Configuration Hub

Documentation

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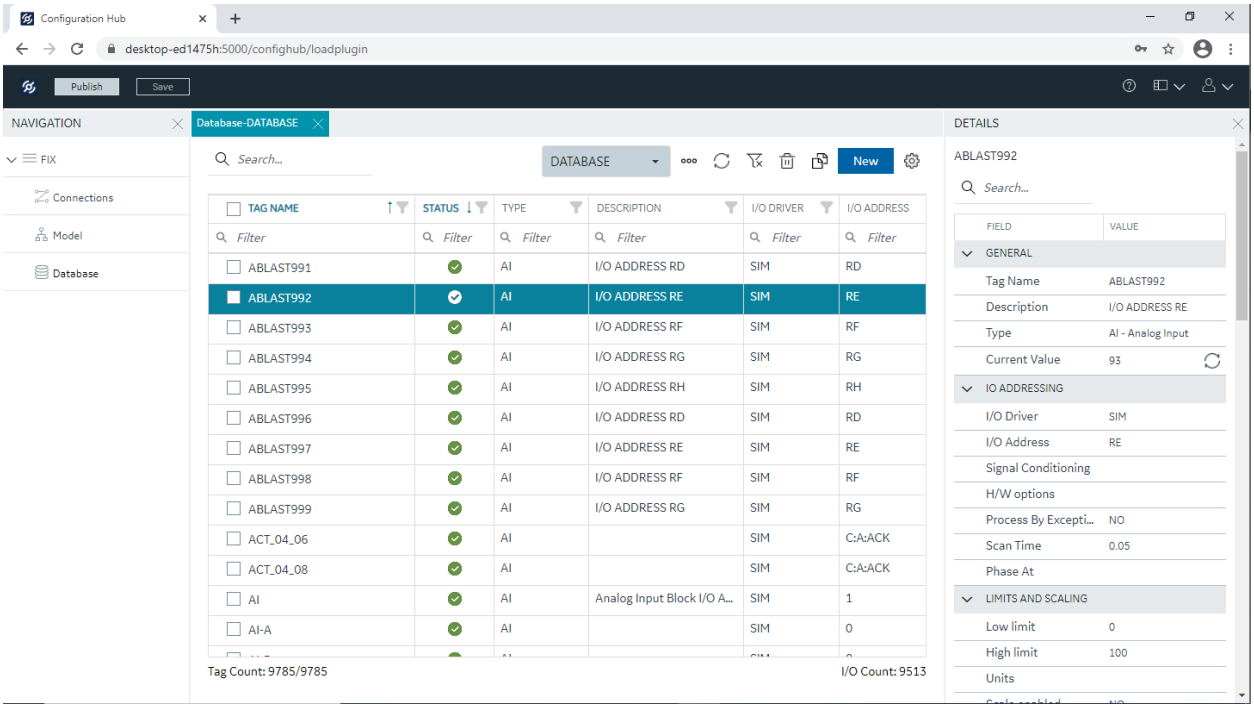
Chapter 1. Getting Started

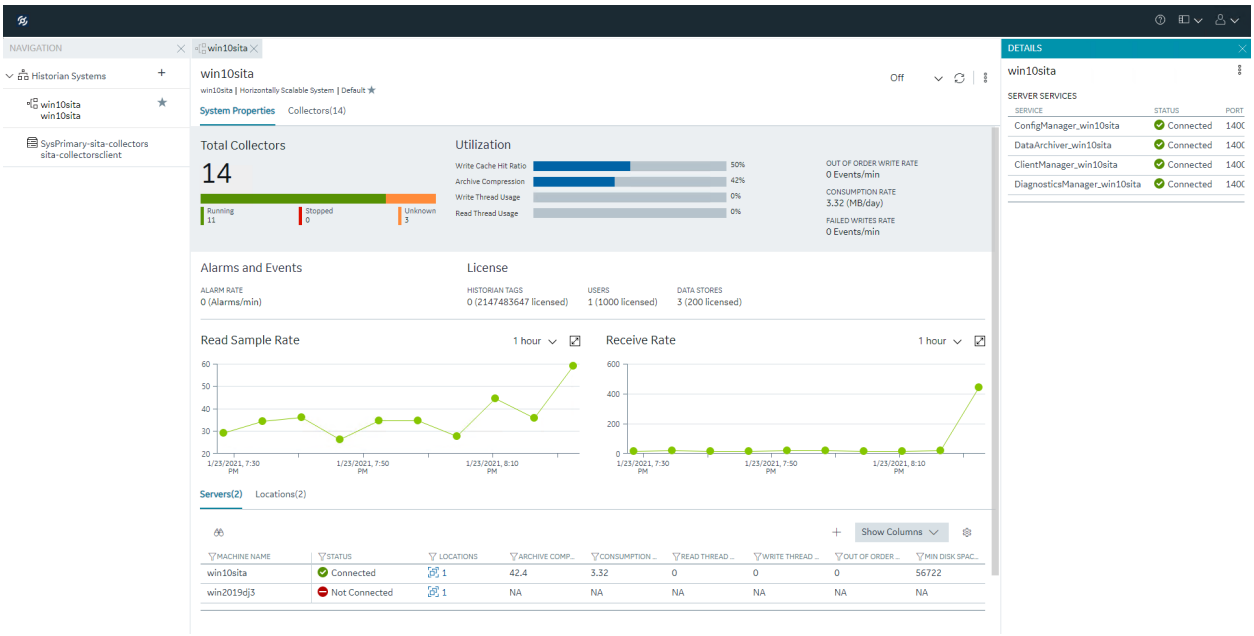
Introduction to the Configuration Hub Framework

Welcome to Configuration Hub. Configuration Hub allows you to configure your Proficy products all together in one place, and access and configure them from anywhere.

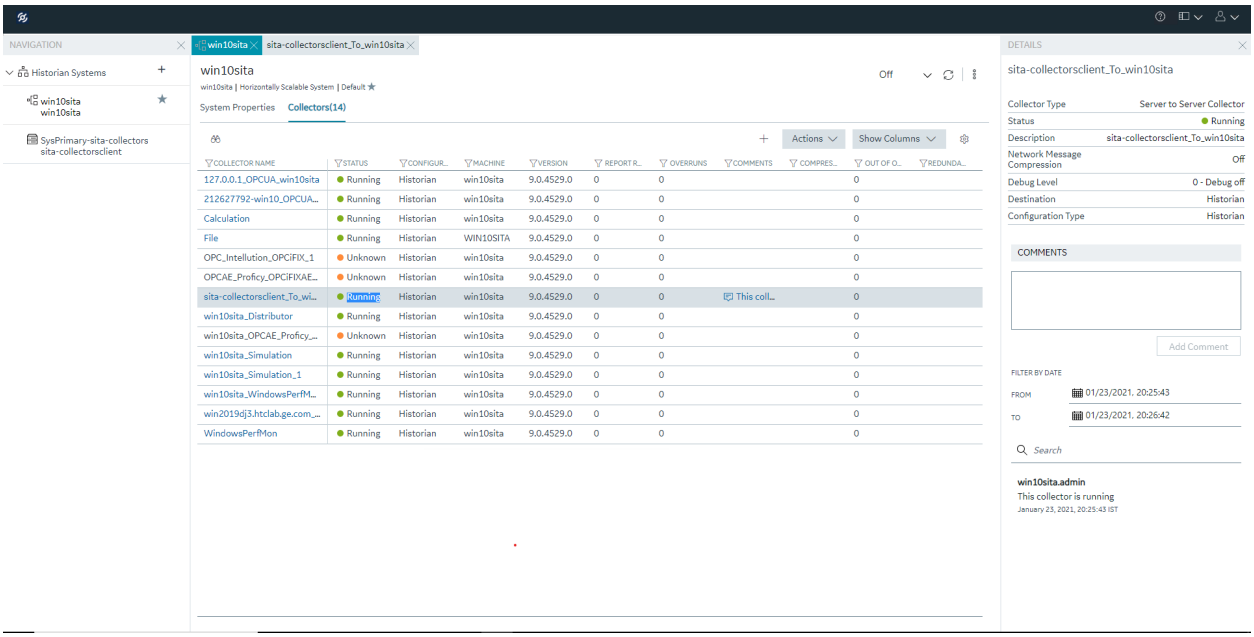
The following graphic shows an example of Configuration Hub with iFIX and Database panel selected:



The following graphic shows an example of Configuration Hub with Historian with a Server selected from the Historian Systems panel:

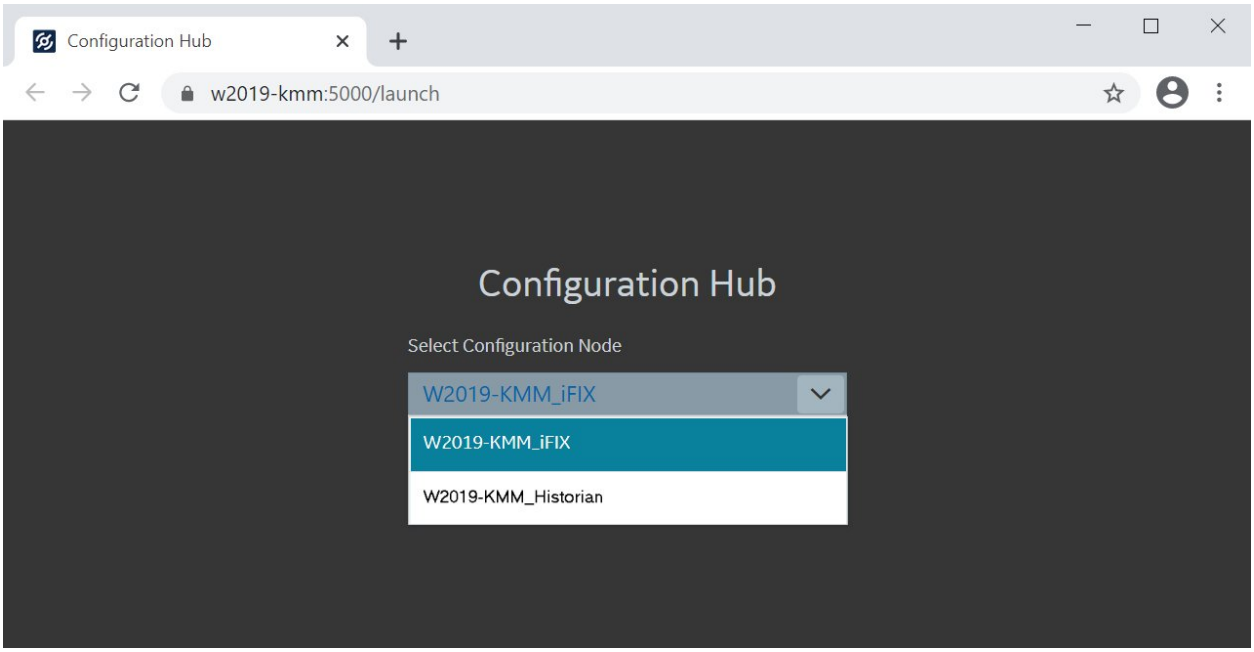


The following graphic shows an example of Configuration Hub with Historian and Collectors panel selected:



Available Product Plugins

Configuration Hub is a framework where more than one Proficy product can be configured. Currently, you are able to register one or more of both iFIX and Historian "plugins" with Configuration Hub. Once registered, opening Configuration Hub will present you with the choice of which plugin instance you want to configure, as shown in the following figure.



After selecting an instance, you will be asked to login to that system.

Common Panels

Common Panels

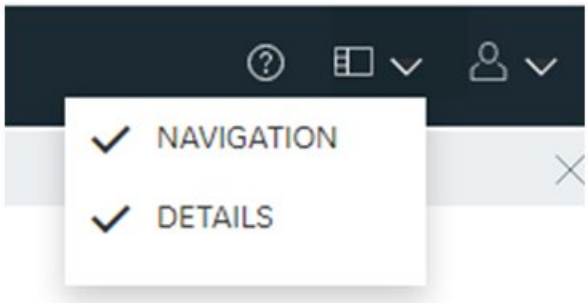
In the Configuration Hub IDE, there are two panels and a toolbar that are common across all products and instances. These panels are the Navigation panel and the Details panel. These panels are always available to re-open via the toolbar. For more information, refer to the following topics:

- Application Bar *(page 7)*
- Navigation panel *(page 8)*
- Details panel *(page 9)*

Application Bar

Configuration Hub has a common toolbar always at the top of the IDE. From this toolbar you can close and open the common panels (Navigation and Details) as well as access the Help and the User actions like Logout.

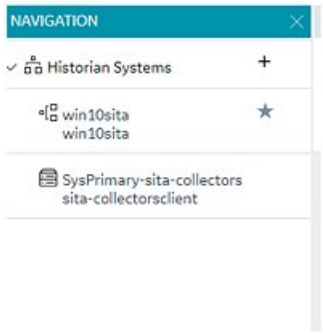
When configuring an iFIX Node, a Save and Publish button also appear in this toolbar.

Item	Description
	Use this button to push any locally saved changes to the iFIX server. This button is not applicable to Historian, and does not display on the Historian toolbar.
	Click to save your changes locally. These changes will not get pushed to the iFIX server until you click the Publish button. This button is not applicable to Historian, and does not display on the Historian toolbar.
	Click to access the online help.
	Use this button to open or close a Navigation or Details panel. 
	Click to select Logout. This will end the current user session and load the launch page to select another plug-in. From a single browser session, a user can log into only one plugin at a time. For example, a user can log in to an iFIX node or Historian one.

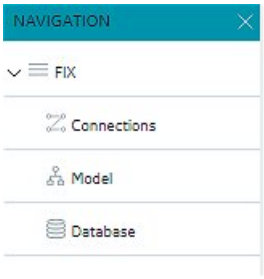
Navigation panel

The Navigation panel contains the plugin instance of the name that you are currently logged into and the associated details. For example:

- In Historian, the Navigation panel includes the Systems configured by user. Systems will have a Server details displayed. By default, there will be one system created.



- In the case of iFIX, the plugin name is the Node name of your iFIX node. Under the node name, you will get Connections, Model, and Database panels.

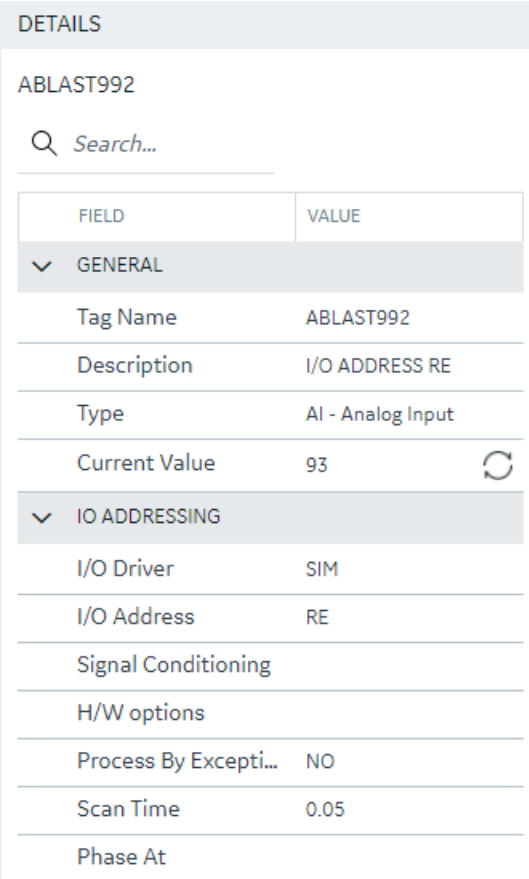


Depending on the product, this instance will have different sub panels available to open and configure.

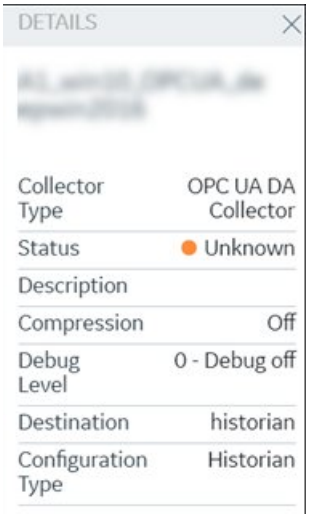
Details panel

The Details panel is a companion panel that responds and works with the currently active panel in the IDE.

For example, if you are configuring the iFIX Database panel, the Details panel will show the tag property grid for the currently selected tag.



For Historian, the Details panel will show the various details pertaining to Collectors and Servers at this point of time. You will be able to take some actions from this pane as well.



Concurrency Management

One of the advantages to a browser-based tool is that more than one user can access the system at the same time. Configuration Hub supports this generally with some of the following considerations:

Generally

- Working on one plugin has no overlap with working on a different plugin in terms of different users overwriting each others work.

iFIX

- An iFIX node can only ever have one active database, so changes resulting from the Publish operation to the running database will be reflected across every browser session.
- The Unpublished changes on any given node are common to all browser sessions accessing that node. So a user on one browser adding tags, importing tags, modifying, and adding to the model and so on will affect what a user in a different browser session working on the same node will see. For example, if one user imports 1000 tags into the database, a second user looking at the same Database panel will see those tags appear in their panel even though they have not yet been published to the running iFIX SCADA system.
- If a user is in the middle of changing anything in iFIX that requires a "Save" operation, they will be prompted to save and refresh if the database is changed from any other source.
- Generally, you should avoid importing from more than one session at the same time. Though this is supported from the Data panel, it will slow down performance drastically to have multiple imports happening simultaneously.

Historian

- Changes resulting from a Publish operation will be reflected across every browser session.
- If an item is changed from any other source while a user is in the middle of making a change in Historian that requires a "Save" operation, the user will be prompted to save and refresh.

Server Certificates for Configuration Hub

Server-side certificates allow for secure connections between the REST services running and the Configuration Hub web server. The SSL certificate for Configuration Hub is valid for two years and must be regenerated after it expires. If your you need to regenerate your certificates use the following steps.

Self-Signed Certificates for Configuration Hub

Use the following steps to update your self-signed certificates for Configuration Hub:

1. Either remove or backup the certificate files in C:\Program Files (x86)\GE\ConfigurationHub \ConfigHubPki folder.
2. Open a command prompt as an administrator in the C:\Program Files (x86)\GE \ConfigurationHub directory.
3. Enter the following command to create new self-signed certificates:

   ```
   restart_confighub.bat "C:\Program Files (x86)\GE\ConfigurationHub" "C:
   \Program Files (x86)\GE\ConfigurationHub\Web" 5678 4890 htclab.ge.com
   ```

   where "C:\Program Files (x86)\GE\ConfigurationHub" is the Configuration Hub install directory, C:\Program Files (x86)\GE\ConfigurationHub\Web is the directory where the Configuration Hub niginx server resides, 5678 is the Configuration Hub authentication service port (Not used any more), and 4890 is the Configuration Hub server port.
4. Copy the server_cert.crt and server_cert.key files the from C:\Program Files (x86)\GE \ConfigurationHub\ConfigHubPki folder to the C:\Program Files (x86)\GE\ConfigurationHub \Web\conf folder.
5. Restart the computer.

Self-Signed Certificates for iFIX with Configuration Hub

Use the following steps to update your self-signed certificates for iFIX:

1. Open iFixConfigServiceCertTool.exe as an administrator. This tool is found in the C:\Program Files (x86)\GE\iFIX\ folder. The iFIX Configuration Service Certificate Tool appears.
2. Click Delete Certificates, and then click Delete Certificate Binding.
3. From the Windows File Explorer, remove or backup the certificate files in C:\Program Files (x86)\GE\iFIX\LOCAL\iFIX_OpcuaConfigService\pki directory.
4. From iFIX Configuration Service Certificate Tool, create the new certificates by clicking on the Create Certificates button.
5. After the new set of certificates are created, ensure that the certificate thumbprint is different in the iFIX Configuration Service Certificate Tool. If they are not different, the new certificates are not created.
6. Copy the iFIX_OpcuaConfigServer.crt and iFIX_OpcuaConfigServer.key files from C: \Program Files (x86)\GE\iFIX\LOCAL\iFIX_OpcuaConfigService\pki into the C:\Program Files (x86)\GE\iFIX\web\conf directory.
7. Restart the computer.

External Certificates for Configuration Hub and iFIX

Use the following steps to configure an externally issued server certificate for Configuration Hub and iFIX.

1. Obtain the private key, server certificate, and the CA bundle that contains the certificates for the issuers. Typically, the private key is generated by you or someone in your organization, and the certificate vendor provides you with the server certificate and the CA bundle.
2. If you received the certificates and the private key in other formats (such as PFX), consult your vendor on how to obtain them as or convert them into PEM files. The web server used by Configuration Hub, Nginx, uses base-64 encoded PEM files for certificates and keys. For more information, refer to the following links:

   http://nginx.org/en/docs/http/ngx_http_ssl_module.html#ssl_certificate

   http://nginx.org/en/docs/http/ngx_http_ssl_module.html#ssl_certificate_key
3. In a text editor, open the PEM file and locate the multiple certificates mentions; each certificate is enclosed by an opening line:

   ```
   -----BEGIN CERTIFICATE-----
   ```

   and a closing line:

   ```
   -----END CERTIFICATE-----
   ```
4. Confirm that the server certificate appears first in this certificate PEM file, followed by the CA certificates in the CA bundle.
5. For Configuration Hub, copy the root and server certificates and key files into the C:\Program Files (x86)\GE\ConfigurationHub\ConfigHubPki folder, and the server certificate and key files to the C:\Program Files (x86)\GE\ConfigurationHub\Web\conf folder. (In Configuration Hub the nginx server certificate files are named: server.crt and server.key.)

   Note: If there is a name change, then the nginx.conf file in the C:\Program Files (x86)\GE\ConfigurationHub\Web\conf\nginx.conf folder also must be updated with the correct file names.

6. If iFIX is used with Configuration Hub, copy the root and server certificates and key files into the C:\Program Files (x86)\GE\iFIX\LOCAL\iFX_OpcuaConfigService\pki folder, and the server certificate and key files to the C:\Program Files (x86)\GE\iFIX\web\conf folder. (In iFIX, the nginx server certificate files are named: iFIX_OpcuaConfigServer.crt and iFIX_OpcuaConfigServer.key.)

   Note: If there is a name change, then the nginx.conf file in the C:\Program Files (x86)\GE\ConfigurationHub\Web\conf\nginx.conf folder also must be updated with the correct certificate file names.

7. Also for iFIX, edit the ifix_config_service.json file (found in the C:\Program Files (x86)\GE\iFIX\LOCAL folder) with the correct certificate file names. The following fields must be updated in this file:

```
"rootCertificateName": "iFIX_OpcuaConfigRoot",
```

```
"serverCertificateName": "iFIX_OpcuaConfigServer",
"serverCertificatePassPhrase": "75D43CAAC1E440F08080D7E4A58AE941",
"generateSSLCerts": true
```

Important: The "generateSSLCerts" field must be set to false if external certificates are used.

Client Certificates for Configuration Hub

For a browser to have a secure connection to Configuration Hub, the Configuration Hub certificate must be copied to the remote machine and added to the trusted root folder. Client-side certificates validate the client's identity to the Configuration Hub web server.

Configuration Hub Root Certificate

To install the Configuration Hub root certificate:

1. Copy the ConfigHubRootCA.crt file on the server machine. By default, this file can be found in the C:\Program Files (x86)\GE\ConfigurationHub\ConfigHubPki folder.
2. Paste the ConfigHubRootCA.crt file to the destination computer.
3. Double-click ConfigHubRootCA.crt to install the certificate. The Install Certificate screen appears.
4. Click the Install Certificate button. The Import Certificate screen appears.
5. Select Local Machine, and then Next. A message appears requesting if you want to proceed.
6. Click Yes. The Certificate Store Screen appears.
7. Select Place All Certificates in the Following Store.
8. Click Browse, and then select Trusted Root Certificate Authorities and then click OK.
9. Click Next. The final screen appears.
10. Click Finish. A message should appear indicating the import was successful.
11. Click OK.
12. Restart the browser.

iFIX OPC UA Client Root Certificate

To install the iFIX OPC UA Client root certificate:

1. Copy the iFIX_OpcuaConfigRoot.crt file on the server machine. By default, this file can be found in the C:\Program Files (x86)\GE\iFIX\LOCAL\iFIX_OpcuaConfigService\pki folder.
2. Paste the iFIX_OpcuaConfigRoot.crt file to the destination computer.
3. Double-click iFIX_OpcuaConfigRoot.crt to install the certificate. The Install Certificate screen appears.
4. Click the Install Certificate button. The Import Certificate screen appears.
5. Select Local Machine, and then Next. A message appears requesting if you want to proceed.
6. Click Yes. The Certificate Store Screen appears.
7. Select Place All Certificates in the Following Store.

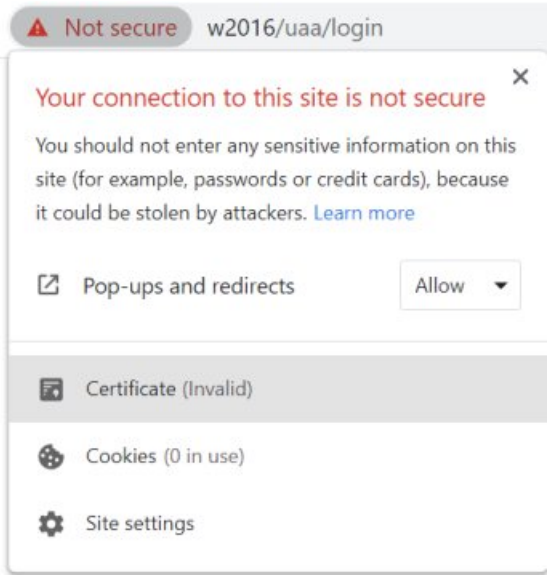
8. Click Browse, and then select Trusted Root Certificate Authorities and then click OK.
9. Click Next. The final screen appears.
10. Click Finish. A message should appear indicating the import was successful.
11. Click OK.
12. Restart the browser.

Enable a Trust with Historian with a Self-Signed Certificate in Chrome

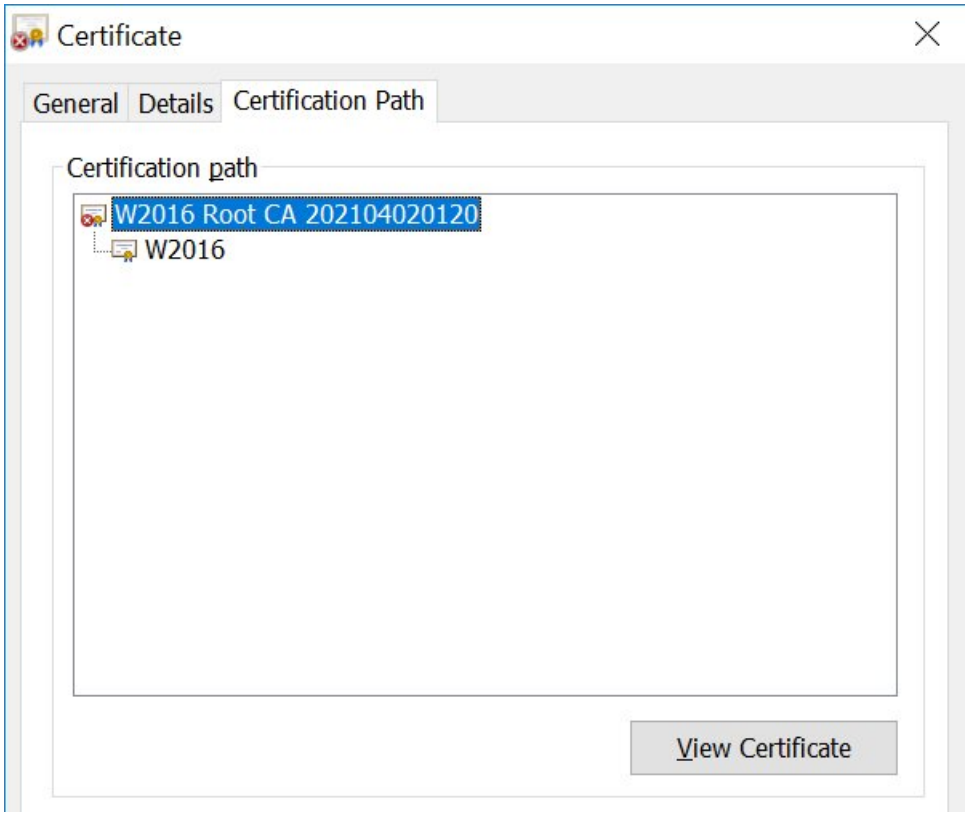
During Historian installation, a self-signed certificate is generated for use with Historian web applications. A self-signed certificate is a certificate that is signed by itself rather than signed by a trusted authority. Therefore, a warning appears in the browser when connecting to a server that uses a self-signed certificate until it is permanently stored in your certificate store. These steps describe how to ensure that Google Chrome trusts the self-signed certificate.

To enable a trust with Historian using a Self-Signed Certificate in Chrome:

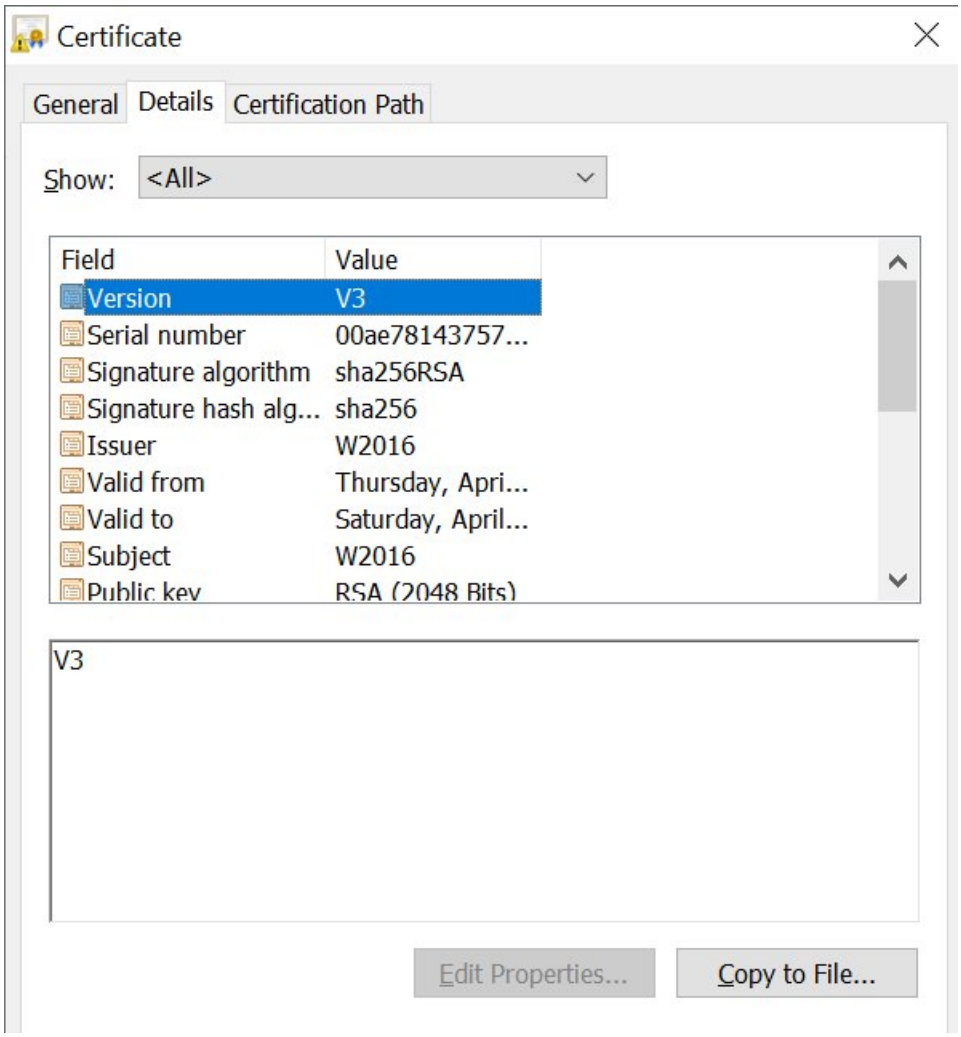
1. Using Google Chrome, access the site to which you want to connect. A message appears to inform you that the certificate is not trusted by the computer or browser.
2. Select **Not Secure** in the URL, and then select **Certificate**. The Certificate window appears.



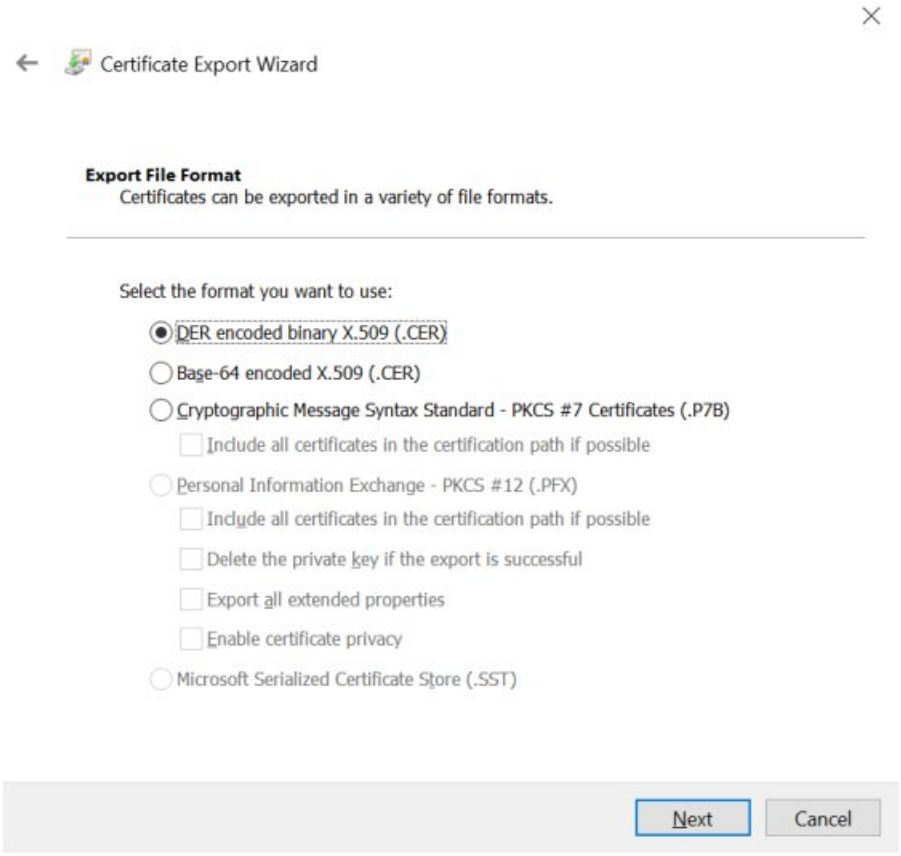
3. Select the **Certification Path** tab, and then select the **root certificate**.



4. Select **View Certificate** The Certificate window appears, displaying the General, Details, and Certification Path sections. Select Details, and then select Copy to Files.

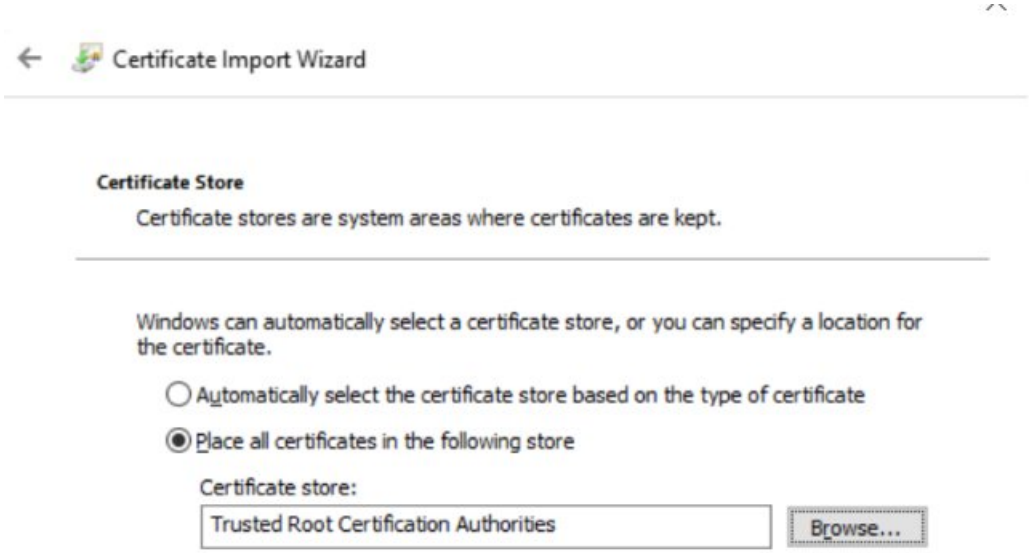


5. Follow the on-screen instructions to save the certificate to a local file. Use the default format: DER encoded binary X.509 (.CER).



6. Right-click the .CER file that you have exported, and select **Install Certificate**. The Certificate Import Wizard window appears.
7. Select **Local Machine** and click Next.
8. Select **Trusted Root Certificate Authorities**, and then select OK.

Note: Do not let the wizard select the store for you.



A Security Warning window may appear. If it does, ignore the message by selecting Yes. The certificate is installed.

9. Restart the browser, and connect to the server.
10. Open the URL authenticated by the certificate. If error messages do not appear, the certificate is successfully imported.

Import an Issuer Certificate in Chrome for Historian

If you want to use an external UAA, you must import an issuer certificate.

1. Copy the issuer certificate from the machine on which UAA is installed.
2. Access the Certificate Management tool. The GE Operations Hub Certificate Management Tool page appears, displaying the Server Certificate section.
3. In the External Trust subsection, next to the Certificate File box, select Select.
4. Navigate to and select the certificate file, and then select Open.
5. Select Import. A message appears, asking you to confirm that you want to import a certificate.
6. Select Yes. You are now ready to use Configuration Hub.

   For more information on Historian, security, and certificates, refer to the Historian online documentation.

Known Issues and Limitations

The following limitations apply to using Configuration Hub:

- Multiple users can log into the same server and make changes, but they must be different browser sessions.
- Only the following browsers were tested for use with Configuration Hub and iFIX: Google® Chrome, Microsoft® Edge based on Chromium, Mozilla® Firefox, or Apple® Safari (MAC OS only).

  Note: Sometimes the MAC OS cannot resolve the system name. In this case, update the hosts file. Also, on the MAC OS, you will be required to manually install the Configuration Hub root certificate.

- From a single browser session, a user can log into only one plugin at a time. For example, an iFIX node or Historian one.
- For iFIX, you can only run Configuration Hub from a running SCADA node. View nodes/ iClients will not be able to login to Configuration Hub.
- For Historian, if only one machine remains in a mirror group, you cannot remove it.
- If you install Configuration Hub and the Historian Web Admin console on the same machine, and use self-signed certificates for both of them, the login page for Configuration Hub does not appear. To prevent this issue, disable the domain security policies:
  1. Access the following URL: chrome://net-internals/#hsts
  2. In the **Domain Security Policy** section, in the **Delete domain security policies** field, enter the domain name for Configuration Hub, and then select **Delete**.
- Configuration Hub cannot be installed on computers with machine names containing non-English characters.
- Configuration Hub will display the number formats and strings as they appear on SCADA or Historian Server node. Changing the browser language will not have impact on the appearance of this data.
- In the Connections Panel, group parameters do not support regional number formatting.
- Only English alphanumeric characters values and the following symbols are supported in the client ID and client secret fields: "-><~!@#$%^&*?|"

Chapter 2. iFIX Web Configuration

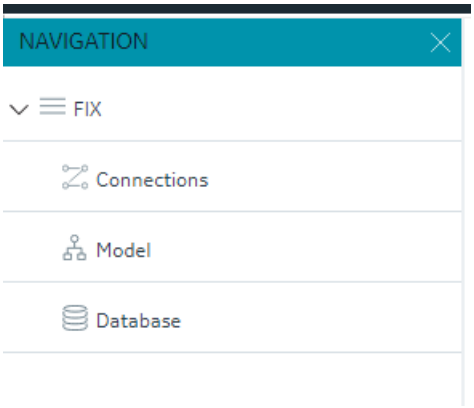
Overview

Introduction to iFIX Web Configuration

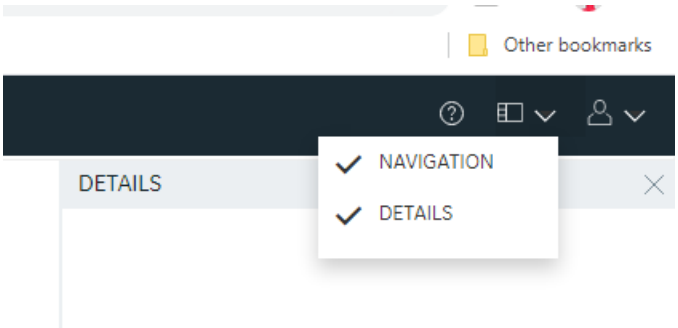
For iFIX, you can launch Configuration Hub from the Applications ribbon bar in WorkSpace.

You can also launch Configuration Hub from the icon on your desktop, but be aware you will get an error message unless you have a running iFIX project.

Use the Navigation panel to open any of the configuration panels.



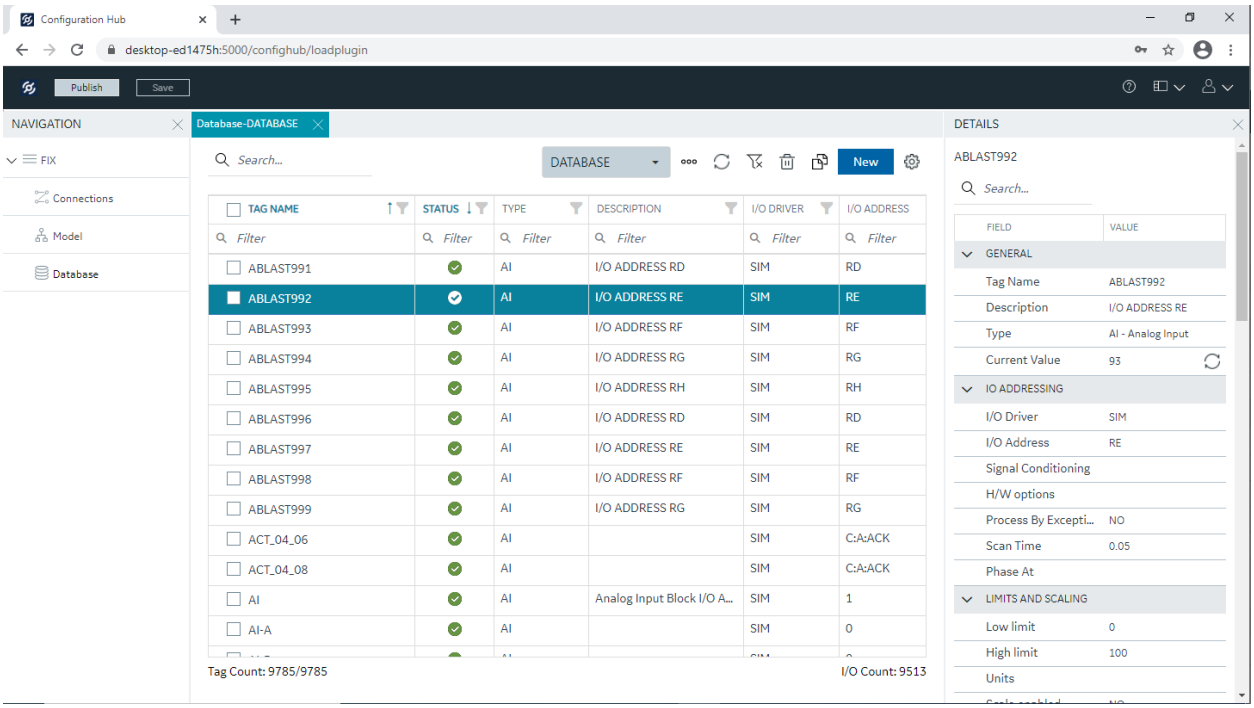
The Navigation panel can be closed to give you more real estate in your IDE and can be re-opened again from the common toolbar on the top right.



Integrated Development Environment

Integrated Development Environments or "IDE's" are configuration tools that provide flexibility in how you layout a number of panels and tools that work together in building a system. Popular development tools that are IDEs include Microsoft Visual Studio and Jupyter Notebook.

Configuration Hub leverages web technologies to create a panel based experience for configuring Proficy products that allows you to move, open, close and resize panels in such a way as to reflect the most convenient and efficient way for you to work on your configuration.



Prerequisites to Use Configuration Hub with iFIX

The following prerequisites are required in order to use iFIX with Configuration Hub:

1. You must enable security before you can log in to Configuration Hub through the browser.
2. The logged in user should belong to the Application Designer group or have all of the iFIX application features that the Application Designer group. (The Application Designer group contains the following iFIX application features:
    - Database Block Add-Delete
    - Database Manager
    - Database Reload
    - Database Save

- Enable Task Switching
- OPC UA Configuration Tool
- Runtime Visual Basic Editor Access
- WorkSpace Configure
- WorkSpace Runtime
- WorkSpace Runtime Exit

3. You can use either a user's login name or the Full Name to login to Configuration Hub.
4. Configuration Hub can only be used to configure a running iFIX project with SCADA Enabled.
5. An iFIX node configured to use Configuration Hub should be registered using the Registration tool (available from Applications menu in Workspace) if Configuration Hub is not installed along with iFIX. See the iFIX Plugin Registration Tool *(page 28)* topic for more details.
6. When there are multiple iFIX nodes registered with your Configuration Hub, they will be listed in the drop-down for login to Configuration Hub. Be aware that you can only log in to one at a time.
7. Multiple users can log into the same server and make changes, from different browser sessions.
8. If using Enhanced Failover with iFIX, you must be in Maintenance Mode before you log in to Configuration Hub. (When you enter Maintenance Mode, SCADA synchronization temporarily stops; synchronization between the SCADA pair is suspended.) After Maintenance Mode is enabled, you can make changes to the database on the primary node.
9. The time on Configuration Hub server and the iFIX SCADA node should be synchronized.
10. Currently Configuration Hub only supports browsing the IGS. It does not support browsing the OUA driver in the Database panel.
11. Use any of the following browsers tested for use with Configuration Hub: Google® Chrome, Microsoft® Edge based on Chromium, Mozilla® Firefox, or Apple® Safari (MAC OS only).

    Note: Sometimes the MAC OS cannot resolve the system name. In this case, update the hosts file. Also, on the MAC OS, you will be required to manually install the Configuration Hub root certificate.

Configuration Information

Local and Remote Installations

Configuration Hub supports product registrations both local to the same machine as Configuration Hub and as remote plugins.

For example, when installing one of the Configuration Hub supported products like iFIX, you can choose to install Configuration Hub on the same machine as your first iFIX node. Subsequent iFIX and Historian installations on different servers in the same network can be registered with the originally installed Configuration Hub instead of installing Configuration Hub again. This will allow you to open Configuration Hub centrally from a browser and being able to see and configure multiple product instances.

iFIX – When you choose to install and iFIX client and register it with an existing Configuration Hub, you should select the "Register with Existing Configuration Hub" option in the install. You will need to take some additional steps after installation to complete the process. Refer to the iFIX Plugin Registration Tool *(page 28)* for more details.

Historian – To register with an existing Configuration hub from the Historian install, select the check box to register with an existing Configuration Hub, and enter the existing Configuration Hub client ID and Secret. The install will proceed to do the install (assuming you have your firewall opened up to the appropriate ports). After install, you will need to follow the instructions in the Registration with Existing Configuration Hub *(page 24)* section to secure the remote connection with the appropriate certificate exchange.

Registration with Existing Configuration Hub

The information that follows describes the prerequisites you need to register with an existing Configuration Hub, and the steps you need to do so. There are also example diagrams to illustrate some common configurations.

Before you can Register with Existing Configuration Hub

- Make sure that users have been added in Windows, and that security is enabled on all of the iFIX SCADAs.
- Make sure that you can view the Configuration Hub web server from the remote machine and vice versa. From a command line, use the ping command: `ping ip` (and replace ip with the actual IP address) to confirm that you can reach the source or destination computer.
- Be aware that the Configuration Hub web server and the iFIX plugin ports must be allowed in the firewall exception rules during installation. If you do not do this during installation, you will need to add these applications manually to the firewall rules.
- If you are using Configuration Hubon a domain, you may need to update the HOSTS files on your network with the name of the Configuration Hub server, the iFIX SCADA Server, and Historian Server (if applicable).

Tip:

- You can find the HOSTS file in the C:\WINDOWS\system32\drivers\etc folder.
- Depending upon your permissions, you may need to copy this file to another folder, edit it, and then copy it back to the etc folder after your edits are complete.
- Use a text editor such as Notepad to edit the HOSTS file. To prevent Notepad from automatically adding a .TXT file extension when you save the file, in the Save as Type field, select “All Files.”
- An example entry in the HOSTS file is as follows: 198.212.170.4 SCADA01. If SCADA1 was the iFIX SCADA Server node name, but the computer name where the iFIX SCADA Server was installed was AREA1, you would need to add a second line to the HOSTS file for AREA1: 198.212.170.4 AREA1.

- If you do not know the TCP/IP address of a computer, run the IPCONFIG command on the SCADA Server to obtain it.
- The contents of the HOSTS file should be identical on each node in your network.
- If your iFIX SCADA Server node name is different from the computer name where iFIX is installed, you also need to add this name to each HOSTS file.
- For Historian, you may need to use the fully qualified domain name (FQDN) in the hosts file of the Web clients machine so it can connect properly to the Configuration Hub machine.

Registration Steps

To register a remote SCADA Server with Existing Configuration Hub:

1. Ensure security is enabled in iFIX.
2. Install the ConfigHubRootCA.crt certificate (from the Configuration Hub computer). *(page 14)*
3. Restart the browser.
4. Access the Registration tool *(page 28)*(from the iFIX WorkSpace ribbon > Applications tab) and register with Configuration Hub (use the client ID & client secret supplied during the original Configuration Hub install).

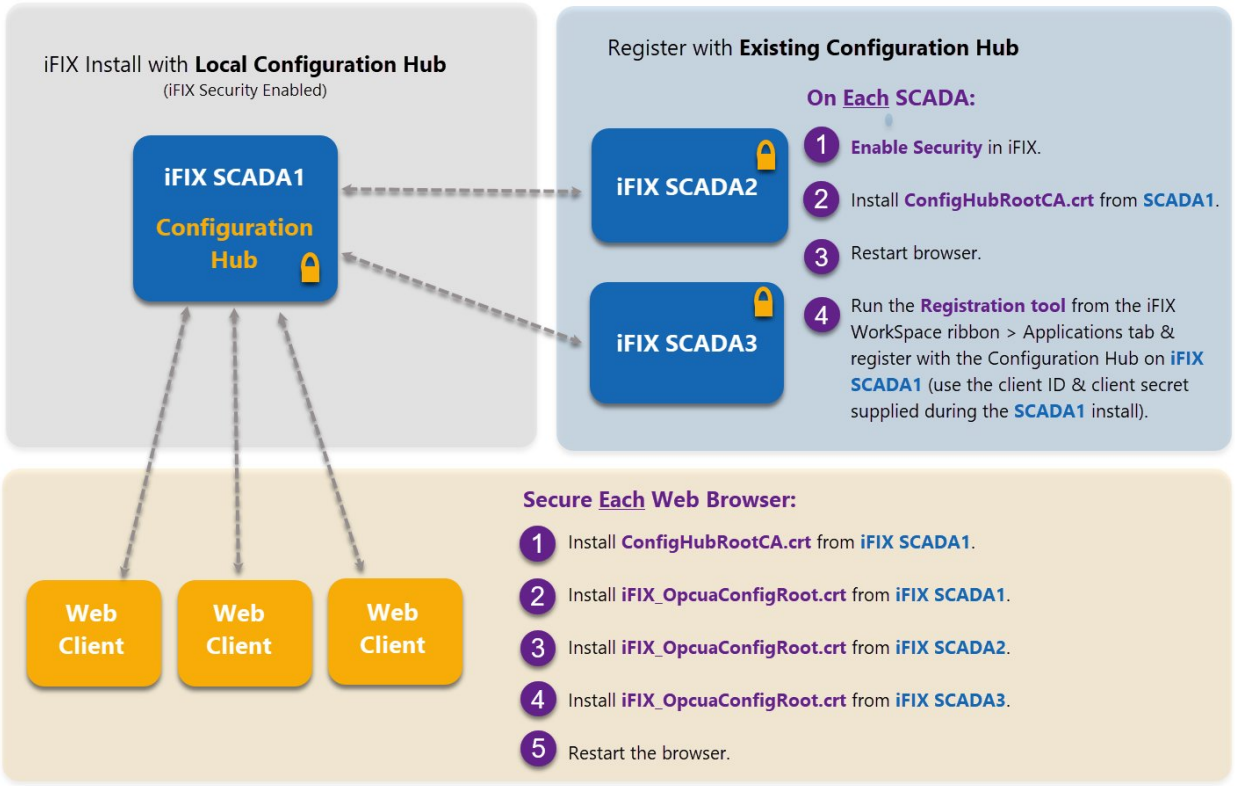
To register a remote Historian with Existing Configuration Hub:

1. Install Historian Web-based Clients using Historian install media, and when prompted, register with the existing Configuration Hub (use the client ID & client secret supplied during the original Configuration Hub install). Historian can be installed on the iFIX node or separately.
2. Install the ConfigHubRootCA.crt certificate (from the Configuration Hub computer). *(page 14)*

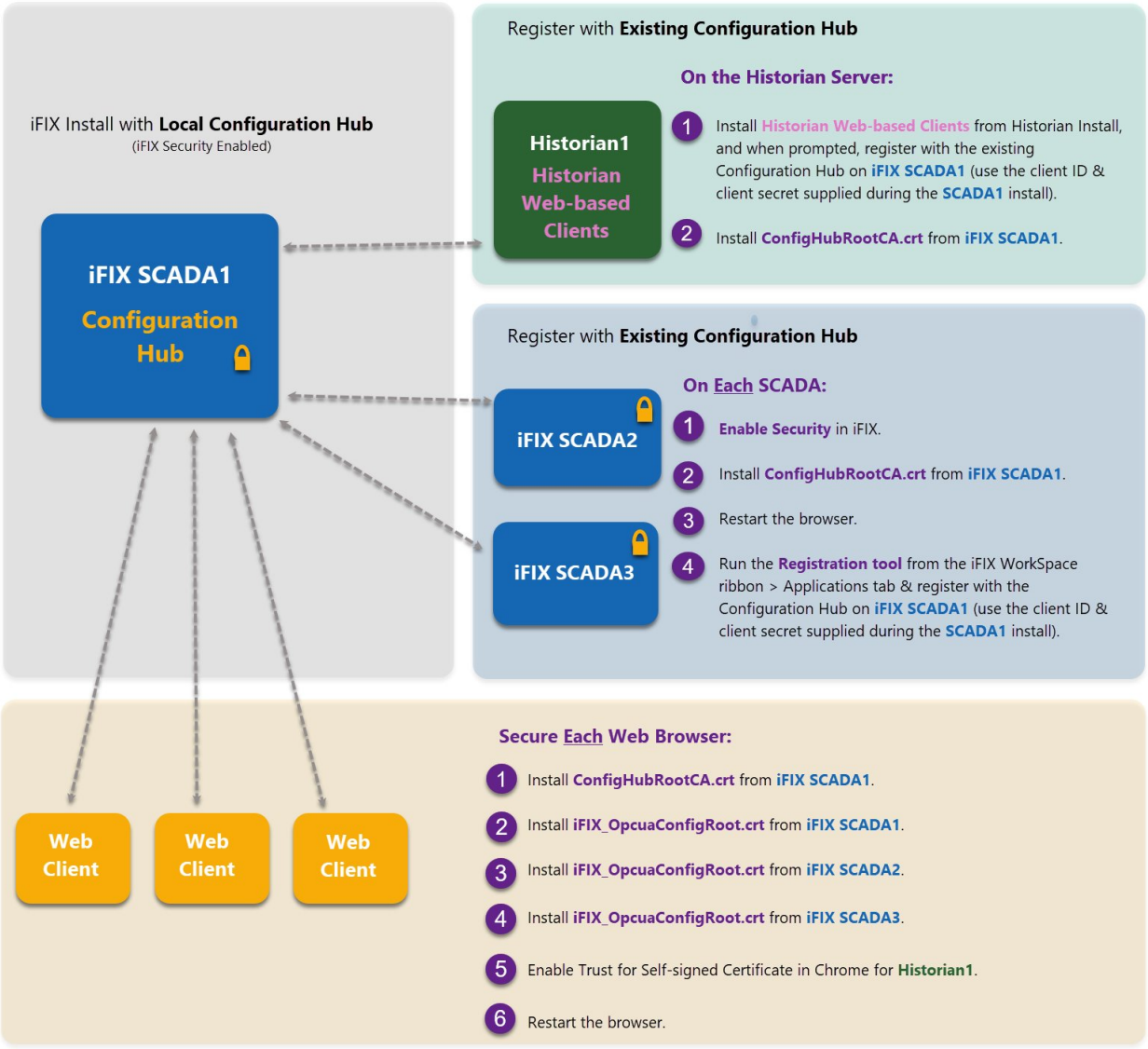
To secure the client web browser, on the browser machine:

1. Install the ConfigHubRootCA.crt certificate (from the Configuration Hub computer). *(page 14)*
2. Install the OPCUAConfigRoot.crt (from each SCADA). *(page 14)*
3. Enable the trust for a self-signed certificate in chrome (for Historian). *(page 15)*
4. Restart browser.

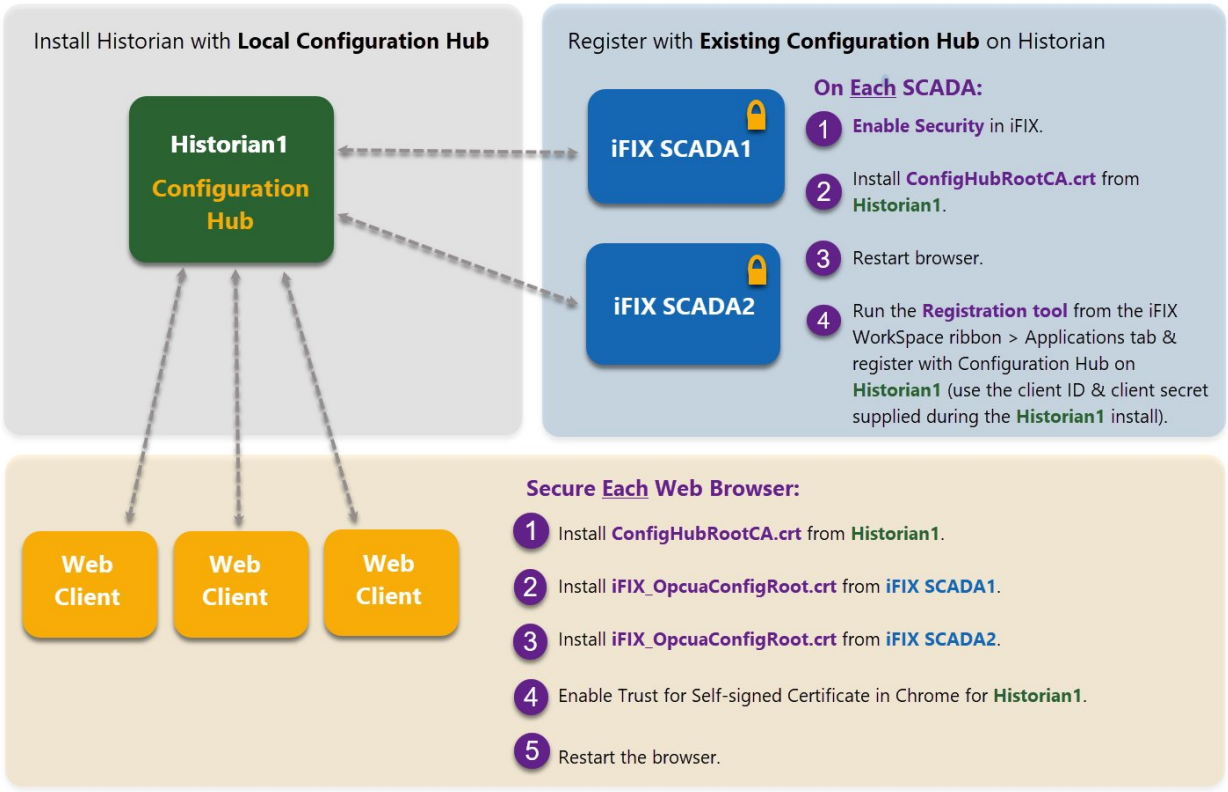
Example 1: Connecting Other SCADAs to an Existing Configuration Hub



Example 2: Connecting Historian and Other SCADAs to an Existing Configuration Hub



Example 3: Connecting iFIX SCADAs an Existing Configuration Hub with Historian



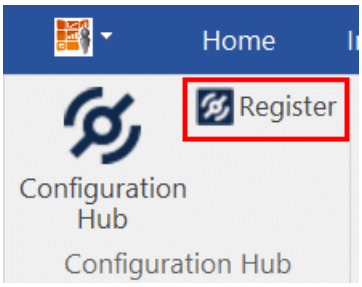
iFIX Plugin Registration Tool

A registration tool is installed during the iFIX install. This tool allows you to register (in the case of an existing Configuration Hub), or re-register your iFIX product plugin with Configuration Hub when and if your setup changes.

The following sections describe how to access the Registration Tool and the fields available.

Access the Registration Tool

You can access the Configuration Hub Registration tool from the iFIX WorkSpace, on the Applications tab, in the Configuration Hub area. Click **Register** to open the tool.



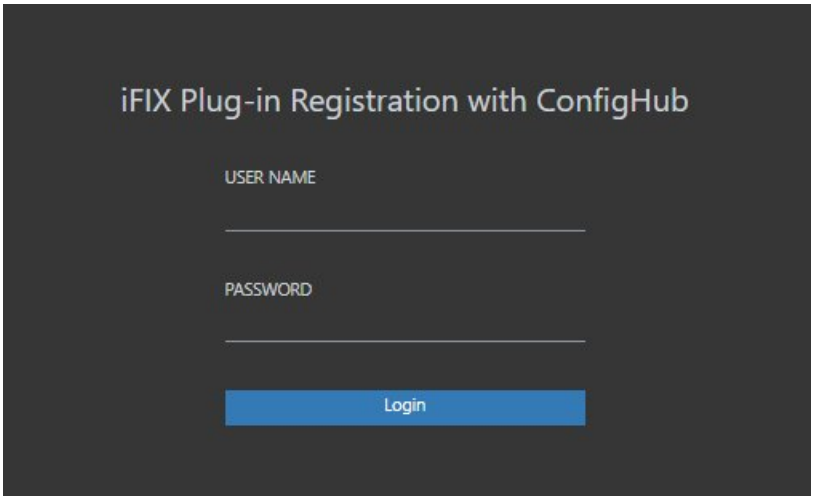
You can also access it directly from the URL:

```
https://servername:port/confighub_register/index.html
```

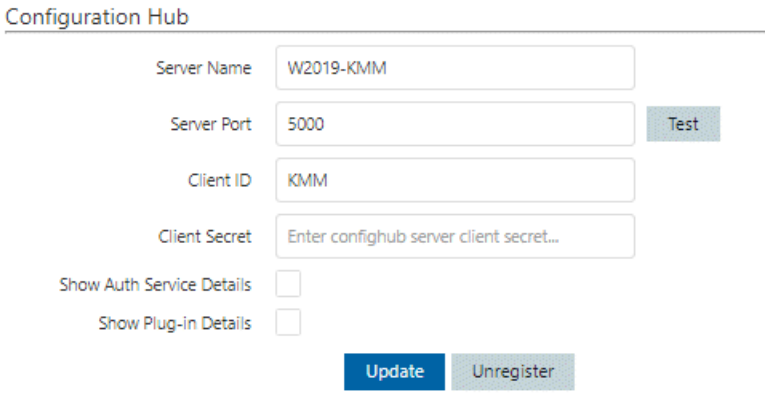
For example:

```
https://w2019:9444/confighub_register/index.html
```

After you launch it, the following login screen appears.



Enter your iFIX user name and password for authentication. The Registration the tool appears, as shown in the following figure.



To register with an existing Configuration Hub, supply the client ID and client secret entered during the local Configuration Hub install.

Descriptions of Fields Available in Registration Tool

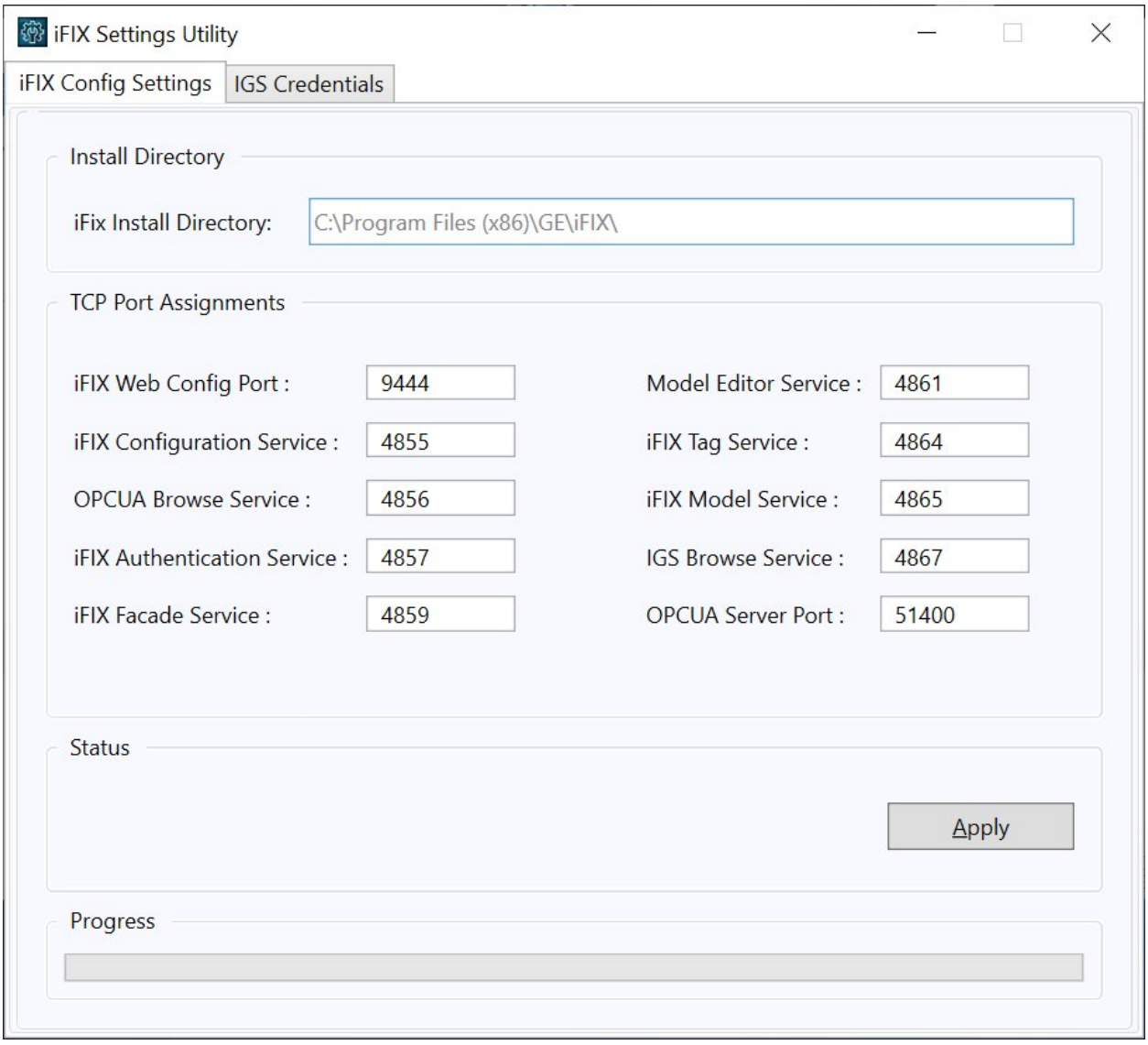
The following fields appear in the Configuration Hub Registration tool:

Field	Description
Server Name	The server name for the Configuration Hub web server. When using a network domain, provide the full domain name. You must supply valid current credentials (Client ID and secret) to make a change.
Server Port	Displays the port associated with the Configuration Hub web server. You cannot edit this field. If you need to change it, refer to the steps in the Port Changes for Configuration Hub *(page 449)* section.
Client ID	Displays the Client ID for your Configuration Hub web server. The Client ID and Client Secret was created when you installed the product.
Client Secret	The client secret associated with the Configuration Hub web server. The Client ID and Client Secret was created when you installed the product. You will need to enter the Client Secret if you want to change the server name (update), unregister, or register your Configuration Hub web server. **Note:** If you forget your client ID or secret, you will not be able to register/unregister plug-ins with Configuration Hub. In this case, you would need to reinstall Configuration Huband register all of all the plug-ins again in order to change them.

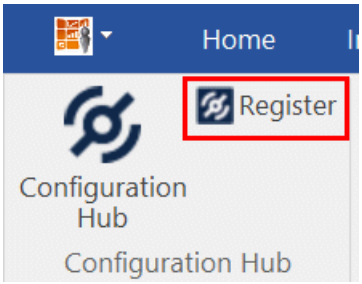
Field	Description
Show Auth Service Details	When selected, expands to show the associated fields. These fields include the following: Auth Service Host Name, Auth Service Port, Use HTTPS to Connect to Auth Service field, Auth Service Client ID, Auth Service Client Secret, Get Token URL, User Login URL, User Authorize URL, Token Public Key URL, Token Introsepct URL, Revoke Bearer Token URL, and Revoke Refresh Token URL. You cannot edit these fields; they are for informational purposes only, and could assist in troubleshooting.
Show Plugin Details	When selected, expands to show the associated fields. Displays the IDs for Configuration Hub, and the Configuration Hub plugin. You cannot edit these fields; they are for informational purposes only, and could assist in troubleshooting.
Update button	Click this button to save changes entered in this wizard. To save your changes, You must enter the Client ID and Client Secret information that you entered when you installed the product.
Register button	Click to register your Configuration Hub web server. This button is only available if the Configuration Hub web server is in an unregistered state. To register Configuration Hub, you'll need the Client ID and Client Secret information that you entered when you installed the product.
Unregister button	Click to unregister your Configuration Hub web server. This button is only available if the Configuration Hub web server is in a registered state. To unregister Configuration Hub, you'll need the Client ID and Client Secret information that you entered when you installed the product.

Port Changes for iFIX after Configuration Hub Install

If you need to change the ports used by iFIX after install, use the **iFIXConfighubSettingsUtility.exe utility** found in the iFIX folder (by default this folder is: C:\Program Files (x86)\GE\iFIX) to reset them. This change must be done only when iFIX is NOT running.



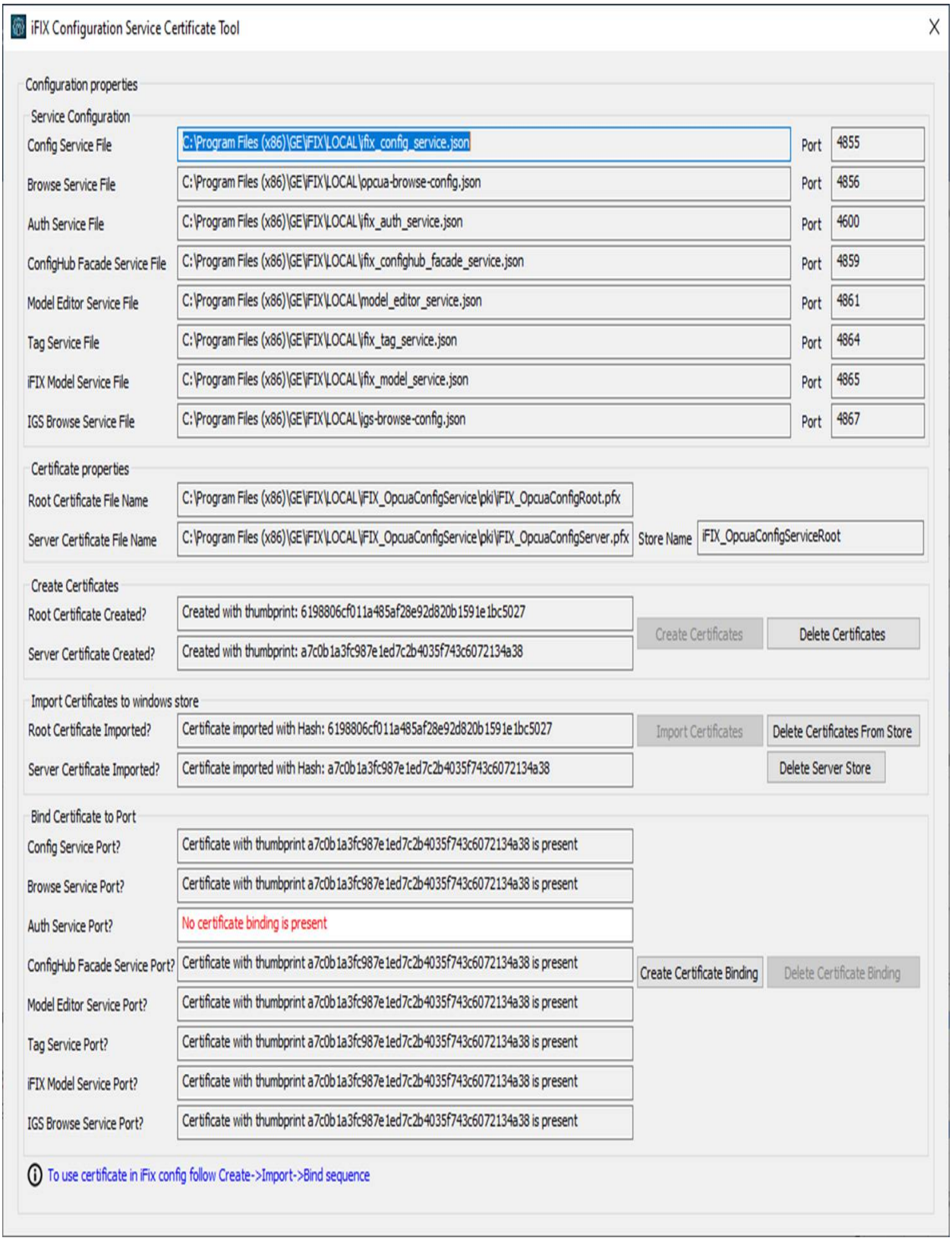
Note: If you are planning to update iFIX Web Config Port, you must first unregister the iFIX Plugin with ConfigHub. If any of the other service ports are changed, then there is no unregister/ register needed.



If the iFIX Web Config Port changed, then you must register the iFIX plugin again with Configuration Hub using the Register button in the iFIX WorkSpace. See the iFIX Plugin Registration Tool *(page 28)* for more details.

With the exception of the iFIX Web Config and OPCUA Service ports, if any other service ports are changed, then you must run the **iFixConfigServiceCertTool.exe tool** (shown in the following figure) to bind the certificates to the changed ports found in C:\Program Files (x86)\GE\iFIX. Please note that this utility must be run as an administrator only.

If any ports are changed, the iFIX Configuration Service Certificate tool shows the updated ports as “No certificate binding is not present.” For example, see the Auth Service Port 2 in the following figure. Click the Create Certificate Binding button to add the necessary port binding.


iFIX Configuration Service Certificate Tool
X
Configuration properties
Service Configuration
Config Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\fix_config_service.json
Port
4855
Browse Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\opcua-browse-config.json
Port
4856
Auth Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\fix_auth_service.json
Port
4600
ConfigHub Facade Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\fix_confighub_facade_service.json
Port
4859
Model Editor Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\model_editor_service.json
Port
4861
Tag Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\fix_tag_service.json
Port
4864
iFIX Model Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\fix_model_service.json
Port
4865
IGS Browse Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\igs-browse-config.json
Port
4867
Certificate properties
Root Certificate File Name
C:\Program Files (x86)\GE\iFIX\LOCAL\iFIX_OpcuaConfigService\pki\iFIX_OpcuaConfigRoot.pfx
Server Certificate File Name
C:\Program Files (x86)\GE\iFIX\LOCAL\iFIX_OpcuaConfigService\pki\iFIX_OpcuaConfigServer.pfx
Store Name
iFIX_OpcuaConfigServiceRoot
Create Certificates
Root Certificate Created?
Created with thumbprint: 6198806cf011a485af28e92d820b1591e1bc5027
Server Certificate Created?
Created with thumbprint: a7c0b1a3fc987e1ed7c2b4035f743c6072134a38
Create Certificates
Delete Certificates
Import Certificates to windows store
Root Certificate Imported?
Certificate imported with Hash: 6198806cf011a485af28e92d820b1591e1bc5027
Server Certificate Imported?
Certificate imported with Hash: a7c0b1a3fc987e1ed7c2b4035f743c6072134a38
Import Certificates
Delete Certificates From Store
Delete Server Store
Bind Certificate to Port
Config Service Port?
Certificate with thumbprint a7c0b1a3fc987e1ed7c2b4035f743c6072134a38 is present
Browse Service Port?
Certificate with thumbprint a7c0b1a3fc987e1ed7c2b4035f743c6072134a38 is present
Auth Service Port?
No certificate binding is present
ConfigHub Facade Service Port?
Certificate with thumbprint a7c0b1a3fc987e1ed7c2b4035f743c6072134a38 is present
Model Editor Service Port?
Certificate with thumbprint a7c0b1a3fc987e1ed7c2b4035f743c6072134a38 is present
Tag Service Port?
Certificate with thumbprint a7c0b1a3fc987e1ed7c2b4035f743c6072134a38 is present
iFIX Model Service Port?
Certificate with thumbprint a7c0b1a3fc987e1ed7c2b4035f743c6072134a38 is present
IGS Browse Service Port?
Certificate with thumbprint a7c0b1a3fc987e1ed7c2b4035f743c6072134a38 is present
Create Certificate Binding
Delete Certificate Binding
To use certificate in iFix config follow Create->Import->Bind sequence

After the binding is complete, close the utility and restart iFIX. The changed ports then will be used by the iFIX.

Access iFIX Web Configuration

1. In the iFIX WorkSpace, select the Applications ribbon and click Configuration Hub Or, on the desktop, click the Configuration Hub icon ( ).

   Note: If using the desktop icon, confirm that iFIX is running and you are logged into iFIX.

   When using the iFIX plugin, the login page expects credentials that are configured in the iFIX SCADA you are connecting to. The user should be a member of Application Designer group to have all the permissions necessary to use Configuration Hub.

   The Configuration Hub server selection screen appears.

2. Select a server name (if more than one exists in the list), and click Continue.
   The iFIX Authentication screen appears.

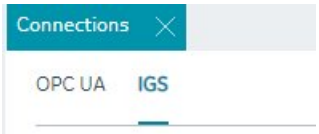
3. Enter the iFIX user name and password, and click Sign In.
   After a successful authentication, the Configuration Hub screen appears.

Connections

Connections Overview

Connections are where you establish connections to the data you want to collect and bring into iFIX. Current available options are OPC UA and IGS.

In the Navigation panel, select Connections, and then select either OPC UA or IGS at the top of the Main Panel.



For more detailed information, see:

- OPC UA Connections *(page 36)*

• IGS Connections *(page 45)*

OPC UA Connections

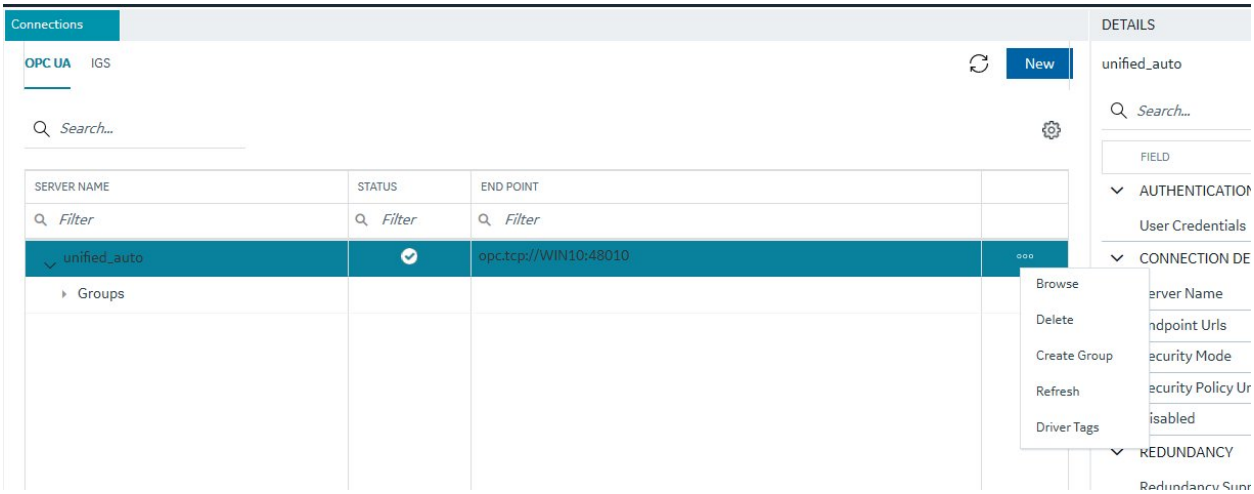
OPC UA Connections

iFIX offers an OPC UA Client Driver option that allows you to connect to OPC UA Servers. To use this feature in Configuration Hub, your running iFIX SCADA node must be licensed for this option.

Note: At this time, Configuration Hub does not support browsing the OUA driver in the Database panel.

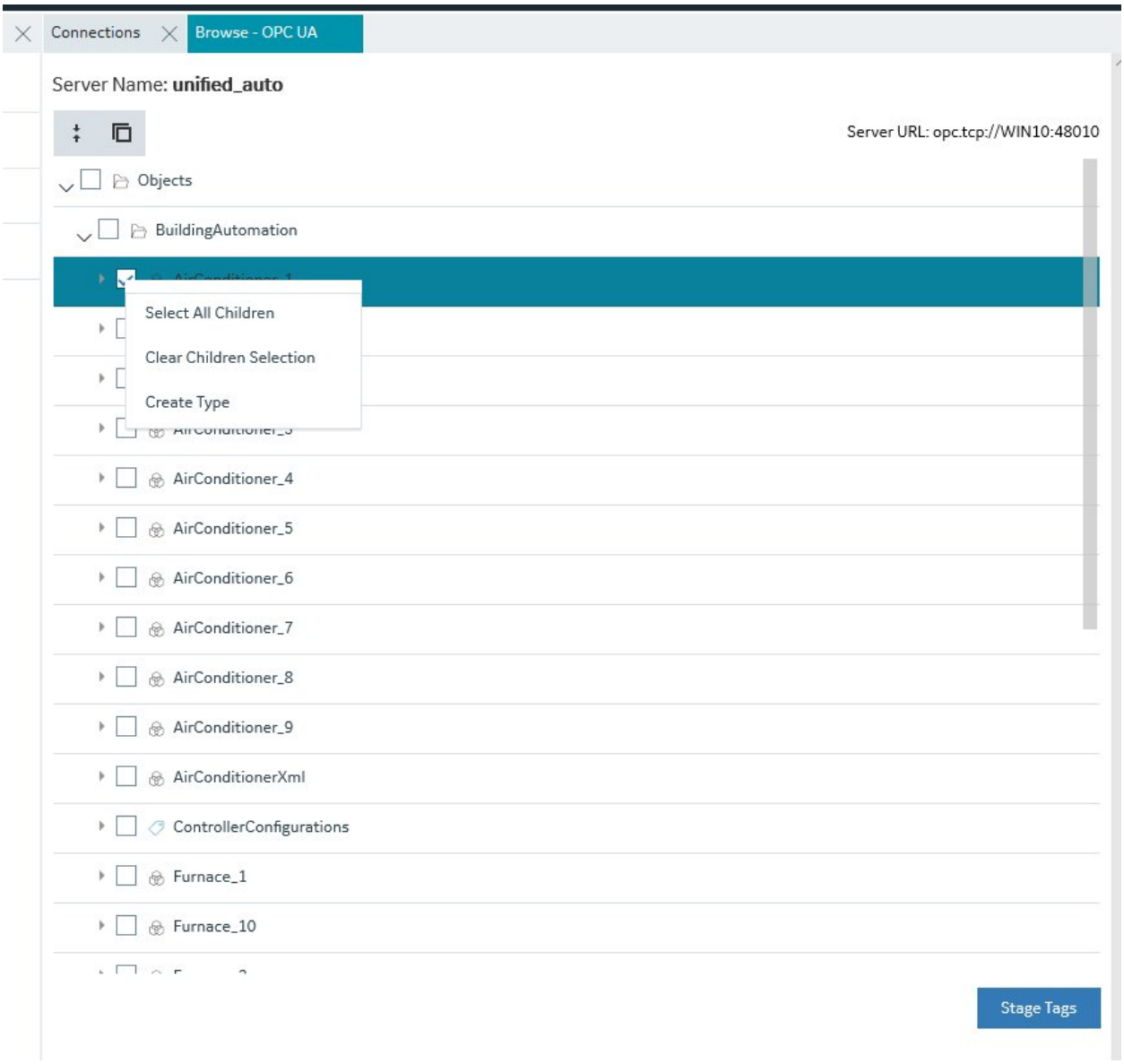
Click New to create a new connection. Type in a unique server name and the end point URL of your OPC UA Server. To test the connection, click the Test button. Click the Create button to create the connection for use.

After your connection is created, it appears in the table. Click the ellipsis (...) to the right of your entry to interact with the server.



From the popup menu, select Browse to browse the hierarchy available in the OPC UA Server.

From here you can select individual tags to populate your iFIX Database, or select higher level object and create a new object type for your iFIX model. For example, you can right-click on an Object row to bring up a sub-menu, and then select Create Type.



Server Management

OPC UA Server connections can be edited using the Details panel. After selecting a server configuration in the Connections panel, the Details panel populates the server connection information.

The ENDPOINT URL field takes the host name or IP address and port used to connect with the OPC UA Server. For example: opc.tcp://MyServer:51400/. The format of this URL (with the machine name, IP address, or fully qualified domain name) is defined on the OPC UA Server.

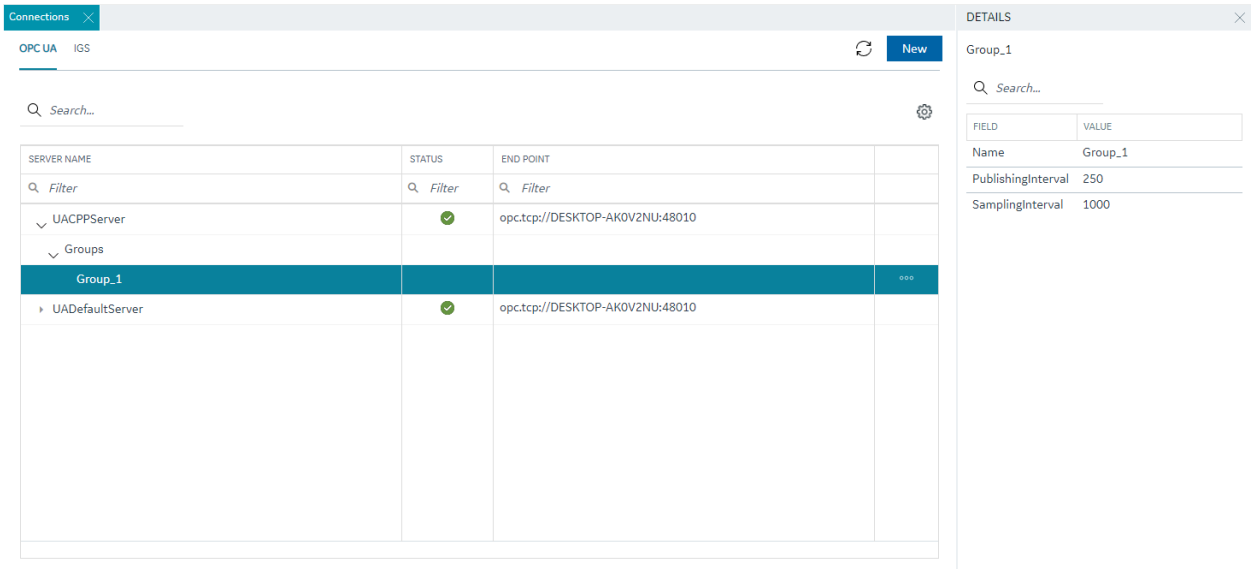
The authentication type can be set to Anonymous or UserName/Password. It is recommended that you select UserName/Password to provide the highest level of security. Anonymous does not provide any protection for accessing data or logging.

If the UserName/Password option is selected, enter the user name and password to connect to the OPC UA Server.

After editing the server details, the Save button on the toolbar is enabled to indicate that the Connections panel has changes to be saved. On clicking the Save button, the changes made to server connections are persisted until the changes are published to the iFIX node.

In addition to editing a server connection, the connections panel supports creating groups under the server connections and deleting them. When an OPC UA server connection is created, a default group is created.

Groups under a server connection allows you to configure the publishing interval, and sampling interval. Any application requesting data from the OPC UA Server uses group names to access items in the group. Group names can be up to 19 alphanumeric characters including underscores (_) and hyphens (-).



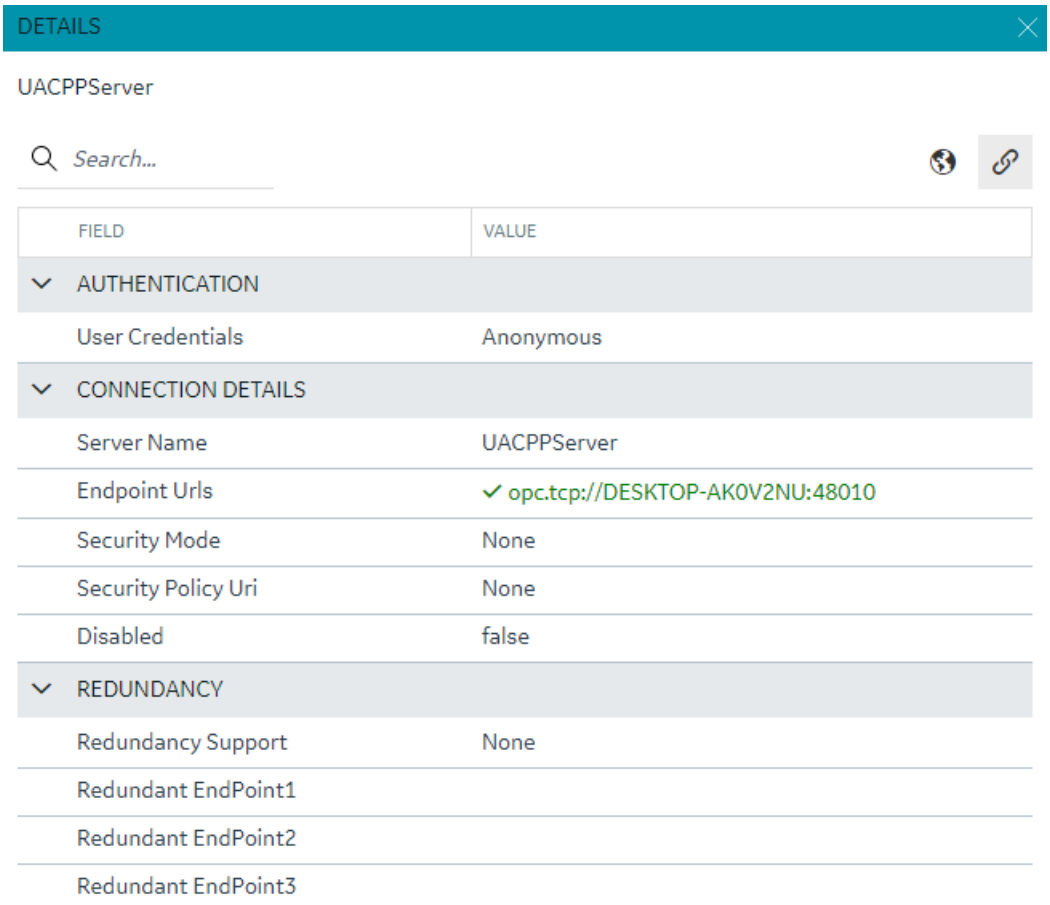
Testing Connections

Test Connection function is provided on the OPC UA server connection's Details panel. The test connection function is initiated from the toolbar button .

The test makes an attempt to reach to the end point URL provided in the Connection Details panel and on successful connection comes back with the test status and populates in to the end point URL

field with a check mark; on failure to connect the same field is highlighted in red with failure a reason.

The following figure displays a successful test.



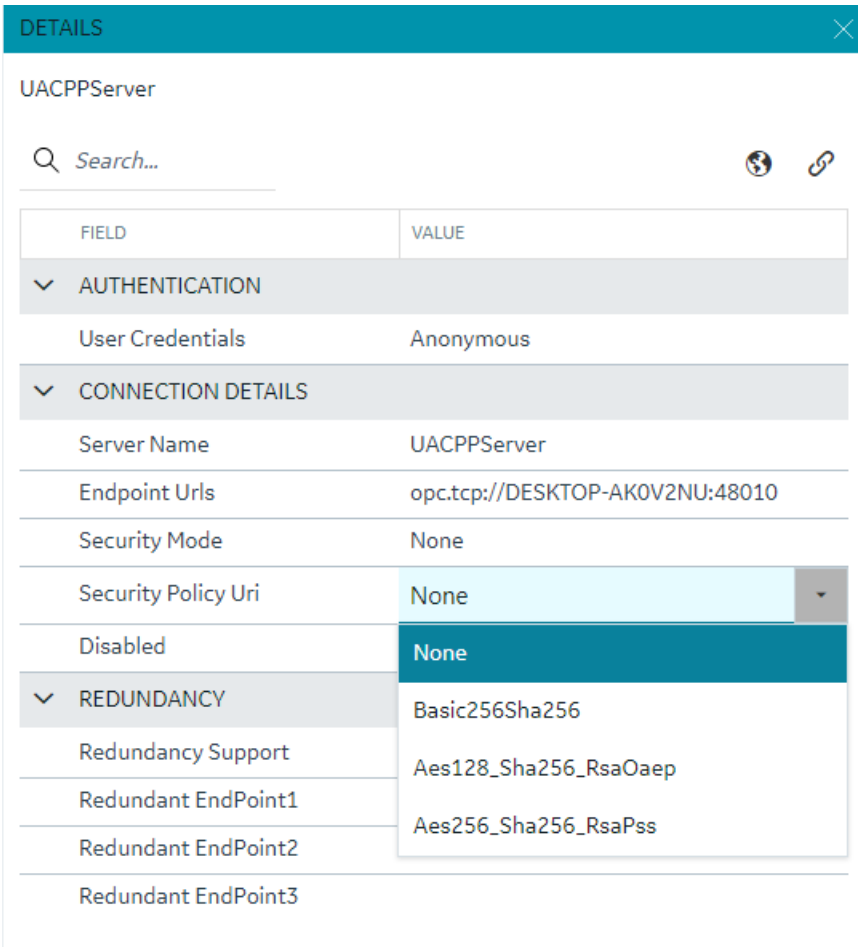
Policy Browse

OPC UA servers are configured with specific security mode and policy. The Details panel of a server connection provides a toolbar button to browse policies .

On execution of this function, the configured Security mode and Policies from the server are browsed and populated into the respective fields in the Details panel.

Select a Security Model and Security Policy to apply to this connection: Basic128Rsa15, Basic256, Basic256Sha256, Aes128_Sha256_RsaOaep, or Aes256_Sha256_RsaPss.

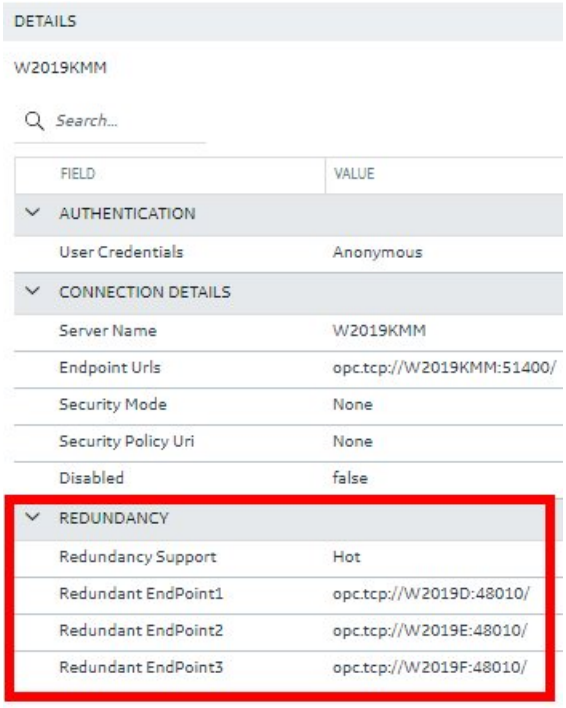
Note: If you are not sure what to select for Security Mode and Security Policy or simply want to test a connection, select None. Be sure that you go back and change this setting later, however, to ensure you have adequate security enabled for your connections.



Note: For the connection to work for any other security policy other than None, you will have to ensure the certificates are properly trusted between the iFIX client and the OPC UA server you are communicating to. See the iFIX help for use of the OPC UA tool in iFIX.

Redundancy Configuration

You can specify the redundancy settings for your OPC UA Server connection, if you have this feature enabled on your OPC UA Server. Scroll to view the Redundancy settings on the Details panel for selected OPC UA server Connection tab, as show in the following figure. You can configure Cold, Warm, or Hot redundancy.



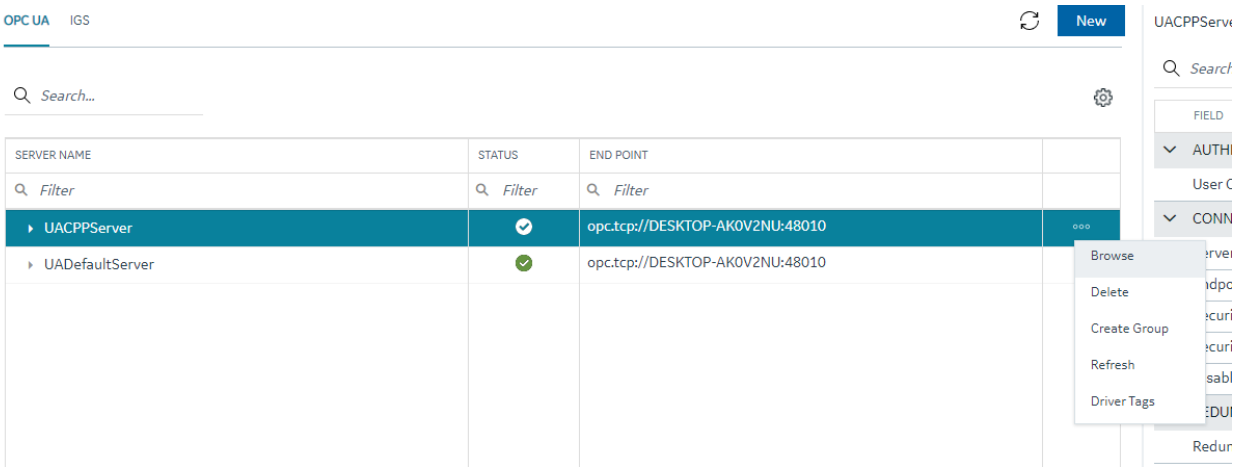
According to the OPC Foundation: Cold redundancy requires an OPC UA Client to reconnect to a backup server after the initial server has failed. Warm redundancy allows a client to connect to multiple servers, but only one server will be providing data values. In Hot redundancy, subscriptions are created in multiple servers but only 1 server is active and providing data to the client at a time.

You can configure up to 3 backup servers (endpoint URLs).

Browse and Create iFIX Tags for OPC UA

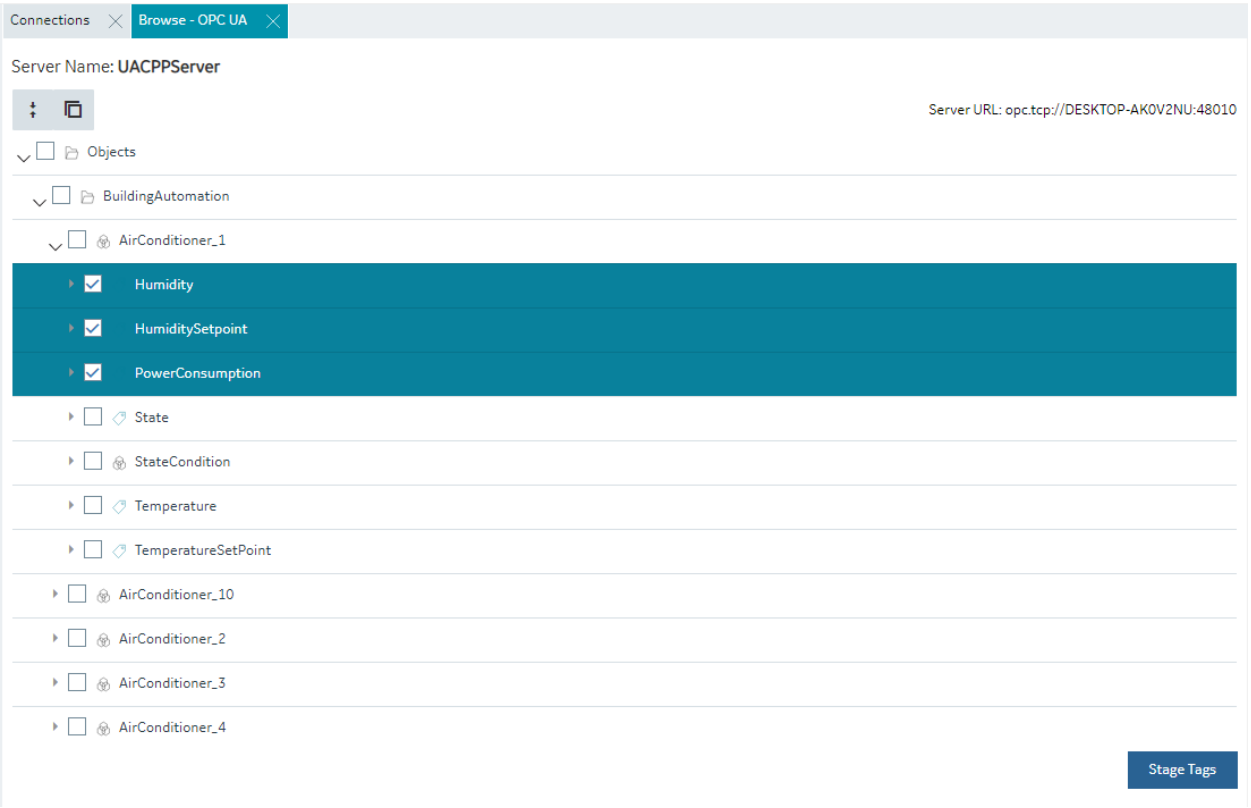
An OPC UA server connection can be browsed to navigate through the address space and select content to create tags into the active iFIX database.

The OPC UA server connection browse is provided through the context menu on the selection of the server connection row.

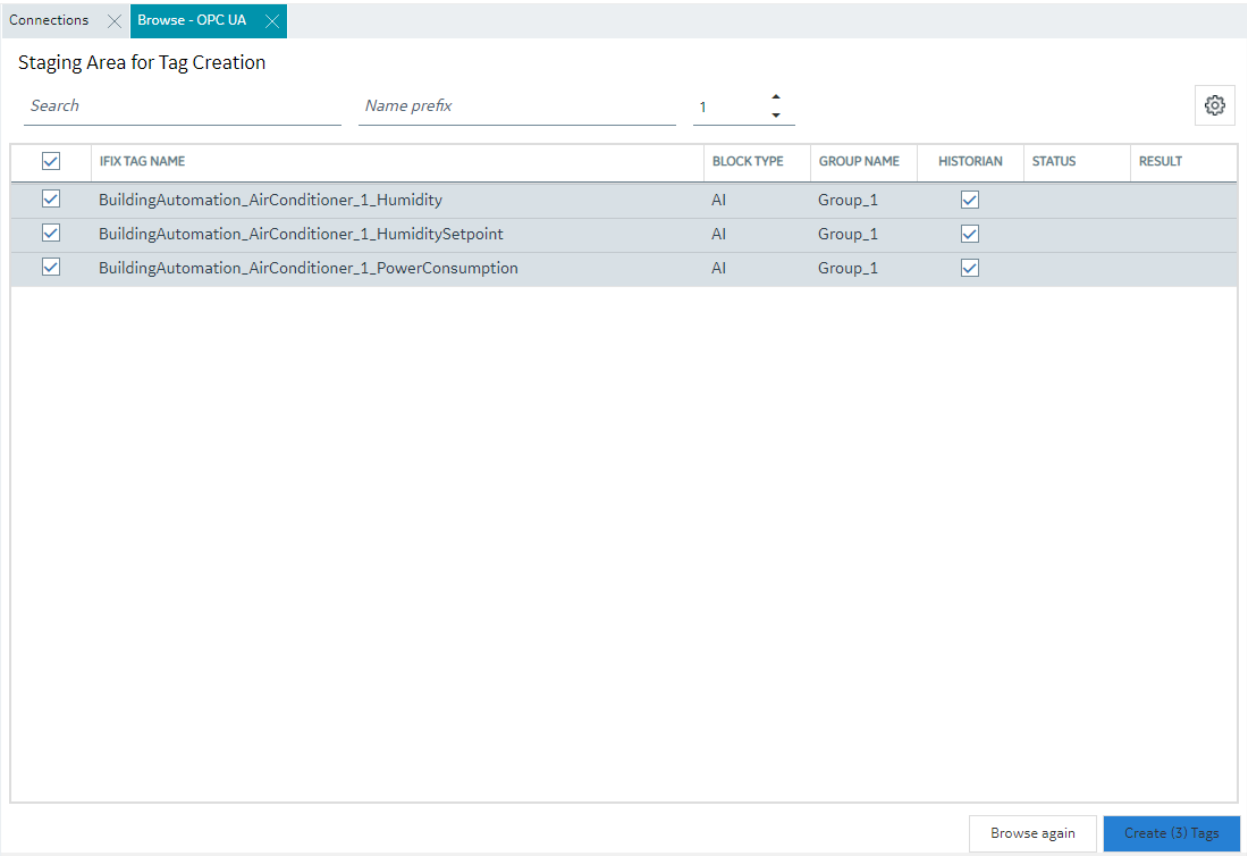


The first step in the tag creation process is to browse the OPC UA Server device and select the tags from the browse content. A parent node's right-click menu can be used to selected bulk child tags for creation.

The next step is to stage the tags and preparing the tags for creation into the iFIX database.



The staging environment allows for modifications to tag names, selection of iFIX block type (default mapped on staging) and selecting a tag for Historian collection.

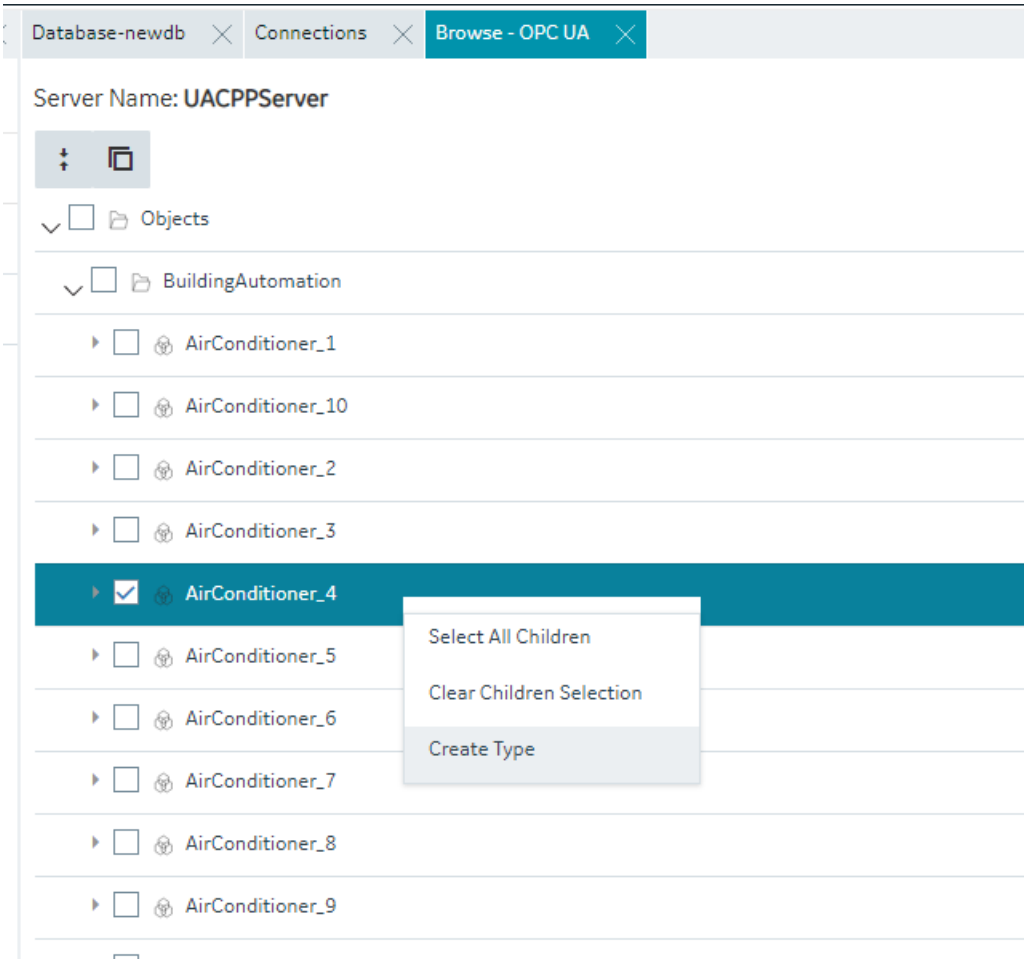


You can automatically generate one or more tags at a time by browsing the OPC UA Server device.

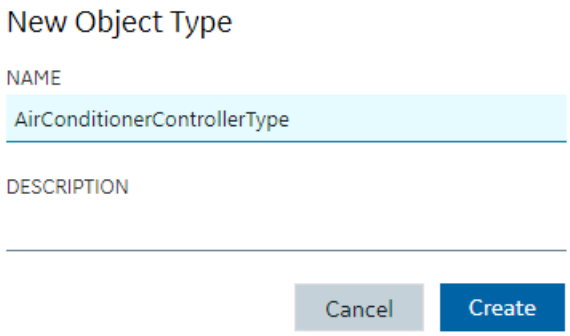
Browse and Create Types for OPC UA

Similar to process of creating tags from an OPC UA sever browse, a model type definition can also be created from the same browse operation. From the OPC UA server browse, an object definition can be selected to create an object type from it.

On selecting an object, the right-click menu provides an option to create a type.



Selection of this menu item displays a pop-up to take the type name as input. New Object Type pop-up shows the class name of the selected object for OPC UA.



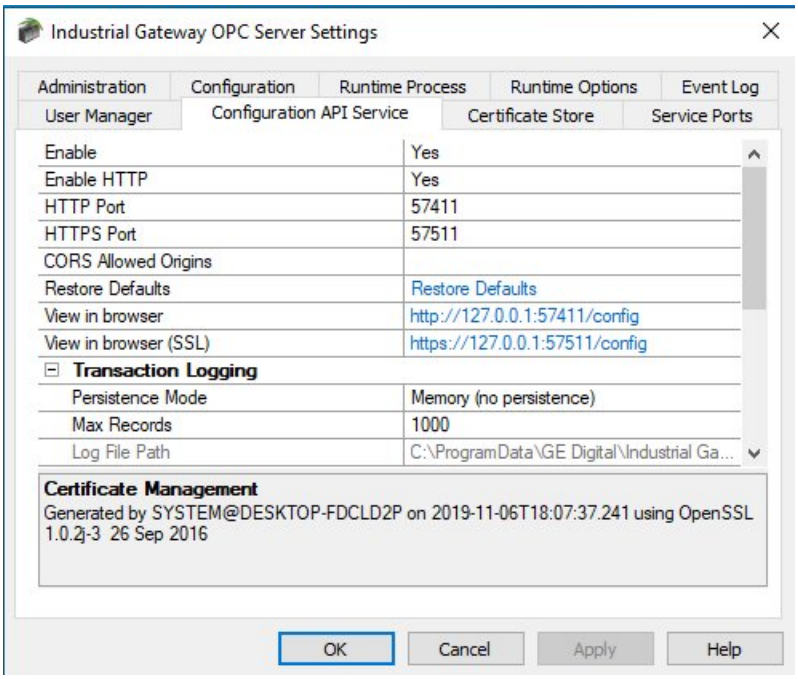
On clicking Create, the type is created into the model along with tags in the object as variables and values are populated in to the default template of the type.

IGS Connections

IGS Connections

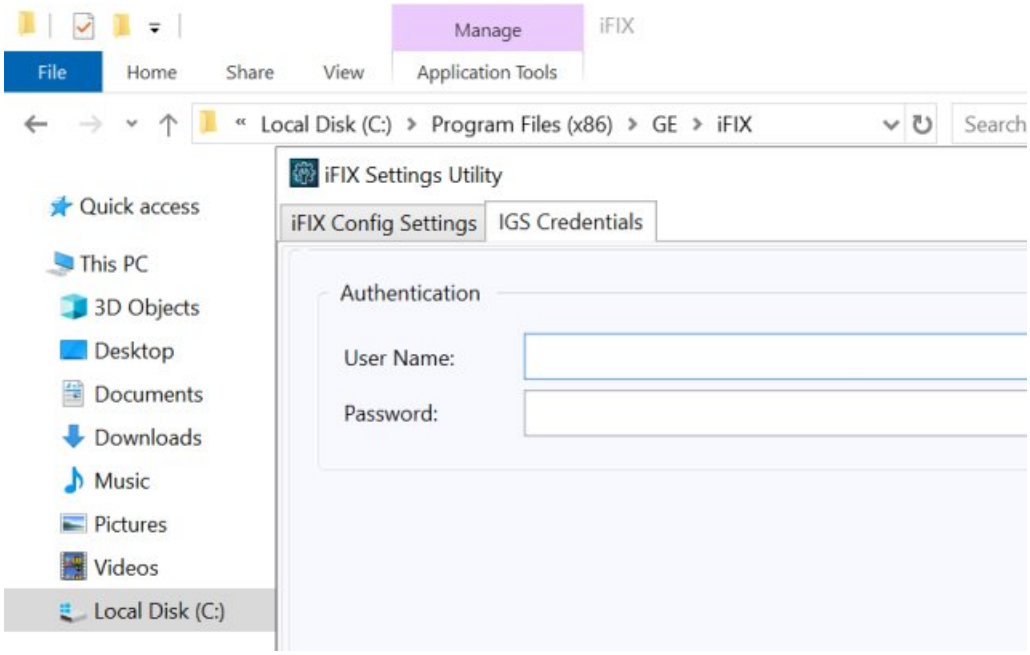
Overview

To use the IGS feature in Configuration Hub, you must have a license for IGS: Industrial Gateway Server - Basic or 100. Also, be sure that for the IGS Settings, on the Configuration API Service, that both the Enable and Enable HTTP fields are set to Yes.



Steps to Enable IGS Settings

1. In the Windows system tray, select the IGS Server icon.
2. Right-click and select Settings. The Industrial Gateway OPC Server Settings dialog box appears.
3. Select the Configuration API Service tab.
4. Set the 'Enable' and 'Enable http' fields to YES.
5. Restart the IGS Driver.
6. If the IGS is configured with a user name and password, in the iFIX install folder, double-click iFIXConfighubSettingsUtility.exe.
7. Select the IGS credentials tab, and then enter the user name and password for your IGS server (as shown in the fields displayed in the following figure) and click Apply.

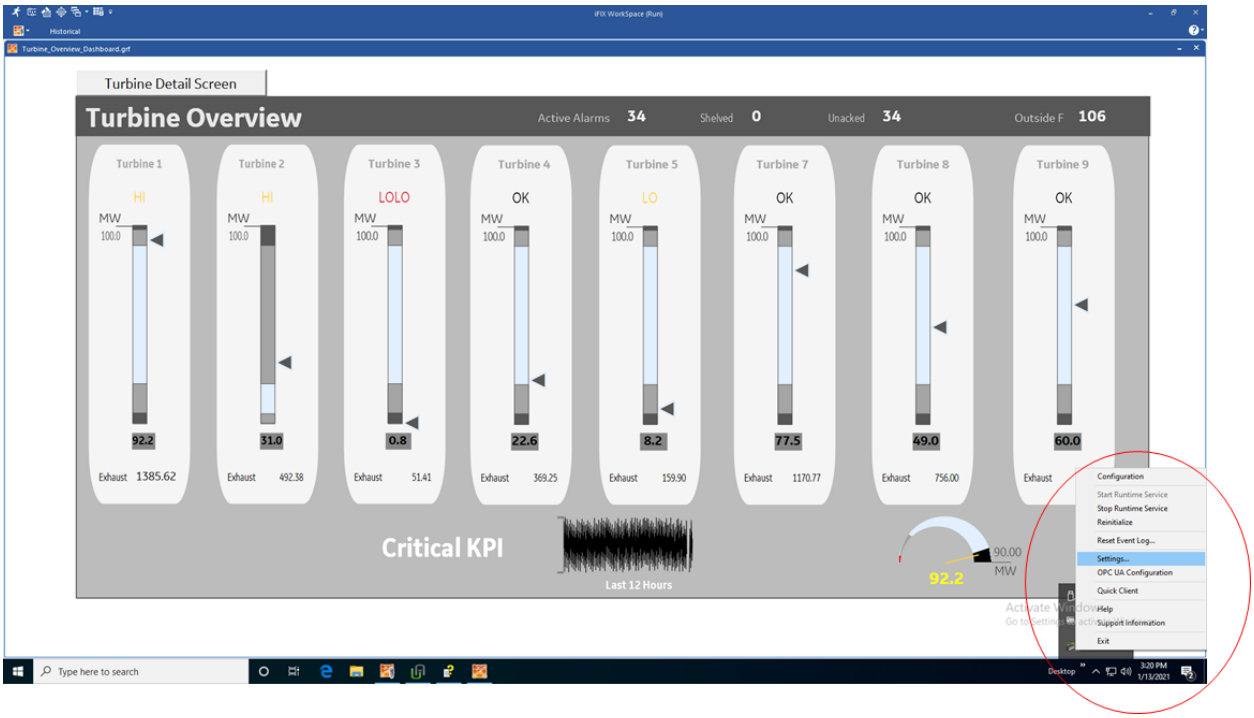


Tip: If you need to troubleshoot IGS issues, you can find the IGS log file (igs-browse-config.log) located in the C:\Program Files (x86)\GE\iFIX\ folder, by default.

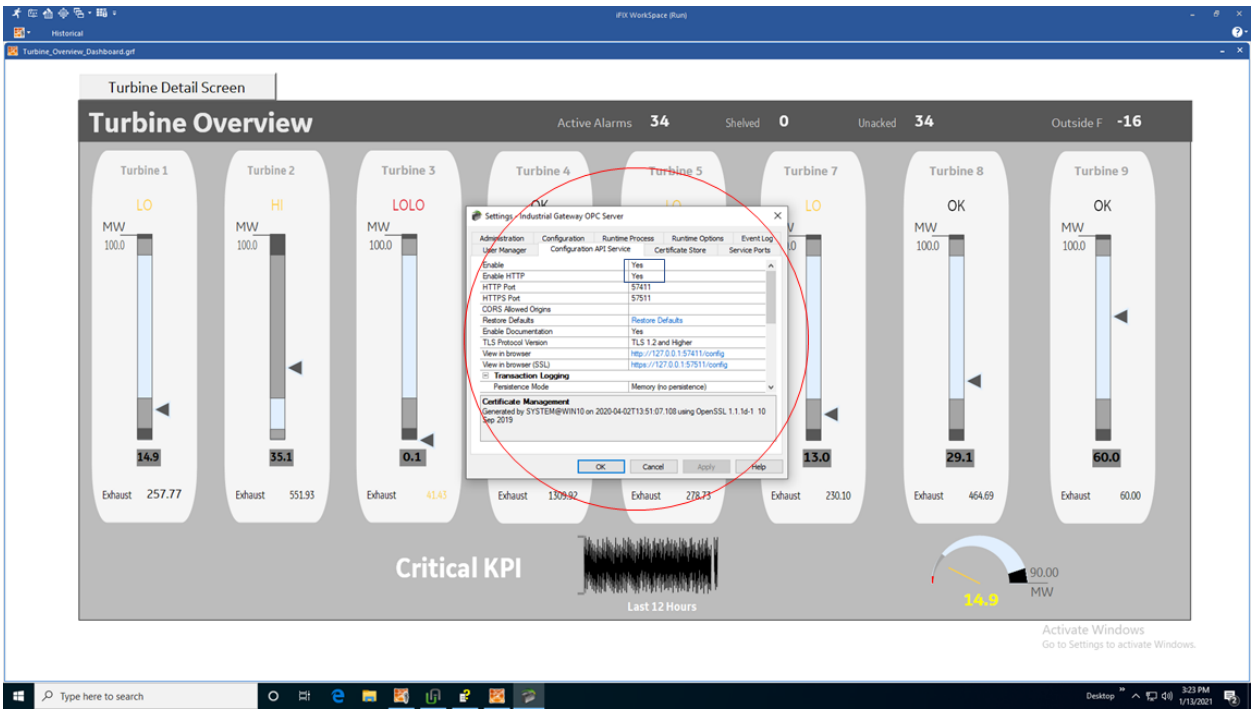
You can now configure channels/devices in the IGS (devices must be added to show Server details), and then Configuration Hub should display the configured channels/devices.

Configuration Example

The following example shows how to access the Settings for the IGS.



This is the Settings screen for the IGS driver:



Prerequisites for IGS

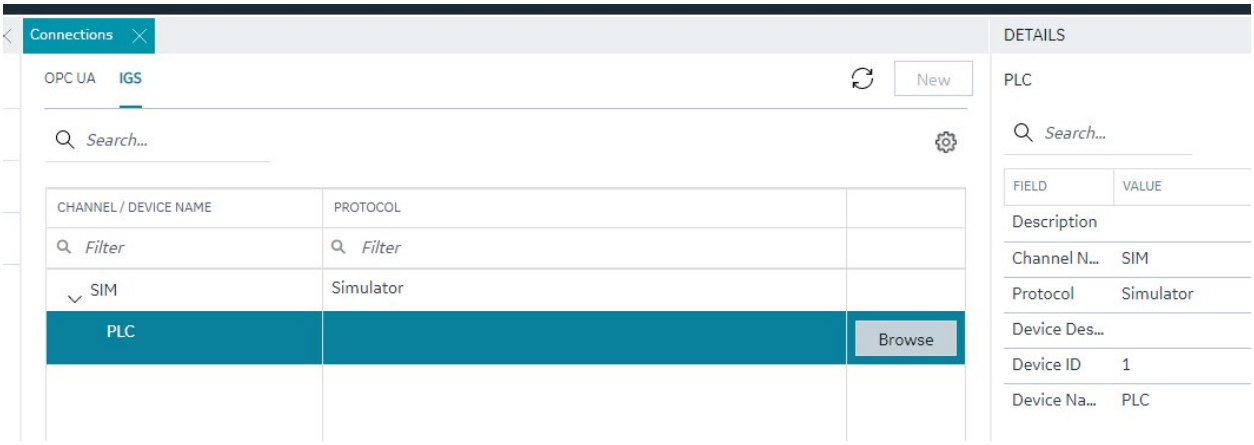
Prerequisites for the IGS driver include:

- Only IGS version 7.6 and onwards will be supported.
- Your license must be for IGS: Industrial Gateway Server - Basic or 100.
- In the IGS Administrator on the Configuration API Service, both Enable and Enable HTTP must be set to Yes.
- If the IGS requires a user name and password, use the iFIXConfighubSettingsUtility.exe in the iFIX install folder to enter the IGS credentials.

Getting Started with the Browse Tree for IGS

If you have an active IGS Project, it will appear in the table.

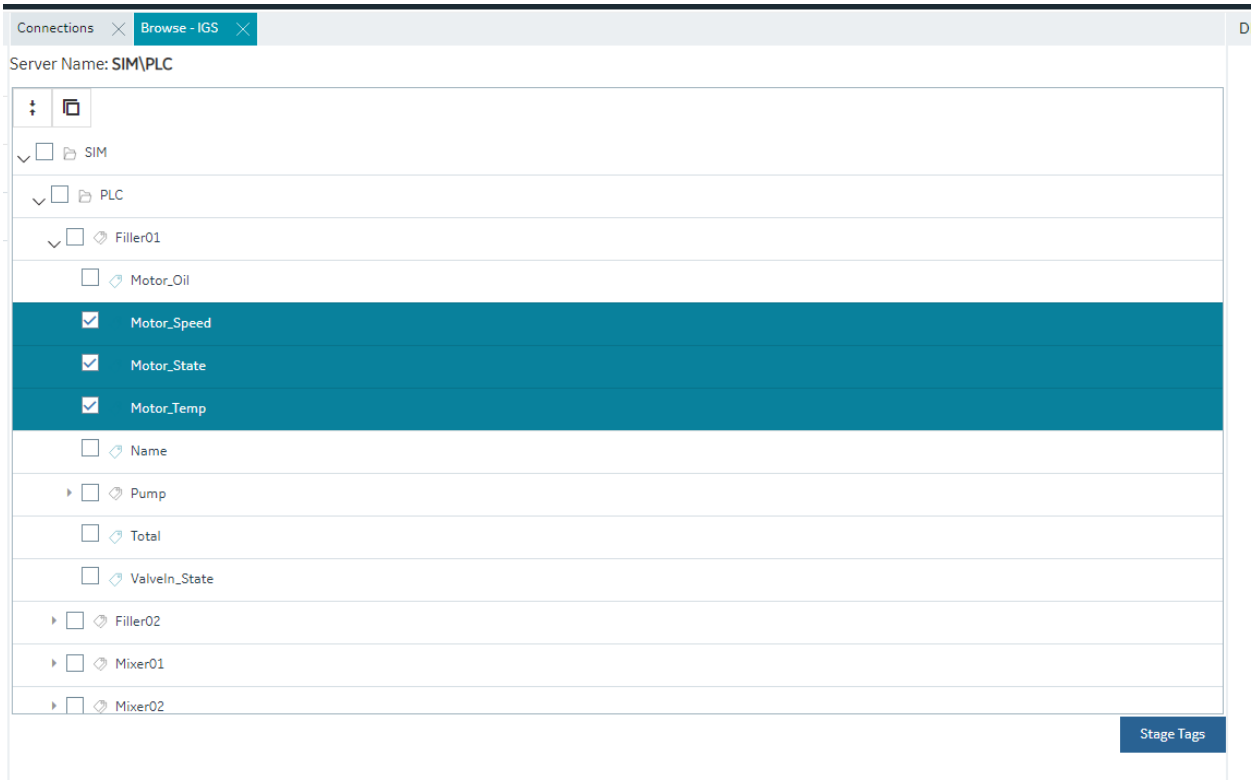
Select Browse to browse the hierarchy of channels and devices available in the IGS Server.



Browsing IGS Channels and Devices

The IGS tab in the connections panel displays the configured channels in the table. The channel can be expanded to access the devices configured under the channels. On selection of a device, the menu offers a browse command.

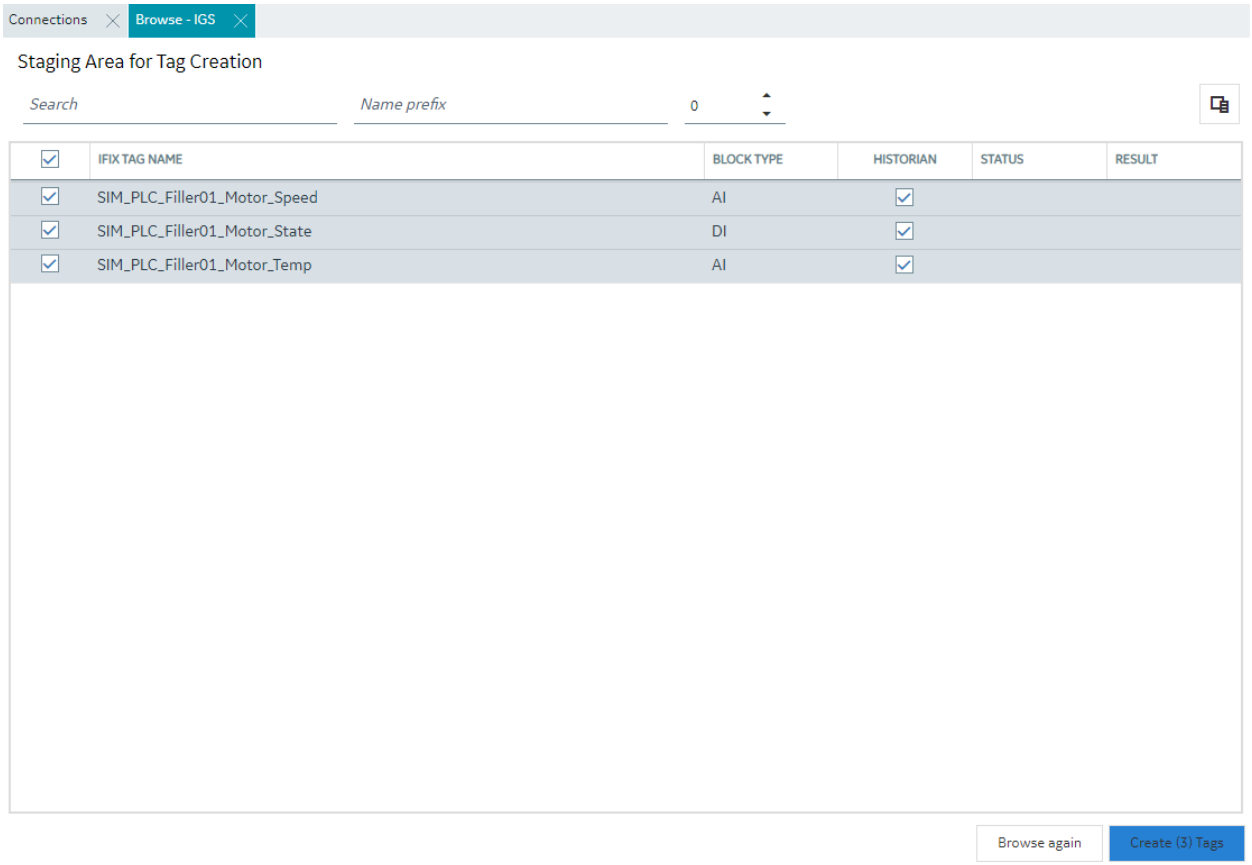
The configuration content of a device is populated into a new panel, the panel displays the selected channel/device and shows the tags/tag groups configured in the device. The tag groups can be expanded to navigated to the further levels of hierarchy.



Browse and Create Tags for IGS

The IGS browse panel shows the content of the IGS channel/device. Individual tags or a tag group can be selected to create as iFIX tags. Right-click menu on the tag groups provides a bulk selection option to select all the tags under the tag group. On selection of the tags and clicking of the Stage Tags option, the tags are staged for the next step in tag creation process.

The staging environment allows for selection of iFIX block type (default mapped on staging) and selection of Historian collection option for the tag. Additionally, you can add a prefix and reduce the hierarchical levels of the tag names.

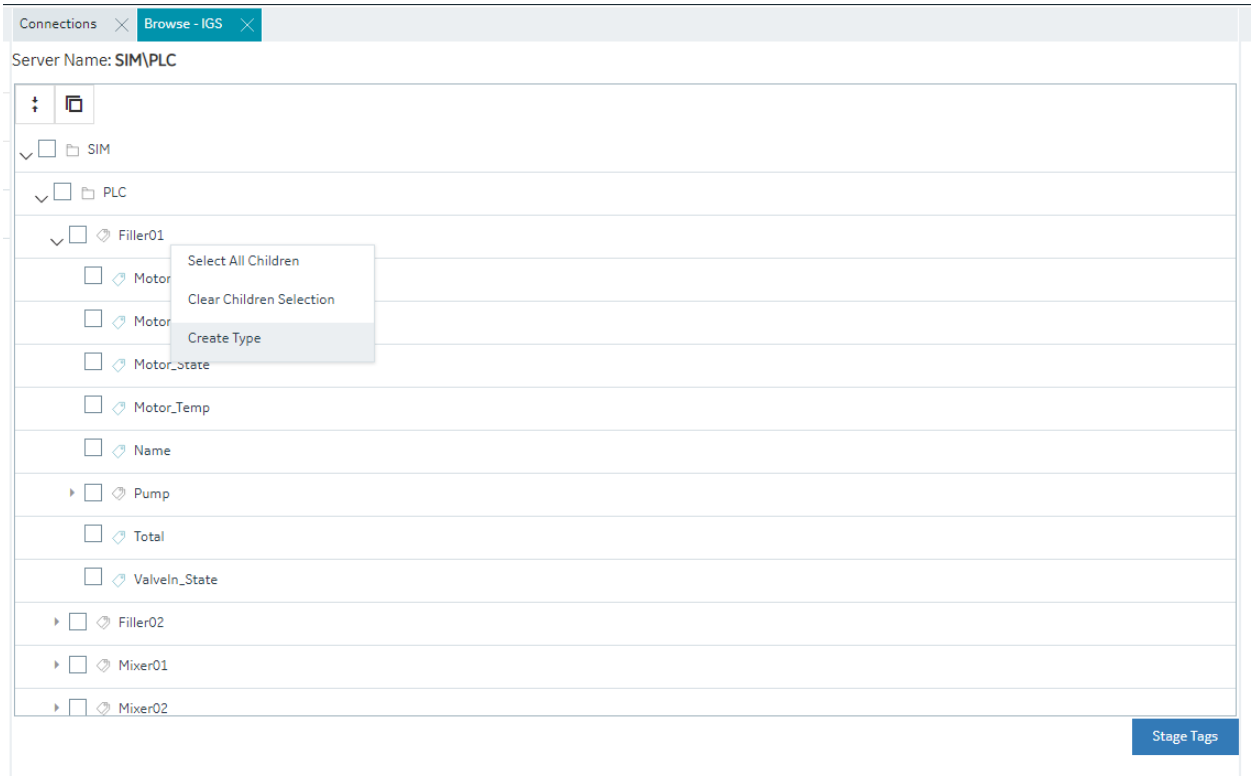


Browse and Create Types for IGS

Similar to process of creating tags from an IGS device browse, a model type definition can also be created from the same browse operation. A tag group can be selected to create the object type.

On selecting a tag group, the right-click menu provides an option to create a type. Selection of this menu item displays a pop-up to take the type name input. New Object Type pop-up shows the selected tag group name.

On clicking create, the type is created into the model along with tags in the tag group as variables and values are populated into the default template of the type.



Special Considerations for Enhanced Failover

If using Enhanced Failover, you must be in Maintenance Mode before you log to Configuration Hub. Maintenance Mode allows you to temporarily suspend synchronization between the two SCADA nodes in an Enhanced Failover pair. This allows you to add or modify groups and tags in your iFIX database while the Scan, Alarm, and Control (SAC) program is running. When you enter Maintenance Mode, SCADA synchronization temporarily stops; synchronization between the SCADA pair is suspended. After Maintenance Mode is enabled, you can make changes to the database on the primary node.

Configuration Hub will not allow you to make changes unless the primary node you are configuring is in Maintenance Mode. It will also not allow any configuration on the Secondary node (you cannot login). All changes to a Failover pair in Configuration Hub must be made on the Primary node.

Every time you make a change in the configuration and publish, the data is reloaded in the configuration and the driver is restarted. This is important to know if you are making changes on a live system. You will NOT need to restart iFIX after you make any changes in the Configuration Hub. However, after you exit Maintenance Mode, you will need to stop and restart the driver from Mission Control on the secondary in order to pick up the configuration changes

Deleting Servers or Groups

Be aware that when the iFIX SCADA Enhanced Failover pair has the OPC UA Driver configured, any server or group delete operation in the Configuration Hub UI on the Primary will not be deleted on Secondary after the maintenance mode synchronization happens. The Secondary SCADA continues to retrieve data since the server and/or group still exist on the Secondary. As a workaround, manually delete the server and group files from the secondary SCADA, since you cannot run Configuration Hub on the secondary SCADA.

Server and Group configuration files are found in the PDB\iFixUaClient folder, in Servers and Groups folders, respectively. Each server and group has its own file. In each of these folders, compare the contents on the Primary node to those on the Secondary. If a file exists on the Secondary but not on the Primary then open the file in a text editor and verify that it is a server or group that was deleted from the Primary. If so, delete that file from the Secondary.

For all other operations, the synchronization works as expected such as: Server Create, Driver tag deletions or updates, Group updates, and so on.

Notes on Certificate Management

When the iFIX SCADA is part of an Enhanced Failover pair and we have enabled the OPC UA Driver on the SCADA, each physical SCADA needs to establish trust with the configured OPC UA Server separately. After both SCADAs can communicate to a remote OPC UA Server individually using their certificates, you can then bring the iFIX SCADAs up as failover pair. Be sure to confirm that you can communicate individually first.

Special I/O Addresses

There are special I/O addresses in iFIX that are very helpful in a Redundancy Configuration for the OPC UA Client. Using the ConnectionStatus and EndpointUrl addresses, you can see the overall connected status of a (logical) server, and the endpoint it is currently using for data.

Model

Model Overview

The iFIX model allows you to create a blueprint or template of the assets in your system and quickly and easily create and maintain instances generated from the Type definition.

The model in iFIX consists of the following components:

- **Object Types**: An object type is a blueprint. A blueprint is something tangible in your plant that you want to replicate, such as mixer, furnace, or pump, that will have a common structure

(common variables and contained types) shared across all mixers, furnaces, and pumps. Object Types will have Variables, Contained Types, and Templates.

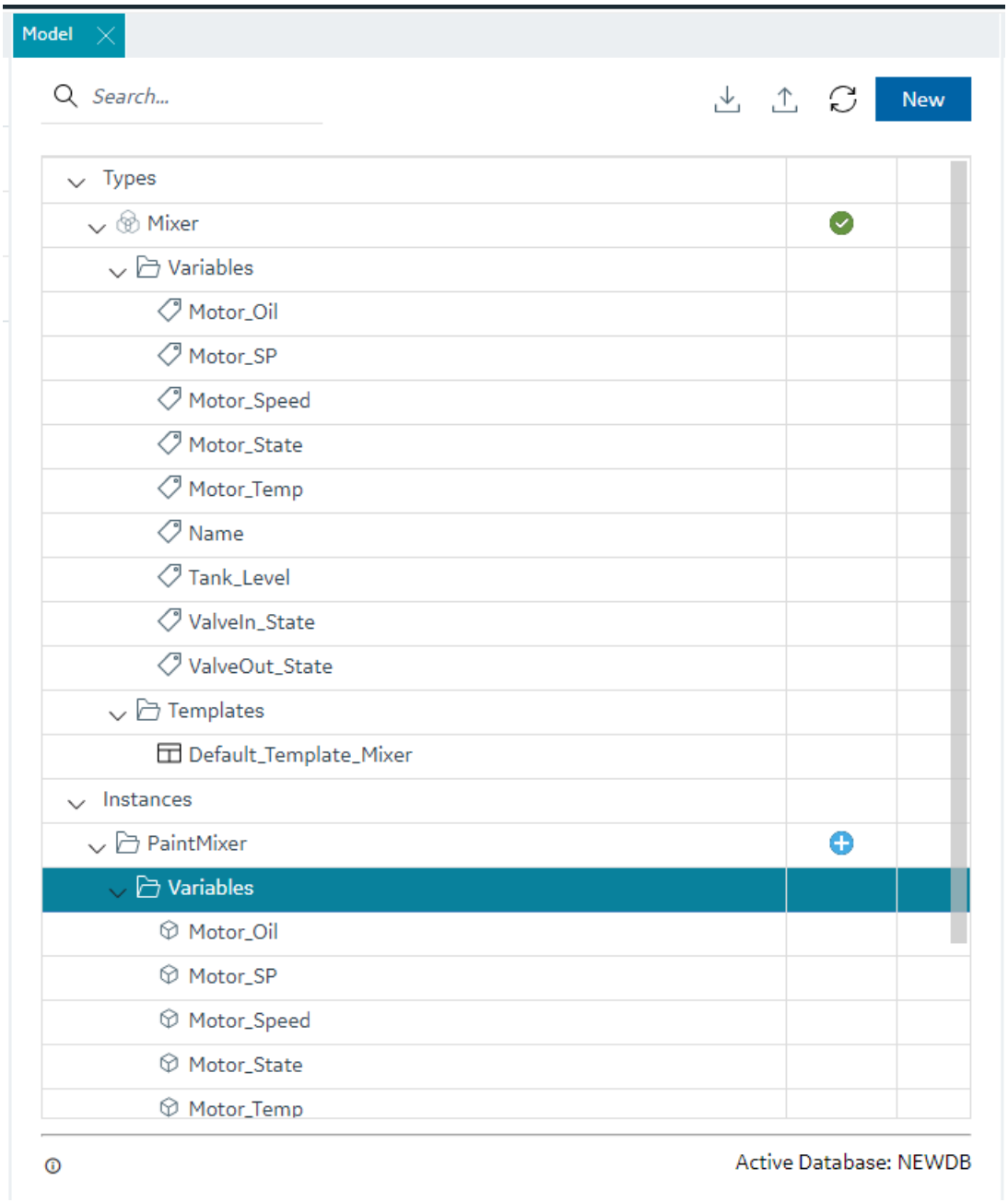
- **Variables -** Individual tags or measurements that are common across all Objects of a certain type, like temperature, pressure, flow, and so on. Variables represent tags that will hold values retrieved via iFIX drivers like IGS and OPC UA client from the devices in your system.
- **Templates**: Templates provide the capability to have one or more translations of an Object Type into an Object Instance. If you have two different types of pumps that have some commonly shared variables but a subset that are unique, you would create two templates for a single pump type.

- **Substitutions -** Substitutions allow you to parametrize your Type definition such that you can modify the Object Instances created from the Type and Templates to be unique.
- **Contained Types -** Contained types allow you to create a hierarchical blueprint of assets that will be instantiated together.

- **Object Instances -** An instance created from the Object Type. The instance represents an asset in the application and the variables are either created as iFIX tags (direct variables) or point to existing iFIX tags (indirect variables) or are static to the type (static variables).

Model Panel

The Model panel is where you go to navigate and initiate actions on your model. To configure the model, click on Model entry under your iFIX node in the Navigation panel. You will see a table of Types and Instances in the main panel.



Note: Be aware that the panel should not be floating, and must be docked before performing any operation.

The Details panel will provide additional information about your selections in the Model panel. The Object types show variables and contained types on expansion and the contained types can be further expanded to navigate through the containment hierarchy. You can also see the hierarchy of templates that will be created for a given parent template. Similarly, the object instances tree provides navigation to the instance containment hierarchy.

The Model panel lets you configure the model in the following ways.

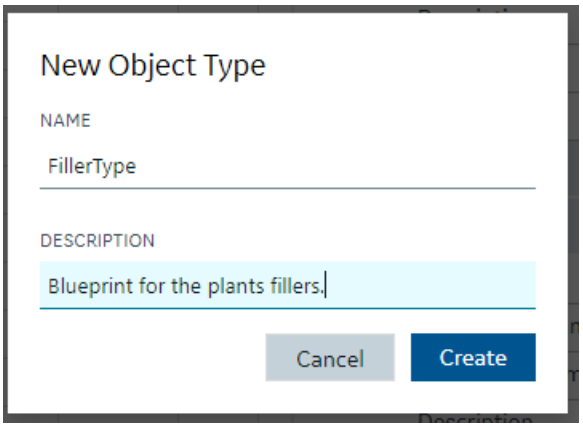
- Create Types
- Edit types (in a separate panel)
- Create Object Instances from Types

Warning: In the Model panel, when Object Instances or variables under an Object Instance are selected, the properties are populated on the Details panel. When changes are made to the properties of an instance or variable, these changes are saved on a selection change in the model tree.

Type Creation

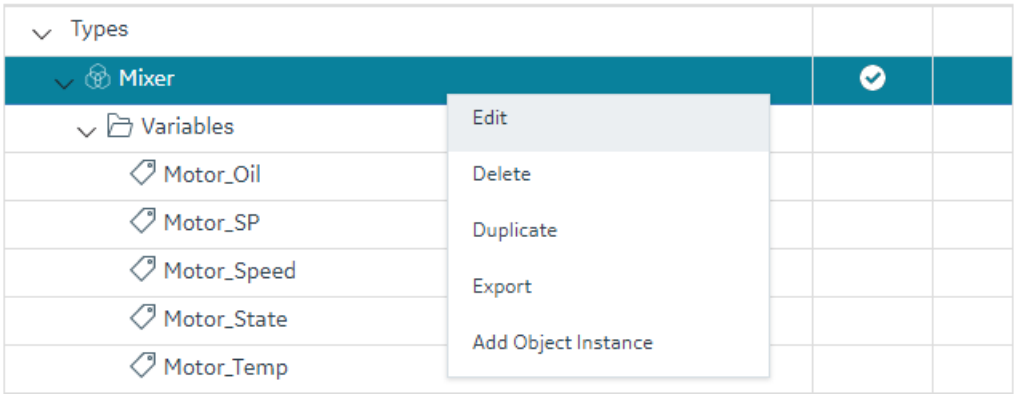
Object Types provide a powerful mechanism for creating and managing Object Instances and variables for your iFIX SCADA. In conjunction with Type Templates, you can generate and update multiple Object Instances from one location.

To create a type, click the "New" button on the top right of the Model panel. This will prompt you for the type name and description.

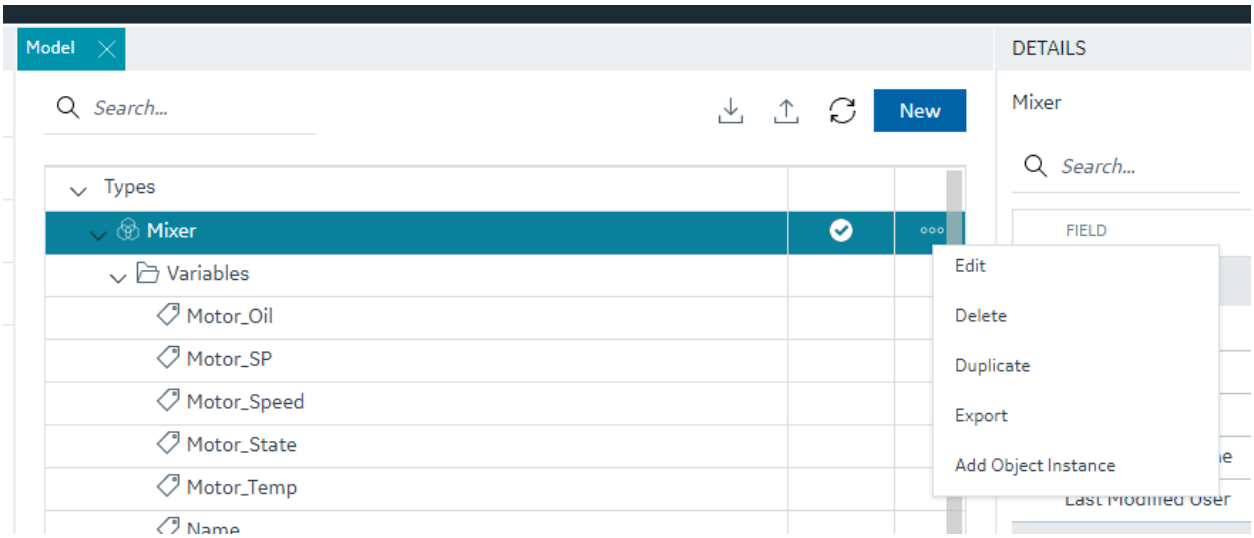


Creating or editing a type will open that type into a separate IDE panel. Currently, there is only one Type Edit panel, so as you edit multiple types, the Type Edit panel will be replaced with the Type currently selected for editing.

After the type is created and saved, the model panel gives you capabilities to manage that type include editing, deleting, duplicating, exporting, or creating an instance of the type.



This can be accessed from the context menu in the Type's row in the grid or the Right-Click menu. Double-clicking the Type's row will open the Type Edit panel.



Note: When saving a type, any updates will be automatically pushed to existing Object Instances of type. Depending on the number of instances associated with the type, it could take a long time to update. This may result in the save taking a long time.

Type Variables

Type Variables

When configuring your type, the most important component is the list of variables that define the asset type characteristics or measures.

In the type edit panel, you can add new variables using the New button. You can configure some simple tag details in Type mode including tag type. Switching to template mode allows you to configure the majority of the variable details.

The iFIX model supports the following tag types for variable configuration:

- Direct Variables *(page 57)* - Direct variables when instantiated, become tags in your iFIX database.
- Indirect Variables *(page 57)* - Indirect variables allow you to reference an existing iFIX tag in the tag database. This can be useful to create a model structure on top of an existing flat tag database.
- Static Variables *(page 58)* - Static variable store static value for the variables, these variables are not created as iFIX tags, they take the value through an object instance and do not change the value during the runtime.

Details panel

The Details panel shows the properties of Type variables. Setting or changing property values for Type variables in template mode will translate into any Object Instances that will or are created from this type's templates when you save those changes.

Direct Variables

Direct variables are variables that directly communicate to iFIX drivers. Direct variables are created as iFIX tags in the iFIX database when Object Instances are created. You can configure variable properties in Object Template mode.

Currently, model variables support a subset of the tag types available in the iFIX system. This subset includes:

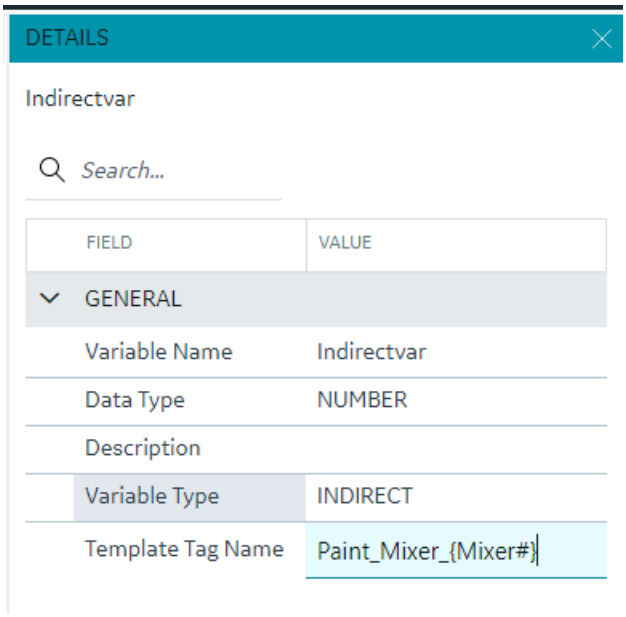
- Numeric types supported - AI, AA, AR, AO, DA, DT, DC, TM
- Boolean types supported - DI, DA, DR, DO, BL
- Text types supported - TX

Indirect Variables

Indirect variables give you the capability to build a model on top of an existing flat tag database. When you create an indirect variable in a Type, for each template, you can use the Details panel to specify a tag or a substitution to generate a tag reference when Object Instances are created.

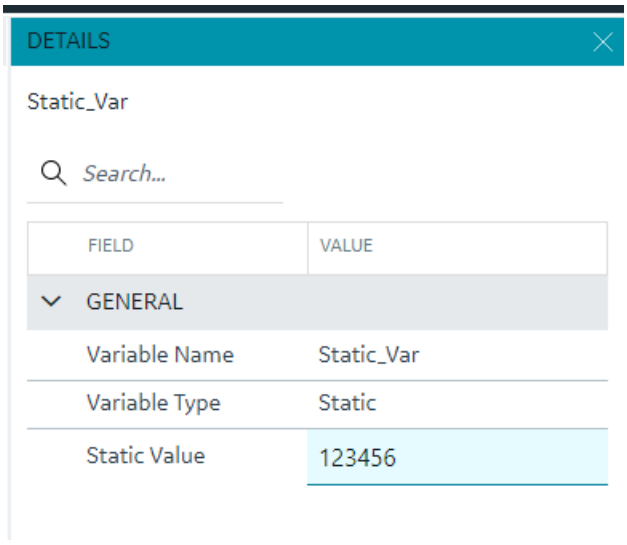
By using a substitution value in the Template Tag Name property, you can dynamically change the name of the variable per Object Instance.

Details panel



Static Variables

Static variables are variables meant to hold static data in your Object Type and Instance. They are read-only variables that are set only at the model instance level and do not create iFIX tags. Static variables can be browsed for and used in your iFIX pictures. An example of a static variable could be a serial number of an Asset.



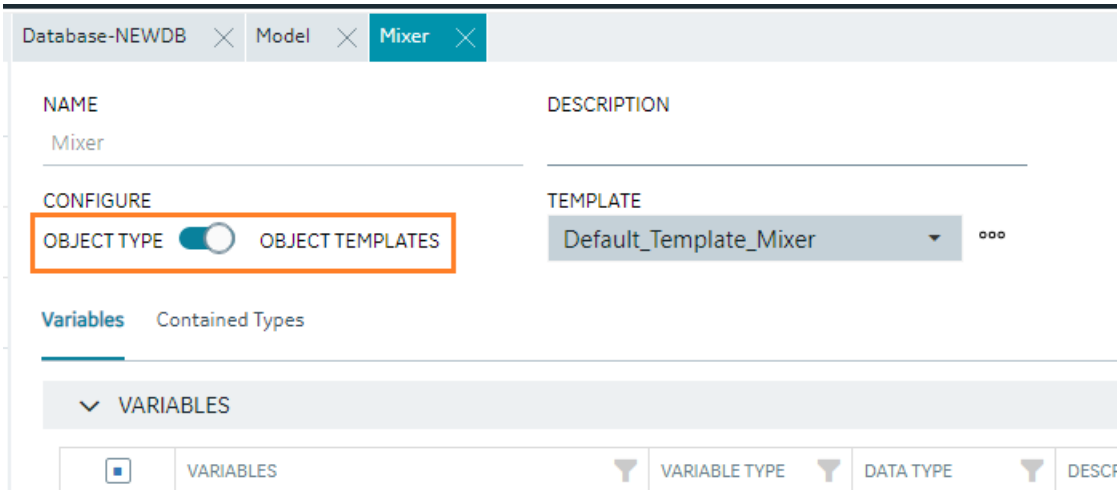
Template Overview

Templates describe how Object Instances will be created from an Object Type. All Types are created with a default template and require at least one template to work. Creating multiple templates is useful if you have a number of Asset definitions that are similar and have majority of overlapping variables, but have some exceptions.

Toggling between Types and Template Configuration

When editing an Object Type, there are two modes in the configuration panel. By default you open a type in "Object Type" mode. In this mode you can add variables and modify their Variable and Data type. It is also in this mode that you configure any Contained Type child aliases.

Variables and Contained Types configured at the type level are propagated to all of the Type's configured templates. In order to configure the properties of Type Variables and Contained Types, you will need to switch into "Object Template" mode.



You can specify the Tag block type of a direct variable only in Object Template mode and only before creating instances of that type and publishing the Model. After published and Instances exist for the type/template, the Tag Block type of your variables cannot be changed.

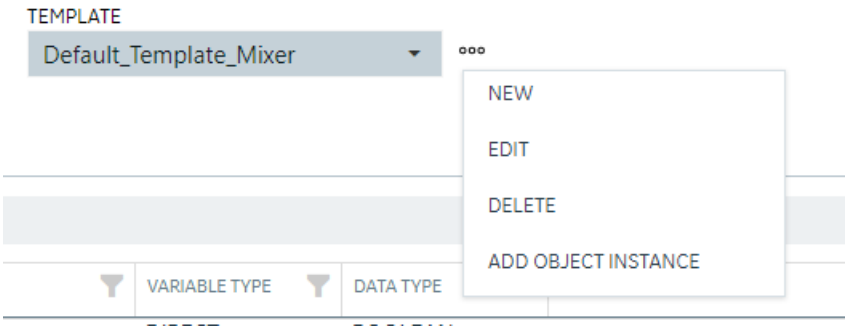
Default Template

A type must always contain at least one Template. By default when you create a Type a default template is created for you. If you do not need to account for slight variations in the Object Instances that will be created from your type, you do not need to configure anything further with the template.

Template Management

Overview

You can manage templates from the Template drop down in the Type edit panel.

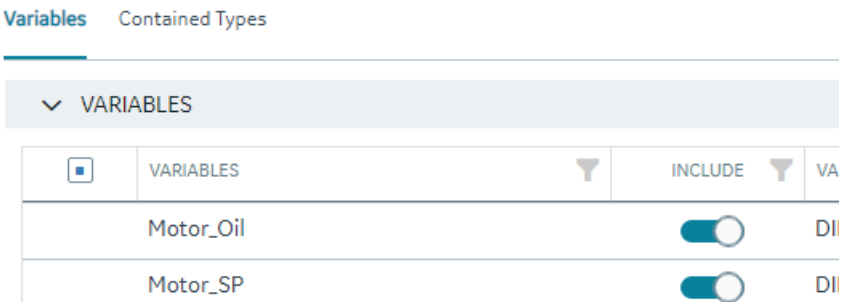


What's Stored in a Template

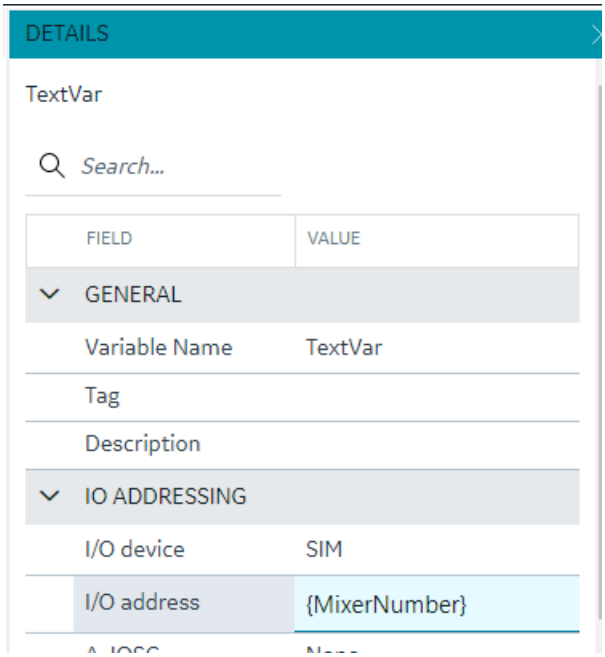
Each template stores a number of details about a type that are unique from other templates in the type. Specifically, the template stores:

- **Substitutions** - are unique per template.
- **Include/Exclude variable** - at the template level, you can choose which variables to include or exclude when an instance is created from that template.
- **Variable property changes** - All property changes you make in template mode, for example the IO address or alarm limits, are stored in the template. They can be different if you create a new template.
- **Contained Type template specification** - for each template, you can specify the template to use when creating an instance from that template for each of your Contained type aliases.

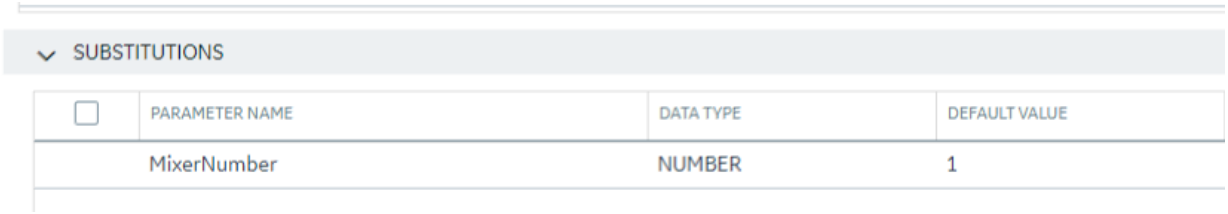
Variables



All property changes you make in template mode, for example the IO address or alarm limits, are stored in the template. They can be different if you create a new template.



Substitutions



Substitutions provide a mechanism to create placeholders in the variable property definitions through the templates. When the variable property value needs to vary between object instances, substitutions can help define a placeholder and provide unique values for each instance. For example, if the I/O address of a variable is defined in the variable template , providing I/O address of a particular tag would bring the same value across all instances. Instead, if we use a substitution in parts of or the full I/O address value, this value can be replaced differently for different instances.

A substitution can be defined and managed as part of a template definition. To use substitutions in template variable properties, use the substitution name surrounded by curly braces within a property. A numeric type property needs to have the full value substituted whereas a string value can have a part substituted or multiple substitutions can be used. Substitutions cannot currently be used for enumerated properties.

For example, a description property for a variable can be defined with substitutions as "This is the serial number \{Asset_Number} of this \{Asset_Name}" where Asset_Number and Asset_Name are substitutions and their values are provided per object instance.

Note: Formulas are not currently supported within substitution strings used in the Model.

Contained Types

Contained types help define asset containment and provide a hierarchy relationship that can be used to make a multi-level instance as well as utilize this hierarchy during the model consumption in the iFIX picture definitions.

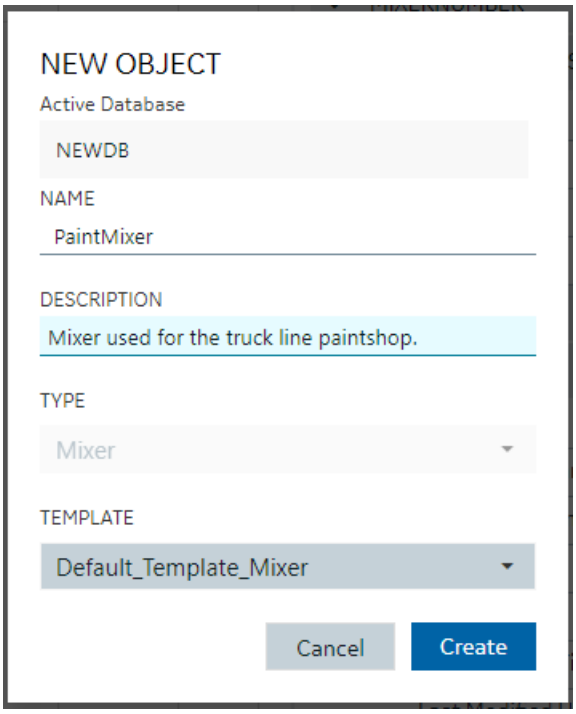
Contained types refer to other existing type definitions and are organized under a parent type. For example, an asset type definition for a pump can contain a shaft type, this can be accomplished by creating a type definition for pump and shaft separately and in the pump type definition, the contained types tab provides options to add a new containment by providing an alias name and selecting the shaft type from the drop-down.

Aliasing

When including contained types under a parent type, you must specify an alias name for that contained type. When the parent type is instantiated, the aliased contained types will be automatically created as instances with the alias name under the Parent instance. Aliasing enables differentiating multiple containments of the same type. You can have more than one alias contained under a parent type and the contained types can also contain other types making up a hierarchy. For example, a pump could contain two bearing units, one for inboard and one for outboard. The bearing type can be added as contained type to the pump with alias names Bearing_Inboard and Bearing_Outboard.

Object Creation

When you create a new object, a dialog box appears requesting a name, description, type, and template.



Substitution Values

Any substitution values from the template that an Object Instance was created from can be edited in the Details panel by selecting the Object Instance in the Model Panel.

Model Import and Export

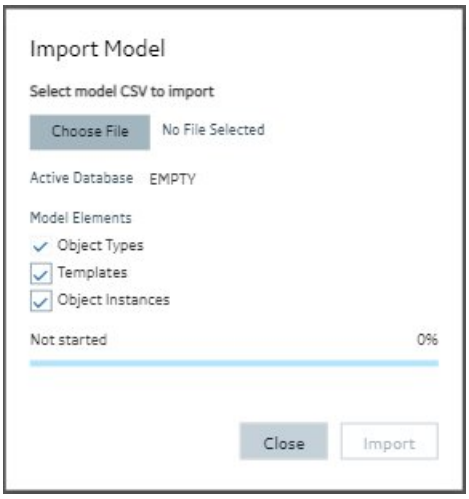
Overview

The Model can be exported or imported for working on outside of Configuration Hub. The Model export is compatible and can be imported into Operations Hub.

To import or export the model, use the first two buttons on the model toolbar:

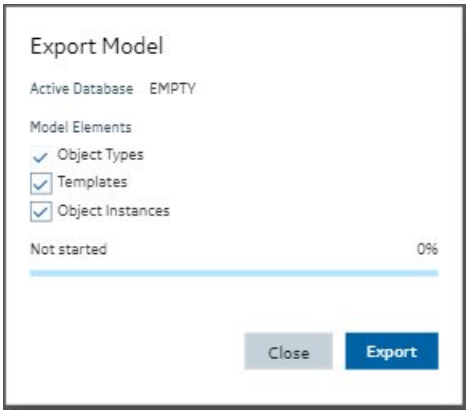
Importing a Model

To import a model click the import button (). The Import Model dialog box appears where you can choose a file and specify what you want to import.



Exporting a Model

To export a model click the export button (⇪). The Export Model dialog box appears where you can specify



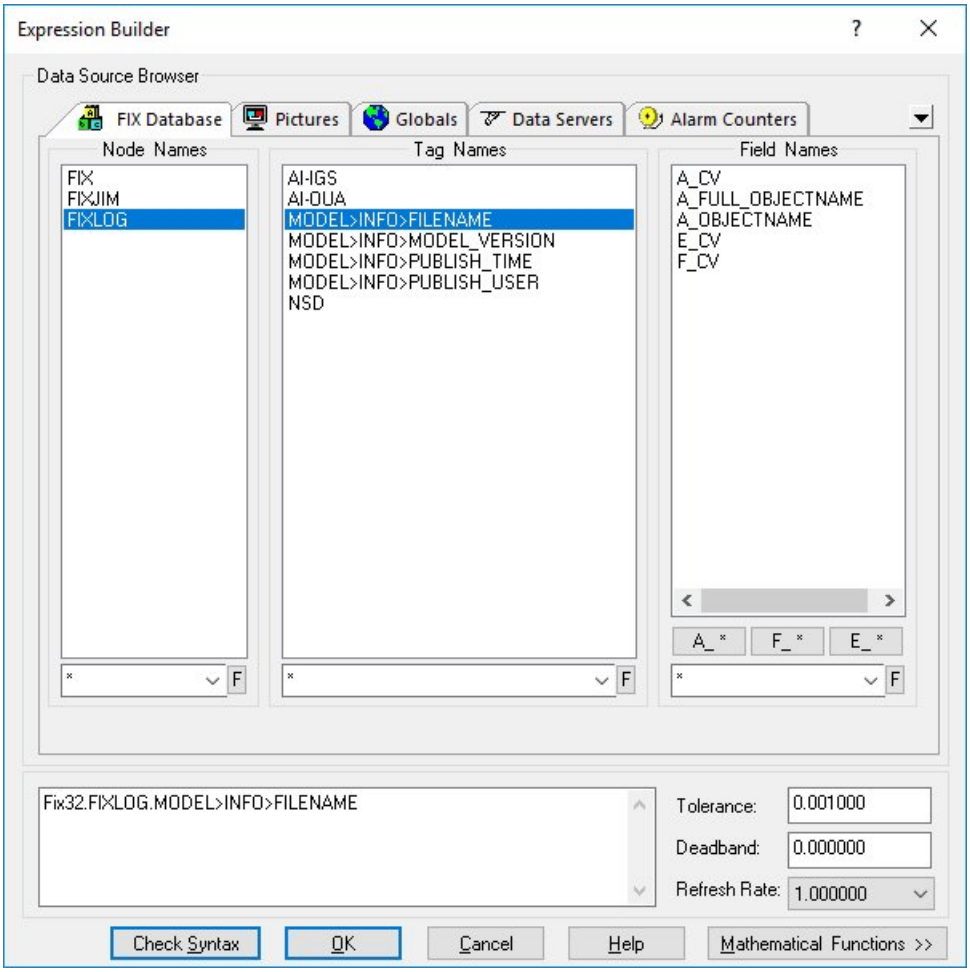
Model Tags in iFIX

Overview

Model-defined tags are also viewable from the iFIX Workspace. These include Indirect and Static variables defined in the model, as well as pre-defined tags that show model-related information. When viewing tags in the iFIX Expression Builder, you can see Indirect and Static variables listed alongside iFIX tags, as well as the pre-defined Model Info tags. Their values can be used in animations in the WorkSpace (such as in data links) just like any other iFIX tag.

Tag	Description
MODEL>INFO>FILENAME	The full file name with path of the model file from which the model was loaded.
MODEL>INFO>MODEL_VERSION	The version of the published model.
MODEL>INFO>PUBLISH_TIME	The time of the last publish.
MODEL>INFO>PUBLISH_USER	The iFIX user who performed the last publish.

Example of Expression Builder with Model Tags Displayed



Notes on the Example

The A_OBJECTNAME and A_FULL_OBJECTNAME fields shown in the previous figure will not have a value for the pre-defined Model Info tags. If iFIX tags are not associated with a variable in the model, they will not display values for these fields.

The Expression Builder does not display the A_OBJECTNAME and A_FULL_OBJECTNAME fields when browsing a tag that exists in the iFIX database – these fields only display when browsing Indirect or Static variables. However, this field can be manually entered for any iFIX database tag, and if that tag is associated with a variable in the currently-published model then the owning object's name will be displayed.

Database

Database Overview

Database Overview

The Database panel provides similar functionality to the iFIX Database Manager, but in a completely different interface: a web one. That interface that should be natively intuitive to those familiar with web-based grid objects. The Database in Configuration Hub has off-line storage where you do your work.

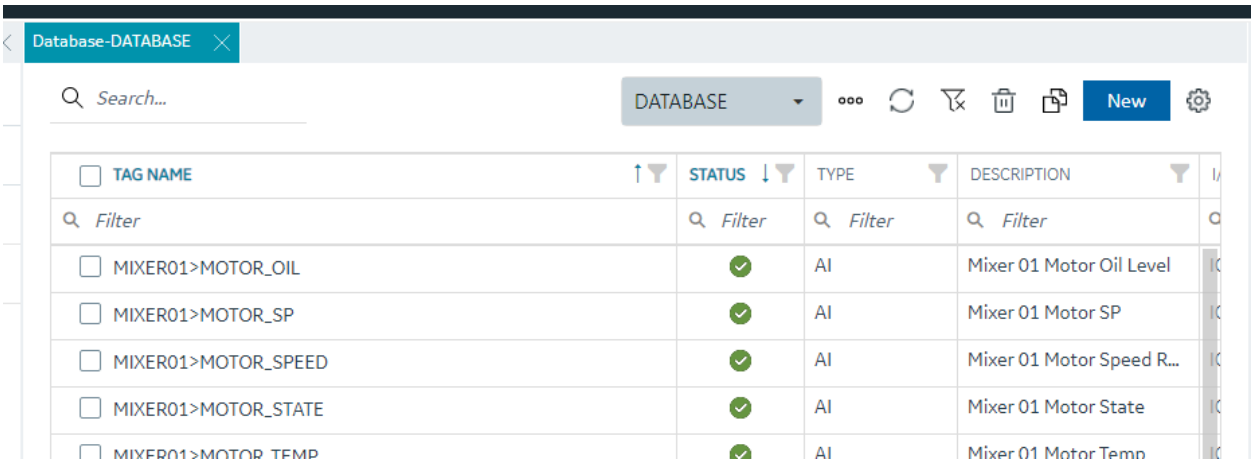
Click on the Database panel to connect to the database running on your iFIX SCADA node. All the tags appear into the off-line database. Interact with your iFIX tags in a web container where you can easily sort, filter, and interact with your iFIX tags.

After you are finished, you can Publish your changes to the running iFIX node. A filterable status column in the database shows the publish status of each tag. A log file is generated every time you Publish providing information about the operation.

The currently active iFIX database is what will show in Configuration Hub and is what will receive all operations done. This is true regardless of how many users are connected to and configuring the same database. Changes to the database, both published and unpublished are shared across users and browser sessions.

Grid Features

The database grid provides many great features to allow you to easily and efficiently work with your iFIX data. The grid will always show and configure the currently active iFIX database for the node you are connected to. An example of the grid is displayed in the following figure.



When the active database changes from anywhere, the grid should notify you and ask you to refresh. If at anytime you believe it is out of date due to concurrent changes from other locations, the toolbar contains a refresh icon to re-fetch the latest updates. The database grid panel works closely with the Details panel.

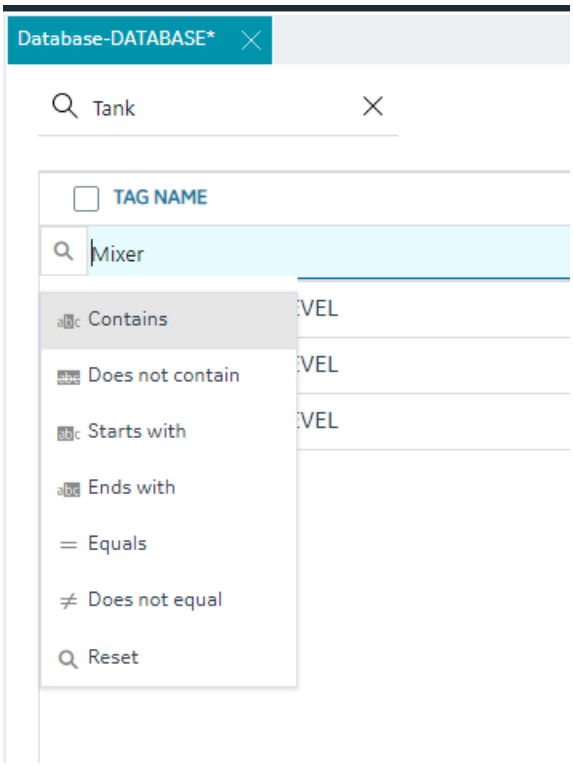
Ensure you have the Details panel open and visible as you work in this panel. As tag rows are selected within the grid, the tag details are displayed and are editable inside the Details panel.

Searching, Filtering, Sorting, and Column Reordering

The following sections provide more details on this functionality.

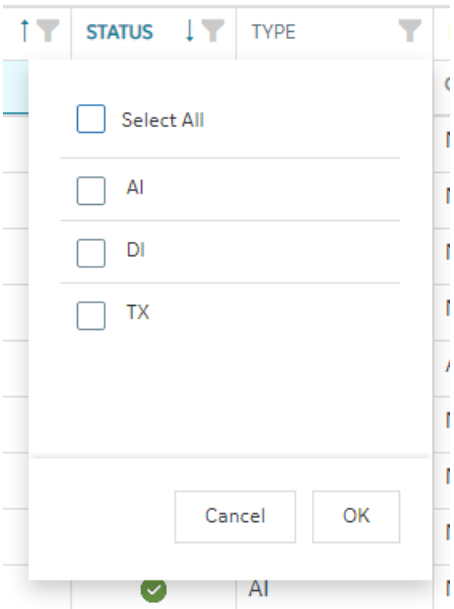
Searching

There are two main search options when using the database grid. A global search that searches the whole grid for the typed in text and a column search that searches a particular column and provides multiple search parameters. Especially for large datasets, using these search options helps to quickly find the tags and data you want to work with.



Filtering

Each column also has the ability to filter by the current contents of the grid. For example, you can quickly and easily search for all the instances of a particular tag type, status or IO Driver:



Sorting

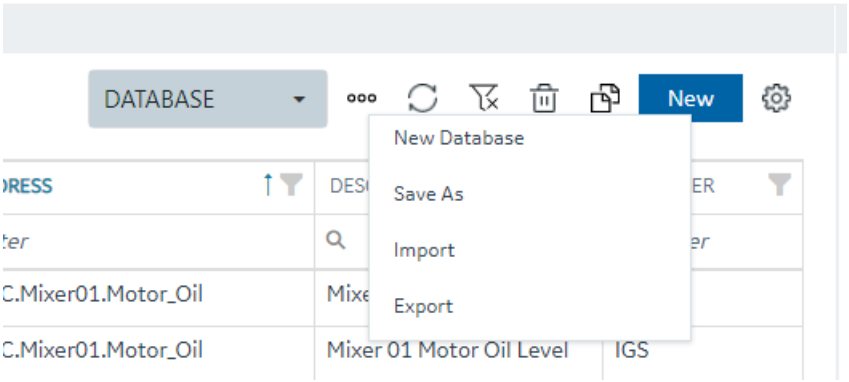
Sorting is easy to do by clicking the header of any column to toggle between ascending and descending sort. For more advanced sorting, you can hold down the shift key and select more than one column to sort by.

Column Re-Ordering and Resizing

The Tag Name is locked at the left position, but the rest of the columns in the database grid can be re-ordered via drag and drop of the column header with your mouse. Any column can be resized to optimally fit the data you are working on.

Database Toolbar

The toolbar for the Database Details screen contains the following icons:



For more information on these icons, refer to the following table.

Item	Description
test	Click the drop-down to switch to another database.
ooo	Use this button to open a menu that you can use to create a new database, save a database under another name, import, or export a database.
	Use this to refresh your grid view.
	Click here to clear all filters currently applied to the grid.
	Select one or more tags and click this button to delete a tag(s).

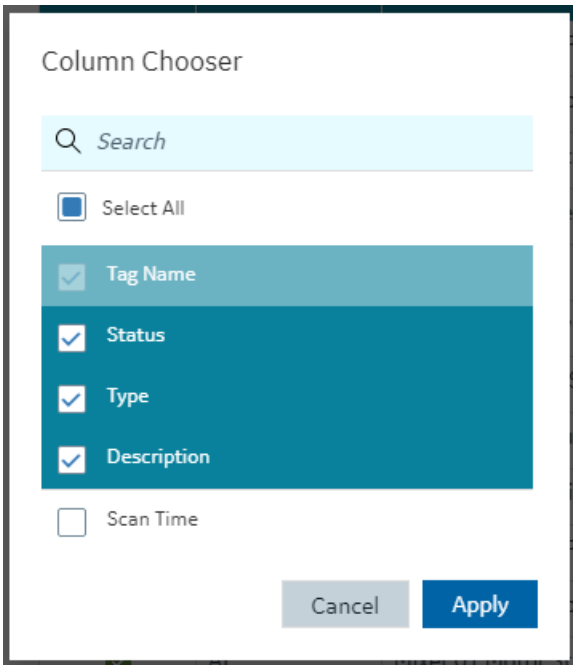
Item	Description
	Select a tag and click this button to duplicate an existing currently selected tag. You will be prompted to enter a new name.
	Click the New button to add a new tag to the database.
	Use the settings icon to pick the columns you want to display on the Database view.

Database Column Choosing

The Database panel by default shows the following columns:

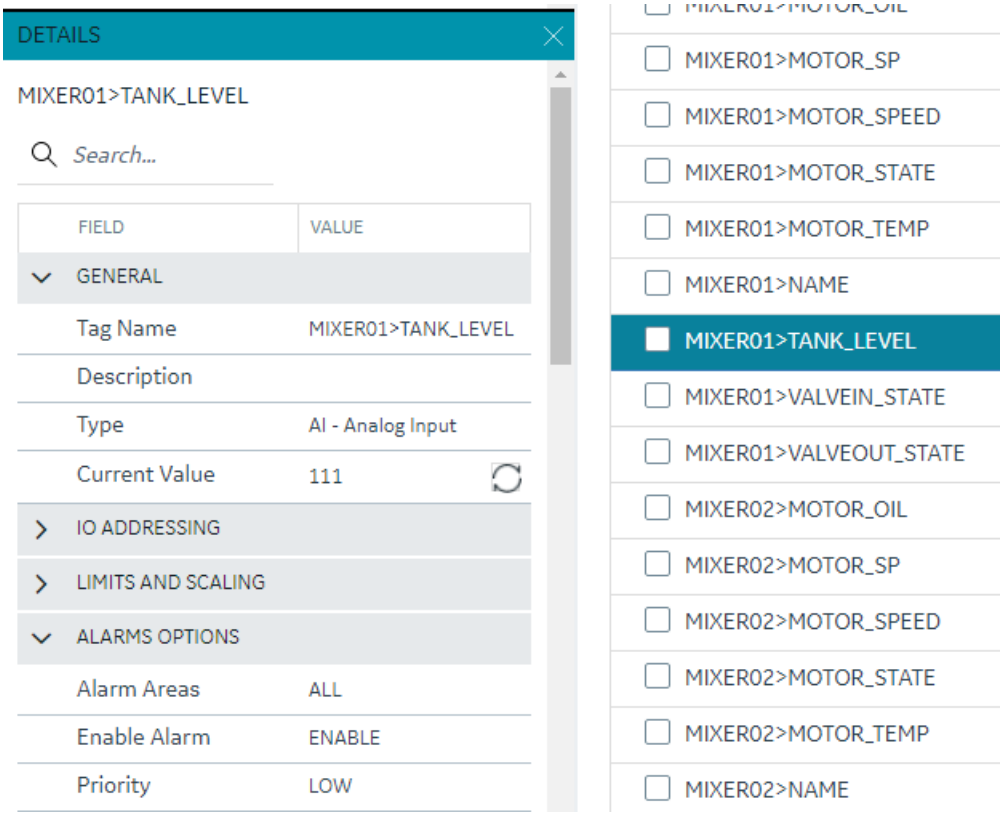
- Tag Name (Fixed and always visible)
- Status - This column shows the publish status of the tag (Published, Unpublished, Modified)
- Type - Displays the block type abbreviation (e.g. AI, AA, MDI, etc)
- Description - Tag description
- I/O Driver - The driver configured for the tag
- I/O Address - The IO address of the tag.

Other columns are available to show in the grid by using the column chooser available when you click on the gear settings icon on the far right of the database toolbar.



Database Details Panel

Editing database tags is done via the Details panel after selecting a particular tag in the Database panel.



The Details panel for the database is made up of property rows with names and values grouped by area. These areas are expandable and collapsible. At the top of the grid is the name of the tag for easy viewing and a search box for filtering and finding the tag property you want to view or configure. The 'Field' and 'View' columns are resizable.

There are different type of properties in the Details panel depending on the type of value being shown or edited. Some are enumerated values with drop down lists, some are text edit boxes and others are numeric edit boxes. Some properties are read only depending on the values of other properties in the grid.

As you make changes on tags, their published status changes to “Modified” and will be applied to the active databases after Publish.

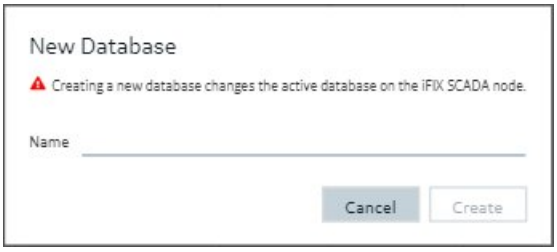
Database Management

Database Management

You can manage your database operations from the Database panel. This includes adding, copying, importing and exporting your databases.

New Database

When you create a new database, you will be prompted for a new database name (up to 8 characters). After you choose to create a new database, the currently active database switches to this new empty database.

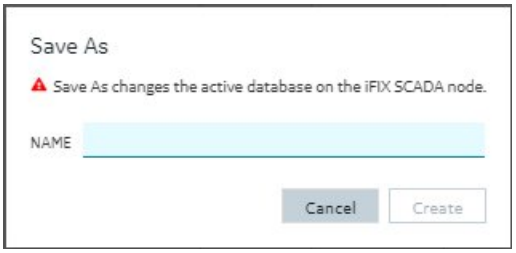


Switching Databases

The drop down in the toolbar lets you quickly switch your currently active iFIX database.

Save as Database

The Save As command lets you take your existing active database and save it as a newly named database. This operation will also switch the active database to the newly copied database.

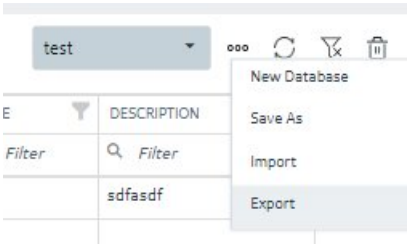


Import or Export a Database

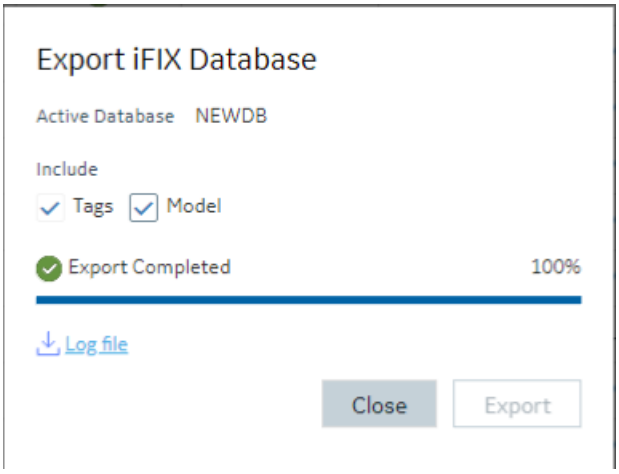
See Import a Database *(page 74)* or Export a Database *(page 73)*.

Export a Database

Import and Export of your database in CSV format is available and supported from the Database panel by clicking the ellipsis (…) icon, and using the drop-down beside the database selector in the toolbar.



When you select the Export option, the Export iFIX Database dialog box appears where you select the options you want and click Export.



The exported file will be automatically downloaded to your browsers in the specified download folder with "export.csv" as the name.

A progress bar keeps you informed of the export progress, especially for larger exports.

After export you can see the results of the export by clicking on the Log file link to download the log file.

Including/Excluding Model

Exporting your currently active database provides you with an option to export any associated model artifacts that are tied to tags in the database. For example if a number of the tags in your database were generated through model object instance creation, checking the Model box will export their associated Type and template details. This is most useful when exporting the database to move it to another node or project.

Clearing the Model check box will export just the tags and their details as it had done in previous versions.

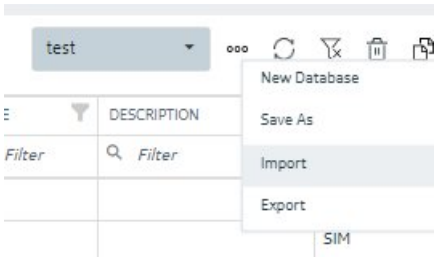
Backwards compatibility

Exports from databases of previous versions of iFIX will import into the new Database Manager. Exporting from the Database panel and importing into older versions of iFIX will also work, however if you choose to export the model associations, these sections will not import and will generate errors.

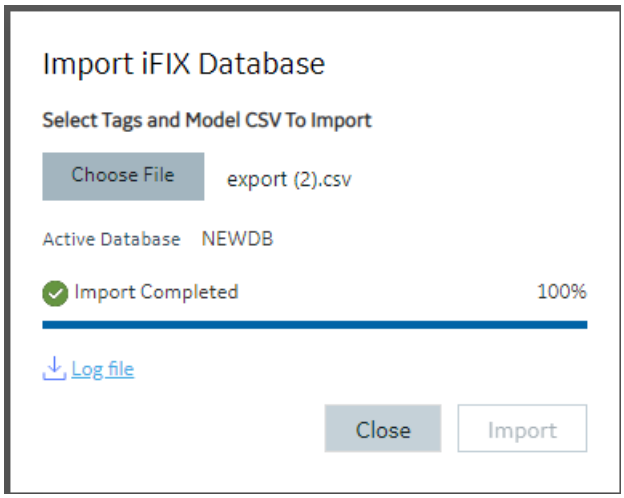
Import a Database

Be aware that Configuration Hub supports only UTF-8 encoded files. The iFIX Database Manager uses ANSI encoding. Prior to importing files into Configuration Hub's Model or Database panel, ensure that the CSV file is in UTF-8 encoding. To do so, open the CSV file in the Windows Notepad editor and perform a SAVE AS with UTF-8 encoding selected, and then save the file as a CSV. Likewise, if you want to import a file from Configuration Hub into the iFIX Database Manager, save as ANSI encoding before importing the file into the Database Manager.

1. Configuration Hub, on the Database panel, click the elipsis (…) icon to open the shortcut menu.



2. Click Import.



The Import iFIX Database dialog box appears.

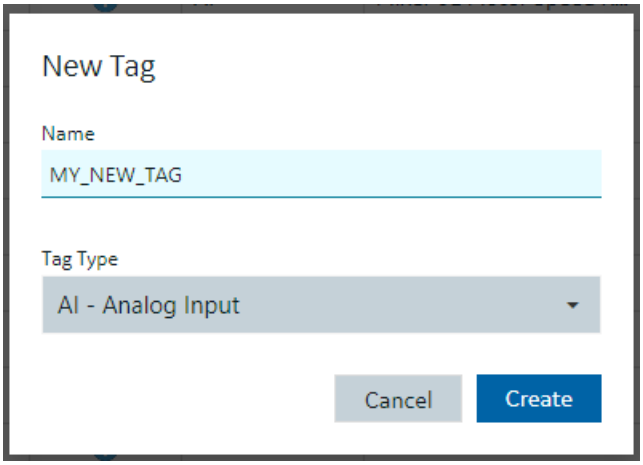
3. Click Choose File to select a file to import.

4. Click Import.

Tag Management

Adding Tags

From the toolbar, the primary action is the New button. This New button will allow you to create a new tag in the iFIX database. When creating a new tag you are required to choose your Tag Type. The dialog box will show errors if you use characters that are not allowed or if the tag length (256) is too long.



Editing Tags

To edit a tag, select it in the Database grid and you will see the Details panel property grid. Find the property you want to change (for example, the I/O address) by either scrolling to the property or searching for it. Making a change to a property will cause the Database panel to go into an unsaved state. When you have made the changes you want to the tag or to multiple tags, be sure to save your changes, by clicking the Save button. Exiting the panel with unsaved changes will prompt you to save however closing your browser without saving your changes using the Save button will lose your changes.

Deleting or Bulk Deleting Tags

Deleting tags from the Database panel can be accomplished in a few different ways:

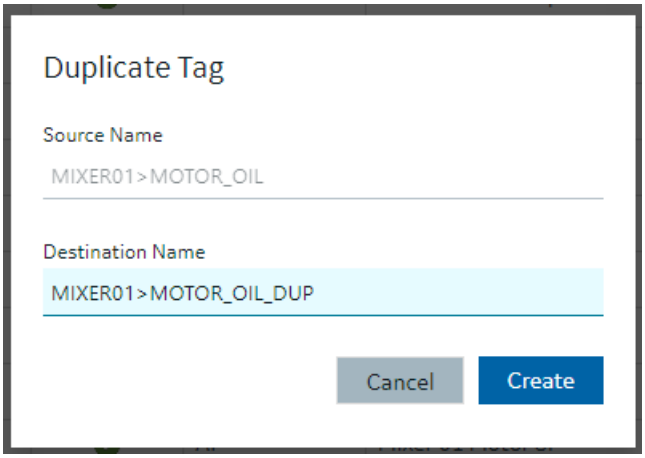
- Selecting a row and pressing the delete key.
- Pressing the delete icon in the toolbar.
- Right-clicking a row and selecting Delete will remove the tag from the list and put the panel in an unsaved state.

- Multi-selecting more than one tag using the check boxes in the first column allows you to do bulk deletes.

If you don't want to save your deletions, close the panel and choose not to save.

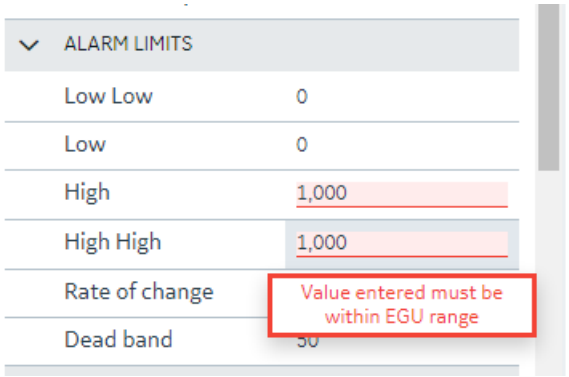
Duplicating Tags

The Database panel allows you to select a tag and duplicate it using the toolbar or Right Clicking on a row. Only one tag at a time can be duplicated. You will be prompted to enter a new name for the duplicated tag:

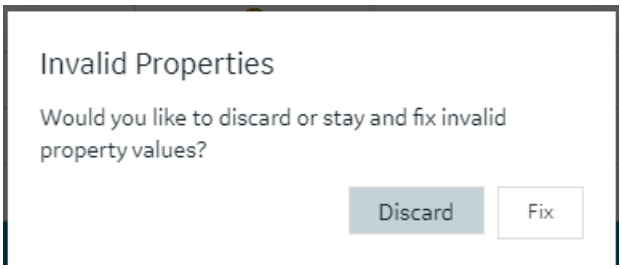


Validations

Certain properties of different tag types require input to be of a certain type of format. The Details panel will highlight when you have incorrectly input a value that is not acceptable for a given property. Some properties may become invalid based on other properties. This is indicated by a red shaded and underlined cell color, and a tooltip appears when you hover over the invalid property.



Generally, you cannot leave a property in an invalid state when leaving the Details panel to select another tag. You will be prompted to revert or stay and fix the invalid property states. An example message is shown in the following graphic.

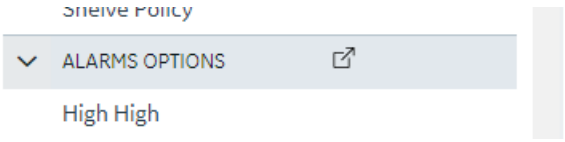


Custom Editors

Some property areas on certain tag types are difficult to understand and edit when flattened into a Field/Value pair properties in the Details panel. In these cases, the Database Details panel will often provide a customized editor, so you have more room to edit the fields. For example:

- The Alarm Options in the AA block.
- The Input Definitions in the PA block.
- The Data Definitions in the SQD block.
- The Programming Statements in the PG block.

Customized editors are indicated in the group/area headers and provide a launch button to open. The following example shows the launch button in the Alarms Options heading.



Here is an example of the dialog box that opens Alarm Options for the AA tag:

It is the same content available from the details pane, but just in a larger viewing area. Changes made in the custom dialog boxes are reflected back into the Details panel properties when closed.

Tag Properties

Tag Properties

The following table describes all the tag types (block types) available in the Configuration Hub application.

Note: iFIX has block types in its database, such as AA (Analog Alarm), AI (Analog Input), and so on. For the purposes of this help document, when we use the term “tag”, we are referring to any block type.

Tag Type	Description
AA Tag *(page 83)*	The Analog Alarm (AA) tag sends and receives analog data from the I/O driver, OPC server, or OPC UA server to provide alarm control. Using this tag you can suspend alarms and define limits and priorities for each alarm. The tag can also wait a specified time interval before issuing an alarm, close a contact when an alarm occurs, and automatically reissue and acknowledge alarms.
AI Tag *(page 101)*	The Analog Input (AI) tag sends and receives analog data from an I/O driver, OPC server, or OPC UA server every time the Scan, Alarm, and Control (SAC) program scans the tag.

Tag Type	Description
AO Tag *(page 117)*	The Analog Output (AO) tag sends an analog signal to an I/O driver, OPC server, or OPC UA server every time it receives a value from an upstream tag, an operator, a Program block, a script, or from its Initial Value field.
AR Tag *(page 129)*	The Analog Register (AR) tag reads and writes analog values to process hardware. It provides both input and output capacity in a single tag using a minimum amount of memory because iFIX only processes the tag when a picture that references it is open.
BB Tag *(page 140)*	The On-Off Control (BB) tag opens and closes up to two digital outputs based upon an incoming analog value or an operator input.
BL Tag *(page 150)*	The Boolean (BL) tag calculates a single true/false output from multiple inputs.
CA Tag *(page 162)*	The Calculation (CA) tag performs simple mathematical calculations on the value passed by the upstream tag and up to seven other constants or tag values. **Note:** The precision of calculations is fifteen digits. Round-off errors can occur in the sixteenth digit.
DA Tag *(page 173)*	The Digital Alarm (DA) tag sends and receives digital data (1 or 0) from an I/O driver, OPC server, or OPC UA server to provide alarm control. Using this tag, you can suspend alarms and define an alarm condition and an alarm priority. The tag can also wait a specified time interval before issuing an alarm, close a contact when an alarm occurs, and automatically reissue and acknowledge alarms.
DC Tag *(page 185)*	The Device Control (DC) tag coordinates the opening and closing of digital devices on the plant floor based upon certain user-defined conditions. This tag allows for the timed operation of a device by confirming its status with feedback signals.
DI Tag *(page 196)*	The Digital Input (DI) tag sends and receives digital data (1 or 0) from an from the I/O driver, OPC server, or OPC UA server every time the Scan, Alarm, and Control (SAC) program scans the tag.

Tag Type	Description
DO Tag *(page 205)*	The Digital Output (DO) tag sends a digital value (1 or 0) to an from the I/O driver, OPC server, or OPC UA server every time it receives a value from an upstream tag, an operator, a Program block, a script, or from its Initial Value field. Because iFIX processes Digital Output tags whenever a new value is sent to the hardware, they generally operate as though they were latched. If you configure a Digital Output tag as a stand alone tag, it outputs a digital value each time the value changes.
DR Tag *(page 213)*	The Digital Register (DR) tag reads and writes digital values to process hardware. It provides both input and output capacity in a single tag using a minimum amount of memory because iFIX only processes the tag when a picture that references it is open.
DT Tag *(page 221)*	The Dead Time (DT) tag can delay the transfer of an input value to the next tag in the chain.
ETR Tag *(page 227)*	The Extended Trend (ETR) tag collects up to 600 values from an upstream tag. By using this tag, you can trend up to 10 minutes worth of data (assuming a one second scan time) with one tag instead of chaining multiple Trend tags together. In addition, you can store several hours, or even days of real-time data, by combining different scan rates in conjunction with the Average Compress field. The upstream primary tag in the chain determines Extended Trend tag's scan time. When the tag receives a value, it stores the data and passes it to the next downstream tag immediately. You can display data collected by the tag using a chart in the iFIX WorkSpace. **Note:** The process database also provides a Trend tag. This tag trends up to 80 values. If you need to trend more than 80 values, use the Extended Trend tag.
EV Tag *(page 235)*	The Event Action (EV) tag tests the value or alarm condition of the previous tag using IF-THEN-ELSE logic. Based upon the outcome of the test expression, the tag can then either open or close a digital point or turn a tag on or off scan.
FN Tag *(page 243)*	The Fanout (FN) tag sends the value it receives to the next tag and up to four additional tags. The tag listed as a next tag receives the value immediately. The additional destination tags receive the value the next time iFIX scans those tags. If the destination tag is in Manual mode, the update is instantaneous.

Tag Type	Description
HS Tag *(page 249)*	The Histogram (HS) tag records how frequently a value occurs during a specified period.
LL Tag *(page 257)*	The Lead Lag (LL) tag allows you to simulate process dynamics by combining the advantages of lead and lag compensation strategies. **Tip:** We suggest you use this tag only if you are thoroughly familiar with lead lag theory. If you simply need a time delay, consider using the Dead Time tag. The Lead Lag formula is: Output=C3[C1(Input-Prior Output)+(Input*Scan time)+C2(Prior Output)] where: C1 = Lead Time C2 = Lag Time $C3 = \frac{K}{C2 + \text{Scan Time}}$ C1, C2, and the scan time (of the primary tag) are in seconds. K is the constant defined in the tag's Constant field.
MDI Tag *(page 265)*	The Multistate Digital Input (MDI) tag provides a means of monitoring the state of one, two, or three related digital inputs. The tag produces a raw input value (0 - 7) based on digital values it receives from an from the I/O driver, OPC server, or OPC UA server every time the Scan, Alarm, and Control (SAC) program scans the tag.
PA Tag *(page 275)*	The Pareto (PA) tag can accept up to eight inputs and calculate percentages for them.
PG Tag *(page 282)*	The Program (PG) tag provides a powerful means of running short programs to increase the degree of automation in your process or to assist in batch control. For a list of the supported commands that you can use in programming statements see the iFIX Database Reference.

Tag Type	Description
PID Tag *(page 289)*	The PID tag maintains balance in a closed loop by changing the controlled variable (an analog output) in response to deviations from a user-defined set point. The difference between the actual value (an analog input) and the set point value is the error, or deviation. In response to errors, the PID tag calculates an appropriate control output signal, which attempts to reduce the error to zero. The adjustment that the PID tag makes is a function of the difference between the set point and the measurement, in addition to the values of the proportional band, the reset, and the rate.
RB Tag *(page 302)*	The Ratio Bias (RB) tag lets you change an incoming signal by adding a constant (bias) and/or by multiplying by a constant (ratio). The tag calculates the constant by subtracting an offset from the signal. The following equation illustrates this method: Output = Ratio (Input - Offset) + Bias **Note:** This is a variation of y = mx + b.
RM Tag *(page 310)*	The Ramp (RM) tag decreases or increases a target output value. The tag provides up to three stages for ramping values. Each ramp stage lets you specify a target value and a ramp rate. The first two stages also provide a hold time. At each scan cycle, the Ramp tag sends its output value to the tag specified in the Next Block field .
SC Tag *(page 321)*	The Statistical Control (SC) tag lets you adjust a value from another tag by calculating the average offset and the rate of deviation from the average XBARBAR.
SD Tag *(page 329)*	The Statistical Data (SD) tag collects and performs statistical calculations on data.
SQD Tag *(page 340)*	The SQL Data (SQD) tag identifies the data to read or write when a SQL Trigger tag executes. The SQL Data tag transfers data between the iFIX process database and your relational database.
SQT Tag *(page 346)*	The SQL Trigger (SQT) tag lets iFIX execute SQL commands.

Tag Type	Description
SS Tag *(page 358)*	The Signal Select (SS) tag provides a means of sampling up to six inputs, manipulating the inputs according to a user-selected mode, and sending the result to the next tag.
TM Tag *(page 369)*	The Timer (TM) tag functions as a time counter by incrementing or decrementing its value.
TR Tag *(page 378)*	The Trend (TR) tag can collects up to 80 values over a period of time. You can trend these values by connecting the tag to a chart in the iFIX WorkSpace. The upstream primary tag in the chain determines Trend tag's scan time. When the tag receives a value, it stores the data and passes it with negligible dead time (transportation delay) to the next downstream tag immediately.
TT Tag *(page 386)*	The Totalizer (TT) tag maintains a floating-point total for values passed to it from upstream tags.
TX Tag *(page 393)*	The Text (TX) tag reads and writes text from your process hardware or an OPC server. When the tag receives text, it sends the data to all enabled alarm destinations assigned to the tag's alarm areas.

AA Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

I/O Addressing

Field	Description
I/O Driver	Lets you select an I/O driver, OPC server, or OPC UA server for the tag. The selected driver or server enables the tag to communicate with process hardware on the plant floor. Before you can select an I/O driver, OPC server, or OPC UA server you must install it and add it to the available ones in the SCU.
I/O Address	Lets you enter the location in the process hardware where data for this tag is saved and where output is sent. **Valid Entries** Depends on your driver. Consult your I/O driver or server manual for details on the proper input/output addresses and configurations. **CAUTION:** Do not assign the same I/O address to tags when using exception-based and time-based processing. Doing so will cause the exception-based tags to occasionally miss a value. **CAUTION:** Configuration Hub currently does not do I/O address validations before publish. If you enter an invalid IO address into a tag or generate an invalid I/O address via the model and substitutions, the publish may fail to set the IO address into the active database, and your invalid IO address will be removed.
Signal Conditioning	Lets you select how to map the range of values coming from your process hardware into the tag's EGU range. **Note:** Signal conditioning and linear scaling cannot be applied simultaneously. If you select a value for Signal Conditioning verify that Linear Scaling is not selected. **Valid Entries** Depends on your driver or server. Refer to your driver or server manual for more information.
H/W Options	Lets you select how to map the range of values coming from your process hardware into the tag's EGU range. **Note:** Signal conditioning and linear scaling cannot be applied simultaneously. If you select a value for Signal Conditioning verify that Linear Scaling is not selected. **Valid Entries** Depends on your driver or server. Refer to your driver or server manual for more information.
Process by Exception	Enables exception-based processing for the tag.

Field	Description
Scan Time	Lets you specify how often the Scan, Alarm, and Control (SAC) program processes the tag and any tags (blocks) chained to it. **Valid Entries** • 0 (one shot processing) • 0.05 to .95 in .05 increments (subsecond scan times) • 1 to 60 in 1 second increments • 1M to 60M in 1 minute increments • 1H to 24H in 1 hour increments **Example** 0.15 specifies a 15-subsecond scan time. 5 specifies a 5-second scan time, 10M specifies a 10-minute scan time, 16H specifies a 16-hour scan time.
Phase At	Lets you specify how long the Scan, Alarm, and Control (SAC) program delays in scanning the tag. When the tag has a second or subsecond scan time, SAC offsets the initial scan by the phase time when iFIX starts or when the database is reloaded. When the tag has a scan time of 1 minute or longer, SAC offsets the initial scan starting at midnight. **Valid Entries** Depends on the scan time. If the scan time is in hours, the phase must be in hours:minutes. If the scan time is in minutes, the phase must be in minutes:seconds. If the scan time is in seconds, the phase must be in seconds. If the scan time is in subseconds, the phase must be in subseconds.

Limits and Scaling

Field	Description
Low Limit	Lets you enter the tag's minimum value. **Valid Entries** • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or Signal Select tag, if the output of the tag is 10 and the Low Limit is 15, the tag clamps the value at 15. You must enter a Low Limit of 10 or less to output a value of 10. If you want to display a value of 1.236 from the Calculation tag, you must enter three or more decimal places in the Low Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.

Field	Description
High Limit	Lets you enter the tag's maximum value. **Valid Entries** You can enter a high limit in one of three formats: • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or a Signal Select tag, if the output of the tag is 150 and the High Limit is 100, the tag clamps the value at 100. You must enter a High Limit of 150 or more to output a value of 150. If you want to display a value of 1.236 from the Calculation tag, you must enter three or more decimal places in the High Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.
Units	Lets you enter text describing the engineering units range. **Valid Entries** Up to 33 characters. **Example** Kilograms per square meter, Liters per minute, degrees Celsius, **Note:** This entry does not affect the calculation or function of any variables in iFIX. It is used strictly as a display label to identify the engineering units.

Field	Description
Scale Enabled	Lets you enable or disable scaling for this tag. Enabling scaling allows the system to convert the data received from input sensors to designated data ranges. **Note:** Linear scaling and signal conditioning cannot be applied simultaneously. If you select Linear Scaling, verify that Signal Conditioning is set to NONE. **Example** Scaling allows conversion of temperature data received in Fahrenheit to an output which uses Celsius values.
Scale Clamping	Lets you enable or disable clamping for this tag. When you enable clamping, any value the tag receives is limited to the raw range. Any value the tag sends is limited to the scaled range. **Note:** Do not enable clamping unless it is necessary. Because clamping limits the data received and sent, some data may be missed by the tag.
Raw Low	Lets you specify the low limit for the values received by the tag. Usually, this value corresponds to the specifications of the hardware from which the data is received. **Valid Entries** • Standard Integer • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary).

Field	Description
Raw High	Lets you specify the high limit for the values sent by the tag. Usually, this value corresponds to the specifications of the hardware from which the data is received. **Valid Entries** • Standard Integer • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary).
Use Low/High Limits	Enables the tag to use the range specified in the Engineering Units fields as the output values. Typically, EGU values normally reflect the expected operating ranges, or the Scale Low and Scale High values for the tag. However, the EGU values also dictate behavior in other areas such as alarming. By allowing the Scale Low and Scale High values to be set to values other than the EGU values, you can further manage conditions when alarms would be generated. **Note:** If you are Using this tag for charts, make sure to select Use EGU. Selecting this option will make it easier for you to see the changes within the expected range in your chart, because the chart axes will correspond to your expected range and not the entire range of the sensors. The smaller range of the chart makes changes in values more obvious.
Scale Low	Lets you specify the low limit for the values sent by the tag. Usually, this value corresponds to the specifications of the hardware from which the data is received. This field is only available if you did not enable Use EGU. **Valid Entries** • Standard Integer • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** Changes made to this field are not reflected in the data until after the next tag scan.

Field	Description
Scale High	Lets you specify the high limit for the values sent by the tag. Usually, this value corresponds to the specifications of the hardware from which the data is received. This field is only available if you did not enable Use EGU. **Valid Entries** • Standard Integer • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** Changes made to this field are not reflected in the data until after the next tag scan.

Alarm Settings

Field	Description
Alarm Areas	Displays the alarm areas that receive alarms and messages generated by this tag. Double-click an item in the list box and select an alarm area with the Browse button, or enter the alarm area name in the field. **Valid Entries** ALL or up to 15 alarm area names.
Enable Alarm	Lets you enable or disable alarming for this tag. When you enable alarming, the tag generates alarms allowing objects in your operator displays to show alarm conditions, and enabling other tags to detect alarms from the tag. **Note:** The entire chain can be affected when you disable alarms for a tag. In addition, for both the Digital and Analog Alarm tags, this field is ignored when you enable the Alarm Suspend field.

Field	Description
Remote Ack Tag	Lets you specify a tag and field name pair to use for alarm acknowledgment. When the value of the tag and field name pair changes from zero to a value greater than zero, the block acknowledges the alarm. **Valid Entries** Any floating point tag and field name (F_CV) pair in the tag.field format. You cannot use an A_CV field as a Remote Acknowledge entry. When the Analog Alarm tag is exception-based, acknowledging an alarm from the iFIX WorkSpace immediately triggers processing of the tag. Acknowledging the alarm with the Remote Acknowledge field does not trigger the Scan, Alarm and Control (SAC) program to process the Analog Alarm tag.
Alarm Suspension Tag	Provides intelligent alarming by defining a tag and field name pair to control alarm processing. When the value of the tag and field name pair is zero, the Analog Alarm block processes alarms. When the value is other than zero, either a positive or negative number, the tag suspends alarms and generates a suspend alarm message. **Valid Entries** Any floating point tag and field name (F_CV) pair in the block.field format. **Note:** If you specify the same tag and field name pair for multiple Analog Alarm blocks, you can suspend alarms within one or more alarm areas. This is an optional feature.
Target Value	Lets you specify the optimum value for the tag. A deviation alarm occurs when the current value of the tag varies from the target value by an amount greater than the deviation alarm's value. **Valid Entries** Any floating point tag and field name (F_CV) pair in the tag.field format or a numeric value within the Low and High Limits (EGU). By default, the field is blank. **Note:** Target Value is an optional field and is used only with deviation alarms.
Shelve Enable	Select this check box to enable Alarm Shelving for the tag.
Shelve Policy	Select an alarm shelving policy from the drop-down list.

Alarm Options

Field	Description
High High	Lets you enter the threshold for the alarm type. If the block's value exceeds this threshold, the block generates an alarm.
HIHI alarm priority	Lets you enter INFO, LOLO, LOW, MEDIUM, HIGH, HIHI, or CRITICAL to define the priority of the alarm type.
HIHI cc-tag	Lets you enter the name of a digital tag that closes when an alarm occurs.
HIHI cc-mode	Lets you enter Acknowledge, Return, All Clear, or Never to define when to open the digital contact.
HIHI delay time	Lets you enter the amount of time the tag waits before generating an alarm. Enter a time in days, hours, minutes, and seconds, in the format dd:hh:mm:ss, within the range of 00:00:00:00 to 03:00:00:00, when the block has time-based scan time. For exception based processing, leave the default entry, 00:00:00:00, which disable the field.
HIHI re-alarm time	Lets you enter the amount of time the tag waits before re-issuing an alarm. Enter a time in days, hours, minutes, and seconds, in the format dd:hh:mm:ss, within the range of 00:00:00:00 to 03:00:00:00, when the block has time-based scan time. For exception based processing, leave the default entry, 00:00:00:00, which disable the field.
High	Lets you enter the threshold for the alarm type. If the block's value exceeds this threshold, the block generates an alarm.
HI alarm priority	Lets you enter INFO, LOLO, LOW, MEDIUM, HIGH, HIHI, or CRITICAL to define the priority of the alarm type.
HI cc-tag	Lets you enter the name of a digital tag that closes when an alarm occurs.
HI cc-mode	Lets you enter Acknowledge, Return, All Clear, or Never to define when to open the digital contact.
HI delay time	Lets you enter the amount of time the tag waits before generating an alarm. Enter a time in days, hours, minutes, and seconds, in the format dd:hh:mm:ss, within the range of 00:00:00:00 to 03:00:00:00, when the block has time-based scan time. For exception based processing, leave the default entry, 00:00:00:00, which disable the field.
HI re-alarm time	Lets you enter the amount of time the tag waits before re-issuing an alarm. Enter a time in days, hours, minutes, and seconds, in the format dd:hh:mm:ss, within the range of 00:00:00:00 to 03:00:00:00, when the block has time-based scan time. For exception based processing, leave the default entry, 00:00:00:00, which disable the field.
Low	Lets you enter the threshold for the alarm type. If the block's value exceeds this threshold, the block generates an alarm.

Field	Description
LO alarm priority	Lets you enter INFO, LOLO, LOW, MEDIUM, HIGH, HIHI, or CRITICAL to define the priority of the alarm type.
LO cc-tag	Lets you enter the name of a digital tag that closes when an alarm occurs.
LO cc-mode	Lets you enter Acknowledge, Return, All Clear, or Never to define when to open the digital contact.
LO delay time	Lets you enter the amount of time the tag waits before generating an alarm. Enter a time in days, hours, minutes, and seconds, in the format dd:hh:mm:ss, within the range of 00:00:00:00 to 03:00:00:00, when the block has time-based scan time. For exception based processing, leave the default entry, 00:00:00:00, which disable the field.
LO re-alarm time	Lets you enter the amount of time the tag waits before re-issuing an alarm. Enter a time in days, hours, minutes, and seconds, in the format dd:hh:mm:ss, within the range of 00:00:00:00 to 03:00:00:00, when the block has time-based scan time. For exception based processing, leave the default entry, 00:00:00:00, which disable the field.
Low Low	Lets you enter the threshold for the alarm type. If the block's value exceeds this threshold, the block generates an alarm.
LOLO alarm priority	Lets you enter INFO, LOLO, LOW, MEDIUM, HIGH, HIHI, or CRITICAL to define the priority of the alarm type.
LOLO cc-tag	Lets you enter the name of a digital tag that closes when an alarm occurs.
LOLO cc-mode	Lets you enter Acknowledge, Return, All Clear, or Never to define when to open the digital contact.
LOLO delay time	Lets you enter the amount of time the tag waits before generating an alarm. Enter a time in days, hours, minutes, and seconds, in the format dd:hh:mm:ss, within the range of 00:00:00:00 to 03:00:00:00, when the block has time-based scan time. For exception based processing, leave the default entry, 00:00:00:00, which disable the field.
LOLO re-alarm time	Lets you enter the amount of time the tag waits before re-issuing an alarm. Enter a time in days, hours, minutes, and seconds, in the format dd:hh:mm:ss, within the range of 00:00:00:00 to 03:00:00:00, when the block has time-based scan time. For exception based processing, leave the default entry, 00:00:00:00, which disable the field.
Rate of Change	Lets you enter the threshold for the alarm type. If the block's value exceeds this threshold, the block generates an alarm.
ROC alarm priority	Lets you enter INFO, LOLO, LOW, MEDIUM, HIGH, HIHI, or CRITICAL to define the priority of the alarm type.
ROC cc-tag	Lets you enter the name of a digital tag that closes when an alarm occurs.

Field	Description
ROC cc-mode	Lets you enter Acknowledge, Return, All Clear, or Never to define when to open the digital contact.
ROC delay time	Lets you enter the amount of time the tag waits before generating an alarm. Enter a time in days, hours, minutes, and seconds, in the format dd:hh:mm:ss, within the range of 00:00:00:00 to 03:00:00:00, when the block has time-based scan time. For exception based processing, leave the default entry, 00:00:00:00, which disable the field.
ROC re-alarm time	Lets you enter the amount of time the tag waits before re-issuing an alarm. Enter a time in days, hours, minutes, and seconds, in the format dd:hh:mm:ss, within the range of 00:00:00:00 to 03:00:00:00, when the block has time-based scan time. For exception based processing, leave the default entry, 00:00:00:00, which disable the field.
DEV alarm limit	Lets you enter the threshold for the alarm type. If the block's value exceeds this threshold, the block generates an alarm.
DEV alarm priority	Lets you enter INFO, LOLO, LOW, MEDIUM, HIGH, HIHI, or CRITICAL to define the priority of the alarm type.
DEV cc-tag	Lets you enter the name of a digital tag that closes when an alarm occurs.
DEV delay time	Lets you enter Acknowledge, Return, All Clear, or Never to define when to open the digital contact.
DEV re-alarm time	Lets you enter the amount of time the tag waits before generating an alarm. Enter a time in days, hours, minutes, and seconds, in the format dd:hh:mm:ss, within the range of 00:00:00:00 to 03:00:00:00, when the block has time-based scan time. For exception based processing, leave the default entry, 00:00:00:00, which disable the field.
Other Alarm Priority	Lets you enter the threshold for the alarm type. If the block's value exceeds this threshold, the block generates an alarm.
Other cc-tag	Lets you enter INFO, LOLO, LOW, MEDIUM, HIGH, HIHI, or CRITICAL to define the priority of the alarm type.
Other cc-mode	Lets you enter the name of a digital tag that closes when an alarm occurs.
Other delay time	Lets you enter Acknowledge, Return, All Clear, or Never to define when to open the digital contact.
Other re-alarm time	Lets you enter the amount of time the tag waits before generating an alarm. Enter a time in days, hours, minutes, and seconds, in the format dd:hh:mm:ss, within the range of 00:00:00:00 to 03:00:00:00, when the block has time-based scan time. For exception based processing, leave the default entry, 00:00:00:00, which disable the field.

Field	Description
Deadband	Lets you enter the maximum fluctuation the tag accepts without re-issuing an alarm. As long as the fluctuation is within the dead band range, the block issues an alarm once, eliminating nuisance alarms. Once the alarm falls below the dead band and then exceeds the alarm limits, the block generates another alarm. **Valid Entries** Numeric value within the EGU range. **Example** If the High alarm limit is 80 and the dead band is 5, the tag does not re-issue an alarm after the one while the current value fluctuates between 75 and 85.
Const Contact Output	Selecting this option enables the tags to attempt to write the contact(s) with every scan, even if the value being written is unchanged. Otherwise, the AA tag only attempts to write to the defined contact tag when a value has changed and it needs to be written to the PLC. The write is a one-time attempt, so if it fails, the write will not be retried until the tag needs to write a new value. **Note:** There are four modes for the contacts - “Acknowledge”, “Return”, “All Clear”, and “Never” - that control when the contact is cleared. Since the contact mode of “Never” does not reset the contact, the Continuous Output option is not supported for this contact mode.
Suppress COMM Alarm	Select this option to separate the original alarm condition from the COMM alarm, and return the AA tag to the same state as it was prior to a COMM alarm. For example, if prior to the COMM alarm, the AA tag was an active alarm but already acknowledged, that is the state it should return to after communication is restored. Otherwise, AA tags handle one alarm at a time. As a result, it is possible that acknowledgement of a COMM alarm could cause the ACK bit in the PLC to be written, and the original alarm condition, if already acknowledged, could re-alarm.
As Event in Suspend	Select this option to enable the Event messaging (Suspend mode), which applies suppression behavior to disable alarm processing. When the tag is in suspend mode, the Alarm state is set to OK, the Alarm is an alarm message only and therefore, does not appear in the alarm summary. Alarm processing continues with each alarm state transition recorded in the alarm loggers but does not display in the alarm summary. The alarm state contact (tag) is not processed.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.

Field	Description
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
Enable Output	Lets you configure the tag to send output to the I/O driver, OPC server, or OPC UA server. The tag sends its output when it is in Automatic mode and converts its data according to the entries in the Low Limit (EGU), High Limit (EGU), and Signal Conditioning fields.

Field	Description
Startup Mode	Lets you select the tag's mode on startup. In Automatic mode, the tag receives data from the I/O driver, OPC server, or OPC UA server. In Manual mode, the tag receives data from the operator, scripts, recipes, or Program blocks.
Initial Scan	Lets you select whether the tag is initially placed on or off scan. Click On Scan to place the tag on scan as soon as the Scan, Alarm, and Control (SAC) program starts or when the database is loaded. Click Off Scan to place the tag on scan by a Program block, an Event Action tag, a script, an operator entry in a Data link, or an Easy Database Access program.
Smoothing	Enables the tag's first order digital filter to reduce noise from the incoming signal. The tag filters the incoming signal by adding part of the previous output and part of the new input from the I/O driver, OPC server, or OPC UA server as the following formula shows: Output = (S/16)X1 + ((16-S)/16)X2 where: • s is the smoothing value entered in the Value field. • X1 is the initial value or previous output. • X2 is the new input from I/O driver or server.
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.
Previous Block	Displays the name of the previous (upstream) tag. **Valid Entries** None. This is a read-only field.

Field	Description
Next Block	Displays the name of the next tag in the database chain. You can select a tag for this field by clicking the browse button. **Note:** In a Statistical Data tag, the Next Block field specifies the tag name of the downstream Statistical Control tag. No other tag type is valid.
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.

AI Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

I/O Addressing

Field	Description
I/O Driver	Lets you select an I/O driver, OPC server, or OPC UA server for the tag. The selected driver or server enables the tag to communicate with process hardware on the plant floor. Before you can select an I/O driver, OPC server, or OPC UA server you must install it and add it to the available ones in the SCU.
I/O Address	Lets you enter the location in the process hardware where data for this tag is saved and where output is sent. **Valid Entries** Depends on your driver. Consult your I/O driver or server manual for details on the proper input/output addresses and configurations. **CAUTION:** Do not assign the same I/O address to tags when using exception-based and time-based processing. Doing so will cause the exception-based tags to occasionally miss a value. **CAUTION:** Configuration Hub currently does not do I/O address validations before publish. If you enter an invalid IO address into a tag or generate an invalid I/O address via the model and substitutions, the publish may fail to set the IO address into the active database, and your invalid IO address will be removed.
Signal Conditioning	Lets you select how to map the range of values coming from your process hardware into the tag's EGU range. **Note:** Signal conditioning and linear scaling cannot be applied simultaneously. If you select a value for Signal Conditioning verify that Linear Scaling is not selected. **Valid Entries** Depends on your driver or server. Refer to your driver or server manual for more information.
H/W Options	Lets you select how to map the range of values coming from your process hardware into the tag's EGU range. **Note:** Signal conditioning and linear scaling cannot be applied simultaneously. If you select a value for Signal Conditioning verify that Linear Scaling is not selected. **Valid Entries** Depends on your driver or server. Refer to your driver or server manual for more information.
Process by Exception	Enables exception-based processing for the tag.

Field	Description
Scan Time	Lets you specify how often the Scan, Alarm, and Control (SAC) program processes the tag and any tags (blocks) chained to it. **Valid Entries** • 0 (one shot processing) • 0.05 to .95 in .05 increments (subsecond scan times) • 1 to 60 in 1 second increments • 1M to 60M in 1 minute increments • 1H to 24H in 1 hour increments **Example** 0.15 specifies a 15-subsecond scan time. 5 specifies a 5-second scan time, 10M specifies a 10-minute scan time, 16H specifies a 16-hour scan time.
Phase At	Lets you specify how long the Scan, Alarm, and Control (SAC) program delays in scanning the tag. When the tag has a second or subsecond scan time, SAC offsets the initial scan by the phase time when iFIX starts or when the database is reloaded. When the tag has a scan time of 1 minute or longer, SAC offsets the initial scan starting at midnight. **Valid Entries** Depends on the scan time. If the scan time is in hours, the phase must be in hours:minutes. If the scan time is in minutes, the phase must be in minutes:seconds. If the scan time is in seconds, the phase must be in seconds. If the scan time is in subseconds, the phase must be in subseconds.

Limits and Scaling

Field	Description
Low Limit	Lets you enter the tag's minimum value. **Valid Entries** • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or Signal Select tag, if the output of the tag is 10 and the Low Limit is 15, the tag clamps the value at 15. You must enter a Low Limit of 10 or less to output a value of 10. If you want to display a value of 1.236 from the Calculation tag, you must enter three or more decimal places in the Low Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.

Field	Description
High Limit	Lets you enter the tag's maximum value. **Valid Entries** You can enter a high limit in one of three formats: • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or a Signal Select tag, if the output of the tag is 150 and the High Limit is 100, the tag clamps the value at 100. You must enter a High Limit of 150 or more to output a value of 150. If you want to display a value of 1.236 from the Calculation tag, you must enter three or more decimal places in the High Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.
Units	Lets you enter text describing the engineering units range. **Valid Entries** Up to 33 characters. **Example** Kilograms per square meter, Liters per minute, degrees Celsius, **Note:** This entry does not affect the calculation or function of any variables in iFIX. It is used strictly as a display label to identify the engineering units.

Field	Description
Scale Enabled	Lets you enable or disable scaling for this tag. Enabling scaling allows the system to convert the data received from input sensors to designated data ranges. **Note:** Linear scaling and signal conditioning cannot be applied simultaneously. If you select Linear Scaling, verify that Signal Conditioning is set to NONE. **Example** Scaling allows conversion of temperature data received in Fahrenheit to an output which uses Celsius values.
Scale Clamping	Lets you enable or disable clamping for this tag. When you enable clamping, any value the tag receives is limited to the raw range. Any value the tag sends is limited to the scaled range. **Note:** Do not enable clamping unless it is necessary. Because clamping limits the data received and sent, some data may be missed by the tag.
Raw Low	Lets you specify the low limit for the values received by the tag. Usually, this value corresponds to the specifications of the hardware from which the data is received. **Valid Entries** • Standard Integer • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary).

Field	Description
Raw High	Lets you specify the high limit for the values sent by the tag. Usually, this value corresponds to the specifications of the hardware from which the data is received. **Valid Entries** • Standard Integer • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary).
Use Low/High Limits	Enables the tag to use the range specified in the Engineering Units fields as the output values. Typically, EGU values normally reflect the expected operating ranges, or the Scale Low and Scale High values for the tag. However, the EGU values also dictate behavior in other areas such as alarming. By allowing the Scale Low and Scale High values to be set to values other than the EGU values, you can further manage conditions when alarms would be generated. **Note:** If you are Using this tag for charts, make sure to select Use EGU. Selecting this option will make it easier for you to see the changes within the expected range in your chart, because the chart axes will correspond to your expected range and not the entire range of the sensors. The smaller range of the chart makes changes in values more obvious.
Scale Low	Lets you specify the low limit for the values sent by the tag. Usually, this value corresponds to the specifications of the hardware from which the data is received. This field is only available if you did not enable Use EGU. **Valid Entries** • Standard Integer • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** Changes made to this field are not reflected in the data until after the next tag scan.

Field	Description
Scale High	Lets you specify the high limit for the values sent by the tag. Usually, this value corresponds to the specifications of the hardware from which the data is received. This field is only available if you did not enable Use EGU. **Valid Entries** • Standard Integer • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** Changes made to this field are not reflected in the data until after the next tag scan.

Alarm Options

Field	Description
Alarm Areas	Displays the alarm areas that receive alarms and messages generated by this tag. Double-click an item in the list box and select an alarm area with the Browse button, or enter the alarm area name in the field. **Valid Entries** ALL or up to 15 alarm area names.
Enable Alarm	Lets you enable or disable alarming for this tag. When you enable alarming, the tag generates alarms allowing objects in your operator displays to show alarm conditions, and enabling other tags to detect alarms from the tag. **Note:** The entire chain can be affected when you disable alarms for a tag. In addition, for both the Digital and Analog Alarm tags, this field is ignored when you enable the Alarm Suspend field.

Field	Description
Priority	Lets you specify the alarm priority for a tag. If the priority is equal or greater than the SCADA node's alarm priority, iFIX sends the alarm to all the alarm destinations enabled for this node. However, if the priority is less than the SCADA node's alarm priority, the alarm is automatically acknowledged and filtered out so that it does not appear in your alarm destinations. However, the alarm does appear in Data links configured to display current and latched alarms. **Valid Entries** INFO, LOLO, LOW, MEDIUM, HIGH, HIHI, or CRITICAL **Note:** To report tag alarms, the appropriate alarm areas must be assigned to each of the alarm services enabled in the System Configuration Utility (SCU).
Shelve Enable	Select this check box to enable Alarm Shelving for the tag.
Shelve Policy	Select an alarm shelving policy from the drop-down list.

Alarm Limits

Field	Description
Low Low	Lets you enter the tag's critically low values. When the tag's value falls below this limit, the tag generates an alarm. **Valid Entries** A critically low value within the tag's engineering units range. **Example** If a temperature of 25 degrees indicates that a cooling water flow is frozen, you could enter a value of 30 degrees for your Low Low alarm.

Field	Description
Low	Lets you enter the tag's low process values. When the tag's value falls below this limit, the tag generates an alarm. **Valid Entries** A low value within the tag's engineering units range. If you want to provide a warning that a value is approaching a critical low limit, enter a slightly higher value than the Low Low alarm. **Example** If a temperature of 35 degrees indicates that ice crystals are forming in a cooling water flow, you could enter a value of 40 degrees for your Low alarm.
High	Lets you enter the tag's high process values. When the tag's value exceeds this limit, the tag generates an alarm. **Valid Entries** A high value within the tag's engineering units range. If you want to provide a warning that a value is approaching a critically high limit, enter a slightly lower value than the High High alarm. **Example** If a bearing temperature of 80 degrees indicates machine wear, you could enter a value of 75 degrees for your High alarm.
High High	Lets you enter the tag's critically high values. When the tag's value exceeds this limit, the tag generates an alarm. **Valid Entries** A critically high value within the tag's engineering units range. **Example** If a bearing temperature of 90 degrees indicates imminent seizure, you could enter a value of 85 degrees for your High High alarm.

Field	Description
Rate of Change	Lets you enter the maximum, acceptable change in a tag's value. If the tag's current value changes by more than the specified value within one scan period, the tag generates a Rate of Change alarm. **Valid Entries** A value within the tag's engineering units range, to be checked per scan period. Enter 0 to disable this alarm. **Example** To generate an alarm due to a fluctuation of more than 20 RPMs on a speed drive since the last scan period, you would enter a 20 in this field.
Deadband	Lets you enter the maximum fluctuation the tag accepts without re-issuing an alarm. As long as the fluctuation is within the dead band range, the tag issues an alarm once, eliminating nuisance alarms. Once the alarm falls below the dead band and then exceeds the alarm limits, the tag generates another alarm. **Valid Entries** Numeric value within the EGU range. **Example** If the High alarm limit is 80 and the dead band is 5, the tag does not re-issue an alarm after the one while the current value fluctuates between 75 and 85.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.

Field	Description
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.

Field	Description
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.

Field	Description
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
Enable Output	Lets you configure the tag to send output to the I/O driver, OPC server, or OPC UA server. The tag sends its output when it is in Automatic mode and converts its data according to the entries in the Low Limit (EGU), High Limit (EGU), and Signal Conditioning fields.
Startup Mode	Lets you select the tag's mode on startup. In Automatic mode, the tag receives data from the I/O driver, OPC server, or OPC UA server. In Manual mode, the tag receives data from the operator, scripts, recipes, or Program blocks.
Initial Scan	Lets you select whether the tag is initially placed on or off scan. Click On Scan to place the tag on scan as soon as the Scan, Alarm, and Control (SAC) program starts or when the database is loaded. Click Off Scan to place the tag on scan by a Program block, an Event Action tag, a script, an operator entry in a Data link, or an Easy Database Access program.

Field	Description
Smoothing	Enables the tag's first order digital filter to reduce noise from the incoming signal. The tag filters the incoming signal by adding part of the previous output and part of the new input from the I/O driver, OPC server, or OPC UA server as the following formula shows: Output = (S/16)X1 + ((16-S)/16)X2 where: • s is the smoothing value entered in the Value field. • X1 is the initial value or previous output. • X2 is the new input from I/O driver or server.
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.
Previous Block	Displays the name of the previous (upstream) tag. **Valid Entries** None. This is a read-only field.
Next Block	Displays the name of the next tag in the database chain. You can select a tag for this field by clicking the browse button. **Note:** In a Statistical Data tag, the Next Block field specifies the tag name of the downstream Statistical Control tag. No other tag type is valid.
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.

Field	Description
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.

AO Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'

Field	Description
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

I/O Addressing

Field	Description
I/O Driver	Lets you select an I/O driver, OPC server, or OPC UA server for the tag. The selected driver or server enables the tag to communicate with process hardware on the plant floor. Before you can select an I/O driver, OPC server, or OPC UA server you must install it and add it to the available ones in the SCU.
I/O Address	Lets you enter the location in the process hardware where data for this tag is saved and where output is sent. **Valid Entries** Depends on your driver. Consult your I/O driver or server manual for details on the proper input/output addresses and configurations. **CAUTION:** Do not assign the same I/O address to tags when using exception-based and time-based processing. Doing so will cause the exception-based tags to occasionally miss a value. **CAUTION:** Configuration Hub currently does not do I/O address validations before publish. If you enter an invalid IO address into a tag or generate an invalid I/O address via the model and substitutions, the publish may fail to set the IO address into the active database, and your invalid IO address will be removed.

Field	Description
Signal Conditioning	Lets you select how to map the range of values coming from your process hardware into the tag's EGU range. **Note:** Signal conditioning and linear scaling cannot be applied simultaneously. If you select a value for Signal Conditioning verify that Linear Scaling is not selected. **Valid Entries** Depends on your driver or server. Refer to your driver or server manual for more information.
H/W Options	Lets you select how to map the range of values coming from your process hardware into the tag's EGU range. **Note:** Signal conditioning and linear scaling cannot be applied simultaneously. If you select a value for Signal Conditioning verify that Linear Scaling is not selected. **Valid Entries** Depends on your driver or server. Refer to your driver or server manual for more information.

Limits and Scaling

Field	Description
Low Limit	Lets you enter the tag's minimum value. **Valid Entries** • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or Signal Select tag, if the output of the tag is 10 and the Low Limit is 15, the tag clamps the value at 15. You must enter a Low Limit of 10 or less to output a value of 10. If you want to display a value of 1.236 from the Calculation tag, you must enter three or more decimal places in the Low Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.

Field	Description
High Limit	Lets you enter the tag's maximum value. **Valid Entries** You can enter a high limit in one of three formats: • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or a Signal Select tag, if the output of the tag is 150 and the High Limit is 100, the tag clamps the value at 100. You must enter a High Limit of 150 or more to output a value of 150. If you want to display a value of 1.236 from the Calculation tag, you must enter three or more decimal places in the High Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.
Units	Lets you enter text describing the engineering units range. **Valid Entries** Up to 33 characters. **Example** Kilograms per square meter, Liters per minute, degrees Celsius, **Note:** This entry does not affect the calculation or function of any variables in iFIX. It is used strictly as a display label to identify the engineering units.

Field	Description
Scale Enabled	Lets you enable or disable scaling for this tag. Enabling scaling allows the system to convert the data received from input sensors to designated data ranges. **Note:** Linear scaling and signal conditioning cannot be applied simultaneously. If you select Linear Scaling, verify that Signal Conditioning is set to NONE. **Example** Scaling allows conversion of temperature data received in Fahrenheit to an output which uses Celsius values.
Scale Clamping	Lets you enable or disable clamping for this tag. When you enable clamping, any value the tag receives is limited to the raw range. Any value the tag sends is limited to the scaled range. **Note:** Do not enable clamping unless it is necessary. Because clamping limits the data received and sent, some data may be missed by the tag.
Raw Low	Lets you specify the low limit for the values received by the tag. Usually, this value corresponds to the specifications of the hardware from which the data is received. **Valid Entries** • Standard Integer • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary).

Field	Description
Raw High	Lets you specify the high limit for the values sent by the tag. Usually, this value corresponds to the specifications of the hardware from which the data is received. **Valid Entries** • Standard Integer • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary).
Use Low/High Limits	Enables the tag to use the range specified in the Engineering Units fields as the output values. Typically, EGU values normally reflect the expected operating ranges, or the Scale Low and Scale High values for the tag. However, the EGU values also dictate behavior in other areas such as alarming. By allowing the Scale Low and Scale High values to be set to values other than the EGU values, you can further manage conditions when alarms would be generated. **Note:** If you are Using this tag for charts, make sure to select Use EGU. Selecting this option will make it easier for you to see the changes within the expected range in your chart, because the chart axes will correspond to your expected range and not the entire range of the sensors. The smaller range of the chart makes changes in values more obvious.
Scale Low	Lets you specify the low limit for the values sent by the tag. Usually, this value corresponds to the specifications of the hardware from which the data is received. This field is only available if you did not enable Use EGU. **Valid Entries** • Standard Integer • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** Changes made to this field are not reflected in the data until after the next tag scan.

Field	Description
Scale High	Lets you specify the high limit for the values sent by the tag. Usually, this value corresponds to the specifications of the hardware from which the data is received. This field is only available if you did not enable Use EGU. **Valid Entries** • Standard Integer • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** Changes made to this field are not reflected in the data until after the next tag scan.

Alarm Options

Field	Description
Alarm Areas	Displays the alarm areas that receive alarms and messages generated by this tag. Double-click an item in the list box and select an alarm area with the Browse button, or enter the alarm area name in the field. **Valid Entries** ALL or up to 15 alarm area names.
Enable Event	Lets you enable or disable event messaging for the tag. Event messaging is similar to alarming except that it does not require acknowledgment. Event messages are sent to the same alarm destinations as alarms for a given tag but do not appear in the Alarm Summary object. Analog Output, Analog Register, Digital Output, Digital Register, Digital Input, and Text tags have event messaging capabilities. **Note:** Be careful when using event messaging in a chain with a time-based scan time. If the scan time is short, your alarm files (either disk or printed) can grow very large. We recommend enabling event messaging for exception-based chains, one shot chains, and stand-alone output blocks.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.

Field	Description
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.

Field	Description
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
Output Reverse	Lets you specify the maximum rate of change you want to allow between successive outputs. **Valid Entries** A value between the Low and High Limit (EGU) fields or a 0 to allow any amount of change.
Initial Value	Lets you specify the value that the Scan, Alarm, and Control (SAC) program sends to the process hardware. SAC sends the data the first time that it reads the block. If an Initial Value is not defined, SAC does not output a value during initialization. **Valid Entries** A value between the Low and High Limit (EGU) fields.

Field	Description
Low Operator Limit	Lets you specify the lowest value that the tag accepts from another tag or from an operator. **Valid Entries** A value between the Low and High Limit (EGU) fields. If appropriate, you can use the Low Limit (EGU) for this value.
High Operator Limit	Lets you specify the highest value that the tag can accept from another tag or from an operator. **Valid Entries** A value between the Low and High Limit (EGU) fields. If appropriate, you can use the High Limit (EGU) for this value.
Rate Limit	Lets you specify the maximum rate of change you want to allow between successive outputs. **Valid Entries** A value between the Low and High Limit (EGU) fields or a 0 to allow any amount of change.
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.
Previous Block	Displays the name of the previous (upstream) tag. **Valid Entries** None. This is a read-only field.

Field	Description
Next Block	Displays the name of the next tag in the database chain. You can select a tag for this field by clicking the browse button. **Note:** In a Statistical Data tag, the Next Block field specifies the tag name of the downstream Statistical Control tag. No other tag type is valid.
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.

AR Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

I/O Addressing

Field	Description
I/O Driver	Lets you select an I/O driver, OPC server, or OPC UA server for the tag. The selected driver or server enables the tag to communicate with process hardware on the plant floor. Before you can select an I/O driver, OPC server, or OPC UA server you must install it and add it to the available ones in the SCU.
I/O Address	Lets you enter the location in the process hardware where data for this tag is saved and where output is sent. **Valid Entries** Depends on your driver. Consult your I/O driver or server manual for details on the proper input/output addresses and configurations. **CAUTION:** Do not assign the same I/O address to tags when using exception-based and time-based processing. Doing so will cause the exception-based tags to occasionally miss a value. **CAUTION:** Configuration Hub currently does not do I/O address validations before publish. If you enter an invalid IO address into a tag or generate an invalid I/O address via the model and substitutions, the publish may fail to set the IO address into the active database, and your invalid IO address will be removed.
Signal Conditioning	Lets you select how to map the range of values coming from your process hardware into the tag's EGU range. **Note:** Signal conditioning and linear scaling cannot be applied simultaneously. If you select a value for Signal Conditioning verify that Linear Scaling is not selected. **Valid Entries** Depends on your driver or server. Refer to your driver or server manual for more information.
H/W Options	Lets you select how to map the range of values coming from your process hardware into the tag's EGU range. **Note:** Signal conditioning and linear scaling cannot be applied simultaneously. If you select a value for Signal Conditioning verify that Linear Scaling is not selected. **Valid Entries** Depends on your driver or server. Refer to your driver or server manual for more information.

Limits and Scaling

Field	Description
Low Limit	Lets you enter the tag's minimum value. **Valid Entries** • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or Signal Select tag, if the output of the tag is 10 and the Low Limit is 15, the tag clamps the value at 15. You must enter a Low Limit of 10 or less to output a value of 10. If you want to display a value of 1.236 from the Calculation tag, you must enter three or more decimal places in the Low Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.

Field	Description
High Limit	Lets you enter the tag's maximum value. **Valid Entries** You can enter a high limit in one of three formats: • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or a Signal Select tag, if the output of the tag is 150 and the High Limit is 100, the tag clamps the value at 100. You must enter a High Limit of 150 or more to output a value of 150. If you want to display a value of 1.236 from the Calculation tag, you must enter three or more decimal places in the High Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.
Units	Lets you enter text describing the engineering units range. **Valid Entries** Up to 33 characters. **Example** Kilograms per square meter, Liters per minute, degrees Celsius, **Note:** This entry does not affect the calculation or function of any variables in iFIX. It is used strictly as a display label to identify the engineering units.

Field	Description
Scale Enabled	Lets you enable or disable scaling for this tag. Enabling scaling allows the system to convert the data received from input sensors to designated data ranges. **Note:** Linear scaling and signal conditioning cannot be applied simultaneously. If you select Linear Scaling, verify that Signal Conditioning is set to NONE. **Example** Scaling allows conversion of temperature data received in Fahrenheit to an output which uses Celsius values.
Scale Clamping	Lets you enable or disable clamping for this tag. When you enable clamping, any value the tag receives is limited to the raw range. Any value the tag sends is limited to the scaled range. **Note:** Do not enable clamping unless it is necessary. Because clamping limits the data received and sent, some data may be missed by the tag.
Raw Low	Lets you specify the low limit for the values received by the tag. Usually, this value corresponds to the specifications of the hardware from which the data is received. **Valid Entries** • Standard Integer • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary).

Field	Description
Raw High	Lets you specify the high limit for the values sent by the tag. Usually, this value corresponds to the specifications of the hardware from which the data is received. **Valid Entries** • Standard Integer • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary).
Use Low/High Limits	Enables the tag to use the range specified in the Engineering Units fields as the output values. Typically, EGU values normally reflect the expected operating ranges, or the Scale Low and Scale High values for the tag. However, the EGU values also dictate behavior in other areas such as alarming. By allowing the Scale Low and Scale High values to be set to values other than the EGU values, you can further manage conditions when alarms would be generated. **Note:** If you are Using this tag for charts, make sure to select Use EGU. Selecting this option will make it easier for you to see the changes within the expected range in your chart, because the chart axes will correspond to your expected range and not the entire range of the sensors. The smaller range of the chart makes changes in values more obvious.
Scale Low	Lets you specify the low limit for the values sent by the tag. Usually, this value corresponds to the specifications of the hardware from which the data is received. This field is only available if you did not enable Use EGU. **Valid Entries** • Standard Integer • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** Changes made to this field are not reflected in the data until after the next tag scan.

Field	Description
Scale High	Lets you specify the high limit for the values sent by the tag. Usually, this value corresponds to the specifications of the hardware from which the data is received. This field is only available if you did not enable Use EGU. **Valid Entries** • Standard Integer • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** Changes made to this field are not reflected in the data until after the next tag scan.

Alarm Options

Field	Description
Alarm Areas	Displays the alarm areas that receive alarms and messages generated by this tag. Double-click an item in the list box and select an alarm area with the Browse button, or enter the alarm area name in the field. **Valid Entries** ALL or up to 15 alarm area names.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.

Field	Description
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.

Field	Description
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.

Field	Description
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
Output Enable	Lets you configure the tag to send output to the I/O driver, OPC server, or OPC UA server. The tag sends its output when it is in Automatic mode and converts its data according to the entries in the Low Limit (EGU), High Limit (EGU), and Signal Conditioning fields.
Enable Event	Lets you enable or disable event messaging for the tag. Event messaging is similar to alarming except that it does not require acknowledgment. Event messages are sent to the same alarm destinations as alarms for a given block but do not appear in the Alarm Summary object. Analog Output, Analog Register, Digital Output, Digital Register, Digital Input, and Text blocks have event messaging capabilities. **Note:** Be careful when using event messaging in a chain with a time-based scan time. If the scan time is short, your alarm files (either disk or printed) can grow very large. We recommend enabling event messaging for exception-based chains, one shot chains, and stand-alone output blocks.

Field	Description
I/O Address Type	Lets you specify the number format of the block's starting address. **Valid Entries** Hex, Octal, or Decimal
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.

BB Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

I/O Addressing

Field	Description
Activate High Contact	Enables or disables the High Contact Data fields.

Field	Description
High Contact Driver	Lets you select an I/O driver, OPC server, or OPC UA server for the block. The selected driver or server enables the block to communicate with process hardware on the plant floor. Before you can select an I/O driver, OPC server, or OPC UA server you must install it and add it to the available drivers in the SCU.
High Contact Driver I/O Address	Lets you enter the location in the process hardware where data for this block is saved and where output is sent. In an On-Off Control block, specify the address of the digital point you want opened and closed based on the Turn on Above and Turn off Below values. **Valid Entries** Depends on your driver. Consult your I/O driver manual for details on the proper input/output addresses and configurations. **CAUTION:** Do not assign the same I/O address to blocks when using exception-based and time-based processing. Doing so will cause the exception-based blocks to occasionally miss a value.
High Contact Hardware Options	Lets you select any specific device control addressing format that the block uses to communicate with process hardware on the plant floor. **Valid Entries** For most process hardware, this field is usually left blank. Consult your I/O driver manual for the applicable hardware code if necessary.
High Contact - Turn On Above	Lets you specify the highest acceptable analog value for the High Contact Data. When the analog input goes above this value, the High Contact I/O address closes. **Valid Entries** Enter the number that represents this value according to the Low and High Limits (EGU) of the analog input.
High Contact - Turn On Below	Lets you specify the lowest acceptable analog value for the High Contact Data. When the analog input falls below this value, the High Contact I/O address opens. **Valid Entries** The number that represents this value according to the Low and High Limits (EGU) of the analog input.

Field	Description
Activate Low Contact	Enables or disables the Low Contact Data fields. **Valid Entries** Select the check box to use the Low Contact Data fields and provide output to a second digital I/O. Clear the check box to suppress them and use your analog input as the basis of a single digital output.
Low Contact Driver	Lets you select an I/O driver, OPC server, or OPC UA server for the block. The selected driver or server enables the block to communicate with process hardware on the plant floor. Before you can select an I/O driver or OPC server, you must install it and add it to the available drivers in the SCU.
Low Contact I/O Address	Lets you enter the location in the process hardware where data for this block is saved and where output is sent. In an On-Off Control tag, specify the address of the digital point you want opened and closed based on the Turn on Below and Turn off Above values. **Valid Entries** Depends on your driver. Consult your I/O driver manual for details on the proper input/output addresses and configurations. **CAUTION:** Do not assign the same I/O address to blocks when using exception-based and time-based processing. Doing so will cause the exception-based blocks to occasionally miss a value.
Low Contact Hardware Options	Lets you select any specific device control addressing format that the block uses to communicate with process hardware on the plant floor. **Valid Entries** For most process hardware, this field is usually left blank. Consult your I/O driver manual for the applicable hardware code if necessary.
Low Contact - Turn On Above	Lets you specify the highest acceptable analog value for the Low Contact Data. When the analog input goes above this value, the Low Contact I/O address opens. **Valid Entries** Enter the number that represents this value according to the Low and High Limits (EGU) of the analog input.

Field	Description
Low Contact - Turn On Below	Lets you specify the lowest acceptable analog value for the Low Contact Data. When the analog input falls below this value, the Low Contact I/O address closes. **Valid Entries** Enter the number that represents this value according to the Low and High Limits (EGU) of the analog input.

Limits and Scaling

Field	Description
Low Limit	Lets you enter the tag's minimum value. **Valid Entries** • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or Signal Select tag, if the output of the tag is 10 and the Low Limit is 15, the tag clamps the value at 15. You must enter a Low Limit of 10 or less to output a value of 10. If you want to display a value of 1.236 from the Calculation tag, you must enter three or more decimal places in the Low Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.

Field	Description
High Limit	Lets you enter the tag's maximum value. **Valid Entries** You can enter a high limit in one of three formats: • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or a Signal Select tag, if the output of the tag is 150 and the High Limit is 100, the tag clamps the value at 100. You must enter a High Limit of 150 or more to output a value of 150. If you want to display a value of 1.236 from the Calculation tag, you must enter three or more decimal places in the High Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.
Units	Lets you enter text describing the engineering units range. **Valid Entries** Up to 33 characters. **Example** Kilograms per square meter, Liters per minute, degrees Celsius, **Note:** This entry does not affect the calculation or function of any variables in iFIX. It is used strictly as a display label to identify the engineering units.

Alarm Options

Field	Description
Alarm Areas	Displays the alarm areas that receive alarms and messages generated by this tag. Double-click an item in the list box and select an alarm area with the Browse button, or enter the alarm area name in the field. **Valid Entries** ALL or up to 15 alarm area names.
Enable Alarm	Lets you enable or disable alarming for this tag. When you enable alarming, the tag generates alarms allowing objects in your operator displays to show alarm conditions, and enabling other tags to detect alarms from the tag. **Note:** The entire chain can be affected when you disable alarms for a tag. In addition, for both the Digital and Analog Alarm tags, this field is ignored when you enable the Alarm Suspend field.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.

Field	Description
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.

Field	Description
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.

Field	Description
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
One Shot	Lets you specify how often to activate the four contact data fields. When selected, the On-Off Control tag sends OPEN or CLOSE commands to the High and Low Contacts only when there is a change of state, rather than each time the tag executes. When cleared, the check box sends the commands every scan period.
Invert Output	Inverts the tag's output value. For example, if you want the I/O driver to return a closed contact as a logical 0 and an open contact as a logical 1, click the check box. Alternatively, to return a closed contact as a logical 1 (normal conditions) and an open contact as a logical 0, clear the check box.
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.

Field	Description
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.

BL Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

Inputs

Field	Description
Input A	Lets you enter a descriptive label for the logical 0 value received by the tag. You can display this label in the iFIX WorkSpace through a Data link to aid operators in interpreting the value for the contact. **Valid Entries** A label of up to 16 characters. **Examples** Open, Off
Input B	Lets you enter a descriptive label for the logical 0 value received by the tag. You can display this label in the iFIX WorkSpace through a Data link to aid operators in interpreting the value for the contact. **Valid Entries** A label of up to 16 characters. **Examples** Open, Off
Input C	Lets you enter a descriptive label for the logical 0 value received by the tag. You can display this label in the iFIX WorkSpace through a Data link to aid operators in interpreting the value for the contact. **Valid Entries** A label of up to 16 characters. **Examples** Open, Off
Input D	Lets you enter a descriptive label for the logical 0 value received by the tag. You can display this label in the iFIX WorkSpace through a Data link to aid operators in interpreting the value for the contact. **Valid Entries** A label of up to 16 characters. **Examples** Open, Off

Field	Description
Input E	Lets you enter a descriptive label for the logical 0 value received by the tag. You can display this label in the iFIX WorkSpace through a Data link to aid operators in interpreting the value for the contact. **Valid Entries** A label of up to 16 characters. **Examples** Open, Off
Input F	Lets you enter a descriptive label for the logical 0 value received by the tag. You can display this label in the iFIX WorkSpace through a Data link to aid operators in interpreting the value for the contact. **Valid Entries** A label of up to 16 characters. **Examples** Open, Off
Input G	Lets you enter a descriptive label for the logical 0 value received by the tag. You can display this label in the iFIX WorkSpace through a Data link to aid operators in interpreting the value for the contact. **Valid Entries** A label of up to 16 characters. **Examples** Open, Off
Input H	Lets you enter a descriptive label for the logical 0 value received by the tag. You can display this label in the iFIX WorkSpace through a Data link to aid operators in interpreting the value for the contact. **Valid Entries** A label of up to 16 characters. **Examples** Open, Off

Field	Description
Output Calculation	Lets you specify the Boolean block equation. If the equation is true, a value of 1 is passed to the next block. If the equation is false, a value of 0 is passed to the next tag. **Valid Entries** Write the equation using the input letters (A - H) that correspond to the defined Input fields. The calculation can use the input values more than once. **Example** (C+(A+B))

Limits and Scaling

Field	Description
Open Tag	Lets you enter a descriptive label for the logical 1 value received by the tag. You can display this label in the iFIX WorkSpace through a Data link to aid operators in interpreting the value for the contact. **Valid Entries** A label of up to 16 characters. **Examples** Close, On.
Close Tag	Lets you enter a descriptive label for the logical 0 value received by the tag. You can display this label in the iFIX WorkSpace through a Data link to aid operators in interpreting the value for the contact. **Valid Entries** A label of up to 16 characters. **Examples** Open, Off

Alarm Options

Field	Description
Alarm Areas	Displays the alarm areas that receive alarms and messages generated by this tag. Double-click an item in the list box and select an alarm area with the Browse button, or enter the alarm area name in the field. **Valid Entries** ALL or up to 15 alarm area names.

Alarm Limits

Field	Description
Low Low	Lets you enter the tag's critically low values. When the tag's value falls below this limit, the tag generates an alarm. **Valid Entries** A critically low value within the tag's engineering units range. **Example** If a temperature of 25 degrees indicates that a cooling water flow is frozen, you could enter a value of 30 degrees for your Low Low alarm.
Low	Lets you enter the tag's low process values. When the tag's value falls below this limit, the tag generates an alarm. **Valid Entries** A low value within the tag's engineering units range. If you want to provide a warning that a value is approaching a critical low limit, enter a slightly higher value than the Low Low alarm. **Example** If a temperature of 35 degrees indicates that ice crystals are forming in a cooling water flow, you could enter a value of 40 degrees for your Low alarm.

Field	Description
High	Lets you enter the tag's high process values. When the tag's value exceeds this limit, the tag generates an alarm. **Valid Entries** A high value within the tag's engineering units range. If you want to provide a warning that a value is approaching a critically high limit, enter a slightly lower value than the High High alarm. **Example** If a bearing temperature of 80 degrees indicates machine wear, you could enter a value of 75 degrees for your High alarm.
High High	Lets you enter the tag's critically high values. When the tag's value exceeds this limit, the tag generates an alarm. **Valid Entries** A critically high value within the tag's engineering units range. **Example** If a bearing temperature of 90 degrees indicates imminent seizure, you could enter a value of 85 degrees for your High High alarm.
Rate of Change	Lets you enter the maximum, acceptable change in a tag's value. If the tag's current value changes by more than the specified value within one scan period, the tag generates a Rate of Change alarm. **Valid Entries** A value within the tag's engineering units range, to be checked per scan period. Enter 0 to disable this alarm. **Example** To generate an alarm due to a fluctuation of more than 20 RPMs on a speed drive since the last scan period, you would enter a 20 in this field.

Field	Description
Deadband	Lets you enter the maximum fluctuation the tag accepts without re-issuing an alarm. As long as the fluctuation is within the dead band range, the tag issues an alarm once, eliminating nuisance alarms. Once the alarm falls below the dead band and then exceeds the alarm limits, the tag generates another alarm. **Valid Entries** Numeric value within the EGU range. **Example** If the High alarm limit is 80 and the dead band is 5, the tag does not re-issue an alarm after the one while the current value fluctuates between 75 and 85.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.

Field	Description
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.

Field	Description
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.

Field	Description
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.
Previous Block	Displays the name of the previous (upstream) tag. **Valid Entries** None. This is a read-only field.
Next Block	Displays the name of the next tag in the database chain. You can select a tag for this field by clicking the browse button. **Note:** In a Statistical Data tag, the Next Block field specifies the tag name of the downstream Statistical Control tag. No other tag type is valid.

Field	Description
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Process by Exception	Enables exception-based processing for the block.
Scan Time	Lets you specify how often the Scan, Alarm, and Control (SAC) program processes the tag and any blocks chained to it. **Valid Entries** • 0 (one shot processing) • 0.05 to .95 in .05 increments (subsecond scan times) • 1 to 60 in 1 second increments • 1M to 60M in 1 minute increments • 1H to 24H in 1 hour increments **Example** 0.15 specifies a 15-subsecond scan time. 5 specifies a 5-second scan time, 10M specifies a 10-minute scan time, 16H specifies a 16-hour scan time.
Phase At	Lets you specify how long the Scan, Alarm, and Control (SAC) program delays in scanning the tag. When the tag has a second or subsecond scan time, SAC offsets the initial scan by the phase time when iFIX starts or when the database is reloaded. When the tag has a scan time of 1 minute or longer, SAC offsets the initial scan starting at midnight. **Valid Entries** Depends on the scan time. If the scan time is in hours, the phase must be in hours:minutes. If the scan time is in minutes, the phase must be in minutes:seconds. If the scan time is in seconds, the phase must be in seconds. If the scan time is in subseconds, the phase must be in subseconds.

CA Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

Inputs

Field	Description
Input A	Lets you specify the inputs to the Calculation tag. **Valid Entries** The following are valid entries for defining your equation with Input entries: • Constants (a floating point number). • Tag names (representing the tag's current value of the tag), including the Calculation block itself. For example, AI1 to represent AI1.F_CV. **Note:** If you enter a tag name without entering a field name, iFIX automatically enters F_CV as the default field name. Tag and field pairs represent the value of the specified field. For example, PID1.F_TV1 to access the tag's set point. **Note:** Input field A always represents the output of the upstream block (previous block). **Example** To input the value of the Statistical Data block's XBARBAR, you would enter SD1.F_XBB. Note the period between the block and field names.
Input B	Lets you specify the inputs to the Calculation tag. **Valid Entries** The following are valid entries for defining your equation with Input entries: • Constants (a floating point number). • Tag names (representing the tag's current value of the tag), including the Calculation block itself. For example, AI1 to represent AI1.F_CV. **Note:** If you enter a tag name without entering a field name, iFIX automatically enters F_CV as the default field name. Tag and field pairs represent the value of the specified field. For example, PID1.F_TV1 to access the tag's set point. **Note:** Input field A always represents the output of the upstream block (previous block). **Example** To input the value of the Statistical Data block's XBARBAR, you would enter SD1.F_XBB. Note the period between the block and field names.

Field	Description
Input C	Lets you specify the inputs to the Calculation tag. **Valid Entries** The following are valid entries for defining your equation with Input entries: • Constants (a floating point number). • Tag names (representing the tag's current value of the tag), including the Calculation block itself. For example, AI1 to represent AI1.F_CV. **Note:** If you enter a tag name without entering a field name, iFIX automatically enters F_CV as the default field name. Tag and field pairs represent the value of the specified field. For example, PID1.F_TV1 to access the tag's set point. **Note:** Input field A always represents the output of the upstream block (previous block). **Example** To input the value of the Statistical Data block's XBARBAR, you would enter SD1.F_XBB. Note the period between the block and field names.
Input D	Lets you specify the inputs to the Calculation tag. **Valid Entries** The following are valid entries for defining your equation with Input entries: • Constants (a floating point number). • Tag names (representing the tag's current value of the tag), including the Calculation block itself. For example, AI1 to represent AI1.F_CV. **Note:** If you enter a tag name without entering a field name, iFIX automatically enters F_CV as the default field name. Tag and field pairs represent the value of the specified field. For example, PID1.F_TV1 to access the tag's set point. **Note:** Input field A always represents the output of the upstream block (previous block). **Example** To input the value of the Statistical Data block's XBARBAR, you would enter SD1.F_XBB. Note the period between the block and field names.

Field	Description
Input E	Lets you specify the inputs to the Calculation tag. **Valid Entries** The following are valid entries for defining your equation with Input entries: • Constants (a floating point number). • Tag names (representing the tag's current value of the tag), including the Calculation block itself. For example, AI1 to represent AI1.F_CV. **Note:** If you enter a tag name without entering a field name, iFIX automatically enters F_CV as the default field name. Tag and field pairs represent the value of the specified field. For example, PID1.F_TV1 to access the tag's set point. **Note:** Input field A always represents the output of the upstream block (previous block). **Example** To input the value of the Statistical Data block's XBARBAR, you would enter SD1.F_XBB. Note the period between the block and field names.
Input F	Lets you specify the inputs to the Calculation tag. **Valid Entries** The following are valid entries for defining your equation with Input entries: • Constants (a floating point number). • Tag names (representing the tag's current value of the tag), including the Calculation block itself. For example, AI1 to represent AI1.F_CV. **Note:** If you enter a tag name without entering a field name, iFIX automatically enters F_CV as the default field name. Tag and field pairs represent the value of the specified field. For example, PID1.F_TV1 to access the tag's set point. **Note:** Input field A always represents the output of the upstream block (previous block). **Example** To input the value of the Statistical Data block's XBARBAR, you would enter SD1.F_XBB. Note the period between the block and field names.

Field	Description
Input G	Lets you specify the inputs to the Calculation tag. **Valid Entries** The following are valid entries for defining your equation with Input entries: • Constants (a floating point number). • Tag names (representing the tag's current value of the tag), including the Calculation block itself. For example, AI1 to represent AI1.F_CV. **Note:** If you enter a tag name without entering a field name, iFIX automatically enters F_CV as the default field name. Tag and field pairs represent the value of the specified field. For example, PID1.F_TV1 to access the tag's set point. **Note:** Input field A always represents the output of the upstream block (previous block). **Example** To input the value of the Statistical Data block's XBARBAR, you would enter SD1.F_XBB. Note the period between the block and field names.
Input H	Lets you specify the inputs to the Calculation tag. **Valid Entries** The following are valid entries for defining your equation with Input entries: • Constants (a floating point number). • Tag names (representing the tag's current value of the tag), including the Calculation block itself. For example, AI1 to represent AI1.F_CV. **Note:** If you enter a tag name without entering a field name, iFIX automatically enters F_CV as the default field name. Tag and field pairs represent the value of the specified field. For example, PID1.F_TV1 to access the tag's set point. **Note:** Input field A always represents the output of the upstream block (previous block). **Example** To input the value of the Statistical Data block's XBARBAR, you would enter SD1.F_XBB. Note the period between the block and field names.

Field	Description
Output Calculation	Lets you specify the Calculation block equation. **Valid Entries** An equation using the input letters (A - H) that correspond to the defined Input fields. The input letters may be used more than once. **Note:** A mathematical overflow (value >1038), underflow (below 10-37), or division by zero causes a Calc error status in the upstream block.

Limits and Scaling

Field	Description
Low Limit	Lets you enter the tag's minimum value. **Valid Entries** • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or Signal Select tag, if the output of the tag is 10 and the Low Limit is 15, the tag clamps the value at 15. You must enter a Low Limit of 10 or less to output a value of 10. If you want to display a value of 1.236 from the Calculation tag, you must enter three or more decimal places in the Low Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.

Field	Description
High Limit	Lets you enter the tag's maximum value. **Valid Entries** You can enter a high limit in one of three formats: • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or a Signal Select tag, if the output of the tag is 150 and the High Limit is 100, the tag clamps the value at 100. You must enter a High Limit of 150 or more to output a value of 150. If you want to display a value of 1.236 from the Calculation tag, you must enter three or more decimal places in the High Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.
Units	Lets you enter text describing the engineering units range. **Valid Entries** Up to 33 characters. **Example** Kilograms per square meter, Liters per minute, degrees Celsius, **Note:** This entry does not affect the calculation or function of any variables in iFIX. It is used strictly as a display label to identify the engineering units.

Alarm Options

Field	Description
Alarm Areas	Displays the alarm areas that receive alarms and messages generated by this tag. Double-click an item in the list box and select an alarm area with the Browse button, or enter the alarm area name in the field. **Valid Entries** ALL or up to 15 alarm area names.
Enable Alarm	Lets you enable or disable alarming for this tag. When you enable alarming, the tag generates alarms allowing objects in your operator displays to show alarm conditions, and enabling other tags to detect alarms from the tag. **Note:** The entire chain can be affected when you disable alarms for a tag. In addition, for both the Digital and Analog Alarm tags, this field is ignored when you enable the Alarm Suspend field.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.

Field	Description
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.

Field	Description
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.

Field	Description
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.
Previous Block	Displays the name of the previous (upstream) tag. **Valid Entries** None. This is a read-only field.
Next Block	Displays the name of the next tag in the database chain. You can select a tag for this field by clicking the browse button. **Note:** In a Statistical Data tag, the Next Block field specifies the tag name of the downstream Statistical Control tag. No other tag type is valid.

Field	Description
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.

DA Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

I/O Addressing

Field	Description
I/O Driver	Lets you select an I/O driver, OPC server, or OPC UA server for the tag. The selected driver or server enables the tag to communicate with process hardware on the plant floor. Before you can select an I/O driver, OPC server, or OPC UA server you must install it and add it to the available ones in the SCU.
I/O Address	Lets you enter the location in the process hardware where data for this tag is saved and where output is sent. **Valid Entries** Depends on your driver. Consult your I/O driver or server manual for details on the proper input/output addresses and configurations. **CAUTION:** Do not assign the same I/O address to tags when using exception-based and time-based processing. Doing so will cause the exception-based tags to occasionally miss a value. **CAUTION:** Configuration Hub currently does not do I/O address validations before publish. If you enter an invalid IO address into a tag or generate an invalid I/O address via the model and substitutions, the publish may fail to set the IO address into the active database, and your invalid IO address will be removed.
Signal Conditioning	Lets you select how to map the range of values coming from your process hardware into the tag's EGU range. **Note:** Signal conditioning and linear scaling cannot be applied simultaneously. If you select a value for Signal Conditioning verify that Linear Scaling is not selected. **Valid Entries** Depends on your driver or server. Refer to your driver or server manual for more information.
H/W Options	Lets you select how to map the range of values coming from your process hardware into the tag's EGU range. **Note:** Signal conditioning and linear scaling cannot be applied simultaneously. If you select a value for Signal Conditioning verify that Linear Scaling is not selected. **Valid Entries** Depends on your driver or server. Refer to your driver or server manual for more information.
Process by Exception	Enables exception-based processing for the tag.

Field	Description
Scan Time	Lets you specify how often the Scan, Alarm, and Control (SAC) program processes the tag and any tags (blocks) chained to it. **Valid Entries** • 0 (one shot processing) • 0.05 to .95 in .05 increments (subsecond scan times) • 1 to 60 in 1 second increments • 1M to 60M in 1 minute increments • 1H to 24H in 1 hour increments **Example** 0.15 specifies a 15-subsecond scan time. 5 specifies a 5-second scan time, 10M specifies a 10-minute scan time, 16H specifies a 16-hour scan time.
Phase At	Lets you specify how long the Scan, Alarm, and Control (SAC) program delays in scanning the tag. When the tag has a second or subsecond scan time, SAC offsets the initial scan by the phase time when iFIX starts or when the database is reloaded. When the tag has a scan time of 1 minute or longer, SAC offsets the initial scan starting at midnight. **Valid Entries** Depends on the scan time. If the scan time is in hours, the phase must be in hours:minutes. If the scan time is in minutes, the phase must be in minutes:seconds. If the scan time is in seconds, the phase must be in seconds. If the scan time is in subseconds, the phase must be in subseconds.

Limits and Scaling

Field	Description
Open Tag	Lets you enter a descriptive label for the logical 0 value received by the tag. You can display this label in the iFIX WorkSpace through a Data link to aid operators in interpreting the value for the contact. **Valid Entries** A label of up to 16 characters. **Examples** Open, Off

Field	Description
Close Tag	Lets you enter a descriptive label for the logical 1 value received by the tag . You can display this label in the iFIX WorkSpace through a Data link to aid operators in interpreting the value for the contact. **Valid Entries** A label of up to 16 characters. **Examples** Close, On.

Alarm Options

Field	Description
Alarm Areas	Displays the alarm areas that receive alarms and messages generated by this tag. Double-click an item in the list box and select an alarm area with the Browse button, or enter the alarm area name in the field. **Valid Entries** ALL or up to 15 alarm area names.
Enable Alarm	Lets you enable or disable alarming for this tag. When you enable alarming, the tag generates alarms allowing objects in your operator displays to show alarm conditions, and enabling other tags to detect alarms from the tag. **Note:** The entire chain can be affected when you disable alarms for a tag. In addition, for both the Digital and Analog Alarm tags, this field is ignored when you enable the Alarm Suspend field.

Field	Description
Priority	Lets you specify the alarm priority for a tag. If the priority is equal or greater than the SCADA node's alarm priority, iFIX sends the alarm to all the alarm destinations enabled for this node. However, if the priority is less than the SCADA node's alarm priority, the alarm is automatically acknowledged and filtered out so that it does not appear in your alarm destinations. However, the alarm does appear in Data links configured to display current and latched alarms. **Valid Entries** INFO, LOLO, LOW, MEDIUM, HIGH, HIHI, or CRITICAL **Note:** To report tag alarms, the appropriate alarm areas must be assigned to each of the alarm services enabled in the System Configuration Utility (SCU).
Shelve Enable	Select this check box to enable Alarm Shelving for the tag.
Shelve Policy	Select an alarm shelving policy from the drop-down list.
Alarm Type	Lets you specify the type of condition that generates an alarm from the tag. When an alarm occurs, it is sent to all locations specified in the Alarm Areas field. **Valid Entries** Open, Close, Change of State, None
Contact Tag	Lets you specify the name of the digital block that the Digital Alarm block closes when the alarm specified in the Alarm Type area occurs. **Valid Entries** A Digital Output or Digital Input block, in Manual mode.
Contact Mode	Lets you specify when to open the digital tag entered in the Contact Name field. **Valid Entries** Acknowledge, Return, All Clear, and Never

Field	Description
Cont Contact Output	Selecting this option enables the tags to attempt to write the contact with every scan, even if the value being written is unchanged. Otherwise, the DA tag only attempts to write to the defined contact tag when a value has changed and it needs to be written to the PLC. The write is a one-time attempt, so if it fails, the write will not be retried until the tag needs to write a new value. **Note:** There are four modes for the contacts - “Acknowledge”, “Return”, “All Clear”, and “Never” - that control when the contact is cleared. Since the contact mode of “Never” does not reset the contact, the Continuous Output option is not supported for this contact mode.
Remote Ack Tag	Lets you specify the tag and field name pair to use for alarm acknowledgment from a remote site. When the tag and field's value changes from zero to a value greater than zero, the Digital Alarm tag acknowledges the alarm. **Valid Entries** Any floating point block and field name pair in the tag.field format. **Note:** When the Digital Alarm tag uses exception-based processing, acknowledging an alarm from an operator display immediately triggers processing of the block. Acknowledging the alarm with the Acknowledge Tag field does not trigger SAC to process the Digital Alarm tag.
Alarm Suspension Tag	Provides intelligent alarming by defining a tag and field name pair to control alarm processing for this tag. When the tag and field's value is zero, the Digital Alarm tag processes alarms. When the value is other than zero, either a positive or negative number, the Digital Alarm tag suspends alarms and generates a suspend message to the enabled alarm destinations. **Valid Entries** Any floating point tag and field name (F_CV) pair in the tag.field format. **Note:** If you specify the same block and field name pair for multiple Digital Alarm blocks, you can suspend alarms within one or more alarm areas. This is an optional feature.

Field	Description
Delay Time	Lets you specify the amount of time the Digital Alarm tag waits before generating an alarm. If an alarm condition persists beyond the specified delay time, the tag generates the alarm. **Valid Entries** For time-based processing, use a time in days, hours, minutes, and seconds, in the format dd:hh:mm:ss, within the range 00:00:00:00 to 03:00:00:00. For exception-based processing, leave the default entry, 00:00:00:00. This disables any delay. **Note:** The value in the Delay Time field does not apply to Change of State (COS) alarms.
Realarm Time	Lets you specify the time interval the Digital Alarm tag waits before re-issuing an alarm. If an alarm condition persists at the time specified, the tag re-issues the alarm. Any contact associated with each alarm type is closed. **Valid Entries** For time-based processing, use a time in days, hours, minutes, and seconds, in the format dd:hh:mm:ss, within the range 00:00:00:00 to 03:00:00:00. For exception-based processing, leave the default entry, 00:00:00:00. This disables any delay.
Suppress COMM Alarm	Select this option to separate the original alarm condition from the COMM alarm, and return the DA tag to the same state as it was prior to a COMM alarm. For example, if prior to the COMM alarm, the DA tag was an active alarm but already acknowledged, that is the state it should return to after communication is restored. Otherwise, DA tags handle one alarm at a time. As a result, it is possible that acknowledgement of a COMM alarm could cause the ACK bit in the PLC to be written, and the original alarm condition, if already acknowledged, could re-alarm.
As Event in Suspend	Select this option to enable the Event messaging (Suspend mode), which applies suppression behavior to disable alarm processing. When the tag is in suspend mode, the Alarm state is set to OK, the Alarm is an alarm message only and therefore, does not appear in the alarm summary. Alarm processing continues with each alarm state transition recorded in the alarm loggers but does not display in the alarm summary. The alarm state contact (tag) is not processed.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.

Field	Description
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
Enable Output	Lets you configure the tag to send output to the I/O driver, OPC server, or OPC UA server. The tag sends its output when it is in Automatic mode and converts its data according to the entries in the Low Limit (EGU), High Limit (EGU), and Signal Conditioning fields.
Invert Output	Inverts the output value so that if the value of the tag is 0, it outputs a 1. You can use this option to send a 0 to close a contact and send a 1 to open it.

Field	Description
Startup Mode	Lets you select the tag's mode on startup. In Automatic mode, the tag receives data from the I/O driver, OPC server, or OPC UA server. In Manual mode, the tag receives data from the operator, scripts, recipes, or Program blocks.
Initial Scan	Lets you select whether the tag is initially placed on or off scan. Click On Scan to place the tag on scan as soon as the Scan, Alarm, and Control (SAC) program starts or when the database is loaded. Click Off Scan to place the tag on scan by a Program block, an Event Action tag, a script, an operator entry in a Data link, or an Easy Database Access program.
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.
Previous Block	Displays the name of the previous (upstream) tag. **Valid Entries** None. This is a read-only field.
Next Block	Displays the name of the next tag in the database chain. You can select a tag for this field by clicking the browse button. **Note:** In a Statistical Data tag, the Next Block field specifies the tag name of the downstream Statistical Control tag. No other tag type is valid.

Field	Description
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.

DC Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

Programming Statements

Field	Description
Step 0 Command	Displays the commands and arguments for each Device Control block. Use the Browse (...) button to select from a list of valid commands. **Valid Entries** The list box can include up to 12 programming statements each containing up to 34 alphanumeric characters.
Step 1 Command	Displays the commands and arguments for each Device Control block. Use the Browse (...) button to select from a list of valid commands. **Valid Entries** The list box can include up to 12 programming statements each containing up to 34 alphanumeric characters.
Step 2 Command	Displays the commands and arguments for each Device Control block. Use the Browse (...) button to select from a list of valid commands. **Valid Entries** The list box can include up to 12 programming statements each containing up to 34 alphanumeric characters.
Step 3 Command	Displays the commands and arguments for each Device Control block. Use the Browse (...) button to select from a list of valid commands. **Valid Entries** The list box can include up to 12 programming statements each containing up to 34 alphanumeric characters.
Step 4 Command	Displays the commands and arguments for each Device Control block. Use the Browse (...) button to select from a list of valid commands. **Valid Entries** The list box can include up to 12 programming statements each containing up to 34 alphanumeric characters.
Step 5 Command	Displays the commands and arguments for each Device Control block. Use the Browse (...) button to select from a list of valid commands. **Valid Entries** The list box can include up to 12 programming statements each containing up to 34 alphanumeric characters.

Field	Description
Step 6 Command	Displays the commands and arguments for each Device Control block. Use the Browse (...) button to select from a list of valid commands. **Valid Entries** The list box can include up to 12 programming statements each containing up to 34 alphanumeric characters.
Step 7 Command	Displays the commands and arguments for each Device Control block. Use the Browse (...) button to select from a list of valid commands. **Valid Entries** The list box can include up to 12 programming statements each containing up to 34 alphanumeric characters.
Step 8 Command	Displays the commands and arguments for each Device Control block. Use the Browse (...) button to select from a list of valid commands. **Valid Entries** The list box can include up to 12 programming statements each containing up to 34 alphanumeric characters.
Step 9 Command	Displays the commands and arguments for each Device Control block. Use the Browse (...) button to select from a list of valid commands. **Valid Entries** The list box can include up to 12 programming statements each containing up to 34 alphanumeric characters.
Step 10 Command	Displays the commands and arguments for each Device Control block. Use the Browse (...) button to select from a list of valid commands. **Valid Entries** The list box can include up to 12 programming statements each containing up to 34 alphanumeric characters.

IO Addressing

Field	Description
Input Driver	Lets you select an I/O driver, OPC server, or OPC UA server for the tag. The selected driver or server enables the tag to communicate with process hardware on the plant floor. Before you can select an I/O driver or OPC server, you must install it and add it to the available drivers in the SCU.
Input Address 1 - 16	Lets you specify the addresses of the digital input points that the Device Control block monitors. **Valid Entries** Up to 16 hardware input bits for input addresses. If necessary, consult your OPC, OPC UA, or I/O driver manual for more information on specifying I/O addresses. **Note:** All input addresses must have the same hardware options and all output addresses must have the same hardware options. However, the input and output hardware options do not need to be identical.
Input Hardware Options	Lets you select any specific device control addressing format that the block uses to communicate with process hardware on the plant floor. **Valid Entries** For most process hardware, this field is usually left blank. Consult your I/O driver, OPC, or OPC UA manual for the applicable hardware code if necessary.
Output Driver	Lets you select an I/O driver, OPC UA, or OPC server for the tag. The selected driver or server enables the block to communicate with process hardware on the plant floor. Before you can select an I/O driver, OPCUA server, or OPC server, you must install it and add it to the available drivers in the SCU.

Field	Description
Output Address 1 - 8	Lets you specify the addresses of the digital output points that the Device Control block monitors. **Valid Entries** Up to 8 hardware output bits for output addresses. If necessary, consult your OPC, OPC UA, or I/O driver manual for more information on specifying I/O addresses. **Note:** All input addresses must have the same hardware options and all output addresses must have the same hardware options. However, the input and output hardware options do not need to be identical.
Output Hardware Options	Lets you select any specific device control addressing format that the tag uses to communicate with process hardware on the plant floor. **Valid Entries** For most process hardware, this field is usually left blank. Consult your I/O driver, OPC, or OPC UA manual for the applicable hardware code if necessary.

Alarm Options

Field	Description
Alarm Areas	Displays the alarm areas that receive alarms and messages generated by this tag. Double-click an item in the list box and select an alarm area with the Browse button, or enter the alarm area name in the field. **Valid Entries** ALL or up to 15 alarm area names.

Field	Description
Priority	Lets you specify the alarm priority for a tag. If the priority is equal or greater than the SCADA node's alarm priority, iFIX sends the alarm to all the alarm destinations enabled for this node. However, if the priority is less than the SCADA node's alarm priority, the alarm is automatically acknowledged and filtered out so that it does not appear in your alarm destinations. However, the alarm does appear in Data links configured to display current and latched alarms. **Valid Entries** INFO, LOLO, LOW, MEDIUM, HIGH, HIHI, or CRITICAL **Note:** To report tag alarms, the appropriate alarm areas must be assigned to each of the alarm services enabled in the System Configuration Utility (SCU).

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.

Field	Description
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.

Field	Description
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.

Field	Description
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
Startup Mode	Lets you select the tag's mode on startup. In Automatic mode, the tag receives data from the I/O driver, OPC server, or OPC UA server. In Manual mode, the tag receives data from the operator, scripts, recipes, or Program blocks.
Initial Scan	Lets you select whether the tag is initially placed on or off scan. Click On Scan to place the tag on scan as soon as the Scan, Alarm, and Control (SAC) program starts or when the database is loaded. Click Off Scan to place the tag on scan by a Program block, an Event Action tag, a script, an operator entry in a Data link, or an Easy Database Access program.
Initial Value	Controls the status of digital points on the hardware when the Scan, Alarm, and Control (SAC) program is first started. **Valid Entries** A valid contact pattern. **Example** A typical contact pattern entry in the Initial Value Field would look like the following example: OOCCXXXX This entry directs the digital points addressed in the 07 and 06 output Addresses fields to Open, the 05 and 04 fields to Close, and the 03 and 00 fields to remain in their present state.

Field	Description
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Process by Exception	Enables exception-based processing for the tag.
Scan Time	Lets you specify how often the Scan, Alarm, and Control (SAC) program processes the block and any tags chained to it. **Valid Entries** • 0 (one shot processing) • 0.05 to .95 in .05 increments (subsecond scan times) • 1 to 60 in 1 second increments • 1M to 60M in 1 minute increments • 1H to 24H in 1 hour increments **Example** 0.15 specifies a 15-subsecond scan time. 5 specifies a 5-second scan time, 10M specifies a 10-minute scan time, 16H specifies a 16-hour scan time.

Field	Description
Phase At	Lets you specify how long the Scan, Alarm, and Control (SAC) program delays in scanning the tag. When the tag has a second or subsecond scan time, SAC offsets the initial scan by the phase time when iFIX starts or when the database is reloaded. When the tag has a scan time of 1 minute or longer, SAC offsets the initial scan starting at midnight. **Valid Entries** Depends on the scan time. If the scan time is in hours, the phase must be in hours:minutes. If the scan time is in minutes, the phase must be in minutes:seconds. If the scan time is in seconds, the phase must be in seconds. If the scan time is in subseconds, the phase must be in subseconds.

DI Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'

Field	Description
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

I/O Addressing

Field	Description
I/O Driver	Lets you select an I/O driver, OPC server, or OPC UA server for the tag. The selected driver or server enables the tag to communicate with process hardware on the plant floor. Before you can select an I/O driver, OPC server, or OPC UA server you must install it and add it to the available ones in the SCU.
I/O Address	Lets you enter the location in the process hardware where data for this tag is saved and where output is sent. **Valid Entries** Depends on your driver. Consult your I/O driver or server manual for details on the proper input/output addresses and configurations. **CAUTION:** Do not assign the same I/O address to tags when using exception-based and time-based processing. Doing so will cause the exception-based tags to occasionally miss a value. **CAUTION:** Configuration Hub currently does not do I/O address validations before publish. If you enter an invalid IO address into a tag or generate an invalid I/O address via the model and substitutions, the publish may fail to set the IO address into the active database, and your invalid IO address will be removed.

Field	Description
Signal Conditioning	Lets you select how to map the range of values coming from your process hardware into the tag's EGU range. **Note:** Signal conditioning and linear scaling cannot be applied simultaneously. If you select a value for Signal Conditioning verify that Linear Scaling is not selected. **Valid Entries** Depends on your driver or server. Refer to your driver or server manual for more information.
H/W Options	Lets you select how to map the range of values coming from your process hardware into the tag's EGU range. **Note:** Signal conditioning and linear scaling cannot be applied simultaneously. If you select a value for Signal Conditioning verify that Linear Scaling is not selected. **Valid Entries** Depends on your driver or server. Refer to your driver or server manual for more information.
Process by Exception	Enables exception-based processing for the tag.
Scan Time	Lets you specify how often the Scan, Alarm, and Control (SAC) program processes the tag and any tags (blocks) chained to it. **Valid Entries** • 0 (one shot processing) • 0.05 to .95 in .05 increments (subsecond scan times) • 1 to 60 in 1 second increments • 1M to 60M in 1 minute increments • 1H to 24H in 1 hour increments **Example** 0.15 specifies a 15-subsecond scan time. 5 specifies a 5-second scan time, 10M specifies a 10-minute scan time, 16H specifies a 16-hour scan time.

Field	Description
Phase At	Lets you specify how long the Scan, Alarm, and Control (SAC) program delays in scanning the tag. When the tag has a second or subsecond scan time, SAC offsets the initial scan by the phase time when iFIX starts or when the database is reloaded. When the tag has a scan time of 1 minute or longer, SAC offsets the initial scan starting at midnight. **Valid Entries** Depends on the scan time. If the scan time is in hours, the phase must be in hours:minutes. If the scan time is in minutes, the phase must be in minutes:seconds. If the scan time is in seconds, the phase must be in seconds. If the scan time is in subseconds, the phase must be in subseconds.

Limits and Scaling

Field	Description
Open Tag	Lets you enter a descriptive label for the logical 0 value received by the tag. You can display this label in the iFIX WorkSpace through a Data link to aid operators in interpreting the value for the contact. **Valid Entries** A label of up to 16 characters. **Examples** Open, Off
Close Tag	Lets you enter a descriptive label for the logical 1 value received by the tag. You can display this label in the iFIX WorkSpace through a Data link to aid operators in interpreting the value for the contact. **Valid Entries** A label of up to 16 characters. **Examples** Close, On.

Alarm Options

Field	Description
Alarm Areas	Displays the alarm areas that receive alarms and messages generated by this tag. Double-click an item in the list box and select an alarm area with the Browse button, or enter the alarm area name in the field. **Valid Entries** ALL or up to 15 alarm area names.
Enable Alarm	Lets you enable or disable alarming for this tag. When you enable alarming, the tag generates alarms allowing objects in your operator displays to show alarm conditions, and enabling other tags to detect alarms from the tag. **Note:** The entire chain can be affected when you disable alarms for a tag. In addition, for both the Digital and Analog Alarm tags, this field is ignored when you enable the Alarm Suspend field.
Enable Event	Lets you enable or disable event messaging for the tag. Event messaging is similar to alarming except that it does not require acknowledgment. Event messages are sent to the same alarm destinations as alarms for a given tag but do not appear in the Alarm Summary object. Analog Output, Analog Register, Digital Output, Digital Register, Digital Input, and Text blocks have event messaging capabilities. **Note:** Be careful when using event messaging in a chain with a time-based scan time. If the scan time is short, your alarm files (either disk or printed) can grow very large. We recommend enabling event messaging for exception-based chains, one shot chains, and stand-alone output blocks.

Field	Description
Priority	Lets you specify the alarm priority for a tag. If the priority is equal or greater than the SCADA node's alarm priority, iFIX sends the alarm to all the alarm destinations enabled for this node. However, if the priority is less than the SCADA node's alarm priority, the alarm is automatically acknowledged and filtered out so that it does not appear in your alarm destinations. However, the alarm does appear in Data links configured to display current and latched alarms. **Valid Entries** INFO, LOLO, LOW, MEDIUM, HIGH, HIHI, or CRITICAL **Note:** To report tag alarms, the appropriate alarm areas must be assigned to each of the alarm services enabled in the System Configuration Utility (SCU).
Alarm Type	Lets you specify the type of condition that generates an alarm from the tag. When an alarm occurs, it is sent to all locations specified in the Alarm Areas field. **Valid Entries** Open, Close, Change of State, None
Shelve Enable	Select this check box to enable Alarm Shelving for the tag.
Shelve Policy	Select an alarm shelving policy from the drop-down list.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.

Field	Description
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.

Field	Description
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.

Field	Description
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
Enable Output	Lets you configure the tag to send output to the I/O driver, OPC server, or OPC UA server. The tag sends its output when it is in Automatic mode and converts its data according to the entries in the Low Limit (EGU), High Limit (EGU), and Signal Conditioning fields.
Invert Output	Inverts the output value so that if the value of the tag is 0, it outputs a 1. You can use this option to send a 0 to close a contact and send a 1 to open it.
Startup Mode	Lets you select the tag's mode on startup. In Automatic mode, the tag receives data from the I/O driver, OPC server, or OPC UA server. In Manual mode, the tag receives data from the operator, scripts, recipes, or Program blocks.
Initial Scan	Lets you select whether the tag is initially placed on or off scan. Click On Scan to place the tag on scan as soon as the Scan, Alarm, and Control (SAC) program starts or when the database is loaded. Click Off Scan to place the tag on scan by a Program block, an Event Action tag, a script, an operator entry in a Data link, or an Easy Database Access program.

Field	Description
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.
Previous Block	Displays the name of the previous (upstream) tag. **Valid Entries** None. This is a read-only field.
Next Block	Displays the name of the next tag in the database chain. You can select a tag for this field by clicking the browse button. **Note:** In a Statistical Data tag, the Next Block field specifies the tag name of the downstream Statistical Control tag. No other tag type is valid.
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.

DO Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

I/O Addressing

Field	Description
I/O Driver	Lets you select an I/O driver, OPC server, or OPC UA server for the tag. The selected driver or server enables the tag to communicate with process hardware on the plant floor. Before you can select an I/O driver, OPC server, or OPC UA server you must install it and add it to the available ones in the SCU.
I/O Address	Lets you enter the location in the process hardware where data for this tag is saved and where output is sent. **Valid Entries** Depends on your driver. Consult your I/O driver or server manual for details on the proper input/output addresses and configurations. **CAUTION:** Do not assign the same I/O address to tags when using exception-based and time-based processing. Doing so will cause the exception-based tags to occasionally miss a value. **CAUTION:** Configuration Hub currently does not do I/O address validations before publish. If you enter an invalid IO address into a tag or generate an invalid I/O address via the model and substitutions, the publish may fail to set the IO address into the active database, and your invalid IO address will be removed.
H/W Options	Lets you select how to map the range of values coming from your process hardware into the tag's EGU range. **Note:** Signal conditioning and linear scaling cannot be applied simultaneously. If you select a value for Signal Conditioning verify that Linear Scaling is not selected. **Valid Entries** Depends on your driver or server. Refer to your driver or server manual for more information.

Limits and Scaling

Field	Description
Open Tag	Lets you enter a descriptive label for the logical 0 value received by the tag. You can display this label in the iFIX WorkSpace through a Data link to aid operators in interpreting the value for the contact. **Valid Entries** A label of up to 16 characters. **Examples** Open, Off
Close Tag	Lets you enter a descriptive label for the logical 1 value received by the tag. You can display this label in the iFIX WorkSpace through a Data link to aid operators in interpreting the value for the contact. **Valid Entries** A label of up to 16 characters. **Examples** Close, On.

Alarm Options

Field	Description
Alarm Areas	Displays the alarm areas that receive alarms and messages generated by this tag. Double-click an item in the list box and select an alarm area with the Browse button, or enter the alarm area name in the field. **Valid Entries** ALL or up to 15 alarm area names.

Field	Description
Enable Event	Lets you enable or disable event messaging for the tag. Event messaging is similar to alarming except that it does not require acknowledgment. Event messages are sent to the same alarm destinations as alarms for a given tag but do not appear in the Alarm Summary object. Analog Output, Analog Register, Digital Output, Digital Register, Digital Input, and Text tags have event messaging capabilities. **Note:** Be careful when using event messaging in a chain with a time-based scan time. If the scan time is short, your alarm files (either disk or printed) can grow very large. We recommend enabling event messaging for exception-based chains, one shot chains, and stand-alone output blocks.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.

Field	Description
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.

Field	Description
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.

Field	Description
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
Invert Output	Inverts the output value so that if the value of the tag is 0, it outputs a 1. You can use this option to send a 0 to close a contact and send a 1 to open it.
Write if Different	Writes a value only if it is different than the current value.
Initial Value	Lets you specify the value that is sent to the process hardware the first time the Scan, Alarm, and Control (SAC) program processes the tag. If an Initial Value is not defined, SAC does not output a value during initialization. **Valid Entries** A value between the Low and High Limit (EGU) fields.
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.
Previous Block	Displays the name of the previous (upstream) tag. **Valid Entries** None. This is a read-only field.

Field	Description
Next Block	Displays the name of the next tag in the database chain. You can select a tag for this field by clicking the browse button. **Note:** In a Statistical Data tag, the Next Block field specifies the tag name of the downstream Statistical Control tag. No other tag type is valid.
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.

DR Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

I/O Addressing

Field	Description
I/O Driver	Lets you select an I/O driver, OPC server, or OPC UA server for the tag. The selected driver or server enables the tag to communicate with process hardware on the plant floor. Before you can select an I/O driver, OPC server, or OPC UA server you must install it and add it to the available ones in the SCU.
I/O Address	Lets you enter the location in the process hardware where data for this tag is saved and where output is sent. **Valid Entries** Depends on your driver. Consult your I/O driver or server manual for details on the proper input/output addresses and configurations. **CAUTION:** Do not assign the same I/O address to tags when using exception-based and time-based processing. Doing so will cause the exception-based tags to occasionally miss a value. **CAUTION:** Configuration Hub currently does not do I/O address validations before publish. If you enter an invalid IO address into a tag or generate an invalid I/O address via the model and substitutions, the publish may fail to set the IO address into the active database, and your invalid IO address will be removed.
H/W Options	Lets you select how to map the range of values coming from your process hardware into the tag's EGU range. **Note:** Signal conditioning and linear scaling cannot be applied simultaneously. If you select a value for Signal Conditioning verify that Linear Scaling is not selected. **Valid Entries** Depends on your driver or server. Refer to your driver or server manual for more information.

Limits and Scaling

Field	Description
Open Tag	Lets you enter a descriptive label for the logical 0 value received by the tag. You can display this label in the iFIX WorkSpace through a Data link to aid operators in interpreting the value for the contact. **Valid Entries** A label of up to 16 characters. **Examples** Open, Off
Close Tag	Lets you enter a descriptive label for the logical 1 value received by the tag. You can display this label in the iFIX WorkSpace through a Data link to aid operators in interpreting the value for the contact. **Valid Entries** A label of up to 16 characters. **Examples** Close, On.

Alarm Options

Field	Description
Alarm Areas	Displays the alarm areas that receive alarms and messages generated by this tag. Double-click an item in the list box and select an alarm area with the Browse button, or enter the alarm area name in the field. **Valid Entries** ALL or up to 15 alarm area names.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.

Field	Description
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.

Field	Description
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.

Field	Description
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
Enable Output	Lets you configure the tag to send output to the I/O driver, OPC server, or OPC UA server. The tag sends its output when it is in Automatic mode and converts its data according to the entries in the Low Limit (EGU), High Limit (EGU), and Signal Conditioning fields.
Invert Output	Inverts the output value so that if the value of the tag is 0, it outputs a 1. You can use this option to send a 0 to close a contact and send a 1 to open it.
Enable Event	Lets you enable or disable event messaging for the tag. Event messaging is similar to alarming except that it does not require acknowledgment. Event messages are sent to the same alarm destinations as alarms for a given tag but do not appear in the Alarm Summary object. Analog Output, Analog Register, Digital Output, Digital Register, Digital Input, and Text blocks have event messaging capabilities. **Note:** Be careful when using event messaging in a chain with a time-based scan time. If the scan time is short, your alarm files (either disk or printed) can grow very large. We recommend enabling event messaging for exception-based chains, one shot chains, and stand-alone output tags.

Field	Description
IO Address Type	Lets you enter the base number system used by the I/O Address field. **Valid Entries** Decimal, Hexadecimal, or Octal.
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.
Previous Block	Displays the name of the previous (upstream) tag. **Valid Entries** None. This is a read-only field.
Next Block	Displays the name of the next tag in the database chain. You can select a tag for this field by clicking the browse button. **Note:** In a Statistical Data tag, the Next Block field specifies the tag name of the downstream Statistical Control tag. No other tag type is valid.
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.

Field	Description
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.

DT Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'

Field	Description
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

Limits and Scaling

Field	Description
Low Limit	Lets you enter the tag's minimum value. **Valid Entries** • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or Signal Select tag, if the output of the tag is 10 and the Low Limit is 15, the tag clamps the value at 15. You must enter a Low Limit of 10 or less to output a value of 10. If you want to display a value of 1.236 from the Calculation tag, you must enter three or more decimal places in the Low Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.

Field	Description
High Limit	Lets you enter the tag's maximum value. **Valid Entries** You can enter a high limit in one of three formats: • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or a Signal Select tag, if the output of the tag is 150 and the High Limit is 100, the tag clamps the value at 100. You must enter a High Limit of 150 or more to output a value of 150. If you want to display a value of 1.236 from the Calculation tag, you must enter three or more decimal places in the High Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.
Units	Lets you enter text describing the engineering units range. **Valid Entries** Up to 33 characters. **Example** Kilograms per square meter, Liters per minute, degrees Celsius, **Note:** This entry does not affect the calculation or function of any variables in iFIX. It is used strictly as a display label to identify the engineering units.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.

Field	Description
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.

Field	Description
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.

Field	Description
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
Dead Time	Lets you specify the length of the delay in seconds before transferring the value of upstream tag to the next tag in the chain. **Valid Entries** A value from 1 to 59 * scan_time, up to a maximum of 255 seconds, where scan_time is the scan time of the upstream block. **Examples** Assume you have an Analog Input tag chained to a Dead Time tag. If the Analog Input's scan time is 2 seconds, you can enter a dead time from 1 to 118 seconds. You can lengthen the dead time by either changing the scan time of the upstream block or by chaining multiple Dead Time blocks together. For example, using the previous example, if you change the scan time of the Analog Input block to 10 seconds, you can enter a dead time from 1 to 255 seconds.

Field	Description
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.
Previous Block	Displays the name of the previous (upstream) tag. **Valid Entries** None. This is a read-only field.
Next Block	Displays the name of the next tag in the database chain. You can select a tag for this field by clicking the browse button. **Note:** In a Statistical Data tag, the Next Block field specifies the tag name of the downstream Statistical Control tag. No other tag type is valid.
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.

ETR Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

Limits and Scaling

Field	Description
Low Limit	Lets you enter the tag's minimum value. **Valid Entries** • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or Signal Select tag, if the output of the tag is 10 and the Low Limit is 15, the tag clamps the value at 15. You must enter a Low Limit of 10 or less to output a value of 10. If you want to display a value of 1.236 from the Calculation tag, you must enter three or more decimal places in the Low Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.

Field	Description
High Limit	Lets you enter the tag's maximum value. **Valid Entries** You can enter a high limit in one of three formats: • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or a Signal Select tag, if the output of the tag is 150 and the High Limit is 100, the tag clamps the value at 100. You must enter a High Limit of 150 or more to output a value of 150. If you want to display a value of 1.236 from the Calculation tag, you must enter three or more decimal places in the High Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.
Units	Lets you enter text describing the engineering units range. **Valid Entries** Up to 33 characters. **Example** Kilograms per square meter, Liters per minute, degrees Celsius, **Note:** This entry does not affect the calculation or function of any variables in iFIX. It is used strictly as a display label to identify the engineering units.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.

Field	Description
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.

Field	Description
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.

Field	Description
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
Buffer Clear Status	Lets you clear the block's data buffers every time the block is put on scan. **Valid Entries** Select the check box to clear data buffers. Clear it to suppress this feature.
Input Tag	Lets you specify the name of the tag and field that the Extended Trend tag stores. If this field is left blank, the Extended Trend block stores the value passed by the upstream block. **Valid Entries** A block and field name pair in the tag.field (F_CV) format. **Note:** To chain Extended Trend blocks, enter the Extended Trend tag's name and the field F_INP.

Field	Description
Avg Compress	Lets you specify the amount of data stored in the trend history by collecting the number of samples entered in the field, averaging them, and storing up to 600 averages in the trend history. **Valid Entries** A value from 1 - 255 that represents the number of samples to collect. **Example** If you have a scan time of 10 seconds and enter 5 as the Average Compress, the Extended Trend tag creates a trend history of 600 averages of 5 samples. In essence, the tag now represents a trend history of 3000 scan periods (5 x 600), or 500 minutes (30,000 seconds). **Note:** Using this field does not affect or delay the value passed by the Next tag field to the downstream tag.
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.
Previous Block	Displays the name of the previous (upstream) tag. **Valid Entries** None. This is a read-only field.
Next Block	Displays the name of the next tag in the database chain. You can select a tag for this field by clicking the browse button. **Note:** In a Statistical Data tag, the Next Block field specifies the tag name of the downstream Statistical Control tag. No other tag type is valid.

Field	Description
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.

EV Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

Event Definitions

Field	Description
If Condition 1	Lets you control the execution of the THEN or ELSE operation based upon a test expression on the previous tag. If the previous tag satisfies the conditions for a logical TRUE, the THEN operation is executed; otherwise, the ELSE operation is executed. **Note:** The command is latched. This means that the tag remembers the last operation and only performs a new operation if the condition has changed. **Valid Entries** An expression in the following format: Value or Alarm operator condition **Example** Value = 83.2 **Note:** You can use either one VALUE or one ALARM in each IF field. When entering your IF statement, leave a space between the VALUE/ALARM, the operator, and the condition entries.
Then	Lets you specify the operation that occurs when the test expression in the IF field is TRUE. This operation executes only if the condition has changed. **Valid Entries** An expression in the following format: command tag **Example** RUN PROG1 **Note:** You must enter the name of an existing tag. iFIX does not notify you that the specified tag does not exist until the Event Action block goes on scan. If you specify a nonexistent tag, an alarm is sent to all of the node's active alarm destinations.

Field	Description
Else	Lets you specify the operation that occurs when the test expression in the IF field is FALSE. This operation executes only if the condition has changed. **Valid Entries** An expression in the following format: command tag **Example** CLOSE DO3 **Note:** You must enter the name of an existing tag. iFIX does not notify you that the specified tag does not exist until the Event Action block goes on scan. If you specify a nonexistent tag, an alarm is sent to all of the node's active alarm destinations.
If Condition 2	Lets you control the execution of the THEN or ELSE operation based upon a test expression on the previous tag. If the previous block satisfies the conditions for a logical TRUE, the THEN operation is executed; otherwise, the ELSE operation is executed. **Note:** The command is latched. This means that the tag remembers the last operation and only performs a new operation if the condition has changed. **Valid Entries** An expression in the following format: Value or Alarm operator condition **Example** Value = 83.2 **Note:** You can use either one VALUE or one ALARM in each IF field. When entering your IF statement, leave a space between the VALUE/ALARM, the operator, and the condition entries.

Field	Description
Then	Lets you specify the operation that occurs when the test expression in the IF field is TRUE. This operation executes only if the condition has changed. **Valid Entries** An expression in the following format: command tag **Example** RUN PROG1 **Note:** You must enter the name of an existing tag. iFIX does not notify you that the specified block does not exist until the Event Action block goes on scan. If you specify a nonexistent block, an alarm is sent to all of the node's active alarm destinations.
Else	Lets you specify the operation that occurs when the test expression in the IF field is FALSE. This operation executes only if the condition has changed. **Valid Entries** An expression in the following format: command tag **Example** CLOSE DO3 **Note:** You must enter the name of an existing tag. iFIX does not notify you that the specified tag does not exist until the Event Action block goes on scan. If you specify a nonexistent tag, an alarm is sent to all of the node's active alarm destinations.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.

Field	Description
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.

Field	Description
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.

Field	Description
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.
Previous Block	Displays the name of the previous (upstream) tag. **Valid Entries** None. This is a read-only field.

Field	Description
Next Block	Displays the name of the next tag in the database chain. You can select a tag for this field by clicking the browse button. **Note:** In a Statistical Data tag, the Next Block field specifies the tag name of the downstream Statistical Control tag. No other tag type is valid.
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.

FN Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

Alarm Options

Field	Description
Alarm Areas	Displays the alarm areas that receive alarms and messages generated by this tag. Double-click an item in the list box and select an alarm area with the Browse button, or enter the alarm area name in the field. **Valid Entries** ALL or up to 15 alarm area names.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.

Field	Description
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
Output Areas A, B, C, D	Lets you specify the destinations of the Fanout tag. **Valid Entries** A tag name (F_CV is appended automatically) or specific tag and field name pair in the tag.field format. **Example** To send the Fanout tag's value to a PID tag's set point Value field and to a Ramp tag's Target field, you would type PID1.F_TV1 and RM1.F_TV1 into the Destination fields. **Tip:** A value sent to a secondary tag does not place that tag on scan. Make sure that the target tag's upstream primary tag is on scan.
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.
Previous Block	Displays the name of the previous (upstream) tag. **Valid Entries** None. This is a read-only field.
Next Block	Displays the name of the next tag in the database chain. You can select a tag for this field by clicking the browse button. **Note:** In a Statistical Data tag, the Next Block field specifies the tag name of the downstream Statistical Control tag. No other tag type is valid.

Field	Description
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.

HS Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

Limits and Scaling

Field	Description
Low Limit	Lets you enter the tag's minimum value. **Valid Entries** • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or Signal Select tag, if the output of the tag is 10 and the Low Limit is 15, the tag clamps the value at 15. You must enter a Low Limit of 10 or less to output a value of 10. If you want to display a value of 1.236 from the Calculation tag, you must enter three or more decimal places in the Low Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.

Field	Description
High Limit	Lets you enter the tag's maximum value. **Valid Entries** You can enter a high limit in one of three formats: • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or a Signal Select tag, if the output of the tag is 150 and the High Limit is 100, the tag clamps the value at 100. You must enter a High Limit of 150 or more to output a value of 150. If you want to display a value of 1.236 from the Calculation tag, you must enter three or more decimal places in the High Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.
Units	Lets you enter text describing the engineering units range. **Valid Entries** Up to 33 characters. **Example** Kilograms per square meter, Liters per minute, degrees Celsius, **Note:** This entry does not affect the calculation or function of any variables in iFIX. It is used strictly as a display label to identify the engineering units.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.

Field	Description
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.

Field	Description
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.

Field	Description
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
Auto Clear Status	Lets you specify when the Histogram tag clears the histogram chart. **Valid Entries** When you enable the check box, the tag clears the display each time the upstream tag goes on scan. If the chain goes off and then back on scan, the histogram chart does not appear until the block generates new values according to the Group field value. When you disable the check box retains old values even if the upstream tag goes off scan. If the chain goes off and then back on scan, old values are displayed. However, this occurs only if the group value was reached.

Field	Description
Interval	Lets you specify the range of values represented by each column in the bar graph. **Valid Entries** A number within the EGU range. **Tip:** Enter the Low and High Limits (EGU) before entering the Interval value. If you enter the Interval value first, the tag automatically readjusts the Interval value when you enter the Low and High Limits.
Group Size	Lets you specify: • How often the Histogram updates the associated chart. The tag calculates the update period by multiplying the Group value by the scan time of the chain. For example, if you enter a Group value of 10 and you scan an Analog Input tag every 5 seconds, the histogram updates every 50 seconds. • The number of occurrences displayed on the histogram and the maximum height of the display bars. **Note:** Some input readings may fall outside of the Histogram tag's engineering units range. When this happens, the histogram registers the readings but does not display them. The histogram only displays those incoming values that fall within the specified engineering units range during the specified group limit. **Valid Entries** A time in seconds from 1 to 1000.
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.

Field	Description
Previous Block	Displays the name of the previous (upstream) tag. **Valid Entries** None. This is a read-only field.
Next Block	Displays the name of the next tag in the database chain. You can select a tag for this field by clicking the browse button. **Note:** In a Statistical Data tag, the Next Block field specifies the tag name of the downstream Statistical Control tag. No other tag type is valid.
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.

LL Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

Limits and Scaling

Field	Description
Low Limit	Lets you enter the tag's minimum value. **Valid Entries** • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or Signal Select tag, if the output of the tag is 10 and the Low Limit is 15, the tag clamps the value at 15. You must enter a Low Limit of 10 or less to output a value of 10. If you want to display a value of 1.236 from the Calculation tag, you must enter three or more decimal places in the Low Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.

Field	Description
High Limit	Lets you enter the tag's maximum value. **Valid Entries** You can enter a high limit in one of three formats: • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or a Signal Select tag, if the output of the tag is 150 and the High Limit is 100, the tag clamps the value at 100. You must enter a High Limit of 150 or more to output a value of 150. If you want to display a value of 1.236 from the Calculation tag, you must enter three or more decimal places in the High Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.
Units	Lets you enter text describing the engineering units range. **Valid Entries** Up to 33 characters. **Example** Kilograms per square meter, Liters per minute, degrees Celsius, **Note:** This entry does not affect the calculation or function of any variables in iFIX. It is used strictly as a display label to identify the engineering units.

Alarm Options

Field	Description
Alarm Areas	Displays the alarm areas that receive alarms and messages generated by this tag. Double-click an item in the list box and select an alarm area with the Browse button, or enter the alarm area name in the field. **Valid Entries** ALL or up to 15 alarm area names.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.

Field	Description
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
Scaling Factor	Lets you specify a scaling factor that modifies the lead lag curve. The constant may be applied to the input prior to performing the calculation. **Valid Entries** A value from -100.00 to +100.00. Enter 1 to disable this function.

Field	Description
Lead Time Constant	Lets you specify the lead time constant. **Valid Entries** A value from 0.00 to +100.00 minutes. Enter 0 to disable this function. iFIX accounts for the chain's scan time in the calculation. This scan time controls the size of the offset introduced by a change in the input. The offset is delayed according to the lag constant.
Lag Time Constant	Lets you specify the lag time constant that controls the rate at which the output of the tag approaches the input. A large lag time changes the output very slowly, aside from the lead time, and a small lag time tracks input more closely. **Valid Entries** A value from 0.00 to +100.00 minutes. Enter 0 if you do not want to use any lag time. **Note:** If the Lag time and Lead time are equal, they cancel each other out because the Lead calculation is the inverse of the Lag.
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.
Previous Block	Displays the name of the previous (upstream) tag. **Valid Entries** None. This is a read-only field.

Field	Description
Next Block	Displays the name of the next tag in the database chain. You can select a tag for this field by clicking the browse button. **Note:** In a Statistical Data tag, the Next Block field specifies the tag name of the downstream Statistical Control tag. No other tag type is valid.
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.

MDI Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

I/O Addressing

Field	Description
Driver	Lets you select an I/O driver, OPC server, or OPC UA server for the tag. The selected driver or server enables the tag to communicate with process hardware on the plant floor. Before you can select an I/O driver, OPC server, or OPC UA server you must install it and add it to the available ones in the SCU.
I/O Address	Lets you enter the location in the process hardware where data for this tag is saved and where output is sent. **Valid Entries** Depends on your driver. Consult your I/O driver or server manual for details on the proper input/output addresses and configurations. **CAUTION:** Do not assign the same I/O address to tags when using exception-based and time-based processing. Doing so will cause the exception-based tags to occasionally miss a value. **CAUTION:** Configuration Hub currently does not do I/O address validations before publish. If you enter an invalid IO address into a tag or generate an invalid I/O address via the model and substitutions, the publish may fail to set the IO address into the active database, and your invalid IO address will be removed.
H/W Options	Lets you select how to map the range of values coming from your process hardware into the tag's EGU range. **Note:** Signal conditioning and linear scaling cannot be applied simultaneously. If you select a value for Signal Conditioning verify that Linear Scaling is not selected. **Valid Entries** Depends on your driver or server. Refer to your driver or server manual for more information.
Enable Driver 1-2	Allows you to enable or disable the second or third digital input value. **Note:** If you select the check box(es), enter the driver name, I/O address, and any options for that particular driver in the appropriate fields.

Field	Description
Driver 1-2	Lets you select an I/O driver, OPC UA server, or OPC server for the tag. The selected driver or server enables the tag to communicate with process hardware on the plant floor. Before you can select an I/O driver, OPC UA server, or OPC server, you must install it and add it to the available drivers in the SCU.
I/O Address 1-2	Lets you enter the location in the process hardware where data for this tag is saved and where output is sent. In an On-Off Control tag, specify the address of the digital point you want opened and closed based on the Turn on Above and Turn off Below values. **Valid Entries** Depends on your driver. Consult your I/O driver manual for details on the proper input/output addresses and configurations. **CAUTION:** Do not assign the same I/O address to tags when using exception-based and time-based processing. Doing so will cause the exception-based blocks to occasionally miss a value.
H/W Options 1-2	Lets you select any specific device control addressing format that the tag uses to communicate with process hardware on the plant floor. **Valid Entries** For most process hardware, this field is usually left blank. Consult your I/O driver manual for the applicable hardware code if necessary.
Process by Exception	Enables exception-based processing for the tag.

Field	Description
Scan Time	Lets you specify how often the Scan, Alarm, and Control (SAC) program processes the tag and any tags (blocks) chained to it. **Valid Entries** • 0 (one shot processing) • 0.05 to .95 in .05 increments (subsecond scan times) • 1 to 60 in 1 second increments • 1M to 60M in 1 minute increments • 1H to 24H in 1 hour increments **Example** 0.15 specifies a 15-subsecond scan time. 5 specifies a 5-second scan time, 10M specifies a 10-minute scan time, 16H specifies a 16-hour scan time.
Phase At	Lets you specify how long the Scan, Alarm, and Control (SAC) program delays in scanning the tag. When the tag has a second or subsecond scan time, SAC offsets the initial scan by the phase time when iFIX starts or when the database is reloaded. When the tag has a scan time of 1 minute or longer, SAC offsets the initial scan starting at midnight. **Valid Entries** Depends on the scan time. If the scan time is in hours, the phase must be in hours:minutes. If the scan time is in minutes, the phase must be in minutes:seconds. If the scan time is in seconds, the phase must be in seconds. If the scan time is in subseconds, the phase must be in subseconds.

Device States

Field	Description
Alarm 0-7 Enable	Enables or disables alarming for each of the 8 possible raw values. If the tag enters any of the states for which the alarm column is checked, the tag generates a CFN (change from normal) alarm. **Note:** The Multistate Digital Input tag generates alarms only on a transition between alarm status and no alarm status. Transitions between different alarm states do not generate new alarms.

Field	Description
Value 0 (000) Value 1 (001) Value 2 (010) Value 3 (011) Value 4 (100) Value 5 (101) Value 6 (110) Value 7 (111)	Lets you enter a descriptive label for each of the 8 possible raw values. **Valid Entries** Up to 9 alphanumeric characters.

Alarm Options

Field	Description
Alarm Areas	Displays the alarm areas that receive alarms and messages generated by this tag. Double-click an item in the list box and select an alarm area with the Browse button, or enter the alarm area name in the field. **Valid Entries** ALL or up to 15 alarm area names.
Enable Alarm	Lets you enable or disable alarming for this tag. When you enable alarming, the tag generates alarms allowing objects in your operator displays to show alarm conditions, and enabling other tags to detect alarms from the tag. **Note:** The entire chain can be affected when you disable alarms for a tag. In addition, for both the Digital and Analog Alarm tags, this field is ignored when you enable the Alarm Suspend field.
Realarm	Enables or disables the re-alarm status of the tag. **Valid Entries** Select the re-alarm check box to generate new alarm messages each time there is a transition between alarm states. Clear this check box if you do not want to generate new alarm messages whenever the alarm state changes.

Field	Description
Priority	Lets you specify the alarm priority for a tag. If the priority is equal or greater than the SCADA node's alarm priority, iFIX sends the alarm to all the alarm destinations enabled for this node. However, if the priority is less than the SCADA node's alarm priority, the alarm is automatically acknowledged and filtered out so that it does not appear in your alarm destinations. However, the alarm does appear in Data links configured to display current and latched alarms. **Valid Entries** INFO, LOLO, LOW, MEDIUM, HIGH, HIHI, or CRITICAL **Note:** To report tag alarms, the appropriate alarm areas must be assigned to each of the alarm services enabled in the System Configuration Utility (SCU).
Shelve Enable	Select this check box to enable Alarm Shelving for the tag.
Shelve Policy	Select an alarm shelving policy from the drop-down list.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.

Field	Description
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.

Field	Description
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.

Field	Description
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
Initial Scan	Lets you select whether the tag is initially placed on or off scan. Click On Scan to place the tag on scan as soon as the Scan, Alarm, and Control (SAC) program starts or when the database is loaded. Click Off Scan to place the tag on scan by a Program block, an Event Action tag, a script, an operator entry in a Data link, or an Easy Database Access program.
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.
Previous Block	Displays the name of the previous (upstream) tag. **Valid Entries** None. This is a read-only field.

Field	Description
Next Block	Displays the name of the next tag in the database chain. You can select a tag for this field by clicking the browse button. **Note:** In a Statistical Data tag, the Next Block field specifies the tag name of the downstream Statistical Control tag. No other tag type is valid.
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.

PA Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

Input Definitions

Field	Description
Input 1-8 Identifier	Any two-character alphanumeric ID that identifies the corresponding input. Default IDs for input values 1 through 8 are A through H.

Field	Description
Input 1-8 Tag	An input can be any primary or secondary tag that accepts analog values (for example, an Analog Input or Totalizer tag) or an operator entry into this field. To configure the Pareto tag to accept values from another tag, enter the tag and field name pair in the input column (for example, AI1.F_CV). If the input goes off scan, the Pareto block treats the input's value as zero. You can also configure the Pareto block to use a numeric constant that is greater than or equal to zero. The Pareto block treats negative numbers as zero.
Input 1-8 Descriptor	Up to 30 alphanumeric characters for each Pareto block input.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.

Field	Description
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.

Field	Description
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.

Field	Description
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
Display Format	Lets you specify the number of decimal digits that appear to the right of the decimal point in operator displays. **Valid Entries** Any number from 0 to 6 digits of precision. **Note:** In the iFIX WorkSpace, the Display field can contain a total of 15 characters, consisting of numbers to the left and right of the decimal point .
Sort Order	Lets you specify the order in which the input values appear in operator displays. An operator can change the sort order through a Data link that displays the A_SORT field. **Valid Entries** Descending, Ascending, or No Sorting. By default, the sort order is Descending. Database Manager sorts the data as follows: • 1 Special characters (such as punctuation marks) by ASCII value. • 2 Numbers by numeric value. • 3 Letters in alphabetic order.
Initial Scan	Lets you select whether the tag is initially placed on or off scan. Click On Scan to place the tag on scan as soon as the Scan, Alarm, and Control (SAC) program starts or when the database is loaded. Click Off Scan to place the tag on scan by a Program block, an Event Action tag, a script, an operator entry in a Data link, or an Easy Database Access program.

Field	Description
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.
Previous Block	Displays the name of the previous (upstream) tag. **Valid Entries** None. This is a read-only field.
Next Block	Displays the name of the next tag in the database chain. You can select a tag for this field by clicking the browse button. **Note:** In a Statistical Data tag, the Next Block field specifies the tag name of the downstream Statistical Control tag. No other tag type is valid.
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Process by Exception	Enables exception-based processing for the tag.

Field	Description
Scan Time	Lets you specify how often the Scan, Alarm, and Control (SAC) program processes the tag and any tags (blocks) chained to it. **Valid Entries** • 0 (one shot processing) • 0.05 to .95 in .05 increments (subsecond scan times) • 1 to 60 in 1 second increments • 1M to 60M in 1 minute increments • 1H to 24H in 1 hour increments **Example** 0.15 specifies a 15-subsecond scan time. 5 specifies a 5-second scan time, 10M specifies a 10-minute scan time, 16H specifies a 16-hour scan time.
Phase At	Lets you specify how long the Scan, Alarm, and Control (SAC) program delays in scanning the tag. When the tag has a second or subsecond scan time, SAC offsets the initial scan by the phase time when iFIX starts or when the database is reloaded. When the tag has a scan time of 1 minute or longer, SAC offsets the initial scan starting at midnight. **Valid Entries** Depends on the scan time. If the scan time is in hours, the phase must be in hours:minutes. If the scan time is in minutes, the phase must be in minutes:seconds. If the scan time is in seconds, the phase must be in seconds. If the scan time is in subseconds, the phase must be in subseconds.

PG Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

Programming Statements

Field	Description
PGM Statement 0 -19	Lets you enter the commands and arguments for the Program tag. Use the Browse (...) button to select from a list of valid commands. **Valid Entries** The list box can include up to 20 programming statements, each containing up to 44 alphanumeric characters in length.

Alarm Options

Field	Description
Alarm Areas	Displays the alarm areas that receive alarms and messages generated by this tag. Double-click an item in the list box and select an alarm area with the Browse button, or enter the alarm area name in the field. **Valid Entries** ALL or up to 15 alarm area names.
Enable Alarm	Lets you enable or disable alarming for this tag. When you enable alarming, the tag generates alarms allowing objects in your operator displays to show alarm conditions, and enabling other tags to detect alarms from the tag. **Note:** The entire chain can be affected when you disable alarms for a tag. In addition, for both the Digital and Analog Alarm tags, this field is ignored when you enable the Alarm Suspend field.
Priority	Lets you specify the alarm priority for a tag. If the priority is equal or greater than the SCADA node's alarm priority, iFIX sends the alarm to all the alarm destinations enabled for this node. However, if the priority is less than the SCADA node's alarm priority, the alarm is automatically acknowledged and filtered out so that it does not appear in your alarm destinations. However, the alarm does appear in Data links configured to display current and latched alarms. **Valid Entries** INFO, LOLO, LOW, MEDIUM, HIGH, HIHI, or CRITICAL **Note:** To report tag alarms, the appropriate alarm areas must be assigned to each of the alarm services enabled in the System Configuration Utility (SCU).

Field	Description
Shelve Enable	Select this check box to enable Alarm Shelving for the tag.
Shelve Policy	Select an alarm shelving policy from the drop-down list.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.

Field	Description
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
Startup Mode	Lets you select the tag's mode on startup. In Automatic mode, the tag receives data from the I/O driver, OPC server, or OPC UA server. In Manual mode, the tag receives data from the operator, scripts, recipes, or Program blocks.

Field	Description
Initial Scan	Lets you select whether the tag is initially placed on or off scan. Click On Scan to place the tag on scan as soon as the Scan, Alarm, and Control (SAC) program starts or when the database is loaded. Click Off Scan to place the tag on scan by a Program block, an Event Action tag, a script, an operator entry in a Data link, or an Easy Database Access program.
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.
Previous Block	Displays the name of the previous (upstream) tag. **Valid Entries** None. This is a read-only field.
Next Block	Displays the name of the next tag in the database chain. You can select a tag for this field by clicking the browse button. **Note:** In a Statistical Data tag, the Next Block field specifies the tag name of the downstream Statistical Control tag. No other tag type is valid.
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.

Field	Description
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Process by Exception	Enables exception-based processing for the tag.
Scan Time	Lets you specify how often the Scan, Alarm, and Control (SAC) program processes the tag and any tags chained to it. **Valid Entries** • 0 (one shot processing) • 0.05 to .95 in .05 increments (subsecond scan times) • 1 to 60 in 1 second increments • 1M to 60M in 1 minute increments • 1H to 24H in 1 hour increments **Example** 0.15 specifies a 15-subsecond scan time. 5 specifies a 5-second scan time, 10M specifies a 10-minute scan time, 16H specifies a 16-hour scan time.
Phase At	Lets you specify how long the Scan, Alarm, and Control (SAC) program delays in scanning the tag. When the tag has a second or subsecond scan time, SAC offsets the initial scan by the phase time when iFIX starts or when the database is reloaded. When the tag has a scan time of 1 minute or longer, SAC offsets the initial scan starting at midnight. **Valid Entries** Depends on the scan time. If the scan time is in hours, the phase must be in hours:minutes. If the scan time is in minutes, the phase must be in minutes:seconds. If the scan time is in seconds, the phase must be in seconds. If the scan time is in subseconds, the phase must be in subseconds.

PID Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

Limits and Scaling

Field	Description
Low Limit	Lets you enter the tag's minimum value. **Valid Entries** • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or Signal Select tag, if the output of the tag is 10 and the Low Limit is 15, the tag clamps the value at 15. You must enter a Low Limit of 10 or less to output a value of 10. If you want to display a value of 1.236 from the Calculation tag, you must enter three or more decimal places in the Low Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.

Field	Description
High Limit	Lets you enter the tag's maximum value. **Valid Entries** You can enter a high limit in one of three formats: • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or a Signal Select tag, if the output of the tag is 150 and the High Limit is 100, the tag clamps the value at 100. You must enter a High Limit of 150 or more to output a value of 150. If you want to display a value of 1.236 from the Calculation tag, you must enter three or more decimal places in the High Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.
EGU Tag	Lets you enter text describing the engineering units range. **Valid Entries** Up to 33 characters. **Example** Kilograms per square meter, Liters per minute, degrees Celsius. **Note:** This entry does not affect the calculation or function of any variables in iFIX. It is used strictly as a display label to identify the engineering units.

Field	Description
Low Output Limit	Displays the low limit for the output of the PID block. **Valid Entries** The lowest value the controlled variable (the Analog Output or another PID block) can have should be specified in the Low Limit field. This entry can be different from the PID block's Low Limit. In addition, your I/O driver, OPC UA server, or OPC server can impose certain limitations on the engineering units range. If necessary, consult your I/O driver, OPC UA server, or OPC server manual for more information.
High Output Limit	Displays the high limit for the output of the PID block. **Valid Entries** The highest value the controlled variable (the Analog Output or another PID block) can have should be specified in the High Limit field. This entry can be different from the PID block's High Limit. In addition, your I/O driver, OPC UA server, or OPC server can impose certain limitations on the engineering units range. If necessary, consult your I/O driver, OPC UA server, or OPC server manual for more information.
Output EGU Tag	Enter a label for the limits in the Units field, such as PCT or DEG.

Tuning Constants and Algorithms

Field	Description
Proportional band	Lets you enter a tuning constant, equal to the inverse of the proportional gain multiplied by 100%. **Valid Entries** A value from 1.00 to 10,000.00 percent. This value is the range of input deviation that drives the controller's output through its full range. The change in controller output is inversely proportional to the proportional band.

Field	Description
Integral Time	Lets you enter an integral time constant. **Valid Entries** A value from 0.000 to 99.000 minutes per repeat. For large capacity control systems, the reset tuning parameter provides a temporary change in the PID output, even if the deviation is small and the rate of deviation is fast. When the rate of change measurement becomes steady, the Reset is adjusted internally to zero (0) in the PID algorithm. Decreasing the reset time tends to minimize overshoot of the set point, but it will then take longer to reach the set point. **Note:** If you apply a reset tuning parameter to a small-capacity process loop, oscillations in the PID output could develop, causing damage to process control equipment.
Derivative Time	Lets you enter a derivative time constant measured in minutes per repeat. **Valid Entries** A value from 0 to 20 minutes. Enter values smaller than a minute in decimals. **Example** Enter a value of .25 (of a minute) to represent a rate of 15 seconds. The tag automatically adjusts internally to account for the scan cycle of the loop. **Tip:** The rate value provides a backwards push to rapidly changing controller output. Usually this value is between 0 and 1. This can help minimize overshoot and stabilize the loop. Higher values can result in loop instability.
Alpha-rate Factor	Lets you specify a derivative mode filter for algorithm tuning. This value specifies the amount of derivative filtering that is applied to the algorithm. The Alpha value performs a filtering of the derivative portion of the output signal and is a first order lag term. **Valid Entries** A value in the range of 0.0 to 0.125. The default value of 0.0 disables this function.

Field	Description
Beta-rate Factor	Lets you specify a proportional action constant for algorithm tuning. This value serves as a multiplier for the proportional term. **Valid Entries** A value in the range of 0.0 to 1.0. The default value of 1.0 provides normal proportional action. A value of 0.0 disables the function.
Gamma-reset Factor	Lets you specify a derivative action constant for algorithm tuning. This value specifies the action of the derivative component of the algorithm. Therefore, a value in this field can limit the amount of derivative action performed in the algorithm. **Valid Entries** A value in the range of 0.0 to 1.0. The default value of 1.0 provides normal derivative action. A value of 0.0 disables the function.

Setpoint Limits and Options

Field	Description
Dead band value	Lets you enter the maximum fluctuation the tag accepts without re-issuing an alarm. As long as the fluctuation is within the dead band range, the tag issues an alarm once, eliminating nuisance alarms. Once the alarm falls below the dead band and then exceeds the alarm limits, the tag generates another alarm. **Valid Entries** Numeric value within the EGU range. **Example** If the High alarm limit is 80 and the dead band is 5, the tag does not re-issue an alarm after the one while the current value fluctuates between 75 and 85.

Field	Description
Deviation value	Generates an alarm if the difference between the set point value and the measured value (Analog Input tag) is greater than the entry in this field. The deviation is the difference between the set point value and the process variable: DEVIATION = SET POINT VALUE - PROCESS VARIABLE **Valid Entries** The appropriate value, in engineering units. Use 0 to disable the deviation alarm.
Gap Action	Compensates for controller error by providing a dead band in updates to the PID algorithm. The Gap Action value prevents the PID tag from sending out adjustments to the process if the deviation from the set point value is within this dead band. **Valid Entries** Enter a value that represents the dead band range. If the change is within this range, the deviation is set to 0 (zero).
Low Setpoint Clamp	Lets you specify the lowest acceptable value for the PID set point. Any changes to the set point must fall within the Low and High Clamp values. This limit applies to set points derived from cascades, ramps, and other control loop strategies in addition to the set point values entered by an operator. **Valid Entries** The minimum value for the set point.
High Setpoint Clamp	Lets you specify the highest acceptable value for the PID set point. Any changes to the set point must fall within the High and Low Clamp values. This limit applies to set points derived from cascades, ramps, and other control loop strategies in addition to the set point values entered by an operator. **Valid Entries** The maximum value for the set point.

Field	Description
Setpoint Tag	Lets you specify the desired value of a controlled variable. **Valid Entries** Blank (to let operators type a fixed value from a Data link, this set point is a local set point.) or an Analog Input tag, in the tag.field format. (F_CV). By controlling the set point from an Analog Input tag, the PID block retrieves the current value through the Scan, Alarm, and Control (SAC) program. This set point is called a remote set point. When the set point is displayed through a Data link (using the TV1 field), it appears with either an L or an R to the right of the set point value to indicate a local or remote set point. In addition, the entry in the set point value field is in effect any time the database is saved and reloaded, even if an operator has manually changed the value.

Alarm Options

Field	Description
Alarm Areas	Displays the alarm areas that receive alarms and messages generated by this tag. Double-click an item in the list box and select an alarm area with the Browse button, or enter the alarm area name in the field. **Valid Entries** ALL or up to 15 alarm area names.
Enable Alarm	Lets you enable or disable alarming for this tag. When you enable alarming, the tag generates alarms allowing objects in your operator displays to show alarm conditions, and enabling other tags to detect alarms from the tag. **Note:** The entire chain can be affected when you disable alarms for a tag. In addition, for both the Digital and Analog Alarm tags, this field is ignored when you enable the Alarm Suspend field.
Shelve Enable	Select this check box to enable Alarm Shelving for the tag.
Shelve Policy	Select an alarm shelving policy from the drop-down list.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.

Field	Description
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.

Field	Description
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
Reverse Output	Inverts the output of the tag.
Startup Mode	Lets you select the tag's mode on startup. In Automatic mode, the tag receives data from the I/O driver, OPC server, or OPC UA server. In Manual mode, the tag receives data from the operator, scripts, recipes, or Program blocks.
Transfer Status	Lets you control how the PID tag reacts during a transition between automatic and manual modes. **Valid Entries** • Track – Tracks the position of the output when the tag is in Manual mode. When there is a transition back to Automatic mode, the PID tag calculates the output using the current and previous error terms. • Balance – Enables the Scan, Alarm, and Control (SAC) program to provide a bumpless transfer when the PID tag changes from Manual to Automatic mode. Error is removed from the process by balancing the set point to make it equal to the process measurement. • None – Disables the transfer options and is the default selection.

Field	Description
Feedback Tag	Lets you control how the PID tag reacts during a transition between automatic and manual modes. **Valid Entries** • Track – Tracks the position of the output when the tag is in Manual mode. When there is a transition back to Automatic mode, the PID tag calculates the output using the current and previous error terms. • Balance – Enables the Scan, Alarm, and Control (SAC) program to provide a bumpless transfer when the PID tag changes from Manual to Automatic mode. Error is removed from the process by balancing the set point to make it equal to the process measurement. • None – Disables the transfer options and is the default selection.
Derivative Time	
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.
Previous Block	Displays the name of the previous (upstream) tag. **Valid Entries** None. This is a read-only field.
Next Block	Displays the name of the next tag in the database chain. You can select a tag for this field by clicking the browse button. **Note:** In a Statistical Data tag, the Next Block field specifies the tag name of the downstream Statistical Control tag. No other tag type is valid.

Field	Description
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.

RB Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

Limits and Scaling

Field	Description
Low Limit	Lets you enter the tag's minimum value. **Valid Entries** • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or Signal Select tag, if the output of the tag is 10 and the Low Limit is 15, the tag clamps the value at 15. You must enter a Low Limit of 10 or less to output a value of 10. If you want to display a value of 1.236 from the Calculation tag, you must enter three or more decimal places in the Low Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.

Field	Description
High Limit	Lets you enter the tag's maximum value. **Valid Entries** You can enter a high limit in one of three formats: • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or a Signal Select tag, if the output of the tag is 150 and the High Limit is 100, the tag clamps the value at 100. You must enter a High Limit of 150 or more to output a value of 150. If you want to display a value of 1.236 from the Calculation tag, you must enter three or more decimal places in the High Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.
Units	Lets you enter text describing the engineering units range. **Valid Entries** Up to 33 characters. **Example** Kilograms per square meter, Liters per minute, degrees Celsius, **Note:** This entry does not affect the calculation or function of any variables in iFIX. It is used strictly as a display label to identify the engineering units.
Ratio Value	Multiplies the value from the upstream block by a constant. **Valid Entries** The constant by which you want to multiply the incoming signal. The default value is 1.

Field	Description
Bias Value	Lets you specify the bias constant for the ratio bias equation. The bias allows the value to be adjusted by up to +/- half the engineering units span. **Valid Entries** A numeric constant or a tag and field name pair in the format tag.field that represents the value you want to add to the incoming signal. **Note:** The range of the bias constant is a function of the engineering units range. Therefore, if you want the bias to use the same EGU range as the incoming signal, enter the EGU range of the upstream block into the Ratios Bias's EGU fields.
Offest Value	Lets you specify the value you want to subtract from the upstream tag's incoming signal. **Valid Entries** A numeric constant or a tag and field name pair in the format tag.field.

Alarm Options

Field	Description
Alarm Areas	Displays the alarm areas that receive alarms and messages generated by this tag. Double-click an item in the list box and select an alarm area with the Browse button, or enter the alarm area name in the field. **Valid Entries** ALL or up to 15 alarm area names.
Enable Alarm	Lets you enable or disable alarming for this tag. When you enable alarming, the tag generates alarms allowing objects in your operator displays to show alarm conditions, and enabling other tags to detect alarms from the tag. **Note:** The entire chain can be affected when you disable alarms for a tag. In addition, for both the Digital and Analog Alarm tags, this field is ignored when you enable the Alarm Suspend field.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.

Field	Description
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.

Field	Description
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.
Previous Block	Displays the name of the previous (upstream) tag. **Valid Entries** None. This is a read-only field.

Field	Description
Next Block	Displays the name of the next tag in the database chain. You can select a tag for this field by clicking the browse button. **Note:** In a Statistical Data tag, the Next Block field specifies the tag name of the downstream Statistical Control tag. No other tag type is valid.
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.

RM Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

Limits and Scaling

Field	Description
Low Limit	Lets you enter the tag's minimum value. **Valid Entries** • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or Signal Select tag, if the output of the tag is 10 and the Low Limit is 15, the tag clamps the value at 15. You must enter a Low Limit of 10 or less to output a value of 10. If you want to display a value of 1.236 from the Calculation tag, you must enter three or more decimal places in the Low Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.

Field	Description
High Limit	Lets you enter the tag's maximum value. **Valid Entries** You can enter a high limit in one of three formats: • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or a Signal Select tag, if the output of the tag is 150 and the High Limit is 100, the tag clamps the value at 100. You must enter a High Limit of 150 or more to output a value of 150. If you want to display a value of 1.236 from the Calculation tag, you must enter three or more decimal places in the High Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.
Units	Lets you enter text describing the engineering units range. **Valid Entries** Up to 33 characters. **Example** Kilograms per square meter, Liters per minute, degrees Celsius, **Note:** This entry does not affect the calculation or function of any variables in iFIX. It is used strictly as a display label to identify the engineering units.
Low Operator Limit	Lets you specify the lowest operational target value accepted from a SETTARG command in a Program tag or from an operator entry into a Data link. **Valid Entries** A value between the Low and High EGU fields. If appropriate, you can use the Low EGU for this value.

Field	Description
High Operator Limit	Lets you specify the highest operational target value accepted from a SETTARG command in a Program tag or from an operator entry into a Data link. **Valid Entries** A value between the Low and High EGU fields. If appropriate, you can use the High EGU for this value.
Scan Time	Lets you specify how often the Scan, Alarm, and Control (SAC) program processes the tag and any tags chained to it. **Valid Entries** • 0 (one shot processing) • 0.05 to .95 in .05 increments (subsecond scan times) • 1 to 60 in 1 second increments • 1M to 60M in 1 minute increments • 1H to 24H in 1 hour increments **Example** 0.15 specifies a 15-subsecond scan time. 5 specifies a 5-second scan time, 10M specifies a 10-minute scan time, 16H specifies a 16-hour scan time.
Phase At	Lets you specify how long the Scan, Alarm, and Control (SAC) program delays in scanning the tag. When the tag has a second or subsecond scan time, SAC offsets the initial scan by the phase time when iFIX starts or when the database is reloaded. When the tag has a scan time of 1 minute or longer, SAC offsets the initial scan starting at midnight. **Valid Entries** Depends on the scan time. If the scan time is in hours, the phase must be in hours:minutes. If the scan time is in minutes, the phase must be in minutes:seconds. If the scan time is in seconds, the phase must be in seconds. If the scan time is in subseconds, the phase must be in subseconds.

Ramp Definitions

Field	Description
Target Value 1	Lets you specify the value you want the tag to reach. **Valid Entries** A value or a tag and field name (uses the current value of another block). **Note:** You can use a Program tag to set the target values of a Ramp tag. SETTARG sets the value of the first target value, SETTARG2 sets the value of the second target value, and SETTARG3 sets the value of the third target value. If a target value that is outside the Ramp tag's EGU range, iFIX clamps the value to the block's Low and High Operator Limits.
Ramp Rate 1	Lets you specify the increments at which the current value is modified until reaching the target value for each stage. **Valid Entries** A value based on hours. Use 0.00 to prevent the execution of the ramp stage. **Example** To use a rate of 1 degree per second, enter 3600, for 3600 degrees per hour. The precision, or number of decimal points, of the ramp rate is the same as the Low and High EGU range.
Hold Time 1	Lets you specify how long the Ramp tag waits after reaching the target value and before continuing on to the next stage. **Valid Entries** A value based on hours. The default hold time is 0.000. The maximum hold time is 1000 hours. **Example** To hold for one hour, enter 1.000. **Note:** You can use a Program tag to set the hold time of a Ramp block. SETTIME sets the ramp time for the first stage and SETTIME2 sets the ramp time for the second stage.

Field	Description
Target Value 2	Lets you specify the value you want the tag to reach. **Valid Entries** A value or a tag and field name (uses the current value of another block). **Note:** You can use a Program tag to set the target values of a Ramp tag. SETTARG sets the value of the first target value, SETTARG2 sets the value of the second target value, and SETTARG3 sets the value of the third target value. If a target value that is outside the Ramp tag's EGU range, iFIX clamps the value to the block's Low and High Operator Limits.
Ramp Rate 2	Lets you specify the increments at which the current value is modified until reaching the target value for each stage. **Valid Entries** A value based on hours. Use 0.00 to prevent the execution of the ramp stage. **Example** To use a rate of 1 degree per second, enter 3600, for 3600 degrees per hour. The precision, or number of decimal points, of the ramp rate is the same as the Low and High EGU range.
Hold Time 2	Lets you specify how long the Ramp tag waits after reaching the target value and before continuing on to the next stage. **Valid Entries** A value based on hours. The default hold time is 0.000. The maximum hold time is 1000 hours. **Example** To hold for one hour, enter 1.000. **Note:** You can use a Program tag to set the hold time of a Ramp block. SETTIME sets the ramp time for the first stage and SETTIME2 sets the ramp time for the second stage.

Field	Description
Target Value 3	Lets you specify the value you want the tag to reach. **Valid Entries** A value or a block and field name (uses the current value of another tag). **Note:** You can use a Program tag to set the target values of a Ramp tag. SETTARG sets the value of the first target value, SETTARG2 sets the value of the second target value, and SETTARG3 sets the value of the third target value. If a target value that is outside the Ramp tag's EGU range, iFIX clamps the value to the block's Low and High Operator Limits.
Ramp Rate 3	Lets you specify the increments at which the current value is modified until reaching the target value for each stage. **Valid Entries** A value based on hours. Use 0.00 to prevent the execution of the ramp stage. **Example** To use a rate of 1 degree per second, enter 3600, for 3600 degrees per hour. The precision, or number of decimal points, of the ramp rate is the same as the Low and High EGU range.

Alarm Options

Field	Description
Alarm Areas	Displays the alarm areas that receive alarms and messages generated by this tag. Double-click an item in the list box and select an alarm area with the Browse button, or enter the alarm area name in the field. **Valid Entries** ALL or up to 15 alarm area names.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.

Field	Description
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.

Field	Description
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.

Field	Description
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
Startup Mode	Lets you select the tag's mode on startup. In Automatic mode, the tag receives data from the I/O driver, OPC server, or OPC UA server. In Manual mode, the tag receives data from the operator, scripts, recipes, or Program blocks.
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.

Field	Description
Previous Block	Displays the name of the previous (upstream) tag. **Valid Entries** None. This is a read-only field.
Next Block	Displays the name of the next tag in the database chain. You can select a tag for this field by clicking the browse button. **Note:** In a Statistical Data tag, the Next Block field specifies the tag name of the downstream Statistical Control tag. No other tag type is valid.
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.

SC Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

SC Specifics and Constants

Field	Description
Add to Block	Lets you pass the adjustment value of the Statistical Control block to the specified tag. The tag can add this adjustment to: • The current value of the Analog Output block. • The target value of the PID block. • The target value of the Ramp block. **Valid Entries** The tag and field name pair in tag.field format.
Recalculate Status	Re-computes the upstream Statistical Data tag's upper and lower control limits after adjusting a value and the delay time expires. **Valid Entries** Select the check box to recalculate the limits. Clear the check box to maintain previously set control limits.
Alarm Suppression	Suppresses the generation of alarms until the Statistical Data tag processes a new set of groups. **Valid Entries** Select the check box to suppress alarms. Clear the check box to generate alarms.
Track Messages	Sends a message to the Statistical Control block's active alarm destinations each time the tag adjusts a value. **Valid Entries** Select the check box to send messages. Clear the check box to suppress messages.
Show Calc Adjustment	Lets you display the latest calculated adjustment in the iFIX WorkSpace. **Valid Entries** Select the check box to display the adjustment through a Data link, using block.A_CV as the entry. Clear the check box to prevent this display. **Note:** Enabling the Show Calculation option allows you to display the calculated adjustments in a picture. You can use these values to adjust your tuning constants more precisely. If you want to see only the values the block sends to its downstream block, use A_SENT in the Data link.

Field	Description
Slope Constant	Multiplies the slope of the plotted XBAR values found in the upstream Statistical Data tag by the specified value. The slope constant is a floating-point scaling factor. **Valid Entries** A value between -99,999.0 and 900,000.0
Deviation Constant	Multiplies the average deviation of XBAR values from XBARBAR by the specified value. The deviation constant is a floating-point scaling factor. **Valid Entries** The appropriate floating point value.
Delay Time	Lets you specify the length of time the Statistical Control tag remains dormant. This period lets the process settle after receiving the adjusted value. During this time, the Scan, Alarm, and Control (SAC) program suppresses alarms in the upstream Statistical Data tag and the Statistical Control tag makes no further adjustments. **Valid Entries** A time in seconds between 1 and 32767. **Tip:** Allow time for the upstream block to read at least one full set of data groups.

Alarm Options

Field	Description
Alarm Areas	Displays the alarm areas that receive alarms and messages generated by this tag. Double-click an item in the list box and select an alarm area with the Browse button, or enter the alarm area name in the field. **Valid Entries** ALL or up to 15 alarm area names.

Field	Description
Enable Alarm	Lets you enable or disable alarming for this tag. When you enable alarming, the tag generates alarms allowing objects in your operator displays to show alarm conditions, and enabling other tags to detect alarms from the tag. **Note:** The entire chain can be affected when you disable alarms for a tag. In addition, for both the Digital and Analog Alarm tags, this field is ignored when you enable the Alarm Suspend field.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.

Field	Description
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.

Field	Description
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.

Field	Description
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
Startup Mode	Lets you select the tag's mode on startup. In Automatic mode, the tag receives data from the I/O driver, OPC server, or OPC UA server. In Manual mode, the tag receives data from the operator, scripts, recipes, or Program blocks.
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.

Field	Description
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.

SD Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'

Field	Description
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

Limits and Scaling

Field	Description
Low Limit	Lets you enter the tag's minimum value. **Valid Entries** • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or Signal Select tag, if the output of the tag is 10 and the Low Limit is 15, the tag clamps the value at 15. You must enter a Low Limit of 10 or less to output a value of 10. If you want to display a value of 1.236 from the Calculation tag, you must enter three or more decimal places in the Low Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.

Field	Description
High Limit	Lets you enter the tag's maximum value. **Valid Entries** You can enter a high limit in one of three formats: • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or a Signal Select tag, if the output of the tag is 150 and the High Limit is 100, the tag clamps the value at 100. You must enter a High Limit of 150 or more to output a value of 150. If you want to display a value of 1.236 from the Calculation tag, you must enter three or more decimal places in the High Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.
Units	Lets you enter text describing the engineering units range. **Valid Entries** Up to 33 characters. **Example** Kilograms per square meter, Liters per minute, degrees Celsius, **Note:** This entry does not affect the calculation or function of any variables in iFIX. It is used strictly as a display label to identify the engineering units.
Scan Qualifier	Lets you specify a digital tag that controls when the Statistical Data block samples the block specified in the Input Tag field. When the digital tag transitions from open to closed, the Statistical Data tag samples the input tag. **Valid Entries** The name of a block with an F_CV field that returns a 1 or 0.

Field	Description
Input Score	Lets you specify the input source of the Statistical Data tag. **Valid Entries** • The name of an Analog Alarm, Analog Input, Analog Output, or Calculation tag. • Blank, to indicate input from an operator or from an Easy Database Access program.
Groups	Lets you specify the input source of the Statistical Data tag. **Valid Entries** The name of an Analog Alarm, Analog Input, Analog Output, or Calculation tag. Blank, to indicate input from an operator or from an Easy Database Access program.
Observations/group	Lets you specify the number of observations that the Statistical Data tag makes per group. **Valid Entries** A value from 1 to 25. **Note:** You can change the Observations/Group field with a Data link in the iFIX WorkSpace. After making your changes, turn the Statistical Data tag off scan and then back on scan to restart it with the new values.
Wait time	Lets you specify the time, in seconds, that the Statistical Data tag pauses between the last observation of one group and the first observation of the next group. **Valid Entries** A value from 0 to 32767 seconds. **Note:** The wait time is valid only when the tag is in Automatic mode.

Field	Description
CTL limit calc mode	Lets you specify the calculation mode of control, warning, and specification limits for XBAR, S, and R charts. **Valid Entries** • Startup – Instructs the tag not to recalculate limits for XBAR, R, and S charts after startup. This option is the default selection. Operators can change these limits through Data links in the WorkSpace at any time. • Always – Lets the tag update values for the limits on a moving average basis. The block overwrites operator entries as soon as the group is updated. • Never – Lets the tag calculate limits for XBAR, R, and S charts based upon defaults. Operators can enter values at any time before or after startup. The block does not overwrite these values. **Note:** If you choose to manually input limit values, verify that the values are very close to the ones the block would calculate. Otherwise, the validity of statistical alarms and control charts is questionable.
XBB calc mode	Specifies the calculation mode of XBARBAR, SBAR, and RBAR values. **Valid Entries** • Startup – Instructs the tag not to recalculate alarm limits, XBARBAR, RBAR, and SBAR values after startup. This option is the default selection. Operators can change these limits with Data links in the WorkSpace at any time. • Always – Lets the tag update values for alarm limits on a moving average basis. The tag overwrites operator entries as soon as the group is updated. • Never – Lets the tag calculate alarm limits, XBAR, R and S values based upon defaults. Operators can enter values at any time before or after startup. The tag does not overwrite these values. **Note:** If you choose to manually input limit values, verify that the values are very close to the ones the block would calculate. Otherwise, the validity of statistical alarms and control charts is questionable.
Process by Exception	Enables exception-based processing for the tag.

Field	Description
Scan Time	Lets you specify how often the Scan, Alarm, and Control (SAC) program processes the tag and any tags (blocks) chained to it. **Valid Entries** • 0 (one shot processing) • 0.05 to .95 in .05 increments (subsecond scan times) • 1 to 60 in 1 second increments • 1M to 60M in 1 minute increments • 1H to 24H in 1 hour increments **Example** 0.15 specifies a 15-subsecond scan time. 5 specifies a 5-second scan time, 10M specifies a 10-minute scan time, 16H specifies a 16-hour scan time.
Phase At	Lets you specify how long the Scan, Alarm, and Control (SAC) program delays in scanning the tag. When the tag has a second or subsecond scan time, SAC offsets the initial scan by the phase time when iFIX starts or when the database is reloaded. When the tag has a scan time of 1 minute or longer, SAC offsets the initial scan starting at midnight. **Valid Entries** Depends on the scan time. If the scan time is in hours, the phase must be in hours:minutes. If the scan time is in minutes, the phase must be in minutes:seconds. If the scan time is in seconds, the phase must be in seconds. If the scan time is in subseconds, the phase must be in subseconds.

Alarm Options

Field	Description
Alarm Areas	Displays the alarm areas that receive alarms and messages generated by this tag. Double-click an item in the list box and select an alarm area with the Browse button, or enter the alarm area name in the field. **Valid Entries** ALL or up to 15 alarm area names.

Field	Description
Enable Alarm	Lets you enable or disable alarming for this tag. When you enable alarming, the tag generates alarms allowing objects in your operator displays to show alarm conditions, and enabling other tags to detect alarms from the tag. **Note:** The entire chain can be affected when you disable alarms for a tag. In addition, for both the Digital and Analog Alarm tags, this field is ignored when you enable the Alarm Suspend field.
Priority	Lets you specify the alarm priority for a tag. If the priority is equal or greater than the SCADA node's alarm priority, iFIX sends the alarm to all the alarm destinations enabled for this node. However, if the priority is less than the SCADA node's alarm priority, the alarm is automatically acknowledged and filtered out so that it does not appear in your alarm destinations. However, the alarm does appear in Data links configured to display current and latched alarms. **Valid Entries** INFO, LOLO, LOW, MEDIUM, HIGH, HIHI, or CRITICAL **Note:** To report tag alarms, the appropriate alarm areas must be assigned to each of the alarm services enabled in the System Configuration Utility (SCU).
Shelve Enable	Select this check box to enable Alarm Shelving for the tag.
Shelve Policy	Select an alarm shelving policy from the drop-down list.
N point control limit alarm on XBAR	Generates an alarm when the XBAR value of the specified number of groups is outside the control limits (+ 3 sigma).
Number of groups for control limit alarm	Enter the appropriate number of groups in the On Groups column so the tag can send alarms to its alarm areas.
N point warning limit alarm on XBAR	Generates an alarm when the XBAR values of the specified number of consecutive groups are outside the control warning limits (control warning limit is 2/3 of the upper or lower control limit values, which is + 2 sigma.)
Number of groups for warning limit alarm	Enter the appropriate number of groups in the On Groups column so the tag can send alarms to its alarm areas.
N point specification limit on XBAR	Generates an alarm if the specified number of groups are outside the range of the control limits. Generates an alarm if the specified number of groups are outside the range of the control limits.
Number of groups for the specification limit alarm	Enter the appropriate number of groups in the On Groups column so the tag can send alarms to its alarm areas.

Field	Description
N point Alarm on RBAR	Generates an alarm when the range of the specified number of groups is outside the standard deviation control limits.
Number of groups for the RBAR alarm	Enter the appropriate number of groups in the On Groups column so the tag can send alarms to its alarm areas.
N point Alarm on SBAR	Generates an alarm when the specified number of groups is outside the standard deviation control limits.
Number of groups for the SBAR alarm	Enter the appropriate number of groups in the On Groups column so the tag can send alarms to its alarm areas.
Trend of runs alarm	Generates an alarm when the specified number of groups is outside the standard deviation control limits.
Number of groups for the Trend alarm	Enter the appropriate number of groups in the On Groups column so the tag can send alarms to its alarm areas.
Lenth of runs alarm	Generates an alarm if the specified number of consecutive groups are above or below XBARBAR.
Number of groups for the Length Alarm	Enter the appropriate number of groups in the On Groups column so the tag can send alarms to its alarm areas.
N Point Critical Runs on XBAR	Generates an alarm if the Statistical Data Block observes less than the specified number of crossings of the mean by serial observations.
Number of groups for critical runs alarm	Enter the appropriate number of groups in the On Groups column so the tag can send alarms to its alarm areas.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.

Field	Description
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.

Field	Description
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.

Field	Description
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
Startup Mode	Lets you select the tag's mode on startup. In Automatic mode, the tag receives data from the I/O driver, OPC server, or OPC UA server. In Manual mode, the tag receives data from the operator, scripts, recipes, or Program blocks.
Initial Scan	Lets you select whether the tag is initially placed on or off scan. Click On Scan to place the tag on scan as soon as the Scan, Alarm, and Control (SAC) program starts or when the database is loaded. Click Off Scan to place the tag on scan by a Program block, an Event Action tag, a script, an operator entry in a Data link, or an Easy Database Access program.

Field	Description
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.
Previous Block	Displays the name of the previous (upstream) tag. **Valid Entries** None. This is a read-only field.
Next Block	Displays the name of the next tag in the database chain. You can select a tag for this field by clicking the browse button. **Note:** In a Statistical Data tag, the Next Block field specifies the tag name of the downstream Statistical Control tag. No other tag type is valid.
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.

SQD Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

Data Definitions

Field	Description
Tag 1 - 20	Enter up to 20 tag and field name pairs that store data from your relational database or from the iFIX process database. Depending on the Tag.Field direction (In or Out), the SQL system task either reads the value of the tag and field and writes it to a relational database, or reads a selected value from the relational database and writes to it to the specified tag and field. The field entry can be any ASCII (A_) or floating point (F_) field available to the tag. In addition, you can also use SQL keywords.
Direction 1 - 20	Determines the data transfer direction between the process database and the relational database for up to 20 tag and field name pairs. Valid entries are: • A SQL keyword, In (to receive data from the relational database), or Out (to send data to the relational database) • A single SQL command can use both directions. **Note:** Most SQL commands delete, select, update, or insert values in a relational database. When selecting values from a relational database, the tag sets the value of each data point's Direction field to In. When inserting or updating rows, or in a SELECT command with a "where" clause, the tag sends process data values to the relational database. In these cases, the tag sets the value of each data point's Direction field to Out.
Reset Status Tag 1 - 20	Allows you to clear numeric or text data in the process database each time the SQL Trigger and Data tag chain executes. This field provides better control over monitoring the actual data retrieved by the SQL Data tag each time the SQL Trigger tag executes. Valid entries are: • None – Prevents the tag from resetting the field. • Blank – Removes any text data in the field. This setting is commonly used when you are retrieving text from tag Description fields. • Zero – Writes a numeric zero to the specified tag and field.

Alarm Options

Field	Description
Alarm Areas	Displays the alarm areas that receive alarms and messages generated by this tag. Double-click an item in the list box and select an alarm area with the Browse button, or enter the alarm area name in the field. **Valid Entries** ALL or up to 15 alarm area names.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.

Field	Description
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.
Previous Block	Displays the name of the previous (upstream) tag. **Valid Entries** None. This is a read-only field.
Next Block	Displays the name of the next tag in the database chain. You can select a tag for this field by clicking the browse button. **Note:** In a Statistical Data tag, the Next Block field specifies the tag name of the downstream Statistical Control tag. No other tag type is valid.
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.

SQT Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

SQL Definitions and Date Filters

Field	Description
SQL Command Name	Lets you specify the SQL command alias that SQL System Task uses when the SQL Trigger tag runs. SQL commands are stored in an SQL Library Table. Each row in the table consists of a SQL command and an alias. If the Database ID field is specified, that database ID will be used to seek the SQL LIB and SQL name for the SQL command, and the Database ID configured inside this block will only be used for the DATA portion of the SQL database and not for the SQL LIB portion. **Valid Entries** An alias up to eight characters. Lowercase letters are automatically capitalized.
Database ID	Lets you specify the relational database (data source) to use for the current block. If you specify a Database ID here, it will be used to seek the SQL LIB and SQL name for the SQL command, and override the block configuration related to the location of the SQL LIB.
Event Start Date	Lets you specify when the SQL Trigger tag executes. **Valid Entries** • 1-31 – Specifies a day of the month to trigger the tag. • Sun, Mon, Tue, Wed, Thu, Fri, Sat – Specifies a day of the week to trigger the tag. • All – Runs the block based upon the Event Time or Event Tag fields. • None – Disables all time and tag based events. **Note:** If the start date is later than the end date, the block runs through the end of the week or month and into the next week or month. When you specify All or None for the Start Date, the End Date should always be None.

Field	Description
Event End Date	Lets you specify when the SQL Trigger tag stops. Use the following guidelines when defining the End Date: • If the start date is later than the end date, the tag runs through the end of the week or month and into the next week or month. • If you do not define an end time or period, the tag executes once on the start time. • If you do not define the end time, but you define a period, the tag uses an implied end time of 24:00:00 (midnight). **Valid Entries** • 1-31 – Specifies a day of the month the tag stops. • Sun, Mon, Tue, Wed, Thu, Fri, Sat – Specifies a day of the week the tag stops. • None – Specifies the tag stops on the same day or date it started on.
Process By Exception	Enables exception-based processing for the tag.
Scan Time	Lets you specify how often the Scan, Alarm, and Control (SAC) program processes the tag and any tags chained to it. **Valid Entries** • 0 (one shot processing) • 0.05 to .95 in .05 increments (subsecond scan times) • 1 to 60 in 1 second increments • 1M to 60M in 1 minute increments • 1H to 24H in 1 hour increments
Phase At	Lets you specify how long the Scan, Alarm, and Control (SAC) program delays in scanning the tag. When the tag has a second or subsecond scan time, SAC offsets the initial scan by the phase time when iFIX starts or when the database is reloaded. When the tag has a scan time of 1 minute or longer, SAC offsets the initial scan starting at midnight. **Valid Entries** Depends on the scan time. If the scan time is in hours, the phase must be in hours:minutes. If the scan time is in minutes, the phase must be in minutes:seconds. If the scan time is in seconds, the phase must be in seconds. If the scan time is in subseconds, the phase must be in subseconds.

Time and Block Events

Field	Description
Event Start Time	Lets you specify a time between 00:00:00 to 23:59:59 to indicate the time that the SQL Trigger tag executes. Use the following guidelines when defining the Start Time field: • If you leave the Start Time field blank, the SQL Trigger block does not run based on time. • If you specify a start time without an end time, the block triggers once at the specified time on every day within the date range specified in the Start Date and End Date fields. • If you define a start and end time and do not define an Event Period, the block triggers based on its scan time.
Event End Time	Lets you specify a time between 00:00:00 and 23:59:59 to indicate the time that the SQL Trigger tag stops. Use the following guidelines when defining the Start Time field: • If you do not enter an end time, the tag automatically stops at midnight. • If you define the Start Time and Event Period but not the End Time, then the tag executes once every day within the date range of Start Date and End Date fields. The tag assumes the End Time is the end of the day.
Event Period	Lets you specify a time between 00:00:00 and 23:59:59 to indicate how often the SQL Trigger tag triggers after reaching the start time. Use the following guidelines when defining the period: • If you enter a time less than the tag's scan time, the tag triggers every time it is scanned; otherwise, the tag triggers according to the period time. • If you enter start and end times, the tag triggers at the start time and every event period after that until reaching the end time. Then, the tag stops until reaching the start time again, provided the day or date is still within the range specified in the Start Date and End Date fields. • Once a period starts, it always finishes even if it spills over into a day that is not within the range specified in the Start Date and End Date fields.

Field	Description
Event Tag	Lets you specify the tag and field name pair that activates the SQL Trigger tag. You can configure the tag to trigger when the value of the specified event tag changes from zero to a non-zero value, from a non-zero value to zero, or simply changes value. **Valid Entries** • If you specify an ASCII field (A_), you can only trigger the tag by a Change Of Value event type. • If you specify a floating point field (F_), you can trigger the tag by either a Change Of Value, High to Low, or Low To High event type. Low is defined as 0 and a High is defined as non-zero, so you can use an analog tag. • To trigger a tag by an event tag and type, the current day or date must be within the date range specified by the Start and End Date fields.
Confirmation Tag	Lets you enter an analog or digital tag (where low is 0 and high is non-zero) to allow your process hardware to confirm the execution of the SQL Trigger tag. The process hardware does this by examining the value of the tag and field entered into this field. When the value is non-zero, the process hardware assumes the execution is complete. In addition, you can use this field in conjunction with the Event Tag and Event Type fields to establish synchronization between the device and the SQL Trigger tag. **Important:** This field requires a floating point (F_) field. Furthermore, the tag only uses the specified tag when the Low to High or High to Low Event Type is selected. **Example** Assume your process hardware sets a value, holds all values for the process database, and then waits for the Confirm Tag's value to change. By setting a value, the process hardware triggers the SQL Trigger tag. This causes the SQL System task to process the downstream SQL Data blocks and write a non-zero value in the Confirm Tag. In response, the process hardware clears the value it set and resumes processing. If you do not have your hardware configured to reset the Confirmation tag, it will reset to 0 anyway when the EVENT tag triggers the SQT to set it back to the default position.

Field	Description
Event Type	Lets you specify the type of event that starts the SQL Trigger tag in conjunction with the Event Tag field. Select one of the following options: • Change of Value – Starts the tag when the value of the Event Tag field changes. To use this event type, enter any ASCII (A_) or floating point (F_) field as the Event Tag. For example, A_CUALM. • Low to High – Starts the tag any time value of the Event Tag field changes from zero to non-zero. To use this event type, enter a floating point field (F_) as the Event Tag. For example: F_CV. • High to Low – Starts the tag any time the value of the Event Tag field changes from non-zero to zero. To use this event type, enter a floating point field (F_) as the Event Tag. For example, F_CV.

Alarm Options

Field	Description
Alarm Areas	Displays the alarm areas that receive alarms and messages generated by this tag. Double-click an item in the list box and select an alarm area with the Browse button, or enter the alarm area name in the field. **Valid Entries** ALL or up to 15 alarm area names.
Enable Alarm	Lets you enable or disable alarming for this tag. When you enable alarming, the tag generates alarms allowing objects in your operator displays to show alarm conditions, and enabling other tags to detect alarms from the tag. **Note:** The entire chain can be affected when you disable alarms for a tag. In addition, for both the Digital and Analog Alarm tags, this field is ignored when you enable the Alarm Suspend field.

Field	Description
Priority	Lets you specify the alarm priority for a tag. If the priority is equal or greater than the SCADA node's alarm priority, iFIX sends the alarm to all the alarm destinations enabled for this node. However, if the priority is less than the SCADA node's alarm priority, the alarm is automatically acknowledged and filtered out so that it does not appear in your alarm destinations. However, the alarm does appear in Data links configured to display current and latched alarms. **Valid Entries** INFO, LOLO, LOW, MEDIUM, HIGH, HIHI, or CRITICAL **Note:** To report tag alarms, the appropriate alarm areas must be assigned to each of the alarm services enabled in the System Configuration Utility (SCU).
Shelve Enable	Select this check box to enable Alarm Shelving for the tag.
Shelve Policy	Select an alarm shelving policy from the drop-down list.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.

Field	Description
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.

Field	Description
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.

Field	Description
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
Startup Mode	Lets you select the tag's mode on startup. In Automatic mode, the tag receives data from the I/O driver, OPC server, or OPC UA server. In Manual mode, the tag receives data from the operator, scripts, recipes, or Program blocks.
Initial Scan	Lets you select whether the tag is initially placed on or off scan. Click On Scan to place the tag on scan as soon as the Scan, Alarm, and Control (SAC) program starts or when the database is loaded. Click Off Scan to place the tag on scan by a Program block, an Event Action tag, a script, an operator entry in a Data link, or an Easy Database Access program.
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.
Previous Block	Displays the name of the previous (upstream) tag. **Valid Entries** None. This is a read-only field.

Field	Description
Next Block	Displays the name of the next tag in the database chain. You can select a tag for this field by clicking the browse button. **Note:** In a Statistical Data tag, the Next Block field specifies the tag name of the downstream Statistical Control tag. No other tag type is valid.
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Table Mode	Lets you specify the SELECT mode of the SQL Data tag. Select one of the following options: • Single Row – The SQL Data block accepts one row from a SELECT command. • Multiple Rows – The SQL Data block accepts more than one row from a SELECT command and write values to individual blocks. • Array Mode – The SQL Data block accepts more than one row from a SELECT command and write values to register blocks. Be sure you specify a register block for each column returned from the SELECT command.
Command Type	Choose one of the following: • SQL Command – Lets you select a SQL command as the command type. Once selected, enter the name of the SQL command in the SQL Name field on the Basic tab. • Procedure – Lets you select a SQL command as the command type. Once selected, enter the name of the SQL command in the SQL Name field on the Basic tab.

Field	Description
Backup Data	Lets you enable the SQL Trigger tag to back up process data if it detects a problem with the relational database. **Note:** The SQL software option does not back up a SELECT command's request because there is no means of accurately determining when the connection to the server can be re-established. Since the SELECT command inserts values into the process database, the process of inserting must be performed on a controlled and predictable basis, not whenever the connection is re-established.
Rows	Lets you specify the starting row, depending on the Select Parameters mode: • Single Row – Enter the starting row of the resulting data if multiple rows are returned. • Multiple Rows – Enter the starting row of the resulting data. • Array Mode – Enter the number of rows returned.
Cols	Lets you specify the number of columns configured in the SELECT command.

SS Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

I/O Addressing

Field	Description
I/O Driver	Lets you select an I/O driver, OPC server, or OPC UA server for the tag. The selected driver or server enables the tag to communicate with process hardware on the plant floor. Before you can select an I/O driver, OPC server, or OPC UA server you must install it and add it to the available ones in the SCU.
I/O Address	Lets you enter the location in the process hardware where data for this tag is saved and where output is sent. **Valid Entries** Depends on your driver. Consult your I/O driver or server manual for details on the proper input/output addresses and configurations. **CAUTION:** Do not assign the same I/O address to tags when using exception-based and time-based processing. Doing so will cause the exception-based tags to occasionally miss a value. **CAUTION:** Configuration Hub currently does not do I/O address validations before publish. If you enter an invalid IO address into a tag or generate an invalid I/O address via the model and substitutions, the publish may fail to set the IO address into the active database, and your invalid IO address will be removed.
Signal Conditioning	Lets you select how to map the range of values coming from your process hardware into the tag's EGU range. **Note:** Signal conditioning and linear scaling cannot be applied simultaneously. If you select a value for Signal Conditioning verify that Linear Scaling is not selected. **Valid Entries** Depends on your driver or server. Refer to your driver or server manual for more information.
H/W Options	Lets you select how to map the range of values coming from your process hardware into the tag's EGU range. **Note:** Signal conditioning and linear scaling cannot be applied simultaneously. If you select a value for Signal Conditioning verify that Linear Scaling is not selected. **Valid Entries** Depends on your driver or server. Refer to your driver or server manual for more information.
Process by Exception	Enables exception-based processing for the tag.

Field	Description
Scan Time	Lets you specify how often the Scan, Alarm, and Control (SAC) program processes the tag and any tags (blocks) chained to it. **Valid Entries** • 0 (one shot processing) • 0.05 to .95 in .05 increments (subsecond scan times) • 1 to 60 in 1 second increments • 1M to 60M in 1 minute increments • 1H to 24H in 1 hour increments **Example** 0.15 specifies a 15-subsecond scan time. 5 specifies a 5-second scan time, 10M specifies a 10-minute scan time, 16H specifies a 16-hour scan time.
Phase At	Lets you specify how long the Scan, Alarm, and Control (SAC) program delays in scanning the tag. When the tag has a second or subsecond scan time, SAC offsets the initial scan by the phase time when iFIX starts or when the database is reloaded. When the tag has a scan time of 1 minute or longer, SAC offsets the initial scan starting at midnight. **Valid Entries** Depends on the scan time. If the scan time is in hours, the phase must be in hours:minutes. If the scan time is in minutes, the phase must be in minutes:seconds. If the scan time is in seconds, the phase must be in seconds. If the scan time is in subseconds, the phase must be in subseconds.

Limits and Inputs

Field	Description
Low Limit	Lets you enter the tag's minimum value. **Valid Entries** • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or Signal Select tag, if the output of the tag is 10 and the Low Limit is 15, the tag clamps the value at 15. You must enter a Low Limit of 10 or less to output a value of 10. If you want to display a value of 1.236 from the Calculation tag, you must enter three or more decimal places in the Low Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.

Field	Description
High Limit	Lets you enter the tag's maximum value. **Valid Entries** You can enter a high limit in one of three formats: • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or a Signal Select tag, if the output of the tag is 150 and the High Limit is 100, the tag clamps the value at 100. You must enter a High Limit of 150 or more to output a value of 150. If you want to display a value of 1.236 from the Calculation tag, you must enter three or more decimal places in the High Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.
Units	Lets you enter text describing the engineering units range. **Valid Entries** Up to 33 characters. **Example** Kilograms per square meter, Liters per minute, degrees Celsius, **Note:** This entry does not affect the calculation or function of any variables in iFIX. It is used strictly as a display label to identify the engineering units.

Field	Description
Scale Enabled	Lets you enable or disable scaling for this tag. Enabling scaling allows the system to convert the data received from input sensors to designated data ranges. **Note:** Linear scaling and signal conditioning cannot be applied simultaneously. If you select Linear Scaling, verify that Signal Conditioning is set to NONE. **Example** Scaling allows conversion of temperature data received in Fahrenheit to an output which uses Celsius values.
Input 1-6	Lets you specify where the Signal Select tag receives input data. You can specify any EGU range for the Signal Select tag's inputs. However, if the value of an input is outside the specified EGU range, the tag clamps it to the highest or lowest acceptable value. **Valid Entries** A tag and field name pair in the format tag.field or a numeric constant. Named blocks must exist in the same database as your Signal Select tag. An input entry may also include zero (0). If you select Low in the Selected Mode field, the Signal Select tag processes a zero entry if that entry is the lowest value entered in all Input fields. **Note:** Input 1 is always the upstream tag, tied to the Signal Select tag through the upstream block's Next Block field.

Field	Description
Selection Mode	Lets you specify how the Signal Select tag uses its input values to calculate its output value. You can change the selected mode field with a modifiable Data link in the iFIX WorkSpace, a SETSEL command from a Program block, or an Easy Database Access program. Select one of the following options: • Inputs 1-6 – Outputs the corresponding input number. • Average – Outputs the average of all the assigned inputs. • Good – Outputs the first good input. A good value is one that is within the tag's EGU range. • High – Outputs the highest input. • Low – Outputs the lowest input. • Sum – Outputs the sum of all the inputs. **Notes** • An Input number, for example, Input 5, is usually specified when you are loading recipes and want the value from a particular input passed to the next tag when a recipe loads. • If one or more of the inputs are bad or off scan and the selected mode is Average or Sum, the Signal Select tag ignores these inputs and continues with the calculation based on the remaining ones.

Alarm Options

Field	Description
Alarm Areas	Displays the alarm areas that receive alarms and messages generated by this tag. Double-click an item in the list box and select an alarm area with the Browse button, or enter the alarm area name in the field. **Valid Entries** ALL or up to 15 alarm area names.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.

Field	Description
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.

Field	Description
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.

Field	Description
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.
Previous Block	Displays the name of the previous (upstream) tag. **Valid Entries** None. This is a read-only field.

Field	Description
Next Block	Displays the name of the next tag in the database chain. You can select a tag for this field by clicking the browse button. **Note:** In a Statistical Data tag, the Next Block field specifies the tag name of the downstream Statistical Control tag. No other tag type is valid.
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.

TM Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

Timer and Setup Options

Field	Description
Timing Direction	Lets you increment or decrement the Timer tag value. Up is the default direction.

Field	Description
Target Value	Lets you specify the value that triggers the following events when alarms are enabled: • Generates an alarm. • Closes the specified digital block, if the Alarm Tag field contains an entry. • Continues counting. **Note:** If alarms are disabled, the block continues counting when it reaches this value. **Valid Entries** The tag and field pair in tag.field format or a numeric value in the format ddd:hh:mm:ss, up to 365:23:59:59. The default target value is 365:00:00:00. When you enter a numeric value in the format ddd:hh:mm:ss, the tag converts the time into seconds for internal use while displaying the value you entered. Likewise, the Timer tag converts the value a tag and field pair into seconds for internal use. This feature allows the Timer tag to use the value from the another tag regardless of how it stores its value.
Preset Value	Lets you specify an initial value for the tag. This field also controls the value of the tag when it resets. **Valid Entries** The tag and field pair in tag.field format or a numeric value in the format ddd:hh:mm:ss, up to 365:23:59:59. The default target value is 000:00:00:00. **Note:** If you use a tag name (tag.field) in the Preset Value field, you must check the Clear on Startup check box.
Clear on Startup	Lets you specify whether the Timer tag retains the last value saved when you save the database, or resets its value to zero when loading the database (on system startup or using the Database Reload command). • If you want to retain the last value saved, clear the Clear on Startup check box. • If you want to reset the counter to a specific value, select the Clear on Startup check box and specify a value in the Preset Value field. • If you want to reset the counter to zero, select the Clear on Startup check box and leave the Preset Value field blank. • If you want to use a tag in the Preset Value field, specify the tag name in the Preset Value field and select the Clear on Startup check box.

Field	Description
Reset Tag	Lets you specify a tag that controls when to reset the Timer block. When the specified block's value changes from zero to one, the Timer tag resets to the value in the Preset Value field and clears any alarms. **Valid Entries** Any of the following tag types: • Digital Alarm • Digital Input • Digital Output • Boolean **Note:** Placing the upstream block off scan stops the Timer tag. When the upstream block is placed on scan again, the Timer tag restarts as defined by the Clear on Startup field.
Hold Tag	Lets you specify an optional digital tag that temporarily suspends Timer tag counting when the hold tag's value changes from zero to one. When the value changes from one to zero, the tag resumes counting. **Valid Entries** A tag name with the F_CV field.

Alarm Options

Field	Description
Alarm Areas	Displays the alarm areas that receive alarms and messages generated by this tag. Double-click an item in the list box and select an alarm area with the Browse button, or enter the alarm area name in the field. **Valid Entries** ALL or up to 15 alarm area names.

Field	Description
Enable Alarm	Lets you enable or disable alarming for this tag. When you enable alarming, the tag generates alarms allowing objects in your operator displays to show alarm conditions, and enabling other tags to detect alarms from the tag. **Note:** The entire chain can be affected when you disable alarms for a tag. In addition, for both the Digital and Analog Alarm tags, this field is ignored when you enable the Alarm Suspend field.
Priority	Lets you specify the alarm priority for a tag. If the priority is equal or greater than the SCADA node's alarm priority, iFIX sends the alarm to all the alarm destinations enabled for this node. However, if the priority is less than the SCADA node's alarm priority, the alarm is automatically acknowledged and filtered out so that it does not appear in your alarm destinations. However, the alarm does appear in Data links configured to display current and latched alarms. **Valid Entries** INFO, LOLO, LOW, MEDIUM, HIGH, HIHI, or CRITICAL **Note:** To report tag alarms, the appropriate alarm areas must be assigned to each of the alarm services enabled in the System Configuration Utility (SCU).
Shelve Enable	Select this check box to enable Alarm Shelving for the tag.
Shelve Policy	Select an alarm shelving policy from the drop-down list.
Alarm Contact Mode	Lets you specify when to open the digital tag specified in the Alarm Contact field. Select one of the following options: • **Acknowledge** – Opens the digital tag when the operator acknowledges the alarm. This mode is the default. • **Return** – Opens the digital tag when the alarm is cleared. • **All Clear** – Opens the digital tag when the alarm is acknowledged and cleared. • **Never** – Does not open the digital tag.

Field	Description
Alarm Contact Tag	Lets you specify a digital tag that closes when the Timer tag reaches the value specified in the Target Value field. If the digital tag controls an alarm, an external horn sounds when the tag closes. If the digital tag controls a digital contact, the contact closes. **Valid Entries** The name of a: • Digital Output tag • Digital Input tag • Digital Alarm tag (in manual mode) **Note:** Disabling alarms prevents this field from generating alarms.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.

Field	Description
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.

Field	Description
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.

Field	Description
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.
Previous Block	Displays the name of the previous (upstream) tag. **Valid Entries** None. This is a read-only field.
Next Block	Displays the name of the next tag in the database chain. You can select a tag for this field by clicking the browse button. **Note:** In a Statistical Data tag, the Next Block field specifies the tag name of the downstream Statistical Control tag. No other tag type is valid.

Field	Description
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Next Blk Processing	Lets you specify when the Scan, Alarm, and Control (SAC) program processes the next tag in the chain. Select one of the following options: • **Always** – Directs the Scan, Alarm, and Control (SAC) program to process the tag without waiting for the Timer block to reach its target value. Always is the default condition. • **Time** – Directs SAC to process the tag when the Timer tag reaches its target value.

TR Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

Limits and Options

Field	Description
Low Limit	Lets you enter the tag's minimum value. **Valid Entries** • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or Signal Select tag, if the output of the tag is 10 and the Low Limit is 15, the block clamps the value at 15. You must enter a Low Limit of 10 or less to output a value of 10. If you want to display a value of 1.236 from the Calculation block, you must enter three or more decimal places in the Low Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.

Field	Description
High Limit	Lets you enter the tag's maximum value. **Valid Entries** You can enter a high limit in one of three formats: • Standard Integer. • Expanded Decimal Notation, ranging from -9999999 to 9999999. • Scientific Notation, ranging from +/-3.4E-38 to +/-3.4E +38. • Standard integers range from -32768 to 32767 (signed integers), 0 to 65535 (unsigned integers), 0 to 999 (3BCD), or 0 to 4095 (12 Binary). **Note:** The I/O driver can set certain limitations on the engineering units range. Consult your I/O driver manual for more information. In a Calculation or a Signal Select tag, if the output of the block is 150 and the High Limit is 100, the block clamps the value at 100. You must enter a High Limit of 150 or more to output a value of 150. If you want to display a value of 1.236 from the Calculation block, you must enter three or more decimal places in the High Limit field. If you are using scientific notation, up to six decimal places may be configured with precision, and the range may be positive or negative.
Units	Lets you enter text describing the engineering units range. **Valid Entries** Up to 33 characters. **Example** Kilograms per square meter, Liters per minute, degrees Celsius, **Note:** This entry does not affect the calculation or function of any variables in iFIX. It is used strictly as a display label to identify the engineering units.
Buffer Clear Status	Lets you clear the block's data buffers every time the block is put on scan.

Field	Description
Input	Lets you specify the name of the tag and field that the Trend block stores. If this field is blank, the Trend block stores the value passed by the upstream block. **Valid Entries** A tag and field name pair in the tag.field (F_CV) format. **Note:** To chain Trend tag, enter a Trend block's name followed by the F_INP field.
Compression Factor	Lets you increase the amount of data stored in the trend history by collecting the number of samples entered in the field, averaging them, and storing up to 80 averages in the trend history. **Valid Entries** A value from 1 - 255. **Example** If you have a scan time of 10 seconds and enter 5 in the Average Compress field, the Trend tag creates a trend history of 80 averages of 5 samples. In essence the block now represents a trend history of 400 scan periods(5 x 80), or 66.66 minutes (4000 seconds). **Note:** Using this field does not affect or delay the value passed by the Next Block field to the downstream block.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.

Field	Description
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.

Field	Description
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.

Field	Description
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.
Previous Block	Displays the name of the previous (upstream) tag. **Valid Entries** None. This is a read-only field.

Field	Description
Next Block	Displays the name of the next tag in the database chain. You can select a tag for this field by clicking the browse button. **Note:** In a Statistical Data tag, the Next Block field specifies the tag name of the downstream Statistical Control tag. No other tag type is valid.
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.

TT Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

Alarm Options

Field	Description
Alarm Areas	Displays the alarm areas that receive alarms and messages generated by this tag. Double-click an item in the list box and select an alarm area with the Browse button, or enter the alarm area name in the field. **Valid Entries** ALL or up to 15 alarm area names.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.

Field	Description
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

Advanced Options

Field	Description
Display Format	Lets you specify the number of decimal digits that appear to the right of the decimal point in an operator display. **Valid Entries** A value from 0 to 15, to indicate the digits of precision. **Note:** From a picture, the Display field can contain 15 characters total, consisting of numbers to the left and right of a decimal point.
Units	Lets you enter text describing the engineering units range. **Valid Entries** Up to 33 characters. **Example** Kilograms per square meter, Liters per minute, degrees Celsius, **Note:** This entry does not affect the calculation or function of any variables in iFIX. It is used strictly as a display label to identify the engineering units.

Field	Description
Period	Lets the tag calculate the correction factor to account for the difference in timing between the chain's scan time and the quantity being measured. When you enter a time in this field, the Totalizer block calculates the number of inputs and then divides the raw total by this number. **Valid Entries** A time in the format HH:MM:SS. **Example** Assume you are using the Totalizer tag to calculate the total number of gallons in a tank, and you have an Analog block measuring the flow (in gallons per minute) into the tank. If the Analog tag has a scan time of five seconds and is reading a flow of 50 gallons per minute, in a minute's time it will send 12 values of 50 gallons per minute to the Totalizer block. If the Totalizer block simply added these 12 values together, the result would be an erroneous raw total of 600 gallons for that one minute's time. The Per field lets the Totalizer block calculate the number of inputs and then divide the raw total by this number (that is, divide by 12): • #inputs/period = period/scan time • corrected total/period = raw total/# inputs Therefore, if you enter 00:01:00 (one minute) in the Per field, the Totalizer block automatically divides the raw total (600 gallons) by the number of inputs (12) per period. This gives you a correct value of 50 gallons entering the tank within the minute.
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.

Field	Description
Previous Block	Displays the name of the previous (upstream) tag. **Valid Entries** None. This is a read-only field.
Next Block	Displays the name of the next tag in the database chain. You can select a tag for this field by clicking the browse button. **Note:** In a Statistical Data tag, the Next Block field specifies the tag name of the downstream Statistical Control tag. No other tag type is valid.
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.

TX Tag

This tag contains the following details:

General

Field	Description
Tag Name	Lets you enter the tag's name. The tag name is referenced by other tags, display links, and other programs. Each tag's name must be unique in the database. If you need to change a tag's name, copy the tag and rename it. **Valid Entries** Tag names must begin with a letter or number and can be up to 256 characters, including certain special characters. Tag names must also contain at least one non-numeric character. For iFIX internal databases, single quotes are not supported in tag names. Tag names can also include dashes (-), underscores (_), forward slashes (/), exclamation points (!), pipes (|), number signs (#), open brackets ([), close brackets (]), percent signs (%), and dollar signs ($). **Invalid Entries** You cannot use the following special characters in a tag name: ~ ` + ^ : ? " * = { } . , ; ? @ **Examples** AI1, CA_10, DI#, 4PID, 'TEST'
Description	Lets you enter optional descriptive text about the tag. **Valid Entries** A text string of up to 256 characters can describe the block and its function. This string is appended to each alarm message and can also be shown on operator displays.
Type	The tag type. Display-only field.
Current Value	The current value of the tag in the database. Display-only field. Click the update button to update the displayed value, if one exists.

I/O Addressing

Field	Description
I/O Driver	Lets you select an I/O driver, OPC server, or OPC UA server for the tag. The selected driver or server enables the tag to communicate with process hardware on the plant floor. Before you can select an I/O driver, OPC server, or OPC UA server you must install it and add it to the available ones in the SCU.
I/O Address	Lets you enter the location in the process hardware where data for this tag is saved and where output is sent. **Valid Entries** Depends on your driver. Consult your I/O driver or server manual for details on the proper input/output addresses and configurations. **CAUTION:** Do not assign the same I/O address to tags when using exception-based and time-based processing. Doing so will cause the exception-based tags to occasionally miss a value. **CAUTION:** Configuration Hub currently does not do I/O address validations before publish. If you enter an invalid IO address into a tag or generate an invalid I/O address via the model and substitutions, the publish may fail to set the IO address into the active database, and your invalid IO address will be removed.
Signal Conditioning	Lets you select how to map the range of values coming from your process hardware into the tag's EGU range. **Note:** Signal conditioning and linear scaling cannot be applied simultaneously. If you select a value for Signal Conditioning verify that Linear Scaling is not selected. **Valid Entries** Depends on your driver or server. Refer to your driver or server manual for more information.
H/W Options	Lets you select how to map the range of values coming from your process hardware into the tag's EGU range. **Note:** Signal conditioning and linear scaling cannot be applied simultaneously. If you select a value for Signal Conditioning verify that Linear Scaling is not selected. **Valid Entries** Depends on your driver or server. Refer to your driver or server manual for more information.
Process by Exception	Enables exception-based processing for the tag.

Field	Description
Scan Time	Lets you specify how often the Scan, Alarm, and Control (SAC) program processes the tag and any tags (blocks) chained to it. **Valid Entries** • 0 (one shot processing) • 0.05 to .95 in .05 increments (subsecond scan times) • 1 to 60 in 1 second increments • 1M to 60M in 1 minute increments • 1H to 24H in 1 hour increments **Example** 0.15 specifies a 15-subsecond scan time. 5 specifies a 5-second scan time, 10M specifies a 10-minute scan time, 16H specifies a 16-hour scan time.
Phase At	Lets you specify how long the Scan, Alarm, and Control (SAC) program delays in scanning the tag. When the tag has a second or subsecond scan time, SAC offsets the initial scan by the phase time when iFIX starts or when the database is reloaded. When the tag has a scan time of 1 minute or longer, SAC offsets the initial scan starting at midnight. **Valid Entries** Depends on the scan time. If the scan time is in hours, the phase must be in hours:minutes. If the scan time is in minutes, the phase must be in minutes:seconds. If the scan time is in seconds, the phase must be in seconds. If the scan time is in subseconds, the phase must be in subseconds.

Alarm Options

Field	Description
Alarm Areas	Displays the alarm areas that receive alarms and messages generated by this tag. Double-click an item in the list box and select an alarm area with the Browse button, or enter the alarm area name in the field. **Valid Entries** ALL or up to 15 alarm area names.

Field	Description
Enable Alarm	Lets you enable or disable alarming for this tag. When you enable alarming, the tag generates alarms allowing objects in your operator displays to show alarm conditions, and enabling other tags to detect alarms from the tag. **Note:** The entire chain can be affected when you disable alarms for a tag. In addition, for both the Digital and Analog Alarm tags, this field is ignored when you enable the Alarm Suspend field.
Enable Event	Lets you enable or disable event messaging for the tag. Event messaging is similar to alarming except that it does not require acknowledgment. Event messages are sent to the same alarm destinations as alarms for a given block but do not appear in the Alarm Summary object. Analog Output, Analog Register, Digital Output, Digital Register, Digital Input, and Text tags have event messaging capabilities. **Note:** Be careful when using event messaging in a chain with a time-based scan time. If the scan time is short, your alarm files (either disk or printed) can grow very large. We recommend enabling event messaging for exception-based chains, one shot chains, and stand-alone output blocks.
Shelve Enable	Select this check box to enable Alarm Shelving for the tag.
Shelve Policy	Select an alarm shelving policy from the drop-down list.

Historian

Field	Description
Tag Description	Lets you enter the tag description that is used by Historian when the tag is collected.
Collect	Lets you select if the tag is set for collection by the Proficy Historian collector. Select Enabled to allow the tag to be collected by the collector.

Field	Description
Collection Interval	Lets you set the collection interval, or the amount of time between readings of data of this tag by the Proficy Historian collector. **Valid Entries** Must be entered in 100 ms intervals. The default value is 5000ms. **Example** 1500 is a valid entry, because it is in 100ms intervals. However, 1545 is not a valid entry, because it is not in 100ms intervals.
Collection Offset	Used with the collection interval to schedule collection of data from a tag. **Valid Entries** Any numeric value that does not exceed the collection interval. The value is in seconds. **Examples** If you want to collect a value for a tag every hour at thirty minutes past the hour (12:30, 1:30, 2:30, and so on), you would enter a collection interval of 1 hour and an offset of 30 minutes. If you want to collect a value each day at 8 am, you would enter a collection interval of 1 day and an offset of 8 hours.
Time Resolution	Lets you select the Time Resolution, or the level of precision for the timestamps for the GE Historian collector. Select either Milliseconds or Seconds.
Collector Compression	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.
Collector Deadband	Lets you select if the tag is set for compression. Compression applies a smoothing filter to incoming data by ignoring incremental changes in values that fall within a deadband centered around the last reported value. Select Disabled to prevent the tag from being compressed.

Field	Description
Compression Type	Lets you select if the deadband value entered in the Collector Deadband field is an absolute value or a percentage. Select Absolute to set the Collector Deadband value to an absolute value. Select Percentage to set the Collector Deadband value to a percentage of the Engineering Units, which are specified on the Basic tab.
Compression Time-out (ms)	Indicates the maximum amount of time the collector will wait between sending samples for a tag to the archiver. After the timeout value is exceeded, the tag stores a value at the next scheduled collection interval, and not when the timeout occurred. The Collector Compression Timeout value should be in increments of your collection interval, and not less. **Valid Entries** Any numeric value.

E-Signature

Field	Description
Type	The Type of Electronic Signature: • Select None to require no Electronic Signature for this tag. • Select Perform Only to require a Perform By signature for any data entry changes or alarm acknowledgements for this tag. • Select Perform and Verify to require both a Perform By and a Verify By signature for any data entry changes or alarm acknowledgements for this tag.
Remember User	Select to allow the operator to repeatedly sign for successive actions by supplying only a password. Continuous use applies only to the person performing an action and does not affect the person verifying an action.
Exempt Alarm Ack	Select to allow operators to acknowledge alarms for this tag without entering a signature, even if this tag requires electronic signatures for data entry.

Field	Description
Unsigned Writes	Select to allow this tag to accept or reject unsigned writes. Unsigned writes can originate from scripts, recipe downloads, and other data sources. When an unsigned write is rejected, a message is sent indicating that the tag rejected an unsigned write. This is the default selection.
Comment Required	Select this option to enable Comment enforcement in the Perform Comment section. This means that the operator must enter comments in the Comment box in the Electronic Signature section during run mode. Comments in the Verify Comment section are optional. The Perform by Comments Required check box appears in every tag configuration where Electronic Signature settings are available. By default, this check box is disabled.

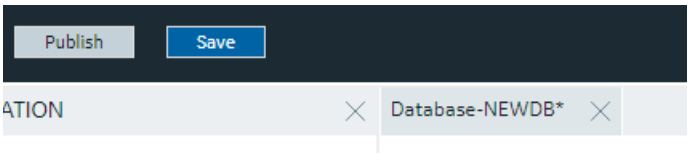
Advanced Options

Field	Description
Startup Mode	Lets you select the tag's mode on startup. In Automatic mode, the tag receives data from the I/O driver, OPC server, or OPC UA server. In Manual mode, the tag receives data from the operator, scripts, recipes, or Program blocks.
Initial Scan	Lets you select whether the tag is initially placed on or off scan. Click On Scan to place the tag on scan as soon as the Scan, Alarm, and Control (SAC) program starts or when the database is loaded. Click Off Scan to place the tag on scan by a Program block, an Event Action tag, a script, an operator entry in a Data link, or an Easy Database Access program.

Field	Description
Security Areas	Lets you specify up to three security areas to restrict operator access to the tag. To change the value of a write-protected tag in the Database Manager or the iFIX WorkSpace, the operator must have access to that tag's security area. **Valid Entries** One security area name per field, ALL, or NONE (disables tag security). iFIX names security areas A-P by default. **Note:** Read access for database tags is available to all users regardless of security area. This allows users to retrieve data from a specific security area even if they cannot write to that area.
Message Length	Lets you specify the length of text that the tag reads and writes. **Valid Entries** 1 to 80 characters.
Alarm Field 1	Lets you enter text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.
Alarm Field 2	Lets you enter more text about the tag. Typically, one of these alarm fields contains a path to a picture you want to associate with the tag. Refer to the Implementing Alarms and Messages electronic book for more information. **Valid Entries** Text, up to 80 characters.

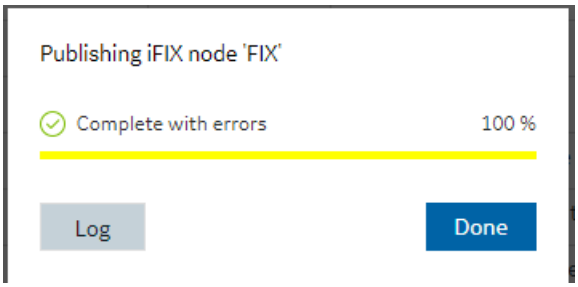
Save and Publish

When configuring an iFIX node in Configuration Hub, the common toolbar will contain two buttons at the top left named Publish and Save.



The Save button responds to certain panel actions that can queue up and will not be applied to the unpublished list until the Save is clicked. For example, any changes in the Database panel must be saved before they are applied. If you do not want to save changes you have made, close the panel and choose not to save. An asterisks (*) appears in the panel tab when there are unsaved changes. Save is also used when editing a type, but the majority of operations in the Model tab are applied with no saving required.

Changes made in Configuration Hub for iFIX nodes do not update the running system until the changes are published. Until then, any changes are kept in a separate directory on the node being configured. When you are ready to apply the changes to the running system, click the Publish button to push the changes over to the server.



Note: When Publishing, the Progress Bar does not update quickly and may take a while to complete. The Publish operation may take a while depending on the number of tags being published to the active iFIX node. Please wait for the Done indication.

You can discover unpublished changes in each panel via the status column in the panels respective grids. Configured items are either in Published, Unpublished, or Modified state.

When publishing, you will be prompted to proceed and will see the progress of the publish. While publishing from one browser session, no other browser sessions are allowed to publish. Once publish has completed you will be able to download and view the results of the publish in a log file.

Note: It is recommended that you only perform one publish operations at a time.

Publish happens in three parts corresponding to the three panels you can open from the Navigation panel. Connectivity changes are published first, followed by Model changes, and finally Database changes. The log file reports the results in this order and contains sections for Unpublished updates, modified updates and deleted update results.

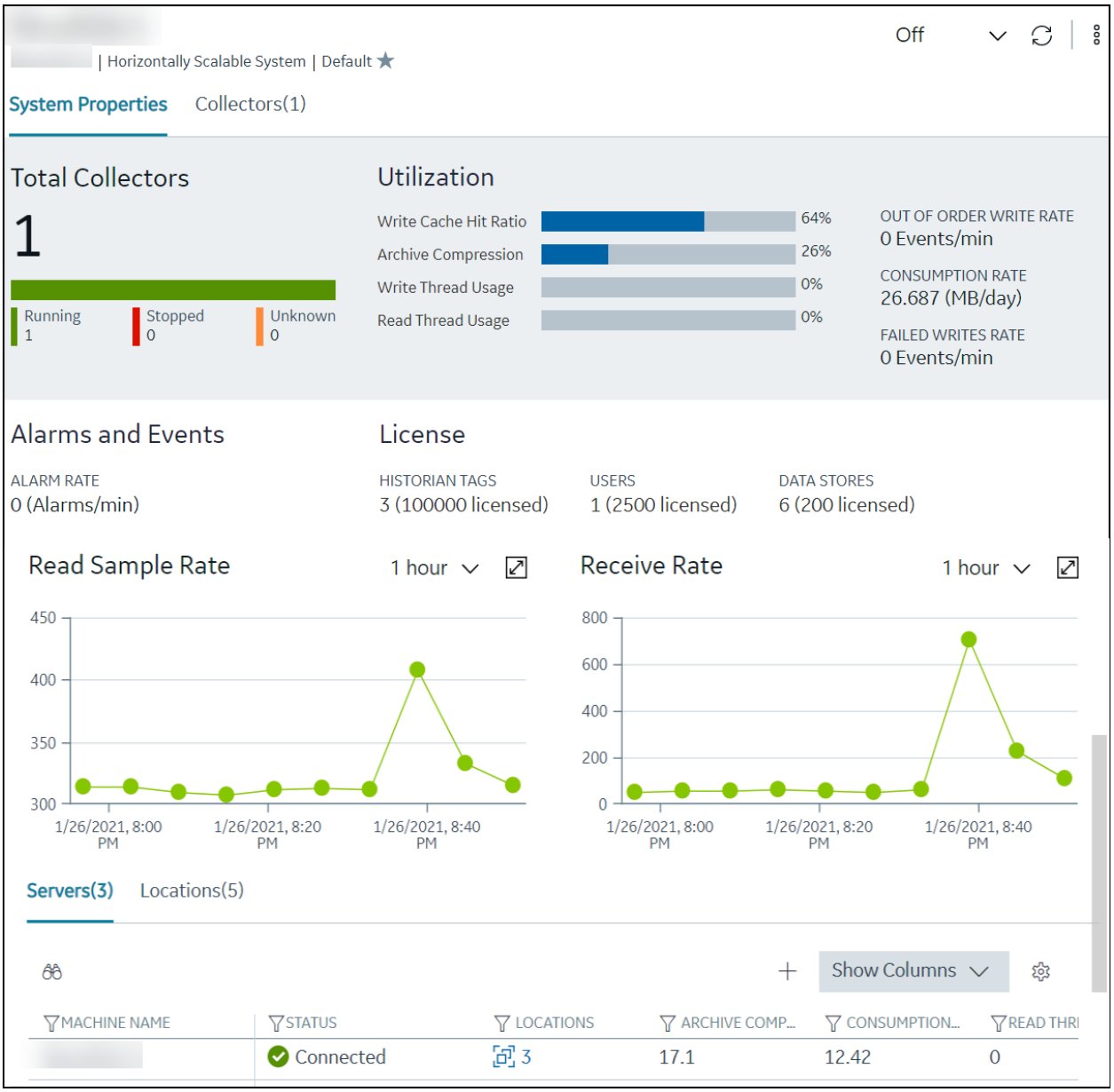
During a publish, depending on your system and other factors, your publish may Fail completely (for example if the connection is lost to a the SCADA), Succeed, or be Complete with Errors. When partially successful, the log file will be the best source to determine what did not publish fully.

Chapter 3. Historian Web Configuration

Overview

Introduction to Configuration Hub and Historian

A Historian system is a network of Historian servers that collect, store, and retrieve data related to tags, alarms, and events.



The Configuration Hub application allows you to manage the Historian systems and its components.

Advantages of Using Configuration Hub:

- **A single application that enables you to manage multiple Historian systems:** You can create and manage Historian systems using Configuration Hub. In addition, you can manage collectors, data stores, and tags.
- **Horizontal scalability:** You can increase the storage capacity of a Historian system by connecting multiple software entities so that they work as a single logical unit. This will improve the performance of the Historian system. The storage capacity depends on the number of Historian licenses that you have purchased.
- **High availability:** You can create mirror locations in a Historian system to achieve high availability of the server. If one of the servers is not available, you can retrieve data from the remaining servers in the mirror location.
- **Ease of setting up:** You can install all the collectors used in a Historian system easily by providing the required details with the help of the user-friendly interface.

Types of Historian Systems

- **Stand-Alone:** In a stand-alone Historian system, there is only one Historian server. This type of system is suitable for a small-scale Historian setup.
- **Horizontally scalable:** In a horizontally scalable Historian system, there are multiple Historian servers, all of which are connected to one another. This type of system is used to scale out the system horizontally. For example, if you have 5,00,000 tags in your Historian system, you can distribute them among the various servers to improve performance.

Components of a Historian System: In a Historian system, the following components are used. This list is not comprehensive. For a complete list, refer to the Historian documentation.

- **Servers:** A server is a machine on which Historian is installed. It contains a location and one or more data stores. A stand-alone Historian system contains only one server, whereas a horizontally scalable one contains multiple servers.
- **Data stores:** These are logical collections of tags used to store, organize, and manage tags according to your requirements. The primary use of data stores is segregating tags by data collection intervals. For example, you can put name plate or static tags (where the value rarely changes) in one data store, and put process tags in another data store. This can improve the query performance.
- **Locations:** These are virtual entities in which data stores are created. They are used for storage. The following types of locations are used in a horizontally scalable Historian system:
    - **Distributed location:** This location is created automatically when you install a Historian mirror primary server, or when you install a Historian distributed/mirror node and add it to the primary server. You cannot modify or delete this location, or create another one.
    - **Mirror location:** This location is used to replicate data collected in a data store. When you create a mirror location, you add one or more servers to the group, and then create the data stores whose data you want to replicate. For example, suppose you want to create a data

store for collecting the data for 100 tags, for which you want high availability. In that case, you must create a mirror location, add two or more servers to the mirror location, and then create the data store. When you do so, the data retrieved in the data store is stored in all the servers in the mirror location. If one of the servers is down, you can retrieve the data from the other servers in the group.

- **Tags:** These are the parameters for which you want to store data (for example, temperature, pressure, torque).
- **Collectors:** These are the applications that collect data from a data source, and send it to Historian or another destination such as Predix Time Series or an Azure IoT hub.
- **Data archiver:** This is a service that indexes all the data by tag name and timestamp, and stores the result in an .iha file.
- **Clients:** These are applications that retrieve data from the archive files using the Historian API.

Limitations

- If only one machine remains in a mirror location, you cannot remove it.
- You cannot add comments, enable the debug mode, pause data collection, resume data collection, modify, or delete an instance of offline collectors. In addition, you cannot compress network messages. You can, however, add or delete the collector instance using the Collector Manager utility at a command prompt.
- If you install Configuration Hub and the Web Admin console on the same machine, and use self-signed certificates for both of them, the login page for Configuration Hub does not appear. To prevent this issue, disable the domain security policies:
  1. Access the following URL: chrome://net-internals/#hsts
  2. In the **Domain Security Policy** section, in the **Delete domain security policies** field, enter the domain name for Configuration Hub, and then select **Delete**.
- Configuration Hub is not supported in a clustered Historian environment.

Access Configuration Hub for Historian

Install Historian Web-Based Clients.

1. Double-click the Configuration Hub icon on your desktop ().
   The Configuration Hub login page appears.

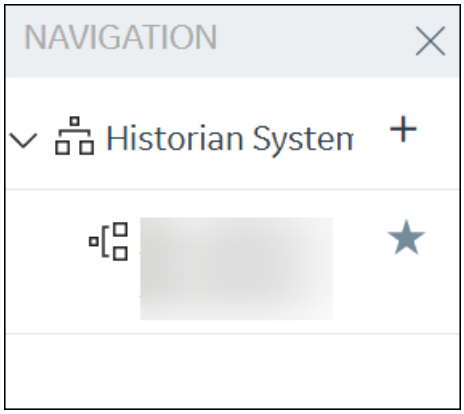
2. Select the Configuration Hub node that you want to access, and then select **Continue**.
   The UAA login page appears.

3. Log in with your credentials.

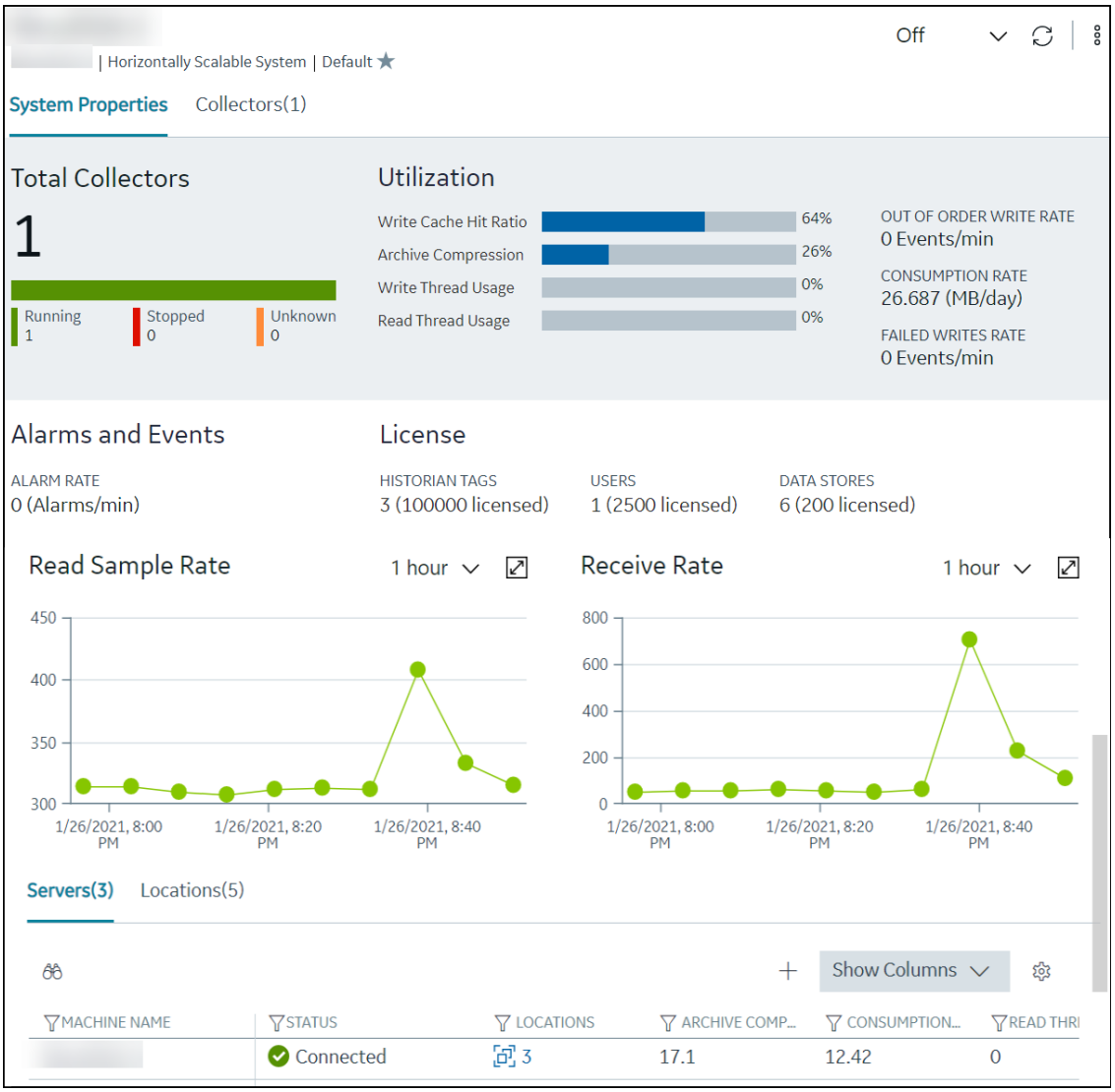
   Note: By default, the username is <*host name*>.admin, and the password is the value that you have entered in the **Admin client secret** field on the **User Account and Authorization Service** page during Web-Based Clients installation.

   The Configuration Hub application appears, displaying the following sections:

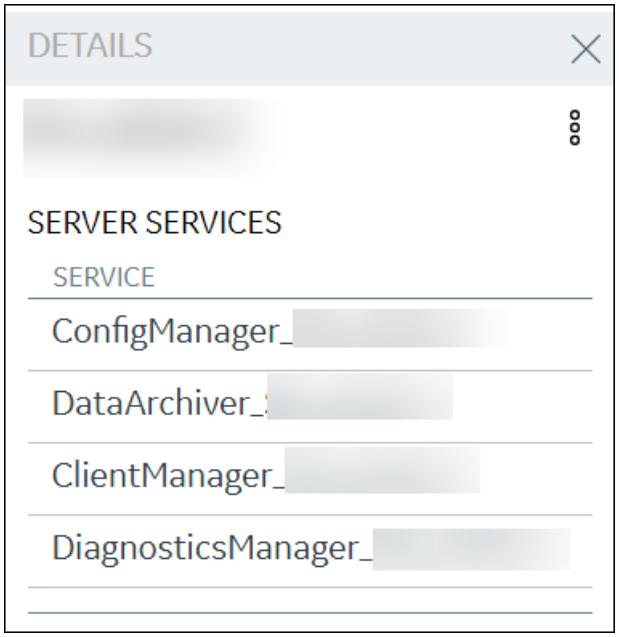
- **The Navigation section:** Contains a list of systems that you have added, along with the host name of each system. In addition, the default system added during installation of Enterprise Historian appears. In the **Navigation** section:
  - A stand-alone system is indicated by .
  - A horizontally scalable system is indicated by .
  - A default system is indicated by .



- **The main section:** Contains the properties and collectors in the selected system.



- **The Details section:** Contains the details of the item selected in the main section. If you select a system, you can view the description of the system, and add data stores and mirror locations using the **Details** section.



Configuration Hub and Historian Overview

This topic provides the high-level steps in using Configuration Hub to set up a Historian system and use it.

To set up a stand-alone Historian system:

1. Install single-server Historian.
2. Add a Historian system *(page 416)*.
3. Add one or more data stores *(page 422)*.
4. Add the collector instances that you want to use *(page 426)*.
5. Start the collectors *(page 436)*.
6. Specify the tags for which you want the collectors to collect data. You can do so using Historian Administrator or offline configuration.

To set up a horizontally scalable Historian system:

1. Install Historian primary server. When you do so, a distributed location is created for the primary server.
2. Add a Historian system *(page 416)*.
3. Install Historian distributed server on each machine that you want to add to the system.
4. Add the distributed servers to the system *(page 417)*. When you do so, a distributed location is created automatically.
5. If you want high availability, add a mirror location in the system *(page 418)*.
6. Add one or more data stores *(page 422)* to each location in the system. If you want high availability for one or more data stores, add them to the mirror location *(page 419)*.
7. Add the collector instances that you want to use *(page 426)*.

8. Start the collectors *(page 436)*.
9. Specify the tags for which you want the collectors to collect data. You can do so using Historian Administrator or offline configuration.

After you perform these initial steps, data is collected and stored in the Historian servers. You can then retrieve and analyze the data.

Common Tasks for Configuration Hub with Historian

Task	Procedure
Show or hide the **Navigation** or the **Details** section.	1. In the upper-right corner of the page, select  . 2. Select the check boxes for the sections that you want to show.
Search for an item in a table in the main section.	1. In the main section, select  . 2. In the column that contains the item you are searching for, enter the search criteria.
Filter items in a table in the main section.	1. In the main section, select  . 2. In the column that contains the item you want to filter, select the check boxes of the items, and then select **OK**.
Show or hide columns in the main section. **Note:** You cannot hide some of the columns (for example, the **COLLECTOR NAME** column).	1. In the upper-right corner of the main section, select  . The **Table Settings** window appears. 2. Select the check boxes in the **SHOW COLUMN** column, and then select **Apply**.
Reorder columns. **Note:** You cannot reorder some of the columns.	1. In the upper-right corner of the main section, select  . The **Table Settings** window appears. 2. Use the arrow buttons in the **RE-ORDER** column, and then select **Apply**.

Task	Procedure
Refresh a page.	1. To refresh manually, in the upper-right corner of the main section, select . 2. To refresh automatically, in the drop-down list box next to , select the time interval at which the page must be refreshed automatically.

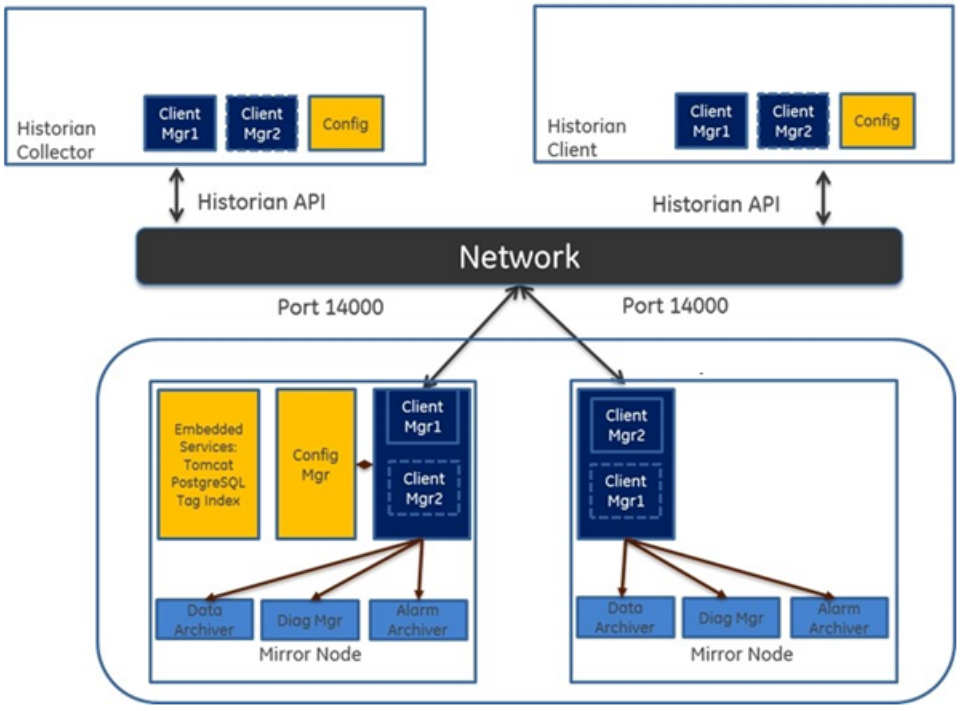
About Data Mirroring

Historian provides mirroring of stored data on multiple nodes to provide high levels of data reliability. Data Mirroring also involves the simultaneous action of every insert, update and delete operations that occurs on any node. Data mirroring provides continuous data read and write functionality.

In a typical data mirroring scenario, one server acts as a primary server to which the clients connect. All communication goes through the Client Manager, and each Client Manager knows about the others. Mirrors must be set up in a single domain.

Mirror Node Setup

The following diagram helps you to understand a typical single mirror node setup.



Managing Historian Systems

Access a System

1. Access Configuration Hub for Historian *(page 406)*.

2. In the **Navigation** section, select the system that you want to access.
   The **System Properties** section appears, displaying the following information.

   Table 1. Total Collectors and Utilization

Field	Description
Total Collectors	A chart that plots the total number of collectors in each state (for example, running, stopped).
Write Cache Hit Ratio	The hit ratio of the write cache in percentage of total writes. At the system level, this value is calculated as the average of the corresponding values of individual servers in the system. It is a measure of how efficiently the system is collecting data. Typically, this value should range from 95 to 99.99%. If the data is changing rapidly over a wide range, however, the hit percentage drops significantly because current values differ from recently cached values. More regular sampling may increase the hit percentage. Out-of-order data also reduces the hit ratio.
Archive Compression	The current effect of archive data compression. At the system level, this value is calculated as the average of the corresponding values of individual servers in the system. If the value is zero, it indicates that archive compression is either ineffective or turned off. To increase the effect of data compression, increase the value of archive compression deadbands on individual tags in the **Tags** section to activate compression. In calculating the effect of archive compression, Historian counts internal system tags as well as data source tags. Therefore, when working with a very small number of tags and with compression disabled on data source tags, this field may indicate a value other than zero. If you use a realistic number of tags, however, system tags will constitute a very small percentage of total tags and will therefore not cause a significant error in calculating the effect of archive compression on the total system.

Field	Description
Write thread usage	The percentage of the write threads currently in use by the system. At the system level, this value is calculated as the average of the corresponding values of individual servers in the system.
Read thread usage	The percentage of the read threads currently in use by the system. At the system level, this value is calculated as the average of the corresponding values of individual servers in the system.
OUT OF ORDER WRITE RATE	The number of out-of-order events per minute. At the system level, this value is calculated as the sum of the corresponding values of individual servers in the system.
CONSUMPTION RATE	The rate at which the archive disk space is consumed. At the system level, this value is calculated as the sum of the corresponding values of individual servers in the system. If the value is too high, you can reduce it by slowing the poll rate on selected tags or data points or by increasing the filtering on the data (widening the compression deadband to increase compression).
FAILED WRITES RATE	The number of samples that failed to be written per minute. At the system level, this value is calculated as the sum of the corresponding values of individual servers in the system. Since failed samples are a measure of system malfunctions or an indication of offline archive problems, this value should be zero. If you observe a non-zero value, investigate the cause of the problem and take corrective action. Historian also generates a message if a writing a sample fails. Note that the message only appears once per tag, for a succession of failed writes associated with that tag. For example, if the number displayed in this field is 20, but they all pertain to one Historian tag, you will only receive one message until that Historian tag is functional again.

Table 2. Alarms and Events

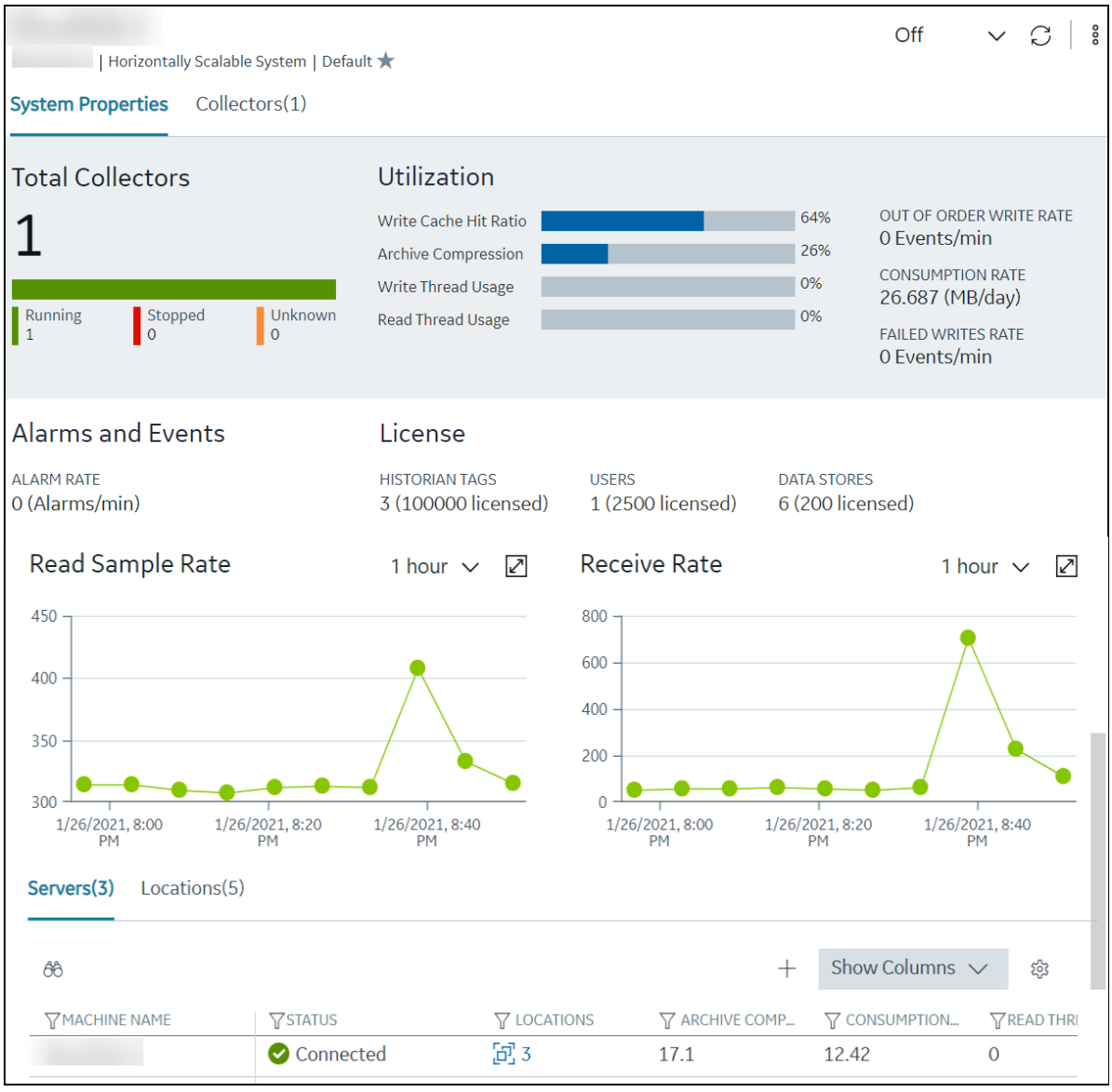
Field	Description
ALARM RATE	The rate at which Historian is receiving alarms and events data. This data appears only if you archive the alarms and events data as well.

Table 3. License

Field	Description
HISTORIAN TAGS	The number of tags authorized for this Historian installation by the software key and license. **Note:** If this field displays 100 tags and the number of licensed users is 1 client, you are probably running in demonstration mode and may have incorrectly installed your license key.
USERS	The number of users who have currently have currently logged in and accessed the system.
DATA STORES	The number of data stores in the system.

Table 4. Graphs

Name	Description
Read Sample Rate	The trend of the average read sample rate across all the servers in the system per sample per minute. You can change the duration by selecting the drop-down list box in the upper-right corner of the graph.
Receive Rate	The trend of the recent rate at which the samples have been received per minute. You can change the duration by selecting the drop-down list box in the upper-right corner of the graph.



The **Servers** subsection contains a list of distributed/mirror servers in the system, along with the status, the number of locations in each server, and a few other details.

Tip: If you select the value in the **LOCATIONS** column, the number of locations, a list of distributed and mirror locations in the server appears. If you select a row, the same information appears in the **Details** section. You can add, remove, or freeze columns, in the table by selecting .

The **Locations** subsection contains lists of distributed locations and mirror locations in the system. This subsection appears only for a horizontally scalable system. For each location, you can access the server machine name and the list of data stores. Similarly, for each mirror location, you can access the number of server machines and data stores in the group. In addition, the default location and data store in the system appear. You can change these default settings.

Tip: If you select these numbers, a list of the server machines and data stores in the group appears, respectively. If you select a row, the same information appears in the **Details** section.

Add a System

Install Historian on the machine that you want to add. If you want to create a stand-alone system, install single-server Historian. If you want to create a horizontally scalable system, install Historian primary server.

If you want to manage a Historian system using Configuration Hub, you must add it to Configuration Hub.

When you access Configuration Hub for the first time, a default Historian system is available. In a distributed environment, the primary server of this system is the machine whose Configuration Hub details you enter while installing Web-Based Clients. This topic describes how to add another system.

Note: Adding a Historian system is specific to the logged-in user.

1. Access Configuration Hub.
2. In the **Navigation** section, select +.
   The **Add System** window appears.
3. Provide values as specified in the following table.

Field	Description
SYSTEM NAME	Enter a name for the Historian system. This name must be unique for a user.
HISTORIAN SERVER	Enter the host name or the IP address of the system that you want to add. This name must be unique for a user.
DESCRIPTION	Enter a description for the system.
Set as Default System	Select this check box if you want to set this system as the default one. If you do so, when you access Configuration Hub, this system appears by default (that is, this system is selected, and all the related information appears in the main section). The default system varies with the user.

4. Select **Add**.
   The Historian system is added, and it appears in the **Navigation** section.

- As needed, add another data store *(page 422)*.

- If you want to create a horizontally scalable system, the machine that you have added serves as the primary server. On the machines that you want to use as distributed servers, you must install Historian distributed nodes and then add them to the system *(page 417)*.

Add a Distributed/Mirror Machine

1. Install Historian distributed server on the machine that you want to add as a distributed server.
2. Add a system *(page 416)*. The server that you specify while adding the system serves as the primary server for the system.

If you want to create a horizontally scalable Historian system, you must first add a primary server, and then add one or more distributed/mirror machines to scale out the primary server horizontally and thus, improve performance.

1. Access the system *(page 412)* to which you want to add the distributed server.
2. In the main section, in the **Servers** subsection, select +.
   The **Add Server Machine**window appears.
3. Enter the host name or IP address of the machine that you want to add, and then select **Add**.
   The distributed server is added to the system. A distributed location is added in the server. You cannot modify or delete this location.

If you want high availability of one or more data stores on the server, create a mirror location *(page 418)*, and then add the data stores *(page 422)*. If not, add the data store *(page 422)* to the distributed location.

Remove a Distributed Machine

- Delete the data stores in the machine (using the Web Admin console).
- If the machine is added to a mirror location, remove it from the location *(page 420)*.

1. Access the system *(page 412)* from which you want to remove a distributed machine.
2. In the main section, in the **Servers** subsection, select the machine that you want to remove.
   The details of the machine appears in the **Details** section.
3. In the **Details** section, select ⋮, and then select **Delete**.
   A message appears, asking you to confirm that you want to remove the distributed machine from the system.
4. Select **Delete**.

The machine is removed from the system.

Set a Default Location

When you set a default location, if you do not specify a location while adding a data store *(page 422)*, it is added to the default location. By default, the distributed location in the primary server is the default location. You can, however, set a different default location. The following conditions apply when you set a default location:

- You can have only one default location in a system.
- You cannot delete a default location.
- You can set any of the distributed or mirror locations as default.

1. Access the system *(page 412)* in which you want to set the default location.
2. Select **Locations**.
   The current default location appears below **DEFAULT LOCATION**.
3. Next to **DEFAULT LOCATION**, select  .
   The **DEFAULT LOCATION** window appears. The **Location** box contains a list of all the distributed and mirror locations in the system.
4. Select the location that you want to set as default, and then select **Set as Default**.
   The location is set s default.

Create a Mirror Location

Add one or more distributed servers *(page 417)* to the system in which you want to create a mirror group.

If you want high availability of one or more data stores, you must create a mirror group (also called a mirror location), and then add servers to it. When you do so, the data in the data stores of the mirror locations is replicated. Therefore, even if one of the servers is down, you can retrieve data from the other servers in the mirror location, thus achieving high availability.

The following conditions apply when you create a mirror location:

- You must add minimum two servers to a mirror location. The maximum number of servers that you can add depends on your Historian license.
- You can add a mirror location only in a horizontally scalable Historian system.
- You can rename a mirror location, remove a machine from a mirror location, or add an additional one even after you create the mirror location. However, if only one machine remains in the group, you cannot remove it.

1. Access the system *(page 412)* in which you want to add a mirror location.
2. In the main section, in the **Locations** subsection, under **MIRROR LOCATIONS**, select +.
   The **Add Mirror Location** window appears.
3. Provide values as described in the following table.

Field	Description
MIRROR LOCATION NAME	Enter a name for the mirror location. The name must be unique for a system.
SERVER MACHINES	Select the servers that you want to add to the mirror group. This box contains a list of all the servers in the system. You can add minimum two servers to a mirror location.

4. Select **Add**.
   The mirror location is created.

Add a data store to the mirror location *(page 422)*.

Rename a Mirror Location

1. Access the system *(page 412)* that contains the mirror location that you want to rename.
2. In the main section, in the **Locations** subsection, under **MIRROR LOCATIONS**, select the location that you want to rename.
   The details of the mirror location appear in the **Details** section.
3. Next to the current name of the mirror location, select  .
4. Enter the new name of the mirror location, and then press Enter.
   The mirror location is renamed.

Add a Machine to a Mirror Location

If you want to add machine to a mirror location that already contains machines,and if you want to copy the archive and configuration information from the existing machines to the new machine, perform the following steps:

1. Copy the archive files and configuration files from an existing machine in the mirror location to the one that you have added.
2. Rename the configuration file `<machine name>_Config.ihc`.

1. Access the system *(page 412)* that contains the mirror location in which you want to add a machine.

2. In the main section, in the **Locations** subsection, under **MIRROR LOCATIONS**, select the mirror location in which you want to add a machine.
   A list of machines and data stores in the mirror location appears in the **Details** section.

3. In the **Details** section, next to **SERVER MACHINES**, select +.
   The **Add Machine: <mirror location>** window appears. The **SERVER MACHINES** box contains a list of machines in the system that are not yet added to the mirror location.

4. In the **SERVER MACHINES** box, select the machine that you want to add to the mirror location, and then select **Add**.
   The machine is added to the mirror location.

Remove a Machine from a Mirror Location

If a mirror location contains only one machine, you cannot remove it.

1. Access the system *(page 412)* that contains the mirror location from which you want to remove a machine.

2. In the main section, in the **Locations** subsection, under **MIRROR LOCATIONS**, select the mirror location from which you want to remove a machine.
   A list of machines and data stores in the mirror location appears in the **Details** section.

3. In the **Details** section, under **SERVER MACHINES**, next to the machine that you want to remove, select ×.
   A message appears, asking you to confirm that you want to remove the machine from the mirror location.

4. Select **Remove**.
   The machine is removed from the mirror location.

Delete a Mirror Location

Delete all the data stores in the mirror location. You cannot delete a mirror location if it contains a data store.

1. Access the system *(page 412)* that contains the mirror location that you want to delete.

2. In the main section, in the **Locations** subsection, under **MIRROR LOCATIONS**, select the row containing the mirror group that you want to delete.

In the **Details** section, the details of the mirror group appear.

3. In the **Details** section, select , and then select **Delete**.
   A message appears, asking you to confirm that you want to delete the mirror location.

4. Select **Delete**.
   The mirror location is deleted.

Modify a Historian System

You can change the following details of a system:

- Name
- Description

1. Access Configuration Hub.

2. In the **Navigation** section, select the Historian system that you want to modify.

3. In the upper-right corner of the main section, select , and then select **Edit**.
   The **Edit System** window appears.

4. Modify values as specified in the following table. The **HISTORIAN SERVER** box is populated and disabled.

Field	Description
SYSTEM NAME	Enter a name for the Historian system. This value must be unique for a user.
DESCRIPTION	Enter a description for the system.

5. Select **Save**.
   The name and description of the Historian system are changed.

Set a Default System

If you set a system as default, when you log in to Configuration Hub, this system appears by default. The following conditions apply when you set a system as default:

- You can have only one default system in Configuration Hub.
- You cannot delete a default system.

1. Access the system that you want to set as default.

2. In the upper-right corner of the main section, select  , and then select **Set Default System**.
   The system is set as default, indicated by  .

Delete a Historian System

You can delete a Historian system if you no longer want to manage it using Configuration Hub. You cannot, however, delete a system if it is set as default.

1. Access Configuration Hub.

2. In the **Navigation** section, select the Historian system that you want to delete.

3. In the upper-right corner of the main section, select  , and then select **Delete**.
   A message appears, asking you to confirm that you want to delete the Historian system.

   Note: The **Delete** button is disabled for a default Historian system.

4. Select **Delete**.
   The Historian system is deleted.

Managing Data Stores

Add a Data Store

If you want to add a data store to a distributed server, add the distributed server *(page 417)* to the system. If you want high availability of the data store, add a mirror location *(page 422)* to the system.

1. Access the system *(page 412)* containing the location to which you want to add a data store.

2. In the main section, in the **Locations** subsection, in the row containing the location to which you want to add a data store, select **Add Datastore**. You can select a distributed location or a mirror location.
   The **Add Data Store: <location name>** window appears.

Note: Alternatively, after you select the row, you can select + next to **Data Stores** in the **Details** section.

3. In the **DATASTORE NAME** box, enter a name for the data store. The name must be unique for the system.
4. In the **Description** box, enter a description for the data store.
5. If you want to set the data store as the default one, select the **Set as default data store for the System** check box.
6. Select **Add**.
   The data store is added to the location.

Specify the tags whose data you want to store in the data store.

Set a Default Data Store

When you set a default data store, if you do not specify a data store while adding a tag, it is added to the default data store.

1. Access the system *(page 412)* in which you want to set the default data store.
2. Select **Locations**.
   The current default data store appears below **DEFAULT DATA STORE**.
3. Next to **DEFAULT DATA STORE**, select .
   The **DEFAULT DATA STORE** window appears, displaying a list of data stores in the system.
4. Select the data store that you want to set as default, and then select **Set as Default**.
   The data store is set as default.

Managing Collector Instances

About Managing Collector Instances Using Configuration Hub

Collectors are used to collect data from various sources and send it to Historian. For a list of collectors and their usage, refer to the Historian documenation.

After you install collectors and Remote Management Agent, the following artefacts will be available:

- **Executable files:** These files are required to add a collector instance.
- **The Remote Collector Management agent:** Provides the ability to manage collectors remotely *(page 435)*.

You can then add a collector instance. This section describes how to add a collector instance using Configuration Hub *(page 426)*. You can also add a collector instance using the RemoteCollectorConfigurator utility, which does not require you to install Web-Based Clients.

Note: Using Configuration Hub, you cannot add comments, enable the debug mode, pause data collection, resume data collection, modify, or delete an instance of offline collectors. In addition, you cannot compress network messages. You can, however, add or delete the collector instance using the Collector Manager utility at a command prompt.

About Sending Data to Azure IoT Hub

The following conditions apply when you send data to Azure IoT Hub:

- Data in Azure IoT Hub is stored for maximum seven days, after which it is deleted from the hub. Therefore, you must consume the data within seven days. Based on your requirement, you can store it in a relevant Azure storage. You can then use Azure functions or streaming analytics to analyse the data.
- The data sent to Azure IoT Hub is in the JSON format with UTF-8 encoding. To reduce the message size and avoid repetition of tag properties, the tag values are in the format of the KairosDB data points: `[{"<tag name>":"Cloud_GCYSS3X2E.Simulation00001","<timestamp, tag value, and quality>":[[1586260104000,132560.203125000,3]]}`

Before add a collector instance to send data to Azure IoT Hub, you must perform the following steps:

1. Set up an Azure IoT Hub account.

   Note: To choose the correct Azure IoT Hub based on your requirement, refer to https://docs.microsoft.com/en-us/azure/iot-hub/iot-hub-devguide-quotas-throttling

2. Create devices in Azure IoT Hub. These devices store the data received from a collector. We recommend that you create one device per collector instance.

Access the Details of a Collector Instance

1. Access the system *(page 412)* linked to the collector instance whose details you want to view.

2. Select **Collectors**.
   A list of collectors linked to the system appears, displaying the following columns:

Column	Description
COLLECTOR NAME	The name of the collector instance. If you select the link in this column, the details of the collector instance appears.
COMPRESSION	The effectiveness of collector compression. If the value is low, you can increase the compression deadbands to pass fewer values and thus increase the effect of compression.
CONFIGURATION	The source of the tag configuration for the collector. Contains one of the following values: • **HISTORIAN**: Indicates that tags are configured using Historian Administrator. • **OFFLINE**: Indicates that tags are configured using an offline configuration file.
MACHINE	The name of the machine on which the collector is installed.
OUT OF ORDER	The total number of out-of-order samples for the collector.
OVERRUNS	The total number of data events not collected. In normal operation and under normal conditions, this value should always be zero. If the value is not zero, which indicates that data is being lost, you must take steps to reduce peak load on the system by increasing the collection interval.
REDUNDANCY	Indicates whether collector redundancy is enabled, which decreases the likelihood of lost data due to software or hardware failures. For information, refer to Collector Redundancy in the Historian documentation.
REPORT RATE	The average rate at which the collector is sending data. This is a general indicator of load on the collector.
STATUS	The status of the collector. Contains one of the following values: • **Started** • **Stopped** • **Running** • **Paused**
TAG COUNT	The number of tags for which the collector collects data.
VERSION	The version number of the collector.

Note: You can add, reorder, and remove columns from the table. For instructions, refer to Common Tasks for Configuration Hub with Historian *(page 410)*.

3. Select the row containing the collector whose details you want to access.
   The details of the collector appear in the main section, and a summary appears in the **Details** section.

Note: If the **Details** section does not appear, in the upper-right corner of the page, select , and then select **Details**.

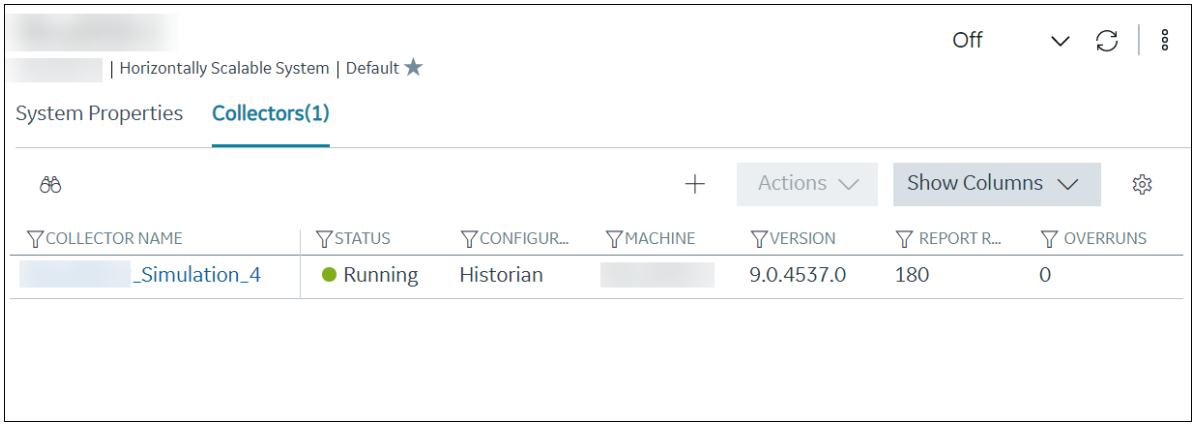
Add a Collector Instance

- Install collectors.
- For an iFIX collector, ensure that iFIX is running in a Windows-service mode.
- If the destination of a collector is an Azure IoT Hub device, ensure that the device is running.

Before you begin using a collector, you must add an instance of the collector. You can add multiple instances of the same collector or instances of multiple collectors where you have installed the collectors. To add multiple instances of a collector, perform the steps provided in this topic once again.

This topic describes how to add a collector instance using Configuration Hub. You can also add a collector instance using the RemoteCollectorConfigurator utility, which does not require you to install Web-Based Clients.

1. Access the system *(page 412)* to which you want to add a collector instance.
2. Select **Collectors**.
   A list of collectors in the system appears.



3. Select .
   The **Add Collector Instance: <system name>** window appears, displaying the **Collector Selection** section. The **MACHINE NAME** field contains a list of machines on which you have installed collectors.
4. In the **MACHINE NAME** field, select the machine in which you want to add a collector instance.

5. In the **COLLECTOR TYPE** field, select the type of the collector whose instance you want to add, and then select **Get Details**.
   The **INSTALLATION DRIVE** and **DATA DIRECTORY** fields are disabled and populated.

6. Select **Next**.
   The **Source Configuration** section appears. For an OPC collector, the source configuration is automatically populated. And, if you have selected **File Collector**, the **Destination Configuration** section appears. If that happens, skip to step 8.

7. In the **HISTORIAN SOURCE SERVER** field, enter the machine name of the source server from which you want the collector to collect data. As needed, enter values in the **USERNAME** and **PASSWORD** fields to connect to the server.
   For cloud collectors, a different set of fields appear. In that case, enter values in the available fields.

8. Select **Next**.
   The **Destination Configuration** section appears.

9. In the **CHOOSE DESTINATION** field, select the destination to which you want the collector to send data. By default, **Historian Server** is selected.

10. Depending on the destination you have selected, provide values in the available fields *(page 429)*, and then select **Next**.
    The **Collector Initiation** section appears. The **COLLECTOR NAME** field is disabled and populated.

11. In the **RUNNING MODE** field, select one of the following options.
    - **Service - Local System Account**: Select this option if you want to run the collector as a Windows service using the credentials of the local user (that is, the currently logged-in user). If you select this option, the **USERNAME** and **PASSWORD** fields are disabled.
    - **Service Under Specific User Account**: Select this option if you want to run the collector as a Windows service using a specific user account. If you select this option, you must enter values in the **USERNAME** and **PASSWORD** fields.

    If you choose the first two options, you can also configure the collector to start automatically when you start the computer, or, in the case of iFIX collectors, whenever you start iFIX.

12. Select **Add**.
    The collector instance is added, and appears in the Collectors list. A shortcut is created for each instance of the following collectors so that you can open them at a command prompt:
    - The iFIX collector
    - The iFIX Alarms and Events collector
    - The OPC Classic Alarms and Events collector
    - The OPC Classic DA collector
    - The OPC Classic HDA collector

Specify the tags whose data you want to collect using the collector. In the **CHOOSE CONFIGURATION** field in the **Destination Configuration** field,

- If you have selected **Historian Configuration**, access Historian Administrator, and manage the tag configuration. For information, see Configure Tags.
- If you have selected **Offline Configuration**, modify the offline configuration file of the collector. By default, this file is available in the following location: `<installation folder of Historian>\GE Digital\<collector name>`. For information, refer to Creating Offline Configuration XML File.

Modify a Collector Instance

Stop the collector *(page 437)* whose instance you want to modify.

This topic describes how to modify a collector instance using Configuration Hub. You can also modify a collector instance using the RemoteCollectorConfigurator utility, which does not require you to install Web-Based Clients. See the Historian documentation for details.

1. Access the system *(page 412)* that contains the collector instance that you want to modify.
2. Select **Collectors**.
   A list of collectors in the system appears.
3. In the **COLLECTOR NAME** column, select the link that corresponds to the collector instance that you want to modify.
   The details of the collector appear.
4. Select  , and then select **Edit**.
5. Depending on the destination of the collector, provide values in the available fields *(page 429)*.
6. Select **Save**. Or, if the changes you have made requires restarting the collector, select **Save & Restart**. Normally, it is required when you change values in the **INSTANCE CONFIGURATION** section.

   Note: For collectors earlier than version 9.0:
   - You cannot modify the details in the **INSTANCE CONFIGURATION** section.
   - Some of the details, such as the collector type, do not appear.

Reconfigure the collector properties using Historian Administrator. See the Historian documentation for details.

Add a Comment to a Collector Instance

This topic describes how to add a comment to a collector instance.

Note:

- You cannot modify or delete comments.
- You cannot add comments to offline collectors.

1. Access the collector instance *(page 424)* to which you want to add a comment.
   The details of the collector appear in the **Details** section, along with a list of comments.

2. In the **Details** section, in the text box below **COMMENTS**, enter your comment, and then select **ADD COMMENT**.
   The comment is added to the collector instance.

Access a Comment on a Collector Instance

1. Access the collector instance *(page 424)* whose comments you want to access.
   The details of the collector appear in the **Details** section, along with a list of comments.

2. If you want to search for a comment, enter the search criteria in the **Search** box. you can also filter the comments based on a date and time range by selecting the values in the **FROM** and **TO** boxes.
   The comments are filtered based on the search criteria.

Collector Instance Fields

This topic provides information on the collector instance fields. These fields are categorized based on the destination of the collector.

Destination: Historian Server

Field	Description
DESTINATION SERVER	The machine name of the Historian server to which you want the collector to send data.
USERNAME	The username to access the Historian server.
PASSWORD	The password to access the Historian server.

Destination: Predix Timeseries

Field	Description
CLOUD DESTINATION ADDRESS	The URL of a data streaming endpoint exposed by the Predix Time Series instance to which you want to send data. Typically, it starts with “wss://”. This value is used as part of the interface name and default tag prefix of the collector. Your Predix Time Series administrator can provide this URL.
IDENTITY ISSUER	The URL of an authentication endpoint for the collector to authenticate itself and acquire necessary credentials to stream to the Predix Time Series. In other words, this is the issuer ID of the UAA instance that you want to use to connect to Predix Time Series. Typically, it starts with https:// and ends with “/oauth/token”.
CLIENT ID	Identifies the collector when interacting with Predix Time Series. This is equivalent to the username in many authentication schemes. The client must exist in the UAA instance identified by the identity issuer, and the system requires that the `timeseries.zones. {ZoneId}.ingest` and `timeseries.zones.{ZoneId}.query` authorities are granted access to the client for the Predix Zone ID specified. Your Predix Time Series administrator can provide this information.
CLIENT SECRET	The secret to authenticate the collector. This is equivalent to the password in many authentication schemes.
ZONE ID	Unique identifier of the instance to which the collector will send data.
PROXY	Identifies the URL of the proxy server to be used for both the authentication process and for sending data. If the collector is running on a network where proxy servers are used to access web resources outside of the network, then you must provide the proxy server settings. However, it does not affect the proxy server used by Windows when establishing secure connections. As a result, you must still configure the proxy settings for the Windows user account under which the collector service runs.
PROXY USERNAME	The username to connect to the proxy server.
PROXY PASSWORD	The password to connect to the proxy server.
DATAPOINT ATTRIBUTES	The attributes or parameters related to a datapoint that you want the collector to collect. Select **Add Attributes** to specify the attributes. You can add maximum five attributes for each collector instance.

Field	Description
CHOOSE CONFIGURATION	The type of the configuration to specify the tags whose data you want to collect. Select one of the following options: • **Historian Configuration**: Select this option if you want to add the tags manually using Historian Administrator. If you select this option, the **CONFIGURATION HISTORIAN SERVER** field appears. • **Offline Configuration**: Select this option if you want to provide the tag names using the offline configuration file instead of adding tags manually. By default, this file is located in the following location: `<installation folder of Historian>\GE Digital\<collector name>`
CONFIGURATION HISTORIAN SERVER	The host name of the machine from which you want to access Historian Administrator to add the tags manually for the collector. This field appears only if you have selected **Historian Configuration** in the **CHOOSE CONFIGURATION** field.

Destination: Azure IoT Hub

Field	Description
DEVICE CONNECTION STRING	Identifies the Azure IoT device to which you want to send data. Enter a value in the following format: `HostName=<value>;DeviceId=<value>;SharedAccessKey=<value>`
TRANSPORT PROTOCOL	The protocol that you want to use to send data to Azure IoT Hub. Select one of the following options: • HTTP • MQTT • AMQP • MQTT_OVER_WEBSOCKETS • AMQP_OVER_WEBSOCKETS For information on which protocol to use, refer to Protocols and Port Numbers *(page 433)*.
PROXY	Identifies the URL of the proxy server to be used for both the authentication process and for sending data. If the collector is running on a network where proxy servers are used to access web resources outside of the network, then you must provide the proxy server settings. However, it does not affect the proxy server used by Windows when establishing secure connections. As a result, you must still configure the proxy settings for the Windows user account under which the collector service runs.
PROXY USERNAME	The username to connect to the proxy server.
PROXY PASSWORD	The password to connect to the proxy server.

Field	Description
CHOOSE CONFIGURATION	The type of the configuration to specify the tags whose data you want to collect. Select one of the following options: • **Historian Configuration**: Select this option if you want to add the tags manually using Historian Administrator. If you select this option, the **CONFIGURATION HISTORIAN SERVER** field appears. • **Offline Configuration**: Select this option if you want to provide the tag names using the offline configuration file instead of adding tags manually. By default, this file is located in the following location: `<installation folder of Historian>\GE Digital\<collector name>`
CONFIGURATION HISTORIAN SERVER	The host name of the machine from which you want to access Historian Administrator to add the tags manually for the collector. This field appears only if you have selected **Historian Configuration** in the **CHOOSE CONFIGURATION** field.

Destination: MQTT

Field	Description
HOST ADDRESS	The host name of the MQTT broker to which you want the collector to send data. A value is required.
PORT	The port number of the MQTT broker.
CLIENT ID	The name of the MQTT client. A value is required and must be unique for an MQTT broker.
TOPIC	The MQTT topic to which you want the collector to publish data. A value is required.
AUTO REFRESH	Indicates whether you want to automatically refresh the authentication token when it expires. • If you switch the toggle off, you must manually provide the token as soon as it expires. • If you switch the toggle on, you must provide details of the required certificates.
USERNAME	Enter the username to connect to the MQTT broker.
PASSWORD	Enter the password to connect to the MQTT broker.
CA SERVER ROOT FILE	Enter the path of the CA server root file that you want to use to connect to the MQTT broker.
CLIENT CERTIFICATE	Enter the path to the client certificate that you want to use to connect to the MQTT broker.

Field	Description
PRIVATE KEY FILE	Enter the path to the private key file that you want to use to connect to the MQTT broker.
PUBLIC KEY FILE	Enter the path to the public key file that you want to use to connect to the MQTT broker.
CHOOSE CONFIGURATION	The type of the configuration to specify the tags whose data you want to collect. Select one of the following options: • **Historian Configuration**: Select this option if you want to add the tags manually using Historian Administrator. If you select this option, the **CONFIGURATION HISTORIAN SERVER** field appears. • **Offline Configuration**: Select this option if you want to provide the tag names using the offline configuration file instead of adding tags manually. By default, this file is located in the following location: `<installation folder of Historian>\GE Digital\<collector name>`
CONFIGURATION HISTORIAN SERVER	The host name of the machine from which you want to access Historian Administrator to add the tags manually for the collector. This field appears only if you have selected **Historian Configuration** in the **CHOOSE CONFIGURATION** field.

Protocols and Port Numbers

The following table provides a list of protocols that are available to send data to Azure IoT Hub, guidelines on which protocol to choose, and the port number that each protocol uses.

Protocol	When to Use	Port Number
HTTP	Use this protocol if the data that you want to send is not large and/or the default ports for the other protocols are not available.	80
MQTT	MQTT is lightweight compared to AMQP, and is widely used. Use this protocol if you want to send data using low bandwidth and/or you do not want to connect to multiple devices using the same connection.	8883
AMQP	AMQP is more reliable compared to other protocols. It sends data in batches, and hence, the network traffic is less compared to that of MQTT. Use this protocol if you want to send a large amount of data from multiple collectors frequently.	5763

Protocol	When to Use	Port Number
MQTT over web sockets	MQTT is lightweight compared to AMQP, and is widely used. In addition, communication using web sockets is more reliable and secure. Use this protocol if you want to send data using low bandwidth and securely.	443
AMQP over web sockets	AMQP is more reliable compared to other protocols. It sends data in batches, and hence, the network traffic is less compared to that of MQTT. In addition, communication using web sockets is more reliable and secure. Use this protocol if you want to send a large amount of data from multiple collectors frequently and securely.	443

Delete a Collector Instance

Stop the collector *(page 437)* whose instance you want to delete.

If you no longer want to use a collector instance to collect data, you can delete it. When you delete a collector instance, the Windows service for the collector, the Registry folder, and the buffer files are deleted as well.

This topic describes how to delete a collector instance using Configuration Hub. You can also delete a collector instance using the RemoteCollectorConfigurator utility, which does not require you to install Web-Based Clients.

1. Access the system *(page 412)* that contains the collector instance that you want to delete.
2. Select **Collectors**.
   A list of collectors in the system appears.
3. In the **COLLECTOR NAME** column, select the link that corresponds to the collector instance that you want to delete.
   The details of the collector appear.
4. Select  , and then select **Delete**.
   A message appears, asking you to confirm that you want to delete the collector instance.
5. If you want to delete the tags as well, select the **Delete associated tags as well** check box.
6. Select **Delete**.

The collector instance is deleted.

Managing Collectors

About Installing and Managing Collectors Remotely

Many Historian users use collectors to collect data from data sources or servers. Typically, these collectors are distributed geographically, and so, accessing them can be challenging and not cost-effective. To overcome this challenge, Historian provides the Remote Collector Management agent, using which you can manage collectors remotely.

Advantages of using the Remote Collector Management agent:

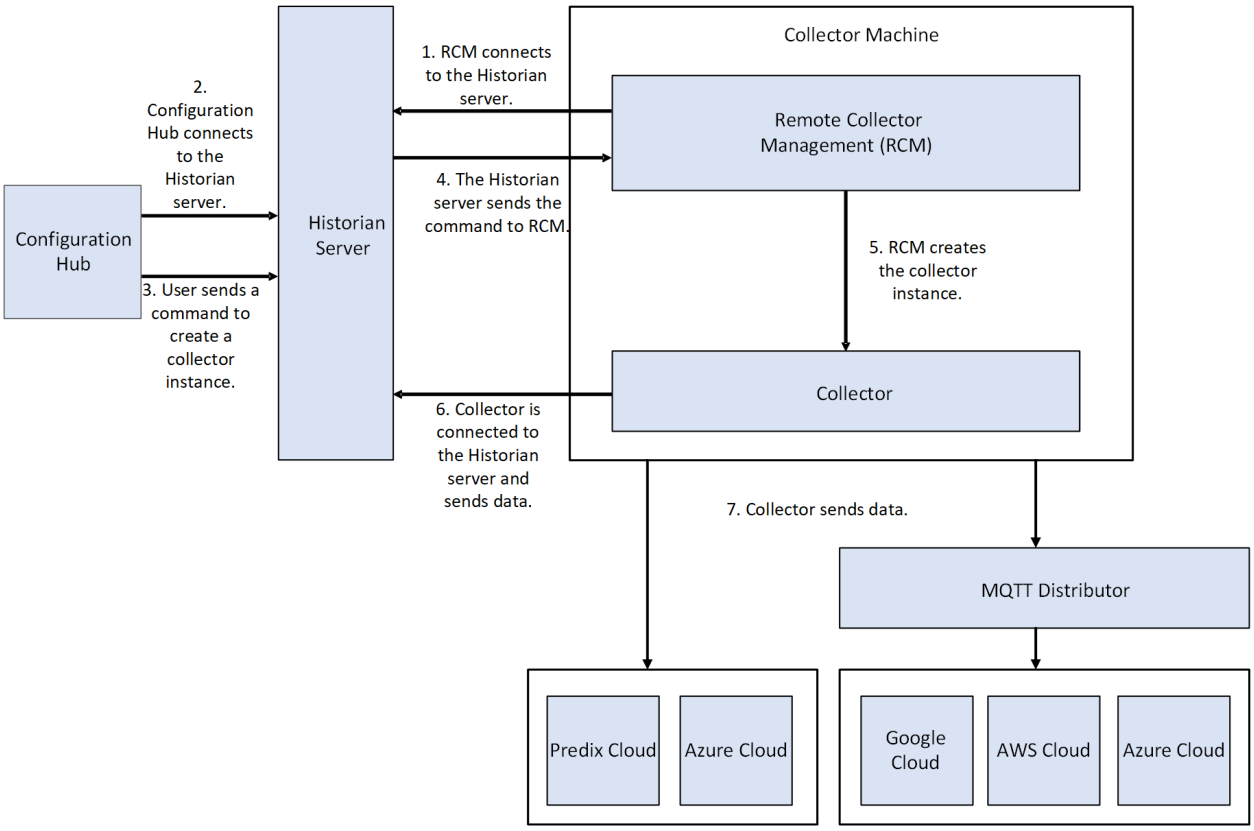
- Accessing a collector machine physically to manage the collector is no longer required.
- Security is enabled. That is, only members of the iH Security Admins, iH Tag Admins, and the iH Collector Admins security groups can manage the collectors remotely.
- Works with the older versions of collectors as well (V5.5 and later).

Features

- Add, modify, or delete a collector instance.
- Start *(page 436)*, stop *(page 437)*, or restart *(page 438)* a collector.
- Pause *(page 438)* or resume *(page 439)* the data collection of a collector.
- Delete *(page 439)* or move *(page 440)* the buffer files of a collector.
- Change the destination server of a collector *(page 440)*.

Workflow

The following diagram provides the workflow of Remote Collector Management when creating a collector instance. After the collector instance is created, the collctor sends data to the configured destination. The green lines indicate the initial, one-time steps. The red lines indicate the steps performed every time you want to manage the collector remotely.



Limitations

- After installing Remote Management Agent, if you install a new collector, you must manually start it for the first time. This is to establish a connection between the collector and the Remote Collector Management agent. From the next time, you can manage the collector remotely.

Start a Collector

You can run a collector using one of the following options:

- **Service - Local System Account**: Select this option if you want to start the collector as a Windows service using the credentials of the local user (that is, the currently logged-in user). If you select this option, the **USERNAME** and **PASSWORD** fields are disabled.
- **Service Under Specific User Account**: Select this option if you want to start the collector as a Windows service using a specific user account. If you select this option, you must enter values in the **USERNAME** and **PASSWORD** fields.

1. Access the system *(page 412)* linked to the collector that you want to start.
2. Select **Collectors**.
   A list of collectors linked to the system appears.

3. Select the row containing the collector that you want to start.

4. Select **Actions**, and then **Start**.
   The **Start: <collector name>** window appears.

5. Provide values as described in the following table.

Field	Description
RUNNING MODE	Select one of the following options: • **Service - Local System Account**: Select this option if you want to start the collector as a Windows service using the credentials of the local user (that is, the currently logged-in user). If you select this option, the **USERNAME** and **PASSWORD** fields are disabled. • **Service Under Specific User Account**: Select this option if you want to start the collector as a Windows service using a specific user account. If you select this option, you must enter values in the **USERNAME** and **PASSWORD** fields.
Username	Enter the username of the Windows user who can run the collector. A value is required if you have selected **Service Under Specific User Account** for the running mode.
Password	Enter the password of the Windows user who can run the collector. A value is required if you have selected **Service Under Specific User Account** for the running mode.

6. Select **Start**.
   The collector is started, and the data collection begins. The status of the collector in the **Collectors** section changes to Starting and then to Running. If, however, the connection fails, the status changes to Unknown.

   Note: If auto-refresh is not enabled, refresh the collector manually.

Stop a Collector

When you stop a collector, the collector stops collecting data, and it is disconnected from the destination. If, however, you want the collector to remain connected to the destination, you can instead pause data collection *(page 438)*.

1. Access the system *(page 412)* linked to the collector that you want to stop.

2. Select **Collectors**.
   A list of collectors linked to the system appears.

3. Select the row containing the collector that you want to stop.

4. Select **Actions**, and then **Stop**.
   The **Stop: <collector name>** window appears. The **COLLECTOR MACHINE** and **CURRENT RUNNING MODE** fields are populated and disabled.

5. If the collector is running in a Windows service mode, select **Stop**. If the collector is running in a command-line mode, enter values in the **Username** and **Password** fields, and then select **Stop**.
   The collector is stopped, and the data collection is paused. The status of the collector in the **Collectors** section changes to Stopped.

Restart a Collector

You can restart a collector to stop and start it again. You can restart a collector only if it is running.

1. Access the system *(page 412)* linked to the collector that you want to restart.

2. Select **Collectors**.
   A list of collectors linked to the system appears.

3. Select the row containing the collector that you want to restart.

4. Select **Actions**, and then **Restart**.
   The **Restart: <collector name>** window appears.

5. If the collector is running in the Windows service mode, select **Restart**. If the collector is running in the command-line mode, enter values in the **Username** and **Password** fields, and then select **Restart**.
   The collector is restarted, and the data collection is resumed.

Pause Data Collection

When you pause data collection, the collector stops collecting the data. However, the collector is still connected to the destination. If you want to disconnect the collector from the destination, stop the collector *(page 437)*.

Note: You cannot pause the data collection of an offline collector.

1. Access the system *(page 412)* linked to the collector whose data collection you want to pause.

2. Select **Collectors**.
   A list of collectors linked to the system appears.

3. Select the row containing collector whose data collection you want to pause.

4. Select **Actions**, and then **Pause Data Collection**.
   A message appears, asking you to confirm whether you want to pause data collection.

5. Select **Pause**.
   The data collection is paused, and the collector is stopped.

Resume the Data Collection of a Collector

1. Access the system *(page 412)* linked to the collector whose data collection you want to resume.

2. Select **Collectors**.
   A list of collectors linked to the system appears.

3. Select the row containing the collector whose data collection you want to resume.

4. Select **Actions**, and then **Resume Data Collection**.
   A message appears, asking you to confirm whether you want to resume data collection.

5. Select **Resume**.
   The collector is started, and the data collection is resumed.

Delete the Buffer Files of a Collector

When you delete buffer files, the collector is stopped, and after the buffer files are deleted, it is restarted .

1. Access the system *(page 412)* linked to the collector whose buffer files you want to clear.

2. Select **Collectors**.
   A list of collectors linked to the system appears.

3. Select the row containing the collector whose buffer files you want to clear.

4. Select **Actions**, and then **Clear Buffer**.
   A message appears, asking you to confirm that you want to clear the buffer files.

5. Select **Clear**.
   The **Clear Buffer: <collector name>** window appears.

6. If the collector is running in the Windows service mode, select **Clear**. If the collector is running in the command-line mode with a specific user account, enter values in the **Username** and **Password** fields, and then select **Clear**.

The buffer files of the collector are deleted.

Move the Buffer Files of the Collector

We recommend that you move the buffer files to a new folder within the same drive. You cannot move files to a folder on a network shared drive.

When you move buffer files, the collector is stopped, and after the buffer files are moved, it is restarted .

1. Access the system *(page 412)* linked to the collector whose buffer files you want to move to a different folder.
2. Select **Collectors**.
   A list of collectors linked to the system appears.
3. Select the row containing the collector whose buffer files you want to move.
4. Select **Actions**, and then **Move Buffer**.
   The **Move Buffer: <collector name>** window appears. The **CURRENT LOCATION**, **COLLECTOR MACHINE**, and **RUNNING MODE** fields are populated and disabled.
5. In the **TARGET LOCATION** box, enter the path of the folder to which you want to move the buffer files.
6. If the collector is running in the command-line mode, enter values in the **Username** and **Password** fields, and then select **Move Buffer**.
   The buffer files are moved, and the collector is started.

Change the Destination Server of a Collector

1. Ensure that Historian is installed on the new destination server to which you want the collector to send data.
2. Ensure that the collector whose destination server you want to change is running.

1. Access the system *(page 412)* linked to the collector that you want to stop.
2. Select **Collectors**.
   A list of collectors linked to the system appears.
3. Select the row containing the collector whose destination server you want to change.
4. Select **Actions**, and then **Change Destination Server**.

The **Change Destination Server: <collector name>** window appears. The **COLLECTOR MACHINE**, **CURRENT RUNNING MODE**, and **CURRENT DESTINATION SERVER** fields are populated and disabled.

5. In the **NEW RUNNING MODE** field, select one of the following options:
   - **Service Under Local System Account:** Select this option if you want to start the collector as a Windows service using the credentials of the local user (that is, the currently logged-in user). If you select this option, the **Username** and **Password** fields are disabled.
   - **Service Under Specific User Account** Select this option if you want to start the collector as a Windows service using a specific user account. If you select this option, you must enter values in the **Username** and **Password** fields.
6. In the **NEW DESTINATION SERVER** field, enter the computer name of the new destination server to which you want the collector to send data.
7. In the **Username** and **Password** fields, enter the credentials to access the new destination server.
8. Select **Change Server**.
   The destination server of the collector is changed, and the collector is stopped.

1. Update the network message compression of the collector by modifying the collector instance using Configuration Hub.
2. Reconfigure the collector properties using Historian Administrator.
3. Restart the collector *(page 438)*.

Chapter 4. Settings

Switch Users

1. Locate the user button on the top right of the toolbar. 
2. Select Logout.
3. Login again under the new user name.

Modify Layout

You can modify the layout in Configuration Hub by:

- Using the split bar to resize panels.
- Open or closing tabs.
- Open or closing panels.
- Resizing the browser window to resize all open panels.

Host Name Changes

This section describes the steps to follow if you need to change the host name of the Configuration Hub server or the iFIX server (or both when the Configuration Hub server is local to the iFIX server). Be aware that the iFIX plugin will only be accessible in Configuration Hub if the certificates are valid. If the host name is changed (in either Configuration Hub or iFIX) and you did not update the certificates, then iFIX plugin may not be accessible in Configuration Hub, as the certificates are not valid anymore. Use the following steps to update your certificates.

Steps for Self-Signed Certificate Creation Due to Configuration Hub Server Host Name Change

During the Configuration Hub install, self-signed certificates are created and stored in the C:\Program Files (x86)\GE\ConfigurationHub\ConfigHubPki folder. The Configuration Hub nginx server certificates are stored in the C:\Program Files (x86)\GE\ConfigurationHub\Web\conf directory. If you want to change the web server name after the Configuration Hub install, you need to update the self-signed certificates.

Use the following steps to update your self-signed certificates for Configuration Hub:

1. Either remove or backup the certificate files in C:\Program Files (x86)\GE\ConfigurationHub \ConfigHubPki folder.
2. Open a command prompt as an administrator in the C:\Program Files (x86)\GE \ConfigurationHub\ConfigHubPki directory.
3. Enter the following command to create new self-signed certificates:

   ```
   restart_confighub.bat "C:\Program Files (x86)\GE\ConfigurationHub" "C:
   \Program Files (x86)\GE\ConfigurationHub\Web" 5678 4890 htclab.ge.com
   ```

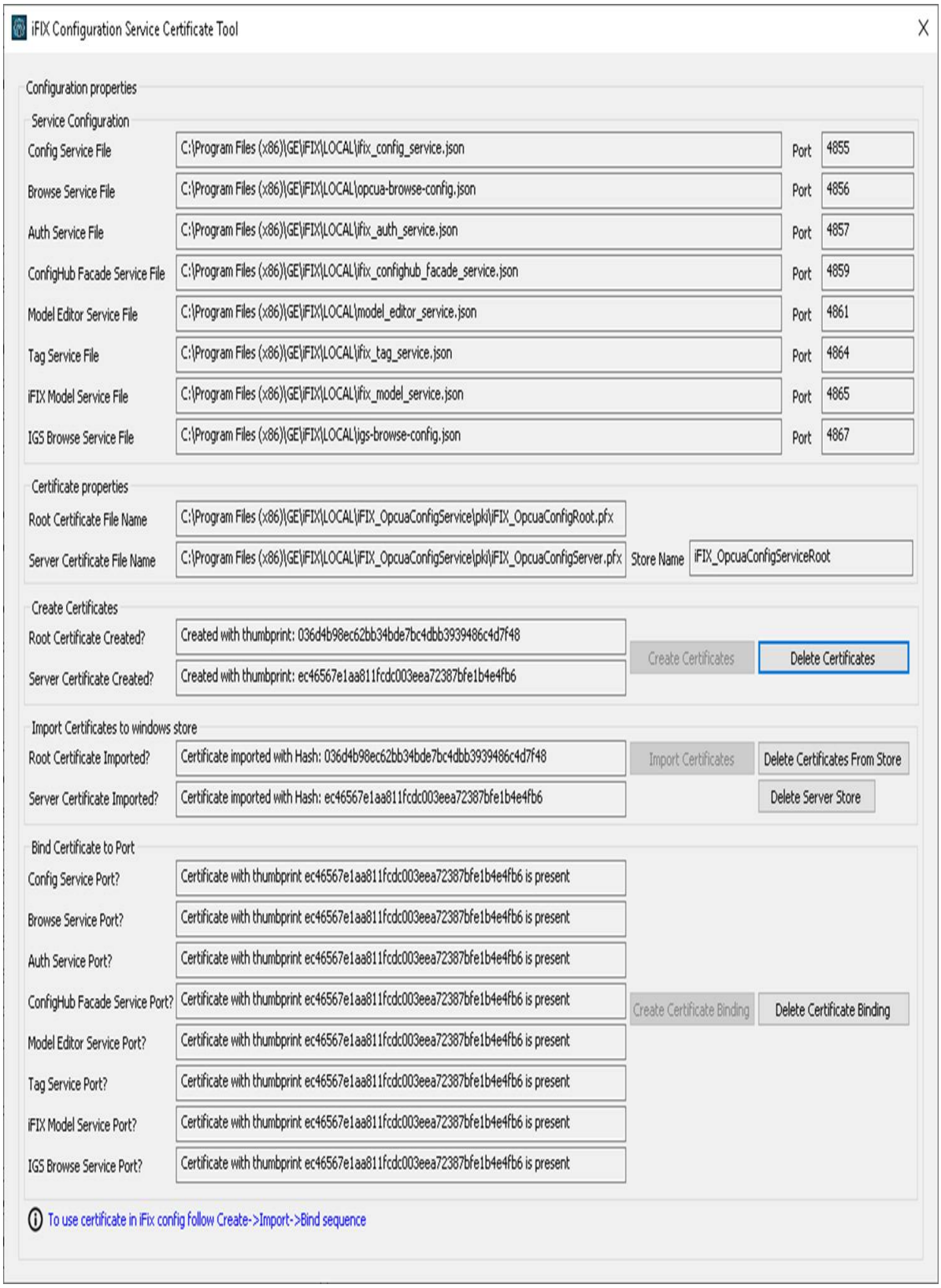
   where "C:\Program Files (x86)\GE\ConfigurationHub" is the Configuration Hub install directory, C:\Program Files (x86)\GE\ConfigurationHub\Web is the directory where the Configuration Hub niginx server resides, 5678 is the Configuration Hub authentication service port (Not used any more), and 4890 is the Configuration Hub server port.
4. Copy the server_cert.crt and server_cert.key files the from C:\Program Files (x86)\GE \ConfigurationHub\ConfigHubPki folder to the C:\Program Files (x86)\GE\ConfigurationHub \Web\conf folder.
5. Restart the computer.

Steps for Self-Signed Certificate Creation Due to iFIX Server Host Name Change

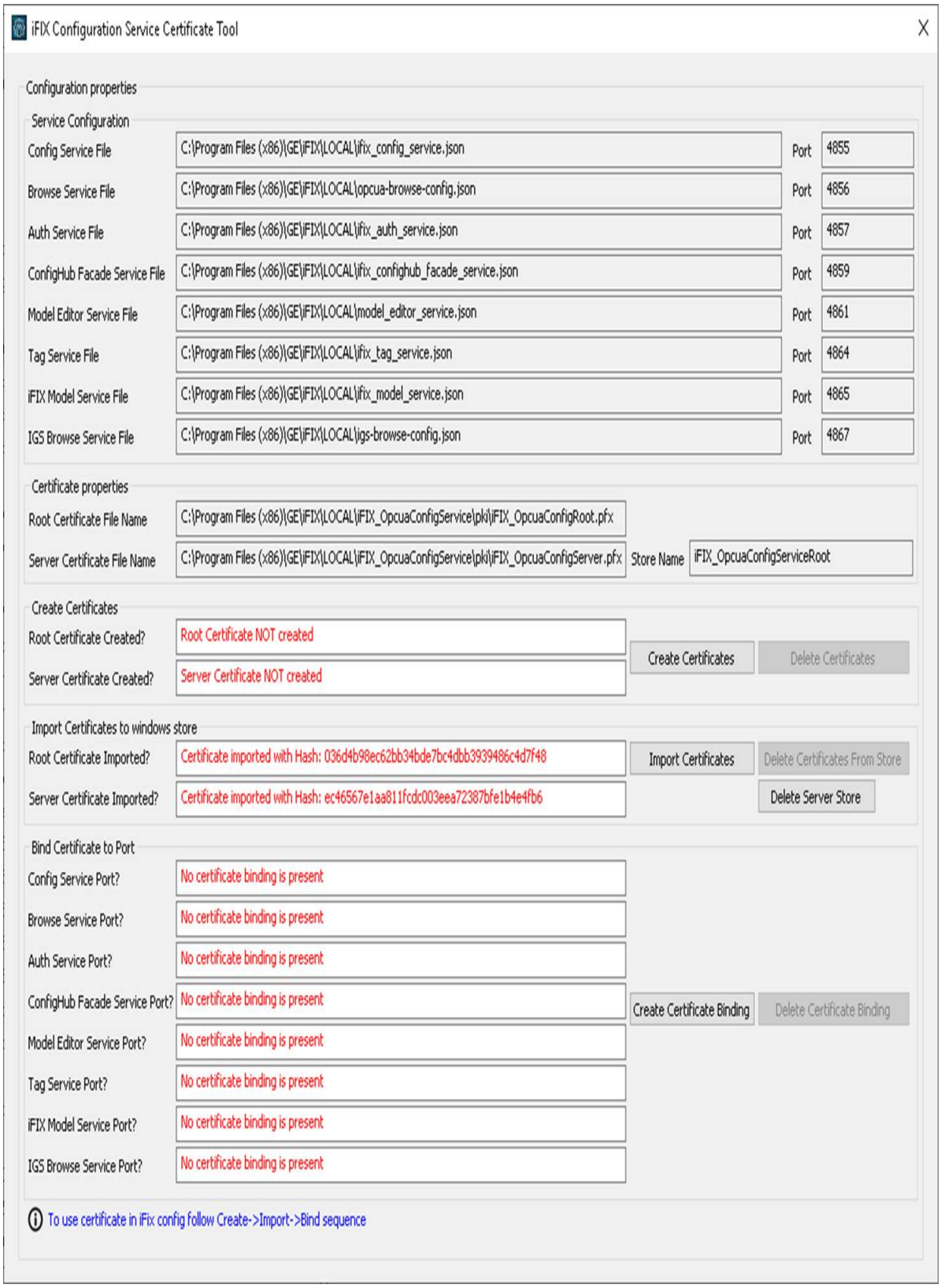
On the iFIX side, during install, self-signed certificates are created and stored in the C:\Program Files (x86)\GE\iFIX\LOCAL\iFIX_OpcuaConfigService\pki folder. The iFIX nginx server certificates are stored in the C:\Program Files (x86)\GE\iFIX\web\conf directory. When the host name changes you will also need to update your iFIX certificates.

Use the following steps to update your self-signed certificates for iFIX:

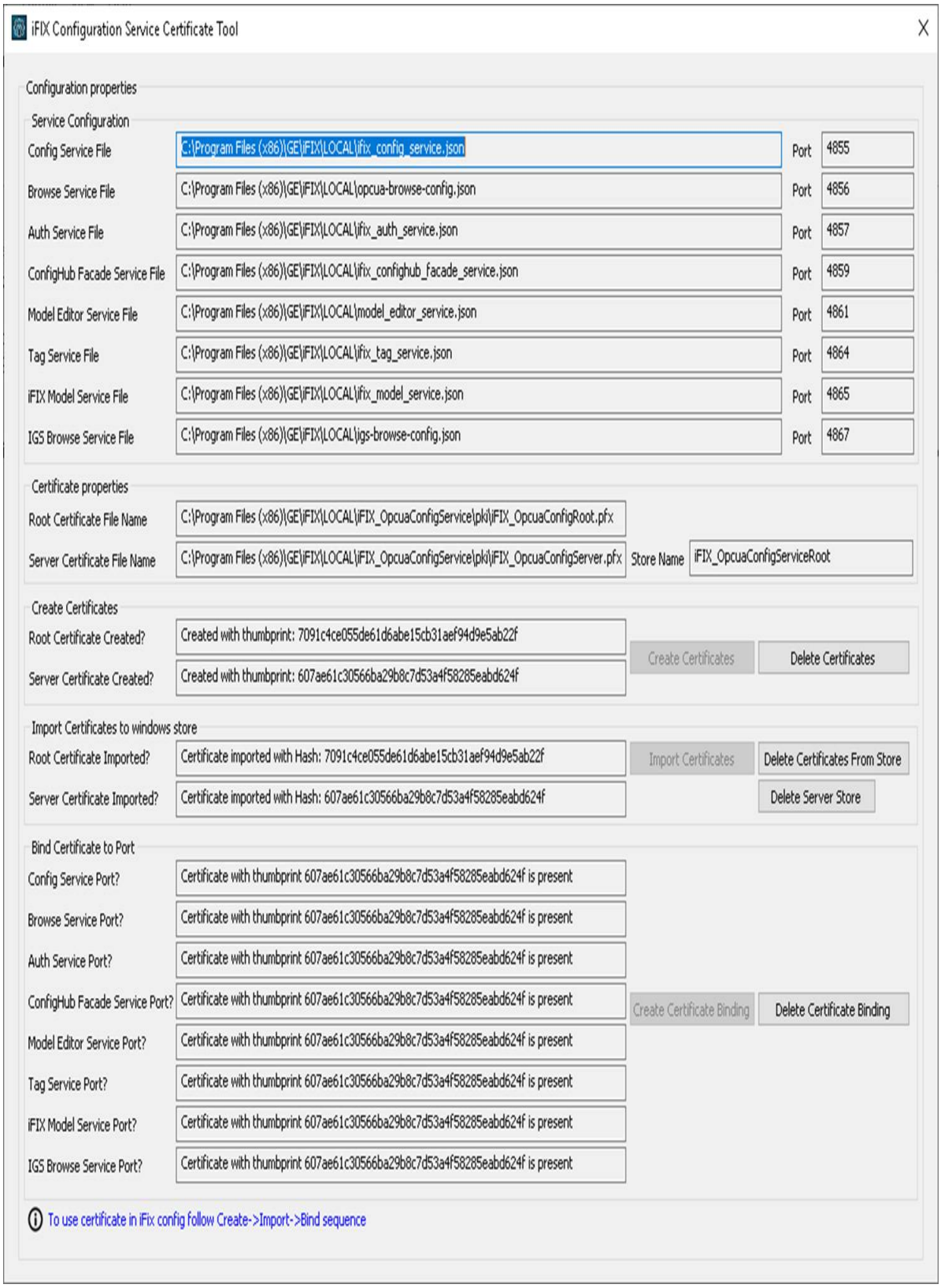
1. Open iFixConfigServiceCertTool.exe as an administrator. This tool is found in the C:\Program Files (x86)\GE\iFIX\ folder. The iFIX Configuration Service Certificate Tool appears, similar to the following figure.


iFIX Configuration Service Certificate Tool
X
Configuration properties
Service Configuration
Config Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\ifix_config_service.json
Port
4855
Browse Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\opcua-browse-config.json
Port
4856
Auth Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\ifix_auth_service.json
Port
4857
ConfigHub Facade Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\ifix_confighub_facade_service.json
Port
4859
Model Editor Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\model_editor_service.json
Port
4861
Tag Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\ifix_tag_service.json
Port
4864
iFIX Model Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\ifix_model_service.json
Port
4865
IGS Browse Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\igs-browse-config.json
Port
4867
Certificate properties
Root Certificate File Name
C:\Program Files (x86)\GE\iFIX\LOCAL\iFIX_OpcuaConfigService\pki\iFIX_OpcuaConfigRoot.pfx
Server Certificate File Name
C:\Program Files (x86)\GE\iFIX\LOCAL\iFIX_OpcuaConfigService\pki\iFIX_OpcuaConfigServer.pfx
Store Name
iFIX_OpcuaConfigServiceRoot
Create Certificates
Root Certificate Created?
Created with thumbprint: 036d4b98ec62bb34bde7bc4dbb3939486c4d7f48
Server Certificate Created?
Created with thumbprint: ec46567e1aa811fcdc003eea72387bfe1b4e4fb6
Create Certificates
Delete Certificates
Import Certificates to windows store
Root Certificate Imported?
Certificate imported with Hash: 036d4b98ec62bb34bde7bc4dbb3939486c4d7f48
Server Certificate Imported?
Certificate imported with Hash: ec46567e1aa811fcdc003eea72387bfe1b4e4fb6
Import Certificates
Delete Certificates From Store
Delete Server Store
Bind Certificate to Port
Config Service Port?
Certificate with thumbprint ec46567e1aa811fcdc003eea72387bfe1b4e4fb6 is present
Browse Service Port?
Certificate with thumbprint ec46567e1aa811fcdc003eea72387bfe1b4e4fb6 is present
Auth Service Port?
Certificate with thumbprint ec46567e1aa811fcdc003eea72387bfe1b4e4fb6 is present
ConfigHub Facade Service Port?
Certificate with thumbprint ec46567e1aa811fcdc003eea72387bfe1b4e4fb6 is present
Model Editor Service Port?
Certificate with thumbprint ec46567e1aa811fcdc003eea72387bfe1b4e4fb6 is present
Tag Service Port?
Certificate with thumbprint ec46567e1aa811fcdc003eea72387bfe1b4e4fb6 is present
iFIX Model Service Port?
Certificate with thumbprint ec46567e1aa811fcdc003eea72387bfe1b4e4fb6 is present
IGS Browse Service Port?
Certificate with thumbprint ec46567e1aa811fcdc003eea72387bfe1b4e4fb6 is present
Create Certificate Binding
Delete Certificate Binding
To use certificate in iFix config follow Create->Import->Bind sequence

2. Click Delete Certificates, and then click Delete Certificate Binding. The certificate tool will look similar to the following:


iFIX Configuration Service Certificate Tool
X
Configuration properties
Service Configuration
Config Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\ifix_config_service.json
Port
4855
Browse Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\opcua-browse-config.json
Port
4856
Auth Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\ifix_auth_service.json
Port
4857
ConfigHub Facade Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\ifix_confighub_facade_service.json
Port
4859
Model Editor Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\model_editor_service.json
Port
4861
Tag Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\ifix_tag_service.json
Port
4864
iFIX Model Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\ifix_model_service.json
Port
4865
IGS Browse Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\igs-browse-config.json
Port
4867
Certificate properties
Root Certificate File Name
C:\Program Files (x86)\GE\iFIX\LOCAL\iFIX_OpcuaConfigService\pki\iFIX_OpcuaConfigRoot.pfx
Server Certificate File Name
C:\Program Files (x86)\GE\iFIX\LOCAL\iFIX_OpcuaConfigService\pki\iFIX_OpcuaConfigServer.pfx
Store Name
iFIX_OpcuaConfigServiceRoot
Create Certificates
Root Certificate Created?
Root Certificate NOT created
Server Certificate Created?
Server Certificate NOT created
Create Certificates
Delete Certificates
Import Certificates to windows store
Root Certificate Imported?
Certificate imported with Hash: 036d4b98ec62bb34bde7bc4dbb3939486c4d7f48
Server Certificate Imported?
Certificate imported with Hash: ec46567e1aa811fcdc003eea72387bfe1b4e4fb6
Import Certificates
Delete Certificates From Store
Delete Server Store
Bind Certificate to Port
Config Service Port?
No certificate binding is present
Browse Service Port?
No certificate binding is present
Auth Service Port?
No certificate binding is present
ConfigHub Facade Service Port?
No certificate binding is present
Model Editor Service Port?
No certificate binding is present
Tag Service Port?
No certificate binding is present
iFIX Model Service Port?
No certificate binding is present
IGS Browse Service Port?
No certificate binding is present
Create Certificate Binding
Delete Certificate Binding
To use certificate in iFix config follow Create->Import->Bind sequence

3. From the Windows File Explorer, remove or backup the certificate files in C:\Program Files (x86)\GE\iFIX\LOCAL\iFIX_OpcuaConfigService\pki directory.
4. From iFIX Configuration Service Certificate Tool, create the new certificates by clicking on the Create Certificates button. The tool will look similar to the following graphic:


iFIX Configuration Service Certificate Tool
X
Configuration properties
Service Configuration
Config Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\ifix_config_service.json
Port
4855
Browse Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\opcua-browse-config.json
Port
4856
Auth Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\ifix_auth_service.json
Port
4857
ConfigHub Facade Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\ifix_confighub_facade_service.json
Port
4859
Model Editor Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\model_editor_service.json
Port
4861
Tag Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\ifix_tag_service.json
Port
4864
iFIX Model Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\ifix_model_service.json
Port
4865
IGS Browse Service File
C:\Program Files (x86)\GE\iFIX\LOCAL\igs-browse-config.json
Port
4867
Certificate properties
Root Certificate File Name
C:\Program Files (x86)\GE\iFIX\LOCAL\iFIX_OpcuaConfigService\pki\iFIX_OpcuaConfigRoot.pfx
Server Certificate File Name
C:\Program Files (x86)\GE\iFIX\LOCAL\iFIX_OpcuaConfigService\pki\iFIX_OpcuaConfigServer.pfx
Store Name
iFIX_OpcuaConfigServiceRoot
Create Certificates
Root Certificate Created?
Created with thumbprint: 7091c4ce055de61d6abe15cb31aef94d9e5ab22f
Server Certificate Created?
Created with thumbprint: 607ae61c30566ba29b8c7d53a4f58285eabd624f
Create Certificates
Delete Certificates
Import Certificates to windows store
Root Certificate Imported?
Certificate imported with Hash: 7091c4ce055de61d6abe15cb31aef94d9e5ab22f
Server Certificate Imported?
Certificate imported with Hash: 607ae61c30566ba29b8c7d53a4f58285eabd624f
Import Certificates
Delete Certificates From Store
Delete Server Store
Bind Certificate to Port
Config Service Port?
Certificate with thumbprint 607ae61c30566ba29b8c7d53a4f58285eabd624f is present
Browse Service Port?
Certificate with thumbprint 607ae61c30566ba29b8c7d53a4f58285eabd624f is present
Auth Service Port?
Certificate with thumbprint 607ae61c30566ba29b8c7d53a4f58285eabd624f is present
ConfigHub Facade Service Port?
Certificate with thumbprint 607ae61c30566ba29b8c7d53a4f58285eabd624f is present
Model Editor Service Port?
Certificate with thumbprint 607ae61c30566ba29b8c7d53a4f58285eabd624f is present
Tag Service Port?
Certificate with thumbprint 607ae61c30566ba29b8c7d53a4f58285eabd624f is present
iFIX Model Service Port?
Certificate with thumbprint 607ae61c30566ba29b8c7d53a4f58285eabd624f is present
IGS Browse Service Port?
Certificate with thumbprint 607ae61c30566ba29b8c7d53a4f58285eabd624f is present
Create Certificate Binding
Delete Certificate Binding
To use certificate in iFix config follow Create->Import->Bind sequence

5. After the new set of certificates are created, ensure that the certificate thumbprint is different in the iFIX Configuration Service Certificate Tool. If they are not different, the new certificates are not created. The following figure shows an example of the before and after:

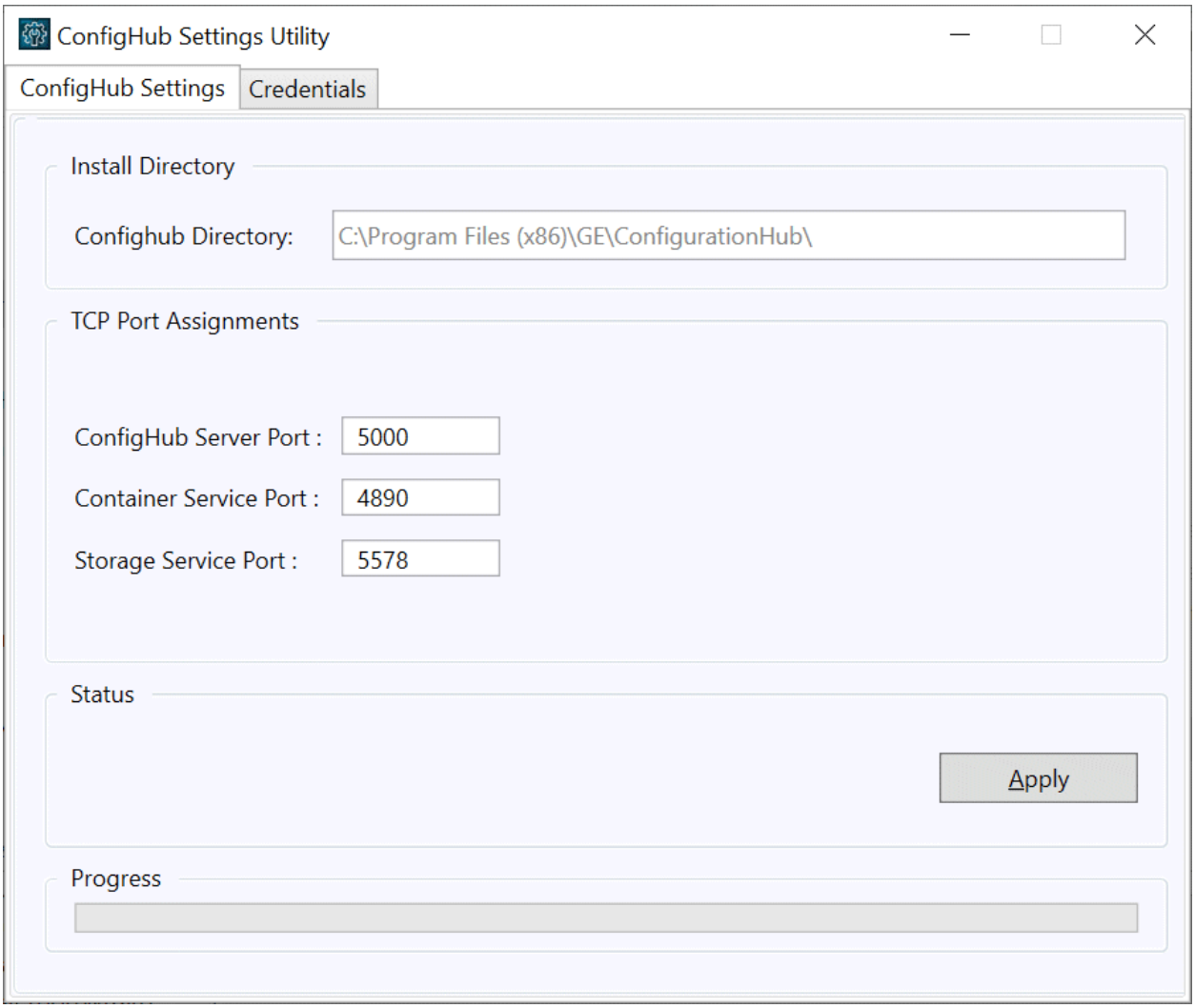
   Before host name change the certificate thumbprint from utility is:

   After the new certificate creation, the thumbprint is:

6. Copy the iFIX_OpcuaConfigServer.crt and iFIX_OpcuaConfigServer.key files from C:\Program Files (x86)\GE\iFIX\LOCAL\iFIX_OpcuaConfigService\pki into the C:\Program Files (x86)\GE\iFIX\web\conf directory.
7. Restart the computer.

Port Changes for Configuration Hub

If you need to change the ports used by Configuration Hub web server after install, use the ConfigHubSettingsUtility.exe utility found in the Configuration Hub folder (by default this folder is: C:\Program Files (x86)\GE\ConfigurationHub) to reset them.



Note: If you are planning to update the ConfigHub Server port number which is the Configuration Hub web server, then you must update all plugins to update ConfigHub Server port change. Otherwise, the plugins cannot communicate with the Configuration Hub. To update your iFIX plugin post install, use the Registration tool available in the iFIX WorkSpace; see iFIX Plugin Registration Tool *(page 28)* for more information. To update your Historian plugin post install, use the Web_Clients_Configuration_Tool.exe tool available in the C:\Program Files\GE Digital \Historian Config folder.

Chapter 5. Troubleshooting

Log Files

Install Log Files

When installed with iFIX, the log for the Configuration Hub portion of the install is named iFIX 6.5_ConfigHubMSI.log. This log appears in your Windows folder and can be used to troubleshoot any issues that occur during install.

Configuration Hub Log Files

By default, the logs for Configuration Hub are saved to the following location: C:\Program Files (x86)\GE\ConfigurationHub\Logs, by default.

Historian Log Files

For Historian, the logs are stored in the following folder, by default: C:\Proficy Historian Data.

iFIX Log Files

For iFIX, the associated logs are in C:\Program Files (x86)\GE]iFIX\LOCAL\Logs folder, by default. The names of these files are:

Log Name	Description
ifix_auth_service.log	iFIX authentication service log file.
ifix_config_service.log	iFIX OPCUA Config Service log file.
ifix_config_service_cert.log	Self-Signed Certificate creation utility log file. This log file is automatically overwritten on each iFIX startup.
ifix_confighub_facade_service.log	iFIX ConfigHub Facade service log file.
ifix_model_editor_service.log	Model editor service log file.
ifix_model_service.log	iFIX model service which is used for publishing model information to iFIX.
ifix_tag_service.log	iFIX tag service log file.

IGS Log File

For IGS, the log file named igs-browse-config.log is located in the C:\Program Files (x86)\GE\iFIX \LOCAL folder, by default.