FactoryTalk Edge Gateway Standalone and Distributed User Manual

Standalone Version 1.04.00
Distributed Version 1.00.00

Rockwell Automation

Important User Information

Read this document and the documents listed in the additional resources section about installation, configuration, and operation of this equipment before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.

Activities including installation, adjustments, putting into service, use, assembly, disassembly, and maintenance are required to be carried out by suitably trained personnel in accordance with applicable code of practice.

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Throughout this manual, when necessary, we use notes to make you aware of safety considerations.

⚠	**WARNING:** Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.

⚠	**ATTENTION:** Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard, and recognize the consequence.

IMPORTANT	Identifies information that is critical for successful application and understanding of the product.

Labels may also be on or inside the equipment to provide specific precautions.

⚡	**SHOCK HAZARD:** Labels may be on or inside the equipment, for example, a drive or motor, to alert people that dangerous voltage may be present.

♨	**BURN HAZARD:** Labels may be on or inside the equipment, for example, a drive or motor, to alert people that surfaces may reach dangerous temperatures.

☀	**ARC FLASH HAZARD:** Labels may be on or inside the equipment, for example, a motor control center, to alert people to potential Arc Flash. Arc Flash will cause severe injury or death. Wear proper Personal Protective Equipment (PPE). Follow ALL Regulatory requirements for safe work practices and for Personal Protective Equipment (PPE).

Rockwell Automation recognizes that some of the terms that are currently used in our industry and in this publication are not in alignment with the movement toward inclusive language in technology. We are proactively collaborating with industry peers to find alternatives to such terms and making changes to our products and content. Please excuse the use of such terms in our content while we implement these changes.

Summary of Changes

This manual includes new and updated information. Use these reference tables to locate changed information.

Global changes

None for this release.

New or enhanced features

This table contains a list of topics changed in this version, the reason for the change, and a link to the topic that contains the changed information.

Topic Name	Reason
Configure the Gateway on page 15	Added note related to Gateway ZeroMQ Port.
FactoryTalk Live Data (FTLD) driver settings on page 18	Added information about FTLD Remote Connector.
Add a data source from a Drive/IMC Device on page 26	Added information related to populate only symbolic tags.
Add a ThingWorx application on page 52	Updated supported versions information.

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Chapter 4

FactoryTalk Edge Gateway applications

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Additional Resources

These documents contain additional information concerning related Rockwell Automation products.

Resource	Description
FactoryTalk Edge Gateway Quick Start Guide	Provide guidelines for using FactoryTalk Edge Gateway.
Studio 5000 Smart Object Configurator Quick Start Guide	Provide guidelines for using Studio 5000 Smart Object Configurator.
Studio 5000 Smart Object Configurator Getting Results Guide	Provides technical details on the Studio 5000 Smart Object Configurator.

View or download publications at http://www.rockwellautomation.com/literature. To order paper copies of technical documentation, contact the local Rockwell Automation distributor or sales representative.

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The software included in this product contains copyrighted software that is licensed under one or more open source licenses.

You can view a full list of all open source software used in this product and their corresponding licenses by opening the oss_licenses.txt file located your product's OPENSOURCE folder on your hard drive.

The default location of this file is:

C:\Program Files (x86)\Common Files\Rockwell\Help\FactoryTalk Edge Gateway\ReleaseNotes\OPENSOURCE\oss_licenses.txt.

You may obtain Corresponding Source code for open source packages included in this product from their respective project web site(s). Alternatively, you may obtain complete Corresponding Source code by contacting Rockwell Automation via the **Contact** form on the Rockwell Automation website:

http://www.rockwellautomation.com/global/about-us/contact/contact.page. Please include "Open Source" as part of the request text.

Overview of FactoryTalk Edge Gateway

FactoryTalk® Edge Gateway™ connects operational technology (OT) to information technology (IT) destination systems. FactoryTalk Edge Gateway collects and organizes data with improved context and makes the data available to stream into higher-level IT applications and databases. FactoryTalk Edge Gateway enables contextualizing OT data at the OT level.

FactoryTalk Edge Gateway offers two deployment options:

1. **Standalone**: The standalone version is based on Windows and comes with local management capabilities.
2. **Distributed**: The distributed version is cloud-based and provides centralized and remote management via FactoryTalk Edge Manager.

FactoryTalk Edge Gateway supports improved data collection and organization by using these capabilities:

To set up your FactoryTalk Edge Gateway application see:

For additional resources see the Studio 5000 Smart Object Configurator Quick Start Guide publication 95055-QS001B-EN-P.

Activation and Licensing - Standalone Version

Activating FactoryTalk Edge Gateway Standalone is a multi-step process that first requires the installation of FactoryTalk® Activation Manager. FactoryTalk Activation Manager provides a secure system for activating Rockwell Automation® software and managing activation files. FactoryTalk Activation Manager is included in the FactoryTalk Edge Gateway installer. Install FactoryTalk Activation Manager and FactoryTalk Edge Gateway separately.

FactoryTalk Edge Gateway Standalone requires full activation. Without full activation, FactoryTalk Edge Gateway Standalone operates for only a seven-day grace period. After expiration of the seven-day grace period, full activation is required to continue using FactoryTalk Edge Gateway Standalone.

The tag licensing options are:

- 100 tags
- 500 tags
- 2500 tags
- 10,000 tags

In FactoryTalk Activation Manager, select a tag license option to determine how many tags the application can use. Tag licensing is not additive; that is, it is not possible to combine any of the four tag licensing options.

Tip: Add-On applications require a 10,000-tag license. Applications are not deployed if there are insufficient tags remaining.

In the FactoryTalk Edge Gateway, under **Settings**, the default preferred tag activation setting is **Automatic selection**. This default setting makes sure that the highest available activation is automatically used. Change the setting by selecting a tag licensing option.

Licensing details, such as the number of used tags and the license status (expiry date), are displayed in the **Overview** page, under **Applications**.

See also

Activation and Licensing - Distributed Version

FactoryTalk Edge Gateway distributed is bundled with FactoryTalk Edge Manager, and it is licensed through entitlements available in FactoryTalk Hub.

The number of available tags depends on the selected catalog, specifically the type of node included in the catalog.

A Type 1 Node includes 100 tags added to the available tag pool, while a Type 2 Node includes 500 tags added to the pool.   It is possible to add an additional 1,000 tags separately.

Please refer to the Rockwell Automation commerce website for more information on the bundle/toolkit catalogs.

Data Ingress

Data ingress is implemented as data sources in FactoryTalk Edge Gateway. Data sources allow an OT engineer to identify data critical for analysis. Use FactoryTalk Edge Gateway to configure a pathway to collect data from these sources:

- Studio 5000 Logix Designer project file (.acd)
- Studio 5000 Logix Designer controller
- FactoryTalk® Live Data shortcut
- Drive/IMC device
- OPC DA device (In distributed version, OPC DA data can be obtained via the FTLD shortcut using the FTLDR connector)
- KEPServer Enterprise device for third-party-data connectivity (standalone version only)

Data Contextualization

Data contextualization is implemented as models in FactoryTalk Edge Gateway. Models help align data to reflect the specific scenario needing analysis. Having aligned data adds resolution and accuracy to the analysis.

FactoryTalk Edge Gateway offers three options for data contextualization:

- Information models
- FactoryTalk Smart Object instances
- Device Discovery Model

An information model is a framework that allows building relationships at the OT layer as pertaining directly to the OT assets and system attributes. Information models allow for the consideration of the overall operational aspects and their organization in reference to the operational hierarchy. Use the configured data sources to build information models.

FactoryTalk Smart Object instances are created in the Studio 5000 application environment and are imported into FactoryTalk Edge Gateway via Studio 5000 Logix Designer project files (.acd). A FactoryTalk Smart Object is an extension of the base Logix tag with additional configuration properties. These user-defined configuration properties allow for additional data analysis. FactoryTalk Smart Object instances also provide high-speed data collection with time synchronization and are based on the configuration properties and information model hierarchy. When used with FactoryTalk Smart Object instances, FactoryTalk Edge Gateway offers contextual resolution of high-speed data with time synchronization.

The object-based methodology of FactoryTalk Smart Object instances provides these advantages:

- Common data across the system
- Reuse and library management at the automation layer
- Automatic use by the information layer
- Contemporary foundation for application development

FactoryTalk Smart Object instances are supported in Logix firmware revisions 28.00 or later. FactoryTalk Smart Object instances are automatically discovered from offline Logix project files (.acd) when using an EtherNet/IP driver for data collection. FactoryTalk Smart Object instances organize the data to collect from data sources. After configuring data sources that contain FactoryTalk Smart Object instances, the FactoryTalk Smart Object models become available in **Models**.

FactoryTalk Smart Object instances are not editable from FactoryTalk Edge Gateway. Modify FactoryTalk Smart Object models in the project for the controller.

Device Discovery Model (Auto-Discovery and Model) enables the user to discover all the known devices and bring them into FactoryTalk Edge Gateway for modeling and egress mapping. Models are created automatically based on the devices that are discovered. User is provided with a list of known device types (based on profiles) where they can select one or more known device types. FactoryTalk Edge Gateway discovers all instances of selected devices and inserts all values accessible in the device into the FactoryTalk Edge Gateway namespace whether or not they're in the profile.

Data Egress

Data egress is implemented as applications in FactoryTalk Edge Gateway that have store and forward capabilities. Use applications to configure pathways that deliver contextualized data to the destination system. Data analysis or machine learning data preparation is executed at the destination system using your preferred analytics engine.

FactoryTalk Edge Gateway supports these destination systems:

- Azure IoT Hub (Azure IoT Edge Runtime will be available in a future release of distributed)
- MSSQL
- ThingWorx® (Available in the future release of distributed version)
- MQTT
- InfluxDB

Note: FactoryTalk Edge Gateway Configuration Tool password is applicable for standalone version only.

FactoryTalk Edge Gateway Configuration Tool password

The first time that you run the FactoryTalk Edge Gateway configuration tool on a machine, the FactoryTalk Edge Gateway Login dialog box appears. Create your password and keep a record of it.

Subsequent users must create the same password. If another user runs the configuration tool for the first time on the same machine, that user is prompted to create a password. The new user must enter the previously created password. Subsequent users are prompted to enter the existing password, which is then cached.

The backup and restore procedures require this password.

The password protects the configuration of the FactoryTalk Edge Gateway service.

This configuration is assigned to the machine and not to the user. Therefore, the password is also bound to the machine and not to the user.

The FactoryTalk Edge Gateway service cannot work with several different configurations (it is obliged to operate single configuration - single service). This is why this particular configuration is additionally protected by a single overriding password.

Data sources

From **Data Sources**, first define drivers and then configure data sources. Drivers define the communication method used by FactoryTalk Edge Gateway to collect data from data sources.

Configure data sources to populate a namespace and collect data from data tags, models, and FactoryTalk Smart Object instances. FactoryTalk Smart Object instances require an offline Studio 5000 Logix Designer project file (.acd) to populate the namespace and an EtherNet/IP driver for data collection.

See also

Go online or offline with the gateway

Go online with FactoryTalk Edge Gateway to monitor the running gateway or modify the current gateway configuration. Any modifications made while online are automatically applied to the gateway. When going online, a mismatch may occur between the new gateway configuration and the one currently downloaded to the gateway. When a mismatch occurs, FactoryTalk Edge Gateway prompts to either upload from the gateway or download the current configuration to the gateway.

You might want to modify the gateway configuration while offline to interrupt minimally the running system or to apply changes when the system usage is less critical. Go offline with the gateway and modify the gateway configuration. To apply simultaneously all changes to the gateway, go online and then download the modified configuration.

You can perform these modifications to the gateway configuration while offline:

- Generate a namespace from a Studio 5000 Logix Designer project file (.acd)
- Build and configure models from any existing namespace

When offline, any configured and deployed applications continue to run.

> Tip: Recommended practice is to go offline to modify the current gateway configuration. Any modifications made while online are automatically downloaded to the gateway.

To go online or offline with the gateway

1. In the top-right corner of any view, select **Online** to go online with the gateway. FactoryTalk Edge Gateway displays a green banner: **Gateway Connection: Online**.

2. If a configuration mismatch occurs, do one of these actions to go online:

    - Select **Upload** to restore the previous gateway configuration. Offline modifications are lost.
    - Select **Download** to overwrite the running gateway configuration with the current modifications. If not backed up, the previous gateway configuration is lost.

3. To go offline with the gateway, select **Offline**. FactoryTalk Edge Gateway displays a gray banner: **Gateway Connection: Offline**.

See also

Overview

The **Overview** displays the **Gateway Status**, **Data In**, and **Data Out** of FactoryTalk® Edge Gateway™.

Tip: Select **Refresh** to display up-to-date information in **Overview**. The latest refresh action is timestamped.

See also

Gateway Status

The **Gateway Status** displays data about the computer running FactoryTalk Edge Gateway and licensing information:

Data	Description
Total Memory	The total amount of RAM installed in the computer running the gateway.
Free Memory	The amount of RAM currently available in the computer running the gateway.
CPU	The percentage of the central processing unit (CPU) that FactoryTalk Edge Gateway currently uses.
Licensed Tags	The total number of licensed tags that all deployed applications use. If multiple applications use a tag, the tag is only counted once.
Maximum Licensed Tags	The maximum number of licensed tags available (100, 500, 2500, or 10000) based on the tag activation in use.
License Status	Displays the current license status: • Normal (expires mm/dd/yyyy) • Normal (Gold Master) (expires mm/dd/yyyy) • In grace period (x.y days remaining) • Grace period expired • Missing

Data In

Data In displays information about data sources flowing into the gateway:

Column	Description
Name	The name of the configured data source.
Driver	The name of the driver defined for the data source. The driver displays one of these statuses: • ⬤ The driver is stopped. • 🟠 The driver is paused. • 🟢 The driver is running.
Collection Path	The collection path defined for the data source. The collection path displays one of these statuses: • ⬤ The collection path is inactive. • 🟢 The collection path is active.

Data Out

Data Out displays information about applications flowing out of the gateway:

Status icon	Name	Licensed tags
⬤	The name of the stopped application.	Stopping an application frees the licensed tags so that they are available for use by other applications.
🟠	The name of the paused application.	The quantity of licensed tags that the paused application uses.
🟢	The name of the running application.	The quantity of licensed tags that the running application uses.

Configure Gateway settings

Configure the Gateway settings.

To configure the Gateway settings:

1. Select **Settings**.
2. Set these parameters:
   - **Gateway Name.** Name of the gateway.
   - **Gateway Description.** Description of the gateway.
   - **Preferred Tag Activation**. Select the preferred tag activation. If the preferred activation is not available, FactoryTalk Edge Gateway uses the next highest available activation.
   - **Gateway IP Address.** Host IP address of the gateway. This information is read-only.
   - **Gateway ZeroMQ Port.** Default local port on the computer hosting the gateway. The gateway uses the port to talk to drivers and applications. Change the port to use an alternate port.

     💡 Tip: Do not use Port 50001 as a Gateway ZeroMQ Port because this port is used by FactoryTalk Edge Gateway configuration tool (GUI) and can not be assigned to FactoryTalk Edge Gateway service.
   - **Path to Log File.** Path to the location of the log file.
   - **Maximum Log File Size.** Maximum allowable size of each log file.
   - **Backup Log File Count.** Number of backed up log files.

- **Compress Log File.** Activation or deactivation of log file compression. Activate this setting to compress backup files and to create an fteg.log.gz file. FactoryTalk Edge Gateway creates an fteg.log.gz file when the maximum log file size is reached. After creation of an .fteg.log.gz file, new logs are logged in a .log file. Compression only applies to older logs.

3. Select **Save**.

See also

Drivers

Drivers define the communication method used by FactoryTalk Edge Gateway to collect data from data sources. For example, use a FactoryTalk Live Data driver to define the FactoryTalk Live Data directory connection and the associated user credentials. Use an OPC Data Access (DA) or KEPServer Enterprise (OPC DA) driver to define the OPC DA server connection and the associated user credentials. Use an EtherNet/IP driver to define the correct network connection for CIP communication.

Drivers also configure the path for populating the namespace.

FactoryTalk Edge Gateway supports these driver types and quantities:

Driver type	Maximum quantity
FactoryTalk Live Data (FTLD)	1
EtherNet/IP (CIP)	Limited by the number of network interface cards (NICs) available on the computer.
OPC Data Access (DA)	4 total
KEPServer Enterprise (OPC DA)	

FactoryTalk Edge Gateway installs with an EtherNet/IP (CIP) driver. Select other driver types during FactoryTalk Edge Gateway installation to include them in the available driver type list. The driver type needed by a data source depends on the data source type. For example, to gather data from an FactoryTalk Live Data data source, add an FTLD driver.

An icon shows the status of each driver:

Icon	Description
⚫	The driver is stopped.
🟠	The driver is paused.
🟢	The driver is running.

Add drivers and set their communication settings before configuring data sources.

See also

Add a driver

Drivers enable communication between the gateway and data sources. Add drivers to configure data collection paths for data sources and FactoryTalk Smart Object instances. Go **Online** to add a driver.

By default, an EtherNet/IP (CIP) driver is installed with FactoryTalk Edge Gateway.

To add a driver

1. Select **Data Flow** > **Data Sources**.
2. From **Define Drivers**, select **Add** to add a driver to the gateway.
3. From **Select Driver**, select the driver type to configure:

   - FactoryTalk Live Data (FTLD)
   - EtherNet/IP (CIP)
   - OPC Data Access (DA) (For standalone version only)
   - KEPServer Enterprise (OPC DA) (For standalone version only)

4. Select **Next**.
5. Enter the **Driver Name** and define the settings.

   - The name must contain only letters, numbers, and hyphens.
   - The settings differ for each driver type.

6. For **OPC Data Access** and **Kepware** drivers, select **Add** to configure **CREDENTIALS FOR SERVERS THAT WILL BE ACCESSED**. These drivers support more than one instance of credentials.

   - Select each credential and enter a value for the **Server Identifier**, **Domain**, and **System username**, and **System password**.

7. Select **Save**.

See also

Edit a driver

Edit an existing driver to modify the settings. Go **Online** to edit a driver.

Tip: You cannot edit a driver in use by a running or paused application. Stop the dependent application to edit the driver.

To edit a driver

1. Select **Data Flow** > **Data Sources**.
2. (optional) From **Define Drivers**, filter the list of drivers.
3. Select **Edit** ✏ for the required driver.
4. Modify the driver settings, and then select **Save**.

See also

FactoryTalk Live Data (FTLD) driver settings on page 18

EtherNet/IP (CIP) driver settings on page 20

OPC Data Access (DA) driver settings on page 21

Kepware (OPC DA) driver settings on page 21

Delete a driver

Go **Online** to delete unused gateway drivers. You cannot delete drivers in use by data sources or applications. The deleted driver is no longer available in the gateway.

To delete a gateway driver

1. Select **Data Flow** > **Data Sources**.
2. (optional) From **Define Drivers**, filter the list of drivers.
3. Select one or more drivers.
4. Select **Delete** 🗑. The unused drivers are removed from the driver list.

Start, stop, and pause a driver

Start, stop, and pause gateway drivers as needed. Pause a driver to stop incoming or outgoing data. The paused driver still exists on the gateway. Stop a driver to remove it from the gateway. The stopped driver is still available in the gateway configuration. You cannot stop a driver used by a running application.

To start, stop, and pause a driver

1. Select **Data Flow** > **Data Sources**.
2. From **Define Drivers**:

- Select **Run** ▶ to start the driver.
- Select **Pause** ▮▮ to pause the driver.
- Select **Stop** ■ to stop the driver.

FactoryTalk Live Data (FTLD) driver settings

The FactoryTalk Live Data (FTLD) driver enables communication between FactoryTalk Edge Gateway and FactoryTalk Live Data sources.

For FactoryTalk Live Data driver, FactoryTalk Edge Gateway supports only "<FTLinx Shortcut>/<OPCDA Topic>/<OPCUA Server>" levels on the browsing tree. You must select one of the lowest levels in tree structure before clicking **Save**, else tags will not be populated to namespace.

When adding a FactoryTalk Live Data driver to the gateway, configure these settings:

FactoryTalk Live Data driver settings	Description
Driver Name	Defines the driver name.
Login as Currently Signed In User	Select this setting to sign in with the current Windows® account.
Username	Displays the username of the associated Windows account. This setting is available when **Login as Currently Signed In User** is not selected.
Password	Displays the password for the **Username**. This setting is available when **Login as Currently Signed In User** is not selected.
Login to Local Directory	Select when logging in to a local directory.
Login to Network Directory	Select when logging in to a network directory.
Create Remote Connection (Applicable only for distributed version)	Select when you want to create a remote connection. Provide the following details: 1. Instance name 2. IP address 3. Port

Tip: When you delete a Remote Driver that is unreachable or its connection is lost (one of the remote parameters - ip, port, hostname was changed), that driver will be deleted locally only and will exist in the remote machine without connection. Once the connection is restored, you can delete that.

When you use the same name as the name of the Remote Driver without connection with new connection parameters then that driver will appear locally and you will not be able to control it (run, pause, delete, etc.).

Reconfigure the FactoryTalk Edge Gateway Live Data Remote Connector:

First configuration of FactoryTalk Live Data Remote Connector happens during installation process when config.boot.json file is created. After delivery of private key and certificates (own and client) to PKI location this configuration stored in config.boot.json file is loaded to service and file is renamed into config.boot.old.json.

To reconfigure FactoryTalk Live Data Remote Connector, perform the following steps:

1. Navigate to the **config.boot.old.json** file and open with notepad.
2. Update the following details:

   a. ip

   b. Port

   c. name

3. Rename the file as "**config.boot.json**".
4. Restart the FactoryTalk Edge Gateway service.

> Tip: Provide certificates in .pem format to secure the connection between the remote driver and the client.
>
> For this purpose, use pki directory: provide client private key into key directory (rename as key.pem), client self-signed certificate into cert directory (rename as cert.pem), and server certificate into ca directory (rename as ca.pem). Do the same on server end (remote connector end) providing server private key into key directory, server self-signed certificate into cert directory, and client certificate into ca directory using the same names.

FactoryTalk Live Data Remote Connector Certificates Management

> Note: (Applicable only for distributed version)

Click **Settings** on the left panel and navigate to **FactoryTalk Live Data Remote Connector TLS Certificates** section.

- To generate self-signed certificates and private key, click **Generate**.
- To download self-signed certificates, click **Download**.
- To upload CA certificates, click **Upload** and select the file.

  > Tip: Provide certificates in .pem format.

See also

EtherNet/IP (CIP) driver settings

The EtherNet/IP (CIP) driver enables communication between FactoryTalk Edge Gateway and data sources using a CIP™ network. When adding an EtherNet/IP driver to the gateway, configure these settings:

EtherNet/IP driver settings	Description
Driver Name	Defines the driver name.
Driver IP Address	Displays the Ipv4 address to use for CIP communication.
Driver Default Gateway IP Address	Displays the default gateway Ipv4 address to use for CIP communication. This setting is related to the **Driver IP Address**.
ADVANCED	
Driver IpV4 Net Mask	Displays the Network IPv4 mask to use for CIP communication.

Tip: If the computer where CIP adapter is running has multiple network interfaces, i.e. multiple IP addresses, ensure that the Driver IP Address and Driver Default Gateway IP Addess are configured correctly. That is, CIP adapter is 'sitting' on the same network as the target CIP devices.
Example:
Your computer have two network interfaces (i) 10.70.136.110, (ii) 192.168.1.10 and you want to communicate with CIP device available at 192.168.1.20, then the Driver IP Address must be set to 192.168.1.10.

See also

Note: The OPC Data Access (DA) driver is supported by standalone version only.

OPC Data Access (DA) driver settings

The OPC Data Access (DA) driver enables communication between FactoryTalk Edge Gateway and data sources using an OPC DA server. When adding an OPC DA driver to the gateway, configure these settings:

OPC Data Access driver settings	Description
Driver Name	Defines the driver name.
CREDENTIALS FOR SERVERS THAT WILL BE ACCESSED	
Server Identifier	Identifies and describes the server. For example: *<ComputerName>/<ServerName>*
Domain	Displays the server domain name.
System password	Displays the password for the selected credential.
System username	Displays the username associated with the **System password**.

To connect FactoryTalk Edge Gateway with a remote OPC server, apart from the standard DCOM communication settings, it is required to create a firewall rule as shown below:

(Program = %ProgramFiles% (x86)\Rockwell Software\FactoryTalk Edge Gateway\fteg\node_modules\cgp-adapter-opcda\lib\opcda-adapter.exe, Protocol = TCP, Local Port = RPC Dynamic Ports)

See also

Note: The KEPServer Enterprise (OPC DA) driver is supported by standalone version only.

KEPServer Enterprise (OPC DA) driver settings

The KEPServer Enterprise (OPC DA) driver enables communication between FactoryTalk Edge Gateway and data sources coming from devices not using Rockwell Automation network protocols. When adding a KEPServer Enterprise driver to the gateway, configure these settings:

KEPServer Enterprise driver settings	Description
Driver Name	Defines the driver name.
CREDENTIALS FOR SERVERS THAT WILL BE ACCESSED	
Server Identifier	Identifies and describes the server. For example: <ComputerName>/<ServerName>
Domain	Displays the server domain name.
System password	Displays the password for the selected credential.
System username	Displays the username associated with the **System password**.

To connect FactoryTalk Edge Gateway with a remote OPC server, apart from the standard DCOM communication settings, it is required to create a firewall rule as shown below:

(Program = %ProgramFiles% (x86)\Rockwell Software\FactoryTalk Edge Gateway\fteg\node_modules\cgp-adapter-opcda\lib\opcda-adapter.exe, Protocol = TCP, Local Port = RPC Dynamic Ports)

Tip: For more information, refer to Remote OPC DA Quick Start Guide (DCOM).

See also

Data source configuration

Configure data sources to populate a namespace and collect data from data tags and FactoryTalk Smart Object instances. Data tags are accessed from controllers, devices, and servers. FactoryTalk Smart Object instances require an offline Studio 5000 Logix Designer project file (.acd) to populate the namespace and an EtherNet/IP driver for data collection.

FactoryTalk Edge Gateway gathers the directory of data from the source and stores the data into a namespace. In the case of FactoryTalk Smart Object instances, the FactoryTalk Smart Object model is also discovered and replicated in **Models**. Use these data tags and models to configure the gateway.

From **Configure Data Sources**, add, edit, delete, populate, clear, and filter data sources.

Data Source Types

Add tags and FactoryTalk Smart Object instances for these data source types:

- Studio 5000 Logix Designer project file
- Logix Controller via EtherNet/IP
- FactoryTalk Live Data shortcut
- Drive/IMC device

- OPC DA device (standalone version only)
- KEPServer Enterprise device (standalone version only)

Namespace

A namespace is a directory of data from your data sources or a collection of data types and instances. The namespace is a local representation of the data structure from the source. The namespace enables quick sorting and searching across all data sources when building models and configuring data to applications. Most namespaces support online discovery of data from data sources. For FactoryTalk Smart Object instances or offline configurations, use .acd files to generate a namespace and create models before deploying the data to applications.

Collection path

Define the collection path when configuring data sources. The collection path defines the location where FactoryTalk Edge Gateway gathers data. This collection path and namespace often use the same path. When configuring an offline Logix Project File data source type, define a collection path to enable FactoryTalk Edge Gateway to collect the system data for running applications.

An icon shows the status of the **Driver** and **Collection Path** for each configured data source:

Icon	Description
⬤	The driver is offline. The collection path is inactive.
⬤	The driver is paused.
⬤	The driver is running. The collection path is active.

See also

Add a data source from a Studio 5000 Logix Designer Project File (.acd)

Add data sources from offline Studio 5000 Logix Designer controller project files to populate a namespace and collect data from data tags and FactoryTalk Smart Object instances. The supported file type is .acd. FactoryTalk Smart Object instances are only available from the Studio 5000 Logix Designer project file (.acd) data source type and require an EtherNet/IP (CIP) driver. The data from the .acd project file is later accessed from the device or server running the Studio 5000 Logix Designer project file.

FactoryTalk Edge Gateway is compatible with Logix firmware revisions 16.00 or later. FactoryTalk Smart Object instances are supported in Logix firmware revisions 28.00 or later.

The Studio 5000 Logix Designer project file (.acd) data source is compatible with these drivers: FactoryTalk Live Data and EtherNet/IP (CIP).

To add a data source from a Studio 5000 Logix Designer project file (.acd)

1. Select **Data Flow** > **Data Sources**, and then from **Configure Data Sources**, add a data source.

   - To add the first data source, select **Add Data Sources**.

   - To add a subsequent data source, select **Add** ╋ .

2. Enter the name and then from **Data Browse Path Type**, select **Logix Project File (ACD)**.

   - The name must contain only letters, numbers, and hyphens.

3. Browse for the file path and select the .acd file.
4. (optional) To generate the namespace, select **Auto-populate namespace**.
5. From **Driver for Collection,** select the FactoryTalk Live Data or EtherNet/IP (CIP) driver.

   Tip: To populate a namespace and collect data from FactoryTalk Smart Object instances available from .acd project files, select the EtherNet/IP (CIP) driver.

6. Enter the collection path.

   Tip: Whether the gateway is online or offline, enter a collection path to add a data source from a Studio 5000 Logix Designer project file. Edit the data source to enter the correct collection path.

7. Select **Save** to add the data source.

See also

Add a data source from a Studio 5000 Logix Designer Controller via EtherNet/IP

Add data sources from Studio 5000 Logix Designer controllers via EtherNet/IP to populate a namespace and collect data from data tags. FactoryTalk Edge Gateway is compatible with Studio 5000 Logix Designer firmware revisions 16.00 or later.

The Studio 5000 Logix Designer Controller via EtherNet/IP data source is compatible with the EtherNet/IP (CIP) driver.

To add a data source from a Studio 5000 Logix Designer Controller via EtherNet/IP

1. Select **Data Flow > Data Sources**, and from **Configure Data Sources**, add a data source.

   - To add the first data source, select **Add Data Sources**.

   - To add a subsequent data source, select **Add** ┼.

2. Enter the name and then from **Data Browse Path Type**, select **Logix Controller via EtherNet/IP**.

   The name must contain only letters, numbers, and hyphens.

3. From **Driver for browsing**, select the EtherNet/IP (CIP) driver.
4. Enter the browse path.

   Tip: For example, use 192.168.1.20/1:3 (IP/Backplane:Slot).

5. (optional) To generate the namespace, select **Auto-populate namespace**.
6. Perform one of these actions:

   - Select **Use browse path for data collection**.
   - From **Driver for Collection,** select the EtherNet/IP (CIP) driver for the data collection path and then enter the collection path.

7. Select **Save** to add the data source.

See also

Add a data source from a FactoryTalk Live Data Shortcut

Add data sources from FactoryTalk Live Data to populate a namespace and collect data from data tags. The data source is also a shortcut to these source types: HMI TagDb, OPC DA server, OPC UA server, and FactoryTalk® Linx shortcut.

The **FactoryTalk Live Data Shortcut** data source is compatible with the FactoryTalk Live Data driver.

To add a data source from a FactoryTalk Live Data shortcut

1. Select **Data Flow** > **Data Sources**, and from **Configure Data Sources,** add a data source.

   - To add the first data source, select **Add Data Sources**.

   - To add a subsequent data source, select **Add** ┼.

2. Enter the name and then from **Data Browse Path Type,** select **FactoryTalk Live Data Shortcut**.

   - The name must contain only letters, numbers, and hyphens.

3. From **Driver for browsing,** select the FactoryTalk Live Data driver.
4. Select a network or local path and enter the browse path.
5. (optional) To automatically generate the namespace, select **Auto-populate namespace**.
6. Perform one of these:

   - Select **Use browse path for data collection**.
   - From **Driver for Collection**, select the FactoryTalk Live Data driver for the data collection path and enter the collection path.

7. Select **Save** to add the data source.

See also

Add a data source from a Drive/IMC Device

Add data sources from drives or Integrated Motion Control (IMC) devices to populate a namespace and collect data from data tags.

The **Drive/IMC Device** data source is compatible with the **EtherNet/IP (CIP)** driver.

To add a data source from a Drive/IMC Device

1. Select **Data Flow** > **Data Sources**, and then from **Configure Data Sources,** add a data source.

   - To add the first data source, select **Add Data Sources**.

   - To add a subsequent data source, select **Add** ╄.

2. Enter the name and then from **Tags and types defined in (data browse path type)**, select **Drive/IMC Device**.

   - The name must contain only letters, numbers, and hyphens.

3. From **Driver for browsing,** select **EtherNet/IP (CIP) driver**.
4. Enter the browse path.
5. (optional) To generate the namespace, select **Auto-populate namespace**.
6. Perform one of these actions:

   - Select **Use browse path for data collection**.
   - From **Driver for Collection**, select the EtherNet/IP (CIP) driver for the data collection path and then enter the collection path.

7. (optional) To populate only symbolic tags into the namespace, select **Populate only Symbolic Tags (Smart devices)**.

8. Select **Save** to add the data source.

See also

Add a data source from an OPC DA Device

Note: The OPC DA device is supported by standalone version only.

Add data sources from OPC DA devices to populate a namespace and collect data from data tags.

The **OPC DA Device** data source is compatible with the OPC DA Access (DA) driver.

To add a data source from an OPC DA Device

1. Select **Data Flow** > **Data Sources**, and from **Configure Data Sources,** add a data source.

   - To add the first data source, select **Add Data Sources**.

   - To add a subsequent data source, select **Add** ┼.

2. Enter the **Name** and then from **Tags and types defined in (data browse path type),** select **OPC DA Device**.

   - The name must contain only letters, numbers, and hyphens.

3. From **Driver for browsing**, select the OPC DA Access (DA) driver.

4. Perform one of these actions:

   - Enter the **Browse path** in the following format. Use "+" in place of space to enter the path. For example: To enter "RSLinx OPC Server", type "RSLinx+OPC+Server".

     - **For remote servers:** Computer_Name/Server_Identifier:Channel.Device (i.e. Computer1/Kepware.KEPServerEnterprise:Channel1.Device1)

     - **For local servers:** Server_Identifier:Channel.Device (i.e. Kepware.KEPServerEnterprise:Channel1.Device1)

   - Select the path from **OPC Local Servers** drop-down list. **OPC Local Servers** drop-down list contains only Local OPC servers.

5. (optional) To generate the namespace, select **Auto-populate namespace**.

6. Perform one of these actions:

   - Select **Use browse path for data collection**.

- From **Driver for Collectio**n, select the OPC DA Access (DA) driver for the data collection path and enter the collection path.

7. Select **Save** to add the data source.

See also

Note: The KEPServer Enterprise device is supported by standalone version only.

Add a data source from a KEPServer Enterprise Device

Add data sources from KEPServer Enterprise devices to populate a namespace and collect data from data tags.

The **KEPServer Enterprise Device** data source is compatible with the KEPServer Enterprise (OPC DA) driver.

To add a data source from a KEPServer Enterprise Device

1. Select **Data Flow** > **Data Sources**, and from **Configure Data Sources**, add a data source.
   - To add the first data source, select **Add Data Sources**.
   - To add a subsequent data source, select **Add** ╪.
2. Enter the **Name** and then from **Tags and types defined in (data browse path type),** select **KEPServer Enterprise Device**.
   - The name must contain only letters, numbers, and hyphens.
3. From **Driver for browsing**, select the KEPServer Enterprise (OPC DA) driver.
4. Perform one of these actions:
   - Enter the **Browse path** in the following format. Use "+" in place of space to enter the path. For example: To enter "RSLinx OPC Server", type "RSLinx+OPC+Server".
     - **For remote servers:** Computer_Name/Server_Identifier:Channel.Device (i.e. Computer1/Kepware.KEPServerEnterprise:Channel1.Device1)
     - **For local servers:** Server_Identifier:Channel.Device (i.e. Kepware.KEPServerEnterprise:Channel1.Device1)
   - Select the path from **OPC Local Servers** drop-down list. **OPC Local Servers** drop-down list contains only Local OPC servers.

5. (optional) To generate the namespace, select **Auto-populate namespace**.
6. Perform one of these actions:

   - Select **Use browse path for data collection**.
   - From **Driver for Collection**, select the KEPServer Enterprise (OPC DA) driver for the data collection path and then enter the collection path.

7. Select **Save** to add the data source.

See also

Add an Auto discovery and model data source

Use Auto discovery and model data source to discover all known devices and automatically create models based on the devices that are discovered.

User is provided with a list of known device types (based on profiles) where they can select one or more known device types.

The Auto discovery and model data source is compatible with the EtherNet/IP (CIP) driver.

To add an Auto discovery and model data source

1. Select **Data Flow** > **Data Sources**, and then from **Configure Data Sources**, add a data source.

   - To add the first data source, select **Add Data Sources**.
   - To add a subsequent data source, select **Add** ┼.

2. Enter the **Name.**

   - The name must contain only letters, numbers, and hyphens.

3. From **Tags and types defined in (data browse path type),** select **Auto discovery and model.**
4. From **Driver for browsing,** select the **EtherNet/IP (CIP) driver.**
5. Select the **Detection type:**

a. **Smart detection:** Automatically detect all known devices and create models.

b. **Manual configure detection:** Enter a single IP address or ranges of IP addresses to manually search the devices and select **Add**. Refer the below table for examples of valid and invalid IP addresses:

Examples of Valid IP Address	Examples of Invalid IP Addess
1.2.3.4	123.256.1.2

123.1.1.255	1.2.3.4/1
12.123.1.241	0.1.2.3
1.2.3.4-10	1.2.3.4/1:2-50
100.200.201.202-255	1.2.3.4/88:15
1.2.3.4/1:2	1.2.3.4-10/1:2
1.2.3.4-1.2.254.255	1.2.3.4/1:2-999999
10.88.14.3/1:4/2:192.168.1.5/1:3	
10.88.14.3/1:4/2:192.168.1.5	
10.88.14.3/1:4/2:192.168.1.5-30	

Tip: If the device with the provided IP/IP range is not in the network, an empty model will be created.

6. (optional) To generate the namespace, select **Auto-populate namespace.**
7. Select one or more devices from the **System known supported devices** list**.**
8. Select **Save** to add the data source.

See also

FactoryTalk Linx and FactoryTalk Logix Echo binding to port 44818

The EtherNet/IP Encapsulation protocol defines a reserved UDP port (number AF12 hexadecimal; number 44818 decimal) which every EtherNet/IP device must support for the device to display in browse. By default, **FactoryTalk Linx** doesn't listen on this port until the **Listen on EtherNet/IP encapsulated ports** checkbox is selected.

FactoryTalk Edge Gateway running on a workstation can also listen on this port, resulting in a race condition: the application that starts first aquires the port, and that application's identity is the one exposed to a browse. Since the FactoryTalk Edge Gateway application also acquires the matching EtherNet/IP TCP port (number AF12 hexadecimal; number 44818 decimal), all EtherNet/IP communications will be directed to FactoryTalk Edge Gateway.

This port is occupied by **FactoryTalk Logix Echo** also. So, when the user uses the **FactoryTalk Logix Echo** to simulate RA controllers and selects **Smart Detection** then the **Auto device and model** does not work and no devices are discovered. Workaround for this is to open the **Windows Task Manager**, then in the **Processes** tab , select the **FactoryTalk Logix Echo** and Click **End Task**.

Perform the following steps to prevent FactoryTalk Linx from binding to port 44818:

1. Launch the **FactoryTalk Administration Console**. Select the Local FactoryTalk directory.
2. Within the **Communications** tab, right-click on **EtherNet, Ethernet** and select **Properties.**
3. Within the **Advanced** tab, ensure that the **Listen on EtherNet/IP encapsulation ports** checkbox is unchecked.
4. Click **Apply**, then click **Ok.**
5. Restart the **FactoryTalk Linx** service.

See also

Supported Profiles and its Datapoints

Below is the list of profiles and its datapoints supported by Device Discovery model.

SN	Profiles	Datapoints
1	Point I/O Communications Adapter	Fault Bits, Minor Recoverable Fault, Minor Unrecoverable Fault, Major Recoverable Fault, Major Unrecoverable Fault
2	ControlLogix ControlNet Adapter	
3	CompactLogix ControlNet Adapter	
4	CompactLogix Communications Adapter	
5	Point I/O Module	
6	ControlLogix HART I/O Module	
7	ControlLogix I/O Module	
8	CompactLogix I/O Module	
9	HART Enabled I/O Module	
10	iTRAK 5730	
11	Kinetix 5500 Servo Drive	
12	PowerFlex 7000 Drive	
13	SMC-50 Solid-State Smart Motor Controller	
14	SMC Flex Solid-State Smart Motor Controller	
15	ControlLogix DeviceNet Adapter	Fault Bits, Minor Recoverable Fault, Minor Unrecoverable Fault, Major Recoverable Fault, Major Unrecoverable Fault, Idle Mode, Node 00 Faults, Node 00 Faults, Node 01 Faults, Node 02 Faults, Node 03 Faults, Node 04 Faults, Node 05 Faults, Node 06 Faults, Node 07 Faults, Node 08 Faults, Node 09 Faults, Node 10 Faults, Node 11 Faults, Node 12 Faults, Node 13 Faults, Node 14 Faults, Node 15 Faults, Node 16 Faults, Node 17 Faults, Node 18 Faults, Node 19 Faults, Node 20 Faults, Node 21 Faults, Node 22 Faults, Node 23 Faults, Node 24 Faults, Node 25 Faults, Node 26 Faults, Node 27 Faults, Node 28 Faults, Node 29 Faults, Node 30 Faults, Node 31 Faults, Node 32 Faults, Node 33 Faults, Node 34 Faults, Node 35 Faults, Node 36 Faults, Node 37 Faults, Node 38 Faults, Node 39 Faults, Node 40 Faults, Node 41 Faults, Node 42 Faults, Node 43 Faults, Node 44 Faults, Node 45 Faults, Node 46 Faults, Node 47 Faults, Node 48 Faults, Node 49 Faults, Node 50 Faults, Node 4 Faults, Node 52 Faults, Node 53 Faults, Node 54 Faults, Node 55 Faults, Node 56 Faults, Node 57 Faults, Node 58 Faults, Node 59 Faults, Node 60 Faults, Node 61 Faults, Node 62 Faults, Node 63 Faults

16	ControlLogix EtherNet/IP Adapter	Fault Bits, Minor Recoverable Fault, Minor Unrecoverable Fault, Major Recoverable Fault, Major Unrecoverable Fault, Ethernet Interface Speed, Ethernet Link Status, Ethernet Duplex, Ethernet Auto-Negotiation Duplex and Speed, Ethernet Manual Setting Requires Reset, Ethernet Local Hardware Fault
17	CompactLogix EtherNet/IP Adapter	
18	Point I/O EtherNet/IP Adapter	
19	PowerFlex 40 Drive	Fault Bits, Minor Recoverable Fault, Minor Unrecoverable Fault, Major Recoverable Fault, Major Unrecoverable Fault, **Output Current :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units, **Output Voltage :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units, **DC Bus Volts :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units, **Drive Temp :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units
20	PowerFlex 70 Drive	Fault Bits, Minor Recoverable Fault, Minor Unrecoverable Fault, Major Recoverable Fault, Major Unrecoverable Fault, **Output Current :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units, **Output Voltage :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units, **DC Bus Volts :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units, **Motor Velocity Feedback :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units, **Drive Temp Pct :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units
21	PowerFlex 400 Drive	
22	PowerFlex 700 Drive	
23	PowerFlex 523 Drive	Fault Bits, Minor Recoverable Fault, Minor Unrecoverable Fault, Major Recoverable Fault, Major Unrecoverable Fault, **Output Current :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units, **Output Speed :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units, **Output Power :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units, **Output Voltage :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units, **Run Time :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units, Trip Fault, Fault Code, Fault Code (Default), Source Port Number, Fault Text
24	PowerFlex 525 Drive	
25	PowerFlex 753 Drive	Fault Bits, Minor Recoverable Fault, Minor Unrecoverable Fault, Major Recoverable Fault, Major Unrecoverable Fault, **Drive Temperature :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units, **Output Current :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units, **Output Frequency :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units, **Output Power :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units, **Output Voltage :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units, **Run Time :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units, Cabinet Fan Total Life, Cabinet Fan Elapsed Life, Cabinet Fan Remaining Life, Cabinet Fan Event Level, Heatsink Fan Remaining Life, Internal Fan Remaining Life, Motor Bearing Total Life, Motor Bearing Remaining Life, Machine Bearing Total Life, Machine Bearing Remaining Life, Port Number If Fault, Fault Code Port 0, Fault Code Port 10, Fault Code Port 11, Fault Code Port 13, Fault Code Port Other, Fault Code (Default), Source Port Number, Fault Text
26	PowerFlex 755 Drive	

27	PowerFlex 755T Drive	Fault Bits, Minor Recoverable Fault, Minor Unrecoverable Fault, Major Recoverable Fault, Major Unrecoverable Fault, **HeatSink Temp Pct :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units, **Output Current :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units, **Output Current Max Limit :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units, **Output Frequency :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units, **Output Power Max Limit :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units, **Output Power :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units, **Output Voltage :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units, **Motor Bearing Total Life :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units, **Motor Bearing Remaining Life :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units, **Machine Bearing Total Life :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units, **Machine Bearing Remaining Life :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units, **Elapsed Run Time :** Value (Default), Percent (Default), Minimum, Maximum, Default, Units, Pod Fan Elapsed Life, Pod Fan Remaining Life, Pod Fan Event Level, Input Bay Roof Fan Elapsed Life, Input Bay Roof Fan Remaining Life, Input Bay Roof Fan Event Level, Power Roof Fan Elapsed Life, Power Roof Fan Remaining Life, Power Roof Fan Event Level, Wiring Bay Fan Elapsed Life, Wiring Bay Fan Remaining Life, Wiring Bay Fan Event Level, Control Bay Roof Fan Elapsed Life, Control Bay Roof Fan Remaining Life, Control Bay Roof Fan Event Level, Heatsink Fan Remaining Life, Port Number If Fault, Fault Code Port 0, Fault Code Port 9, Fault Code Port 10, Fault Code Port 11, Fault Code Port 12, Fault Code Port 13, Fault Code Port 14, Fault Code Port Other, Fault Code (Default), Source Port Number, Fault Text

| 28 | PowerFlex 755TM Bus Supply | Fault Bits, Minor Recoverable Fault, Minor Unrecoverable Fault, Major Recoverable Fault, Major Unrecoverable Fault,
 DC Bus Voltage : Value (Default), Percent (Default), Minimum, Maximum, Default, Units,
 Elapsed Run Time : Value (Default), Percent (Default), Minimum, Maximum, Default, Units,
 Control Pod Fan Remaining Life, Input Bay Roof Fan Remaining Life, Power Bay Roof Fan Remaining Life, Wiring Bay Fan Remaining Life, Control Bay Roof Fan Remaining Life, Heatsink Temp Pct,
 AC Line Voltage : Value (Default), Percent (Default), Minimum, Maximum, Default, Units,
 AC Line Current : Value (Default), Percent (Default), Minimum, Maximum, Default, Units,
 AC Line Frequency : Value (Default), Percent (Default), Minimum, Maximum, Default, Units,
 Measured Real Power : Value (Default), Percent (Default), Minimum, Maximum, Default, Units,
 Measured Reactive Power : Value (Default), Percent (Default), Minimum, Maximum, Default, Units,
 Power Factor : Value (Default), Percent (Default), Minimum, Maximum, Default, Units,
 Current Limit : Value (Default), Percent (Default), Minimum, Maximum, Default, Units,
 L0 Stirring Fan Remaining Life, L0 Heatsink Fan Remaining Life, L1 Heatsink Fan Remaining Life, L2 Heatsink Fan Remaining Life, L3 Heatsink Fan Remaining Life, L4 Heatsink Fan Remaining Life, L5 Heatsink Fan Remaining Life, L6 Heatsink Fan Remaining Life, L7 Heatsink Fan Remaining Life, L8 Heatsink Fan Remaining Life, L9 Heatsink Fan Remaining Life, Port Number If Fault, Fault Code Port 0 ICB, Fault Code Port 0 SFIB, Fault Code Port 13 Converter Control, Fault Code Port 14 PIOB, Fault Code Port 14 PLI, Fault Code Port 14 ACP, Fault Code Port Other, Fault Code (Default), Source Port Number, Fault Text |
| 29 | PowerFlex 755TM Inverter | Fault Bits, Minor Recoverable Fault, Minor Unrecoverable Fault, Major Recoverable Fault, Major Unrecoverable Fault,
 Elapsed Run Time : Value (Default), Percent (Default), Minimum, Maximum, Default, Units,
 Control Pod Fan Remaining Life, Power Bay Roof Fan Remaining Life, Wiring Bay Fan Remaining Life, Control Bay Roof Fan Remaining Life,
 Heatsink Temp Pct : Value (Default), Percent (Default), Minimum, Maximum, Default, Units
 Output Voltage : Value (Default), Percent (Default), Minimum, Maximum, Default, Units,
 Output Current : Value (Default), Percent (Default), Minimum, Maximum, Default, Units,
 Output Frequency : Value (Default), Percent (Default), Minimum, Maximum, Default, Units,
 Output Power : Value (Default), Percent (Default), Minimum, Maximum, Default, Units,
 Output Power Max Limit : Value (Default), Percent (Default), Minimum, Maximum, Default, Units,
 Motor Bearing Total Life : Value (Default), Percent (Default), Minimum, Maximum, Default, Units,
 Machine Bearing Total Life : Value (Default), Percent (Default), Minimum, Maximum, Default, Units,
 Machine Bearing Remaining Life : Value (Default), Percent (Default), Minimum, Maximum, Default, Units,
 M0 Heatsink Fan Remaining Life, M1 Heatsink Fan Remaining Life, M2 Heatsink Fan Remaining Life, M3 Heatsink Fan Remaining Life, M4 Heatsink Fan Remaining Life, M5 Heatsink Fan Remaining Life, M6 Heatsink Fan Remaining Life, M7 Heatsink Fan Remaining Life, M8 Heatsink Fan Remaining Life, M9 Heatsink Fan Remaining Life, Port Number If Fault, Fault Code Port 0 ICB, Fault Code Port 0 SFIB, Fault Code Port Other, Fault Code (Default), Source Port Number, Fault Text |

30	PowerFlex 6000T Drive	Fault Bits, Minor Recoverable Fault, Minor Unrecoverable Fault, Major Recoverable Fault, Major Unrecoverable Fault, AC Line Freq, AC Line Voltage, Ctrl Pod Temp, Units, DC Bus Volts, Units, Output Current, Units, Output Freq, Units, Output Voltage, Units, V Ref Commanded, Units, Motor Voltage Feedback, Units, Output Power, Units, Output Current Max Limit, Output Freq Min Limit, Output Freq Max Limit, Output Power Max Limit, Output Voltage Max Limit, Port Number If Fault, Fault Code Port 0, Fault Code Port 10, Fault Code Port 12, Fault Code Port 13, Fault Code Port 14, Fault Code Port Other, Fault Code (Default), Source Port Number, Fault Text
31	PowerMonitor 500	Fault Bits, Minor Recoverable Fault, Minor Unrecoverable Fault, Major Recoverable Fault, Major Unrecoverable Fault, Average L-N Voltage, Average L-L Voltage, Line 1 Current, Line 2 Current, Line 3 Current, Average Frequency, Real Power, Power Factor, Real Power Demand, Consumption, Alarm 1, Alarm 2, Alarm 3, Alarm 4
32	PowerMonitor 1000	Fault Bits, Minor Recoverable Fault, Minor Unrecoverable Fault, Major Recoverable Fault, Major Unrecoverable Fault, Average L-N Voltage, Average L-L Voltage, Average Current, Average Frequency, Imbalance (Voltage), Imbalance (Current), Real Power, Power Factor, Consumption, kW Demand, Projected kW Demand, Phase Loss V1, Phase Loss V2, Phase Loss V3, PT Primary
33	PowerMonitor 5000	Fault Bits, Minor Recoverable Fault, Minor Unrecoverable Fault, Major Recoverable Fault, Major Unrecoverable Fault, Phase Loss V1, Phase Loss V2, Phase Loss V3, IEEE 1159 Voltage THD Alarm or IEEE 1159 Voltage THD Alarm Condition, IEEE1159 Current THD Alarm or IEEE 1159 Current THD Alarm Condition, Sag Indication, Swell Indication, Transient Indication, IEEE1159 Imbalance Condition Volts, IEEE1159 Imbalance Condition Current, Average L-N Voltage, Average L-L Voltage, Average Current, Average Frequency, Real Power, Power Factor Average THD-Voltage, Average THD-Current, Imbalance (Voltage), Imbalance (Current), Consumption, KW Demand, Projected KW Demand, V1_V2_V3_PT_Primary
34	Festo CPX-FB36 Ethernet/IP Adapter	Fault Bits, Minor Recoverable Fault, Minor Unrecoverable Fault, Major Recoverable Fault, Major Unrecoverable Fault, Module 0 Input Size, Module 0 Output Size, Module 0 Identity, Module 1 Input Size, Module 1 Output Size, Module 1 Identity, Valve, Output, Input, Analog, Undervolt, Short Circuit, Open Circuit, Other Device Name, Flow, Consumption, Pressure, Valve Shut Off Status, Air Saving Status
35	FactoryTalk Historian ME Series A	Fault Bits, Minor Recoverable Fault, Minor Unrecoverable Fault, Major Recoverable Fault, Major Unrecoverable Fault, Total CPU, Fault word value, Running, DataCollectionActive, DataTransferActive, SAFEMODE, BADTAG, NTPsyncProblem, ServiceNotRunning, IpAddress1, IpAddress2, IpAddress3, IpAddress4
36	FactoryTalk Historian ME Series B	
37	PanelView 5310	Fault Bits, Minor Recoverable Fault, Minor Unrecoverable Fault, Major Recoverable Fault, Major Unrecoverable Fault, Ethernet Interface Speed, Ethernet Link Status, Ethernet Duplex, Ethernet Auto-Negotiation Duplex and Speed, Ethernet Manual Setting Requires Reset, Ethernet Local Hardware Fault
38	PanelView 5500	
39	PanelView 5510	
40	Point I/O IO-Link Master Module	Fault Bits, Minor Recoverable Fault, Minor Unrecoverable Fault, Major Recoverable Fault, Major Unrecoverable Fault **Channel (0 - 3) :** Operational Mode, Rollup, Device Connection Fault, Configuration In Process, Device Configuration Failed, Key Failure, Short Circuit, Process Input Data Invalid, Low Power Fault, Output Limit Fault, No IO Sizes, Vendor ID, Rockwell Device ID, Device Name, Application Tag, 42JT Margin Low Alarm, 871C Margin Status, 871TM Margin Status, 42EF Margin Low Alarm, 42EF Proximity Alarm, 42AF Margin Low Alarm, 42AF Proximity Alarm, 871FM Margin Status, 871FM Margin Low Alarm, 871FM Proximity Alarm, 46DFA Margin Low Alarm, 45DMS Minimum Distance Alarm, 45DMS Low Signal Quality, 45PLA Low Margin, 46CLR Low Margin, 45CRM Local Teach Dial Position, 836P-D2xxxA Pressure, 836P-D2xxxB Pressure, 836P-D2xxxC Pressure, 836P-D1xxxA Pressure, 836P-D1xxxB Pressure, 837T Temperature, Temperature,

41	ArmorBlock IO-Link Master Module	Fault Bits, Minor Recoverable Fault, Minor Unrecoverable Fault, Major Recoverable Fault, Major Unrecoverable Fault **Channel (0 - 7) :** Operational Mode, Rollup, Device Connection Fault, Configuration In Process, Device Configuration Failed, Key Failure, Short Circuit, Process Input Data Invalid, Low Power Fault, Output Limit Fault, No IO Sizes, Vendor ID, Rockwell Device ID, Device Name, Application Tag, 42JT Margin Low Alarm, 871C Margin Status, 871TM Margin Status, 42EF Margin Low Alarm, 42EF Proximity Alarm, 42AF Margin Low Alarm, 42AF Proximity Alarm, 871FM Margin Status, 871FM Margin Low Alarm, 871FM Proximity Alarm, 46DFA Margin Low Alarm, 45DMS Minimum Distance Alarm, 45DMS Low Signal Quality, 45PLA Low Margin, 46CLR Low Margin, 45CRM Local Teach Dial Position, 836P-D2xxxA Pressure, 836P-D2xxxB Pressure, 836P-D2xxxC Pressure, 836P-D1xxxA Pressure, 836P-D1xxxB Pressure, 837T Temperature, Temperature
42	ControlLogix Controller	Fault Bits, Minor Recoverable Fault, Minor Unrecoverable Fault, Major Recoverable Fault, Major Unrecoverable Fault, Total CPU, Idle CPU, System CPU, Comms CPU, I/O CPU, Messaging CPU, Motion CPU, Safety CPU, Redundancy CPU, User Tasks CPU, Free I/O Memory, Free Logic Memory, Total I/O Memory, Total Logic Memory, I/O Memory Biggest Block Size, Logic Memory Biggest Block Size
43	CompactLogix Controller with EtherNet/IP	
44	CompactLogix Controller	
45	ControlLogix Controller with EtherNet/IP	Fault Bits, Minor Recoverable Fault, Minor Unrecoverable Fault, Major Recoverable Fault, Major Unrecoverable Fault, Control Utilization, Messaging Utilization, I/O Utilization, Ethernet Interface Speed, Ethernet Link Status, Ethernet Duplex, Ethernet Auto-Negotiation Duplex and Speed, Ethernet Manual Setting Requires Reset, Ethernet Local Hardware Fault,
46	ControlLogix Process Controller	Fault Bits, Minor Recoverable Fault, Minor Unrecoverable Fault, Major Recoverable Fault, Major Unrecoverable Fault, Control Core % Usage, Comms Core % Usage, Packet Processing Core % Usage, ForceStatus_b0, ForceStatus_b1, LED Status, Minor Fault Count, MinorFaultBits_b4, MinorFaultBits_b6, MinorFaultBits_b9, MinorFaultBits_b10, Total Connections Count, Total Connections Current, I/O Connections Allowed, I/O Connections Current, Produced Connections Allowed, Produced Connections Current, Consumed Connections Allowed, Consumed Connections Current, MSG Current Count, MSG Max Count
47	E1 Plus Electronic Overload Relay	Fault Bits, Minor Recoverable Fault, Minor Unrecoverable Fault, Major Recoverable Fault, Major Unrecoverable Fault
48	E3 Plus Solid-State Overload Relay	
49	E300 Electronic Overload Relay	
50	Stratix 5400 Managed Ethernet Switch	Fault Bits, Minor Recoverable Fault, Minor Unrecoverable Fault, Major Recoverable Fault, Major Unrecoverable Fault, SFP Invalid, CDP mismatch, MAC address flap, Security violation, Internal Temperature, Major Output Alarm Relay Event, Minor Output Alarm Relay Event, Alarm Input 1 Event, Alarm Input 2 Event, Alarm Input 3 Event, Alarm Input 4 Event, Active Faults, IOS Release, Switch Uptime, Total Bandwidth Utilization, PTP Is Enabled, PTP Is Synchronized, Number Of Ports, Port #26 Utilization, Port #25 Utilization, Port #24 Utilization, Port #23 Utilization, Port #22 Utilization, Port #21 Utilization, Port #20 Utilization, Port #19 Utilization, Port #18 Utilization, Port #17 Utilization, Port #16 Utilization, Port #15 Utilization, Port #14 Utilization, Port #13 Utilization, Port #12 Utilization, Port #11 Utilization, Port #10 Utilization, Port #9 Utilization, Port #8 Utilization, Port #7 Utilization, Port #6 Utilization, Port #5 Utilization, Port #4 Utilization, Port #3 Utilization, Port #2 Utilization, Port #1 Utilization, Card Present, Card Corrupt, Card File(s) Corrupted, IOS Unsynchronized, Configuration Unsynchronized, Sync Failed
51	Stratix 5410 Managed Ethernet Switch	
52	Stratix 5700 Managed Ethernet Switch	
53	Stratix 8000 Managed Ethernet Switch	Fault Bits, Minor Recoverable Fault, Minor Unrecoverable Fault, Major Recoverable Fault, Major Unrecoverable Fault, SFP Invalid, CDP mismatch, MAC address flap, Security violation, Internal Temperature, Major Output Alarm Relay Event, Minor Output Alarm Relay Event, Alarm Input 1 Event, Alarm Input 2 Event, Alarm Input 3 Event, Alarm Input 4 Event, Active Faults, IOS Release, Switch Uptime, Total Bandwidth Utilization, PTP Is Enabled, PTP Is Synchronized, Number Of Ports, Port #26 Utilization, Port #25 Utilization, Port #24 Utilization, Port #23 Utilization, Port #22 Utilization, Port #21 Utilization, Port #20 Utilization, Port #19 Utilization, Port #18 Utilization, Port #17 Utilization, Port #16 Utilization, Port #15 Utilization, Port #14 Utilization, Port #13 Utilization, Port #12 Utilization, Port #11 Utilization, Port #10 Utilization, Port #9 Utilization, Port #8 Utilization, Port #7 Utilization, Port #6 Utilization, Port #5 Utilization, Port #4 Utilization, Port #3 Utilization, Port #2 Utilization, Port #1 Utilization

See also

Edit a data source

Edit a data source to modify the settings.

Tip: Models using the edited data source automatically update to reflect the changes. Redeploy applications consuming the impacted models to reflect the modifications done to the data source.

To edit a data source

1. Select **Data Flow** > **Data Sources.**
2. (optional) From **Configure Data Sources**, filter the list of data sources.
3. Select **Edit** 🖉 for the required data source.
4. From **Configure Data Source**, modify the settings for the data source.
5. Select **Save** to edit the data source.

See also

Delete a data source

Delete unused data sources. You cannot delete data sources in use by models or applications.

To delete data sources

1. Select **Data Flow** > **Data Sources.**
2. (optional) From **Configure Data Sources**, filter the list of data sources.
3. Select the data sources to delete.

4. Select **Delete** 🗑 to remove the data sources from the gateway.

See also

Populate data sources

Populating a data source gathers data from a controller, device, or server and saves the data in the namespace. The namespace tracks tags and FactoryTalk Smart Object from the data source.

After adding new tags to data sources previously configured in FactoryTalk Edge Gateway, repopulate the data sources to synchronize the new tags with the namespace.

💡 Tip: To generate the namespace, select **Auto-populate namespace** when configuring a data source.

To populate a data source

1. Select **Data Flow** > **Data Sources.**
2. (optional) From **Configure Data Sources**, filter the list of data sources.
3. Select the data sources to populate.
4. Select **Populate** ⟳ to update the namespace for the data sources. The **Status** of the data sources displays **Populated**.

See also

Clear a data source

Clear a data source to erase the data gathered into the namespace storage for that source.

To clear a data source

1. Select **Data Flow** > **Data Sources.**
2. (optional) From **Configure Data Sources**, filter the list of data sources.
3. Select the data sources to clear.
4. Select **Clear** ✕ to erase the namespace for the data sources. The **Status** of the data sources displays **Not Populated**.

See also

Configure Data Collection Properties

When configuring an application, set data collection properties for individual tags and tags bound to models.

Child nodes in a model can inherit the data collection properties from the parent node.

Tip: When you use two or more types of models in an application and one of them is Device Discovery type or when you select two or more tags and one or more of them is Device Discovery type, then the Update rate in the Properties pane will be as applicable for a Device Discovery model.

To configure data collection properties for Device Discovery model

1. See Configure and deploy an application.
2. Set these parameters:
   - **Overwrite parent value**. Select **On** to overwrite the data collection properties of the parent node.
   - **Data collection.** Select **On** to collect data.
   - **Update rate**. Defines the rate at which updates are performed. The default **Update rate** is **10 seconds**. The possible update rate values are:
     - 10 seconds
     - One minute
     - Two minutes
     - Five minutes

       Tip: You can select **Update rate** for complete model only. This setting is inactive for nodes or tags in a Device Discovery model. All nodes and tags under that selected model will inherit this settings from that model.

   - **Update type**. Defines the type of update performed for the individual or bound tag. The possible update types are: **Polling** and **On change**.

     Select **Polling** to collect tag data at the set update rate. Select **On change** to collect data when the tag value changes. The values are checked for changes at the set update rate.

       Tip: You can select **Update type** for complete model only. This setting is inactive for nodes or tags in a Device Discovery model. All nodes and tags under that selected model will inherit this settings from that model.

To configure data collection properties for Azure or MSSQL or ThingWorx

1. See Configure and deploy an application.
2. Set these parameters:
   - **Overwrite parent value**. Select **On** to overwrite the data collection properties of the parent node.
   - **Data collection.** Select **On** to collect data.
   - **Update rate**. Defines the rate at which updates are performed. The possible update rate values are:
     - 500 milliseconds

- One second
- Two seconds
- Five seconds
- 10 seconds
- One minute
- Two minutes
- Five minutes

> Tip: When you use two or more types of models in an application and one of them is Device Discovery type or when you select two or more tags and one or more of them is Device Discovery type, then the Update rate in the Properties pane will be as applicable for a Device Discovery model.

- **Update type**. Defines the type of update performed for the individual or bound tag. The possible update types are: **Polling** and **On change**.

  Select **Polling** to collect tag data at the set update rate. Select **On change** to collect data when the tag value changes. The values are checked for changes at the set update rate.

To configure data collection properties for Drive/IMC data source

1. See Configure and deploy an application.
2. Set these parameters:

   - **Overwrite parent value**. Select **On** to overwrite the data collection properties of the parent node.
   - **Data collection.** Select **On** to collect data.
   - **Update rate**. Defines the rate at which updates are performed. The possible update rate values are:

     - 500 milliseconds
     - One second
     - Two seconds
     - Five seconds
     - 10 seconds
     - One minute
     - Two minutes
     - Five minutes

     > Tip: The correct way to setup Update rate for Drive/IMC Device is to multiply number of tags/parameters by 100ms and select rate greater than this value.
     > **For Example:** When you want to collect 50 parameters or symbolic tags using "Drive/IMC Device" data source, each tag will have timestamp delayed by 100ms. So, the last tag will have timestamp delayed by 5sec compared to first tag (50 * 100ms = 5sec).
     > So, in such case, it is not recommended to select Update rate quicker than 5sec when configuring application (500msec, 1 sec, 2sec) because some of tags will not be updated and you will see quality '24' error (after 30sec - quality '8').

   - **Update type**. Defines the type of update performed for the individual or bound tag. The possible update types are: **Polling** and **On change**.

Select **Polling** to collect tag data at the set update rate. Select **On change** to collect data when the tag value changes. The values are checked for changes at the set update rate.

To configure data collection properties for InfluxDB

1. See [Configure and deploy an application](#).
2. Set these parameters:

- **Overwrite parent value**. Select **On** to overwrite the data collection properties of the parent node.
- **Data collection.** Select **On** to collect data.
- **Update rate**. Defines the rate at which updates are performed. The possible update rate values are:
  - 500 milliseconds
  - One second
  - Two seconds
  - Five seconds
  - 10 seconds
  - One minute
  - Two minutes
  - Five minutes

    Tip: When you use two or more types of models in an application and one of them is Device Discovery type or when you select two or more tags and one or more of them is Device Discovery type, then the Update rate in the Properties pane will be as applicable for a Device Discovery model.

- **Update type**. Defines the type of update performed for the individual or bound tag. The possible update types are: **Polling** and **On change**.

    Select **Polling** to collect tag data at the set update rate. Select **On change** to collect data when the tag value changes. The values are checked for changes at the set update rate.

- **InfluxDB Measurement:** You can assign InfluxDB Measurement name to single node of FTEG model. When you select a single node, you can assign additional information attribute "**InfluxDB Measurement**".
- **InfluxDB Tags**: You can assign FTEG property to "field" or "tag". Select the **InfluxDB Tags** checkbox in the property pane if property to be used as "tag". Unselected the **InfluxDB Tags** checkbox to map value of FTEG property to InfluxDB "field".

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Models

Use models to organize data into a hierarchy. Associate models with applications or data destinations.

Build models by staging tags, and then associating the tags to a node or property. Use parent and child nodes to form a hierarchy of information elements.

These are guidelines for models:

- There is a maximum of 30 models per gateway.
- There is a maximum of 500 parent nodes per model.
- There is a maximum of eight layers per model.

When FactoryTalk Smart Object instances are configured in a Studio 5000 Logix Designer controller, connecting to that controller by importing an .acd file replicates the FactoryTalk Smart Object model created in the controller. It is possible to view the imported FactoryTalk Smart Object model from this area; however, FactoryTalk Smart Object models cannot be edited from the gateway.

> Tip: When using data egress to SQL, the maximum column size is 512 characters. Be sure to create names for models, nodes, and properties that do not exceed 512 characters.
> A model ID:
> - Cannot exceed 512 characters
> - Will be built based on the pathway to the property: ModelName + "." + Node1 "." + Node8 + "." + PropertyName.

See also

Add a model

Add a model to organize data into a hierarchy.

To add a model

1. Go to **Data Flow** > **Models**.
2. Select **Add**.
3. Type a name for the model and then select **Save**.

   The new model appears in the **Models** table.

See also

Add nodes to a model

To build a model, add nodes or properties to create a hierarchical relationship between the elements of information.

To add nodes or properties to a model

1. Perform one of these actions:
   - Select **Data Flow** > **Models**.
   - Select **Data Flow** and then under **Organize**, select **Configure**.
2. Select **Edit** ✎ next to the model.
3. Under **Models**, select **Add Node**.
4. Type a name for the root node and press **Enter**.
5. To add a child node, right-click the parent node, select **Add Child,** and then select **Node**.
6. To add a child property under a node, right-click the parent node, select **Add Child**, and then select **Property**.
7. Type the name of the child node or property and then press **Enter**.
8. To change the hierarchy, drag and then drop the nodes or properties.
9. To move a node to the highest level, right-click the node and then select **Move to Root**.
10. To rename a node or property, right-click the node or property and then select **Rename**. Type a new name.

See also

Stage tags

Staging a tag involves moving content from a namespace to the Staging Area and then mapping tags to a model. Once tags are in the Staging Area, bind them to nodes in the model.

A namespace is a directory of data from your data source or a collection of data types and instances. It represents the data structure from the source used to generate models. Most data sources allow for online discovery of data from the data source for populating the namespace.

Use Studio 5000 Logix Designer project files (.acd) to generate a namespace and to create offline models available for download.

There is a limitation of 30 models per gateway, 500 nodes per model, and 8 nested node levels per model.

Tip: FactoryTalk Smart Object models are automatically created and appear under models. Tags are already bound to these models and FactoryTalk Smart Object instances are read-only. The scan rate for FactoryTalk Smart Object instances cannot be set since they are mapped to the output.

To stage tags

1. Perform one of these actions:
   - Select **Data Flow** > **Models**.
   - Select **Data Flow** and then under **Organize**, select **Configure**.
2. Select **Edit** 🖉 next to a model.
3. Under **Tags**, select **Stage Tags** ┼ .
4. (optional) Filter the list of tags by data source or by type.
5. Select tags and then select **Save**.

   Tags appear in the workspace.
6. To remove tags that are not being used by the model, from the

   workspace, select tags and then select **Unstage Tags** 🗑 .

See also

Bind a tag to a model on page 45

Add a model on page 43

Bind tags to a model

Tags are elements of information from your data source. After adding a model and staging tags, associate tags to elements (nodes and properties) in the model.

Tip: Tags are automatically bound in FactoryTalk Smart Object models.

To bind a tag to a model

1. Perform one of the actions:
   - Select **Data Flow** > **Models**.
   - Select **Data Flow** and then under **Organize**, select **Configure**.
2. Select **Edit** 🖉 next to a model.
3. (optional) Filter the list of tags.
4. Perform one of these actions:
   - To select and bind multiple tags, under **Tags**, select the tags to associate to the node or property and then select **Bind**. The tags appear underneath the top-level node.
   - Select a tag, select a node or a property and then select **Bind**.
   - Drag and then drop a tag on a node or a property.
5. Select **Save**.

Tip: To unbind tags from a model, select the tags in the model and then select **Unbind.**

See also

Edit a model

Edit models at any time. Redeploy the applications to see the changes.

Tip: FactoryTalk Smart Object models are not editable.

To edit a model

1. Perform one of these actions:
   - Select **Data Flow** > **Models**.
   - Select **Data Flow** and then under **Organize**, select **Configure**.

2. Select **Edit** 🖉 next to a model.
3. Edit the model.
4. Select **Save**.
5. Review and redeploy any dependent applications.

See also

Export a gateway model configuration

Note: The Export feature will be available in a future release of FactoryTalk Edge Gateway distributed.

Export a gateway model configuration to a CSV file. Edit the exported CSV file outside of FactoryTalk Edge Gateway and then import the CSV file to the namespace for use by FactoryTalk Edge Gateway applications.

When errors occur during export, FactoryTalk Edge Gateway creates a log file in the FactoryTalk Edge Gateway installation folder under **FactoryTalk Edge Gateway\fteg-ct\export_import_logs.**

You can perform these actions for gateway model configuration:

- Add, delete, and rename nodes and properties.
- Assign tags to properties.

To export a gateway model configuration

1. Do one of these actions:

   - Preselect models and then select **Export models** 🔼.
   - Select models in the dialog.

2. In **Select folder**, determine where to export the gateway model configuration files.

3. In **Select instances (with tags), templates (no tags) or data sources only**, select the data to export.

    *   **Instances**. Select this option to export an instance. The instance includes tags bound to the properties and data source information.

        The data sources associated with the model are selected by default. Clear the checkboxes, if necessary.

    *   **Templates**. Select this option to export a gateway model template from one gateway configuration tool namespace and then build a model to import to a different gateway configuration tool namespace. The template does not contain tag bindings. Data sources are not exported with the template.

    *   **Data sources only**. Select this option to export specific data sources. A data source CSV file is exported to use as a tag reference to associate with properties in the model. Data sources are not available for selection if they are either unpopulated or loading.

4. Select **Export**.

    FactoryTalk Edge Gateway creates and saves a CSV file for each model or data source in your folder location.

See also

> Note: The Import feature will be available in the future release of FactoryTalk Edge Gateway distributed.

Import a gateway model configuration

To reduce the time required for mass configuration, import the exported and edited gateway model configurations. Due to case sensitivity, the names in the CSV file must match the names in FactoryTalk Edge Gateway.

Tag bindings are case sensitive. Changing the case of tag bindings in the exported model CSV file and then importing the model CSV file causes an error. To ensure that the tag bindings are correct, copy and then paste the tag bindings from the exported data source CSV file.

FactoryTalk Edge Gateway saves information about the validation of the model including errors and warnings in a log file in the FactoryTalk Edge Gateway installation folder under **FactoryTalk Edge Gateway\fteg-ct\export_import_logs**.

> Tip: It is not possible to import or export FactoryTalk Smart Object models. Build FactoryTalk Smart Object models in Studio 5000 Smart Object Configurator and then bring them into FactoryTalk Edge Gateway by using an ACD file.

To import a gateway model configuration

1. Do one of these actions:

   - Preselect models and then select **Import models** ⬇.
   - Select models in the dialog.

2. In **Select folder that contains configuration files**, select the folder that contains the CSV configuration files to import.

   The models appear based on the model hierarchy specified in the CSV file. You can see the tags bound to properties if tags are bound to the properties in the CSV file.

   > 💡 Tip: If the CSV file is missing required fields for a model element, then that model element does not appear in the preview. If a node is missing required fields, then the node and its children do not appear in the preview.

3. Select the models to import.
4. (optional) Before importing the models, select **Validate** to get the list of errors and warnings.

   The model name and its components that contain the error are listed.

   > 💡 Tip: Models, nodes, or properties with errors are not imported.

5. (optional) If a validation error occurs, modify the CSV file, validate the model configuration, and then import the model configuration again.
6. Select **Import**.

   A new namespace ID is generated for new items in the model. If a node or property is renamed, a new ID is generated.

   > 💡 Tip: If a model exists in the namespace and the CSV file has the same model, the existing model is overwritten during the import.

See also

Delete a model

Delete a model to remove it from the list of available models. It is only possible to delete a model that an application has not configured for use.

To delete a model

1. Perform one of these actions:

   - Select **Data Flow** > **Models**.
   - Select **Data Flow** and then under **Organize**, select **Configure**.

2. (optional) Filter the list of models.
3. Select the models to delete.
4. Select **Delete** 🗑.
5. Select **Save**.

See also

Modify a model on a running gateway

Modify a model that is bound to applications running on the gateway. Redeploy the applications affected by the change to the models.

Modify a model when the gateway is either offline or online. To apply modifications made to the model while the gateway is offline, go online with the gateway and then download the current configuration to the gateway. To reconfigure and redeploy applications affected by the modified model, the gateway must be online.

> **Tip:** It is not possible to modify FactoryTalk Smart Object models in FactoryTalk Edge Gateway. Modify FactoryTalk Smart Object models in the project of the controller. After modifying a FactoryTalk Smart Object model, repopulate the namespace from **Data Sources**, then reconfigure and redeploy the dependent applications.

To modify a model on a running gateway

1. Select **Data Flow** > **Models**.
2. Select **Edit** 🖊 to modify the model.
3. Select **Finish** to apply the modifications to the model.
4. Review applications affected by the modified model.
5. If currently offline, select **Online** to go online with the gateway. FactoryTalk Edge Gateway displays a green banner stating **Gateway Connection: Online**.

   - If prompted, select **Download** to overwrite the running gateway configuration with the current modifications.

6. Do these steps for applications affected by the modified model:

a. Select **Data Flow** > **Applications** and then select an application from the tree view.

b. Select **Configure** and select the modified model.

c. Set the data collection properties for each bound tag and then select **Save**.

d. Select **Deploy** to send the updated model configuration to the application.

See also

Naming rules for models

Nodes of models mapped to applications must follow these naming rules:

- Names must be unique for each model node located under the same parent level. For example, each property node under a parent node must use a unique name. The same name can be used for a property node located under a different parent node.
- Names are mandatory.
- Names are case insensitive.
- Names are limited to 40 Unicode characters and can be alphanumeric; special characters are not supported.
- Spaces and periods are supported, but not at the beginning or end of names.
- Underscores are supported anywhere in the names.

Additional naming rules for ThingWorx applications

Nodes of models mapped to ThingWorx applications follow the naming rules as well as these additional rules:

- The name cannot be the reserved keyword *me*.

See also

FactoryTalk Edge Gateway applications

Applications in FactoryTalk Edge Gateway collect data from tags, models, or FactoryTalk Smart Object models and then send the data to the configured server or IoT device. For example, the ThingWorx application in FactoryTalk Edge Gateway sends data to the configured PTC ThingWorx Foundation server.

FactoryTalk Edge Gateway supports these applications:

- Azure IoT Hub (Azure IoT Edge Runtime application will be available in the future release of FactoryTalk Edge Gateway distributed)
- MSSQL
- ThingWorx (standalone version only)
- Test Client
- MQTT
- InfluxDB

In FactoryTalk Edge Gateway, monitor the values of live data flowing into the gateway.

Select **Error Log** to view errors for each deployed application.

See also

Add an application

Add applications to FactoryTalk Edge Gateway to send data to the required server or IoT device. After adding an application, configure the models or tags to bind them to the application.

> Tip: The maximum number of applications that are permitted for each gateway instance are:
> - SQL Server and Azure IoT Hub: Five applications

To add an application

1. In the top-right corner, select **Online** to go online with the gateway. FactoryTalk Edge Gateway displays a green banner: **Gateway Connection: Online**.
2. Select **Data Flow** > **Applications**.

   - To add the first application, select **Add Application**.

- To add a subsequent application, select **Add** ╋ .

3. From **Select Application**, select an application
4. Select **Next.**
5. Enter the application name.
6. For Azure IoT Hub, MSSQL, and ThingWorx applications, configure the application settings and Store and Forward settings.
7. Select **Save** to add the application.

See also

Note: The ThingWorx application is supported by standalone version only.

Add a ThingWorx application

For users that have IIoT (Industrial Internet of Things) applications or solutions using PTC® ThingWorx®, FactoryTalk Edge Gateway provides a method to collect information from Rockwell Automation and third-party sources and send it to a ThingWorx Foundation server.

FactoryTalk Edge Gateway supports ThingWorx version 8.5, 9.0 and 9.3.

FactoryTalk Edge Gateway facilitates creating objects that are required in ThingWorx to represent the model, which reduces the time for deploying a ThingWorx application.

To communicate with the ThingWorx Foundation server, add a ThingWorx application in FactoryTalk Edge Gateway, and then configure and deploy the application. During configuration of a ThingWorx application, models selected from the **Models** dialog box appear in **Preview** as a hierarchical structure of ThingWorx Things.

To add a ThingWorx application

1. In the top-right corner, select **Online** to go online with the gateway. FactoryTalk Edge Gateway displays a green banner: **Gateway Connection: Online**.
2. Select **Data Flow** > **Applications**.

   - To add the first application, select **Add Application**.

   - To add a subsequent application, select **Add** ╋ .

3. From **Select Application**, select an application
4. Select **Next.**
5. Set these parameters:

   - **Application Name**. Defines the application name.
   - **ThingWorx Server Host Name**. Defines the name or IP Address of the server host.
   - **ThingWorx Server Port**. Indicates the communication port between the <TXW> Foundation server and the gateway.

- **ThingWorx Server Application Key**. Defines the security token used for authentication with the <TXW> Foundation server.
- **ThingWorx Logging Level**. Set the logging level for the ThingWorx application to one of these options:
  - **Info**.This level logs important system information. Exceptions are not logged.
  - **Trace**. This level is used to help debug issues while developing an application. Trace logs provide detailed information to troubleshoot issues. This is the most detailed log.
  - **Debug**. This level is used to help debug issues. The log contains information about what the code is doing and the values of important variables.
  - **Warn**. This level logs unexpected exceptions that are acceptable or can be worked around. It includes problems that could become errors if left unattended.
  - **Error**. This level logs issues that affect the usage or performance of the system.
  - **Force**. This level logs issues that affect the usage or performance of the system. This option makes sure that all errors are logged.
  - **Audit**. This level logs messages in a separate audit file.
- **ThingWorx Logging Verbose**. Select **Logging Verbose** to log every message sent between the application and the ThingWorx Foundation server. While valuable for debugging, this setting can significantly impact performance.
- **Store and Forward**. This setting enables storing the data entering the application in a database on the gateway. This setting also functions as a buffer for data entering the store database at higher speeds than it is forwarding to the application.

  A maximum of 256 KB of data is fetched from the store database at each configured fetch interval.
  Select **Store and Forward** to enable the **Maximum store size (bytes)** and **Fetch Interval (ms)** settings. In case connectivity is lost to the external application, having **Store and Forward** enabled avoids periods of lost data to ThingWorx. Store and Forward keeps data stored in the database until the connection is restored.

- **Maximum store size (bytes)**. This setting defines the maximum size of the store database on the gateway, in bytes. When the maximum store size is reached, the oldest data is deleted to make space for new application data. Select **Store and Forward** to enable this setting.
- **Maximum fetch size (bytes)**. This setting defines the maximum size of data to fetch from the store database at each configured fetch interval.

  Select **Store and Forward to enable** this setting.

- **Fetch Interval (ms)**. This setting defines the interval of time to egress (that is, forward) data from the store database, in

milliseconds. Data continues to be egressed to the ThingWorx application until the store database is empty.

When egress fails, the data remains in the store database. Select **Store and Forward** to enable this setting.

See also

ThingWorx Preview

During configuration of a ThingWorx application, models selected from **Models** appear in **Preview** as a hierarchical structure of ThingWorx Things. **Preview** represents how the model appears in ThingWorx.

> Tip: The Device Discovery model is not supported by ThingWorx application.

Preview displays a hierarchical structure of ThingWorx Things using these icons:

ThingWorx Icon	Description
🏘	This icon represents a ThingWorxThing **Network**. Thing Networks define the relationships between ThingWorx Things in a hierarchy. In FactoryTalk Edge Gateway, the **Network** represents the model name in the hierarchical structure. There is only one **Network** per model preview.
⬡	This icon represents a ThingWorx **Thing** instance. Thing instances define the types of Things contained in a model. In FactoryTalk Edge Gateway, each **Thing** represents the parent node in the model hierarchy.
#	This icon represents a ThingWorx Thing **Property**. Properties describe the data points directly related to a **Thing**. In FactoryTalk Edge Gateway, each **Property** represents a child node of a parent node in the model hierarchy.

See also

Assign a ThingWorx template or shape to a node in a model

Assign a ThingWorx template or shape to a single node in a FactoryTalk Edge Gateway model.

To assign a ThingWorx template or shape to a node in a model

1. Select a single node or property.
2. In **Properties**, set these parameters:

   - **ThingWorx template**. Select this checkbox to assign a single ThingWorx template to a Thing. By default, a template name

appears as a placeholder in the input field. Change the template name to match the template name in ThingWorx. To create a Thing, the template name in ThingWorx and FactoryTalk Edge Gateway must correspond.

- **Add ThingWorx shapes**. User can add unlimited shapes.

3. Select **Add**.
4. Select **Save**.

See also

ThingWorx template and shape mapping rules on page 55

Map property values to a ThingWorx template or shape on page 55

ThingWorx template and shape mapping rules

FactoryTalk Edge Gateway node properties map to properties inherited from a ThingWorx template or shape. If the node uses a ThingWorx template or shape but contains properties that are not in the ThingWorx template or shape, FactoryTalk Edge Gateway creates the corresponding properties on the target Thing.

To achieve correct property mapping across properties, set these properties in ThingWorx Composer.

- **Base Thing Template** - Select **Remote Thing**.

  The **Base Thing Template** setting can be another ThingWorx template or shape if the underlying ThingWorx template or shape is based on a remote Thing.

- **Name** - Name of the property. The name must match the FactoryTalk Edge Gateway property name exactly.
- **Base Type** - Select the base type (data type). The base type must match the data type of the FactoryTalk Edge Gateway property.

FactoryTalk Edge Gateway data type	ThingWorx base type
STRING	STRING
DINT	Integer
LINT	Long
REAL	Number

- **Binding** - Select **Remotely Bound**.

See also

Map property values to a ThingWorx template or shape on page 55

Assign a ThingWorx template or shape to a node in a model on page 54

Map property values to a ThingWorx template or shape

When a parent node uses a ThingWorx template or shape, by default, the properties of the node (DINT, REAL, LINT, STRING) map to properties inherited from the ThingWorx template or shape.

If the node uses a ThingWorx template or shape but contains properties

that are not in the ThingWorx template or shape, FactoryTalk Edge Gateway creates the corresponding properties on the target Thing.

To map property values to a template or shape

- In **Properties**, set these parameters:

  Template or Shape Property. Maps the value to properties inherited from a template or shape property. This is the default behavior.
  Thing Property. Maps the property to a new Thing property in ThingWorx Composer.

See also

Assign a ThingWorx template or shape to a node in a model on page 54

ThingWorx template and shape mapping rules on page 55

Test Client application

Use the Test Client application to test the connection to the gateway and make sure that your data sources and models are properly configured and sending the correct data.

The advantage of the Test Client application is that you do not need to configure an application for a server or IoT device to test the connection. The Test Client application displays live data streaming into the gateway when **Enable Data Flow** is selected.

See also

Add an application on page 51

Add an Azure IoT Hub application

For users that have IoT (Industrial Internet of Things) applications or solutions using Microsoft® Azure® IoT Hub, FactoryTalk Edge Gateway provides a method to collect information from Rockwell Automation and third-party sources and send it to a Microsoft Azure IoT Hub.

FactoryTalk Edge Gateway facilitates creating objects that are required in SQL Server to represent the model, which reduces the time for deploying a SQL Server application.

To communicate with the Azure IoT Hub, add an Azure IoT Hub application in FactoryTalk Edge Gateway, and configure and deploy the application. During configuration of an Azure IoT Hub application, models selected from the **Models** dialog box appear in **Preview** as a hierarchical structure of Azure IoT Hub.

To add an Azure IoT Hub application

1. In the top-right corner, select **Online** to go online with the gateway. FactoryTalk Edge Gateway displays a green banner: **Gateway Connection: Online**.
2. Select **Data Flow** > **Applications**.

- To add the first application, select **Add Application**.

- To add a subsequent application, select **Add** ╀.

3. From **Select Application**, select an application
4. Select **Next.**
5. For Azure IoT Hub, set these parameters:

   - **Application Name.** Defines the application name.
   - **Connect to Edge Runtime**. Do not select for regular IoT applications.
   - **Use WebSockets.** Select to use MQTTWS protocol. Uses port 443.
   - **IoT Device Name.** Enter the name of the IoT device created in the Azure portal.
   - **IoT Device Connection String**. Enter the Primary/Secondary Device connection string from IoT Hub device.
   - **Store and Forward.** Enables the data storage in a database on the gateway. This setting also functions as a buffer for data entering the store database at higher speeds than the data is forwarded to the application.

     At each configured Fetch Interval, a maximum amount of data fetched from the store database is 256 KB.
     Select **Store and Forward** to enable the Maximum store size (bytes) and Fetch Interval (ms) settings.

     Tip: In case connectivity is lost to the external application, having **Store and Forward** enabled helps prevent periods of lost data to <MSSQL>. Store and Forward stores data in the database until the connection is restored.

   - **Maximum store size (bytes).** Defines the maximum size of the store database on the gateway, in bytes. When the maximum store size is reached, the oldest data is deleted to make space for new application data.

     Select **Store and Forward** to enable this setting.

   - **Fetch Interval (ms).** Defines the interval of time to egress (that is, forward) data from the store database, in milliseconds. Data continues to be egressed to the Azure application until the store database is empty.

     When egress fails, the data remains in the store database.
     Select **Store and Forward** to enable this setting.

6. Select **Save.**

See also

Add an IoT Edge Runtime application

Configure settings when adding or editing an IoT Edge Runtime application.

To add an IoT Edge Runtime application

1. In the top-right corner, select **Online** to go online with the gateway. FactoryTalk Edge Gateway displays a green banner: **Gateway Connection: Online**.
2. Select **Data Flow** > **Applications**.

   - To add the first application, select **Add Application**.

   - To add a subsequent application, select **Add** ╈.

3. From **Select Application**, select an application
4. Select **Next.**
5. Set these parameters:

   - **Application Name.** Defines the application name.
   - **Connect to Edge Runtime.** Select to see additional options.
   - **Use Websockets.** Select to use MQTTWS protocol. Uses port 443.
   - **Edge Runtime Host Name.** Enter the host name of the machine where Edge runtime is running. This machine must be accessible from the current machine.
   - **Protocol**. HTTP, MQTT, AMQP, MQTTWS.
   - **Public certificate.** Defines the public certificate used.
   - **Use token identification.** Select to use token identification.

     If selected, enter: X509 Certificate, X509 Certificate Key, or X509 Certificate Passphrase

   - **IoT Device Name.** Name of IoT device created in Microsoft Azure portal.
   - **IoT Device Connection String.** Enter the Primary/Secondary Device connection string from IoT Hub device.
   - **Store and Forward.** Enables the data storage in a database on the gateway. This setting also functions as a buffer for data entering the store database at higher speeds than the data is forwarded to the application. Select **Store and Forward** to enable the Maximum store size (bytes) and Fetch Interval (ms) settings.

     In case connectivity is lost to the external application, having **Store and Forward** enabled helps prevent periods of lost data to SQL Server. **Store and Forward** stores data in the database until the connection is restored.

   - **Maximum store size (bytes).** Defines the maximum size of the store database on the gateway, in bytes. When the maximum store size is reached, the oldest data is deleted to make space for new application data. Select **Store and Forward** to enable this setting.
   - **Fetch Interval (ms).** Defines the interval of time to egress (that is, forward) data from the store database, in milliseconds. Data continues to be egressed to the Azure application until the store database is empty. When egress fails, the data remains in the store database. Select **Store and Forward** to enable this setting.

6. Select **Save**.

Add a SQL Server application

For users that have IIoT (Industrial Internet of Things) applications or solutions using SQL Server®, FactoryTalk Edge Gateway provides a method to collect information from Rockwell Automation and third-party sources and send it to a SQL Server.

FactoryTalk Edge Gateway facilitates creating objects that are required in SQL Server to represent the model, which reduces the time for deploying a SQL Server application.

To communicate with the SQL Server, add a SQL Server application in FactoryTalk Edge Gateway, and configure and deploy the application. During configuration of a SQL Server application, models selected from the **Models** dialog box appear in **Preview** as a hierarchical structure of SQL Server.

Before you begin, create a username for the database and set permissions using the user interface in SQL Server Management Studio.

To add a SQL Server application

1. In the top-right corner, select **Online** to go online with the gateway. FactoryTalk Edge Gateway displays a green banner: **Gateway Connection: Online**.
2. Select **Data Flow** > **Applications**.
   - To add the first application, select **Add Application**.
   - To add a subsequent application, select **Add** ┼.
3. From **Select Application**, select an application
4. Select **Next.**
5. Set these parameters:
   - **Application Name.** Defines the application name.
   - **Server Name**. Defines the name or IP Address of the server host.
   - **SQL Server Instance Name.** Enter the name of the SQL Server instance.
   - The SQL Server Browser service must be running anytime the SQL Server instance name is the connection method. If you enter information in both SQL Port and SQL Server Instance Name, FactoryTalk Edge Gateway uses the SQL Server instance name. To configure and debug the SQL Server, see Microsoft SQL Server technical documentation.
   - **SQL Port.** Enter a port number for SQL Server if not using the standard 1433 port number.
   - **Database Name.** Indicates the communication port between the SQL Server and the gateway.
   - **Table Name.** Enter the name of a table already in use by FactoryTalk Edge Gateway or enter the name of a new table. If the table does not exist, FactoryTalk Edge Gateway creates the table. Only use tables that FactoryTalk Edge Gateway creates.
   - **Domain.** Enter domain or workgroup name to connect to SQL Server by using Windows authentication. Leaving this field blank uses SQL Server authentication.
   - **Username**. Enter the specific username for the database. Recommended practice is to create a username with the correct

access and permissions for the database to use with the FactoryTalk Edge Gateway SQL Server endpoint.

- **Password.** Enter the password associated with the username.
- **Encrypt.** Encrypt the connection to the SQL server.
- **Enable Fire Insert Trigger.** Enable the execution of database triggers on bulk insert of data to SQL table from FactoryTalk Edge Gateway.
- **Store and Forward.** Enables the storage of data entering the application in a database on the gateway. This setting also functions as a buffer for data entering the store database at higher speeds than the data is forwarded to the application. At each configured Fetch Interval, a maximum amount of data fetched from the store database is 256 KB.

  Select **Store and Forward** to enable the **Maximum store size (bytes)** and **Fetch Interval (ms)** settings.
  In case connectivity is lost to the external application, having **Store and Forward** enabled prevents periods of lost data to SQL Server. **Store and Forward** stores data in the database until the connection is restored.

- **Aggressive Database Cleaning**. Select to delete 50% of the oldest data from the store when maximum store size is exceeded.
- **Maximum store size (bytes)**. This setting defines the maximum size of the store database on the gateway, in bytes. When the maximum store size is reached, the oldest data is deleted to make space for new application data. Select **Store and Forward** to enable this setting.
- **Fetch Interval (ms).** This setting defines the interval of time to egress (that is, forward) data from the store database, in milliseconds. Data continues to be egressed to the ThingWorx application until the store database is empty. When egress fails, the data remains in the store database. Select **Store and Forward** to enable this setting.
- **Domain.** Enter to connect to SQL Server using Windows authentication. The default value is SQL Server authentication. This field is optional.

Set database permissions in SQL Server Management Studio

Set database permissions for SQL Server.

To set database permissions in SQL Server Management Studio

1. Open SQL Server Management Studio.
2. In the **Server** tree in the Object Explorer, right-click **Logins** and select **New Login**.
3. Create a username by using any name or password.
4. Assign the Server role **bulkadmin**.
5. In the **Databases** tree, right-click **Security** > **Users**.
6. Select the newly created username and assign these roles:

   - **db_datareader**
   - **db_datawriter**

- **ddadmin**

7. Exit SQL Server Management Studio.

Add a MQTT Application

Use MQTT to egress data from FactoryTalk Edge Gateway. Set the MQTT configuration settings.

To add a MQTT application

1. In the top-right corner, select **Online** to go online with the gateway. FactoryTalk Edge Gateway displays a green banner: **Gateway Connection: Online**.
2. Select **Data Flow** > **Applications**.

   - To add the first application, select **Add Application**.

   - To add a subsequent application, select **Add** ╋.

3. From **Select Application**, select an application
4. Select **Next.**
5. Set these parameters:

   - **Application Name:** Input the name of the application.
   - **MQTT Broker Path:** Input the path to the MQTT broker.
   - **Port:** Input a port number. The default port number is 1883.
   - **MQTT Topic:** The MQTT topic under which FactoryTalk Edge Gateway publishes configured models and tags. The gateway name appears by default in the data published to the topic.
   - **Client ID:** Input the client name or ID that the MQTT broker uses to track subscriptions.

     This ID must be a unique identifier for the FactoryTalk Edge Gateway connection to the broker. If multiple MQTT Gateway applications send data, change this ID to something different than the other gateway application IDs. The ID is not generated automatically but does have a default value that should be unique unless other gateway MQTT applications are deployed.

   - **QoS:** Quality of Service. Defines the effort produced by the broker/client to ensure that a message is received. The broker sends messages at any QoS level.

     - **At most once:** The message is delivered once, with no confirmation.
     - **At least once:** The message is delivered at least once, with confirmation required.
     - **Exactly once:** The message is delivered once by using a four-step handshake.

   - **Enable Retain:** Signals the broker to keep the FactoryTalk Edge Gateway message after sending it to subscribers.
   - **Enable Flat Payload**: Select the "**Enable Flat Payload**" checkbox to flatten the MQTT payload structure. This flatten payload is required for PLEX APM applications. See below figure for an example of the flatten payload.

Figure: Flat Payload

```
{
    "st":"1642680448603",
    "f":[
        {
            "id":"LN_Test01Model.LN_Test01Node.LN_Test01dint01",
            "t":1642680448576,
            "q":true,
            "v":111
        },
    {
            "id":"LN_Test01Model.LN_Test01Node.LN_Test01dint01",
            "t":1642680448599,
            "q":true,
            "v":222
        },
        {
            "id":"LN_Test01Model.LN_Test01Node.LN_Test01real01",
            "t":1642680448576,
            "q":true,
            "v":14195.5
        },
        {
            "id":"LN_Test01Model.LN_Test01Node.LN_Test01string101",
            "t":1642680448576,
            "q":true,
            "v":"abc"
        }
    ]
}
```

- **Clean Session:** When the connection is interrupted, the broker retains the MQTT session and the session state information (including the partial QoS handshake state). When FactoryTalk Edge Gateway reconnects to the broker, the previous session state is maintained for the new connection.
- **Security:** Set security to log in to the broker.

  - **Username:** Input the username to log in to the broker.
  - **Password:** Input the password to log in to the broker.

- **SSL/TLS:** Allows encrypted communication to the broker.

  - **CA Certificate File:** Input the path to a CA certificate file in X.509 PEM format.
  - **Client Certificate File:** Input the path to the client certificate file. The client certificate (if required by the broker configuration) validates the authenticity of the gateway as a client to the broker. The client certificate does not need to be unique to any specific client, but the CA certificate must sign it.
  - **Client Private Key File:** Input the path to the client private key. This is the path to a key file in X.509 PEM format associated with the client certificate.
  - **Client Private Key Passphrase:** (optional) Input the passphrase for the private key.

- **Enable Last Will and Testament:** When enabled, **Last Will and Testament** signals the broker to publish the configured message to the configured topic when the gateway is disconnected from the broker. Subscribed clients can use this option when network outages occur.

  - **Last Will and Testament Topic:** When the gateway is disconnected, this is the topic to which the broker publishes the Last-will message.
  - **Enable Retain:** The gateway saves the last message published to the Last Will and Testament topic so that new subscribers receive the message when connected.

- **QoS:** Quality of Service. Defines the effort produced by the broker/client to ensure that a Last-will message is received. The broker sends messages at any QoS level.
- **Message:** The message that the broker publishes to the Last Will and Testament topic when the gateway is disconnected.

- **Store and forward:** Stores the data entering the application in a database on the gateway. This setting also functions as a buffer for data entering the store database at higher speeds than it is forwarding to the application. A maximum of 256 KB of data is fetched from the store database at each configured fetch interval. Select **Store and Forward** to enable the **Maximum store size (bytes)** and **Fetch Interval (ms)** settings.

6. Select **Save**.

Add an InfluxDB Application

Use InfluxDB to egress data from FactoryTalk Edge Gateway. FactoryTalk Edge Gateway supports InfluxDB 2.x Open Source and InfluxDB Cloud versions. Set the InfluxDB configuration settings.

To Add an InfluxDB Application

1. In the top-right corner, select **Online** to go online with the gateway. FactoryTalk Edge Gateway displays a green banner: **Gateway Connection: Online**.
2. Select **Data Flow** > **Applications**.

   - To add the first application, select **Add Application**.

   - To add a subsequent application, select **Add** ╋.

3. From **Select Application**, select **InfluxDB**.
4. Select **Next**.
5. Set these parameters:

   - **Application Name:** Defines the application name.
   - **URL address:** Enter URL address.
   - **Port:** Select the applicable port. The default port for InfluxDB 2.x Open Source on-premise version is **8086**. The default port for HTTPS connection in InfluxDB Cloud version is **443**.
   - **Organization Name:** Enter the organization name created in the InfluxDB.
   - **Bucket Name:** Enter the Bucket Name created in the InfluxDB.
   - **Token:** Enter the Token created in the InfluxDB.
   - **Max buffer size in bytes:** Select the Max buffer size from drop-down list.
   - **Max time-out in milliseconds:**   Select the Max time-out from drop-down list.
   - **Store and forward:** Stores the data entering the application in a database on the gateway. This setting also functions as a buffer for data entering the store database at higher speeds than it is forwarding to the application. A maximum of 256 KB of data is fetched from the store database at each configured fetch interval. Select **Store and Forward** to enable the **Maximum store size (bytes)** and **Fetch Interval (ms)** settings. In case connectivity is lost to the external application, having **Store and Forward** enabled avoids periods of lost data to InfluxDB. Store

and Forward keeps data stored in the database until the connection is restored.

- **Maximum store size (bytes):** This setting defines the maximum size of the store database on the gateway, in bytes. When the maximum store size is reached, the oldest data is deleted to make space for new application data. Select **Store and Forward** to enable this setting.
- **Maximum fetch size (bytes):** This setting defines the maximum size of data to fetch from the store database at each configured fetch interval. Select **Store and Forward** to enable this setting.
- **Fetch Interval (ms):** This setting defines the interval of time to egress (that is, forward) data from the store database, in milliseconds. Data continues to be egressed to the InfluxDB application until the store database is empty. When egress fails, the data remains in the store database. Select **Store and Forward** to enable this setting.
- **Aggressive Database Cleaning:** Select to delete 50% of the oldest data from the store when maximum store size is exceeded.

6. Select **Save**.

> Tip: While sending data to InfluxDB, FactoryTalk Edge Gateway creates two separate fields i.e. "tagName_v" for value and "tagName_q" for quality. But when some of the FTEG tags have a "null" value, it has "bad" quality too and it is unsupported by InfluxDB application. So, FactoryTalk Edge Gateway creates an additional InfluxDB field "tagname_v_q#" with value set to 'null' (as a string) to send "null" value to InfluxDB application. "#" denotes bad quality code in   additional field.

Delete an application

Delete unused applications. You cannot delete running or paused applications.

To delete an application

1. Select **Data Flow** > **Applications.**
2. (optional) Filter the list of applications.
3. Select **Stop** ▮ for each application you want to delete.
4. Select the applications to delete.
5. Select **Delete** 🗑 to remove the applications from the gateway.

See also

Start, pause, and stop an application

When online with the gateway, start, pause, and stop individual applications. Start applications to transmit tag and model data to the associated applications. Deployed tags and models are scanned and count towards the maximum tag count selected during license activation.

Pause an application to stop the data transmission to the associated application. While paused, deployed tags and models are still scanned and count towards the maximum tag count selected during license activation.

Stop the application before modifying the application settings or configuration. Tags bound to stopped applications do not count towards the maximum tag count.

To start, pause, and stop an application

- Select **Data Flow** > **Applications**.

  - Select **Run** ▶ to start the application.
  - Select **Pause** ❚❚ to pause the application.
  - Select **Stop** ■ to stop the application.

See also

Configure and deploy an application

After adding an application, configure the models and tags to bind them to the application. Use the bound tags and models to access the information stored in the namespace of the data source.

Each model node and tag has an update rate and update type.

Deploy the application data after configuring the models and tags. During deployment of the new configuration, the existing configuration for the application is overwritten with the new one. Deploy the application any time after configuring the models and tags.

To configure and deploy an application

1. In the top-right corner of any view, select **Online** to go online with the gateway. FactoryTalk Edge Gateway displays a green banner stating **Gateway Connection: Online**.
2. Select **Data Flow** > **Applications** and then select the application to configure from the tree view.
3. Select **Configure**. See Data collection properties
4. From **Models and Tags**, choose **Select** ╂ to add models or tags to the application configuration.
5. From **Select Models or Tags**, choose **Models** or **Tags.**
6. (optional) Filter the data appearing in **Select Models or Tags**:

   - Use the list to select specific models or data sources.
   - Use the text box to filter the list of models or data sources.
   - For tags, use the pull-down list to select specific types.

7. Select the models or tags to add to the configuration and then select **Save**.

   Tip: Select **Clear All** to erase the selected models or data sources.

8. Set the data collection properties for each tag.

a. From **Models and Tags**, select a tag.

b. From **Properties**, set the **Update Rate** and **Update Type** for the tag.

c. Select **Save**.

9. From **Models and Tags**, select the tags and models to bind them to the application and then select **Save**. These tags and models that are deployed to the application.
10. Select **Deploy** to send the current bound tags and models to the application.

   Are you sure you want to deploy following changes? displays the **Current configuration** and **New configuration** for the application. Select **Deploy** to send the **New configuration** to the gateway.

See also

Configure Data Collection Properties

When configuring an application, set data collection properties for individual tags and tags bound to models.

Child nodes in a model can inherit the data collection properties from the parent node.

> 💡 Tip: When you use two or more types of models in an application and one of them is Device Discovery type or when you select two or more tags and one or more of them is Device Discovery type, then the Update rate in the Properties pane will be as applicable for a Device Discovery model.

To configure data collection properties for Device Discovery model

1. See Configure and deploy an application.
2. Set these parameters:

   - **Overwrite parent value**. Select **On** to overwrite the data collection properties of the parent node.
   - **Data collection.** Select **On** to collect data.
   - **Update rate**. Defines the rate at which updates are performed. The default **Update rate** is **10 seconds**. The possible update rate values are:

     - 10 seconds
     - One minute
     - Two minutes
     - Five minutes
       > 💡 Tip: You can select **Update rate** for complete model only. This setting is inactive for nodes or tags in a Device Discovery model. All nodes and tags under that selected model will inherit this settings from that model.

- **Update type**. Defines the type of update performed for the individual or bound tag. The possible update types are: **Polling** and **On change**.

  Select **Polling** to collect tag data at the set update rate. Select **On change** to collect data when the tag value changes. The values are checked for changes at the set update rate.

  > Tip: You can select **Update type** for complete model only. This setting is inactive for nodes or tags in a Device Discovery model. All nodes and tags under that selected model will inherit this settings from that model.

To configure data collection properties for Azure or MSSQL or ThingWorx

1. See Configure and deploy an application.
2. Set these parameters:

   - **Overwrite parent value**. Select **On** to overwrite the data collection properties of the parent node.
   - **Data collection.** Select **On** to collect data.
   - **Update rate**. Defines the rate at which updates are performed. The possible update rate values are:

     - 500 milliseconds
     - One second
     - Two seconds
     - Five seconds
     - 10 seconds
     - One minute
     - Two minutes
     - Five minutes

       > Tip: When you use two or more types of models in an application and one of them is Device Discovery type or when you select two or more tags and one or more of them is Device Discovery type, then the Update rate in the Properties pane will be as applicable for a Device Discovery model.

   - **Update type**. Defines the type of update performed for the individual or bound tag. The possible update types are: **Polling** and **On change**.

     Select **Polling** to collect tag data at the set update rate. Select **On change** to collect data when the tag value changes. The values are checked for changes at the set update rate.

To configure data collection properties for Drive/IMC data source

1. See Configure and deploy an application.
2. Set these parameters:

   - **Overwrite parent value**. Select **On** to overwrite the data collection properties of the parent node.
   - **Data collection.** Select **On** to collect data.
   - **Update rate**. Defines the rate at which updates are performed. The possible update rate values are:

- 500 milliseconds
- One second
- Two seconds
- Five seconds
- 10 seconds
- One minute
- Two minutes
- Five minutes

   Tip: The correct way to setup Update rate for Drive/IMC Device is to multiply number of tags/parameters by 100ms and select rate greater than this value.

   For Example: When you want to collect 50 parameters or symbolic tags using "Drive/IMC Device" data source, each tag will have timestamp delayed by 100ms. So, the last tag will have timestamp delayed by 5sec compared to first tag (50 * 100ms = 5sec).

   So, in such case, it is not recommended to select Update rate quicker than 5sec when configuring application (500msec, 1 sec, 2sec) because some of tags will not be updated and you will see quality '24' error (after 30sec - quality '8').

- **Update type**. Defines the type of update performed for the individual or bound tag. The possible update types are: **Polling** and **On change**.

   Select **Polling** to collect tag data at the set update rate. Select **On change** to collect data when the tag value changes. The values are checked for changes at the set update rate.

To configure data collection properties for InfluxDB

1. See [Configure and deploy an application](#).
2. Set these parameters:

   - **Overwrite parent value**. Select **On** to overwrite the data collection properties of the parent node.
   - **Data collection.** Select **On** to collect data.
   - **Update rate**. Defines the rate at which updates are performed. The possible update rate values are:

     - 500 milliseconds
     - One second
     - Two seconds
     - Five seconds
     - 10 seconds
     - One minute
     - Two minutes
     - Five minutes

        Tip: When you use two or more types of models in an application and one of them is Device Discovery type or when you select two or more tags and one or more of them is Device Discovery type, then the Update rate in the Properties pane will be as applicable for a Device Discovery model.

   - **Update type**. Defines the type of update performed for the individual or bound tag. The possible update types are: **Polling** and **On change**.

Select **Polling** to collect tag data at the set update rate. Select **On change** to collect data when the tag value changes. The values are checked for changes at the set update rate.

- **InfluxDB Measurement:** You can assign InfluxDB Measurement name to single node of FTEG model. When you select a single node, you can assign additional information attribute "**InfluxDB Measurement**".
- **InfluxDB Tags**: You can assign FTEG property to "field" or "tag". Select the **InfluxDB Tags** checkbox in the property pane if property to be used as "tag". Unselected the **InfluxDB Tags** checkbox to map value of FTEG property to InfluxDB "field".

Modify an application on a running gateway

When FactoryTalk Edge Gateway is online with the gateway,modify the application by changing the application settings and Store and Forward settings. Modify the configuration of models and tags bound to the application.

Other applications on the gateway continue to run and transmit data without interruption.

To modify an application on a running gateway

1. Select **Data Flow** > **Applications**.
2. Select **Edit** ✎ .
3. Modify the settings for the application and then select **Save**.
4. To modify the configured models and tags to deploy, select **Configure.**
5. Update the configuration and select **Save**.
6. Select **Deploy** to send the modified configuration to the application.

See also

Monitor the data flow for a deployed application

Monitor the values of the data streaming from the gateway to the application. The gateway only monitors tags that have the **Data Collection** property set to **On**.

💡 Tip: When enabled, **Data Flow** displays the values currently streaming through the gateway at the set data collection rates. Previous values are not retained in the gateway.
To display all values streaming through the gateway at the set rates, select **Enable Data Flow** before deploying the application.
Enabling data flow after deployment results in data only appearing in **Data Flow** at the next set collection rate (**On change** or **Update rate**).

To monitor the data flow for a deployed application

1. In the top-right corner of any view, select **Online** to go online with the gateway. FactoryTalk Edge Gateway displays a green banner stating **Gateway Connection: Online**.
2. Select **Data Flow** > **Applications**, and then select the required application from the tree view.

3. Select **Enable Data Flow**.
4. From **Data Flow**, monitor the data flowing from the gateway to the application.

See also

Application data flow on page 70

Go online or offline with the gateway on page 13

Configure and deploy an application on page 65

Data collection properties on page 39

Application data flow

For each application, **Data Flow** displays this information when an application is deployed and **Enable Data Flow** is selected:

Data Flow	Description
Tag Name	This column displays the name of the tag sent to the application.
Data Source	This column displays the name of the data source associated to the tag.
Value	This column displays the current value of the tag.
Quality	This column displays the quality of the data sent.
Time	This column displays the date and time when the data refreshes.

See also

Monitor the data flow for a deployed application on page 69

Quality codes for application data flow on page 70

Quality codes for application data flow

When data flow is enabled for applications, a code indicating the quality of the data for each tag appears in the **Quality** column:

Code	Quality	Description
0	Bad [Non-Specific]	The value of the data is bad for an unknown reason.
4	Bad [Configuration error]	The value of the data is bad due to a server-specific problem with the configuration. For example, the tag was deleted from the configuration.
8	Bad [Not Connected]	No value is available at this time due to a disconnected input. The data source may not have provided the value.
12	Bad [Device Failure]	The data value is bad due to a device failure.
16	Bad [Sensor Failure]	The data value is bad due to a sensor failure.
20	Bad [Last Known Value]	Communications failed. The last known value is available.
24	Bad [Communication Failure]	Communications failed. The last known value is not available.
28	Bad [Out of Service]	The data value is bad. The tag may be off scan or locked.
32	Initializing	Initializing the data.
64	Uncertain [Non-Specific]	The value's quality is uncertain for an unknown reason.
65	Uncertain [Non-Specific] (Low Limited)	The value's quality is uncertain. The tag value pegged at some lower limit.
66	Uncertain [Non-Specific] (High Limited)	The value's quality is uncertain. The tag value pegged at some higher limit.
67	Uncertain [Non-Specific] (Constant)	The value's quality is uncertain. The tag value is a constant and cannot change.

Code	Quality	Description
68	Uncertain [Last Usable]	The value's quality is uncertain since the external source writing the value stopped returning values within an acceptable period. The data is considered stale.
69	Uncertain [Last Usable] (Low Limited)	The value's quality is uncertain since the external source writing the value stopped returning values within an acceptable period. The data is considered stale. The tag value pegged at some lower limit.
70	Uncertain [Last Usable] (High Limited)	The value's quality is uncertain since the external source writing the value stopped returning values within an acceptable period. The data is considered stale. The tag value pegged at some higher limit.
71	Uncertain [Last Usable] (Constant)	The value's quality is uncertain since the external source writing the value stopped returning values within an acceptable period. The data is considered stale. The tag value is a constant and cannot change.
80	Uncertain [Sensor Not Accurate]	The value's quality is uncertain. Internal diagnostics detected the sensor is uncalibrated.
81	Uncertain [Sensor Not Accurate] (Low Limited)	The value's quality is uncertain. The tag value pegged at some lower limit or internal diagnostics has detected the sensor is uncalibrated.
82	Uncertain [Sensor Not Accurate] (High Limited)	The value's quality is uncertain. The value pegged at some higher limit or internal diagnostics detected the sensor is uncalibrated.
83	Uncertain [Sensor Not Accurate] (Constant)	The value's quality is uncertain. The value is locked at a constant value or internal diagnostics detected the sensor is uncalibrated.
84	Uncertain [EU Exceeded]	The value's quality is uncertain. The value is outside the limits defined for the tag.
85	Uncertain [EU Exceeded] (Low Limited)	The value's quality is uncertain. The value is outside the lower limit defined for the tag.
86	Uncertain [EU Exceeded] (High Limited)	The value's quality is uncertain. The value is outside the higher limit defined for the tag.
87	Uncertain [EU Exceeded] (Constant)	The value's quality is uncertain. The value is outside the constant value defined for the tag.
88	Uncertain [Sub-Normal]	The value's quality is uncertain since the data is derived from multiple sources.
89	Uncertain [Sub-Normal] (Low Limited)	The value's quality is uncertain since the data is derived from multiple sources. The tag value has pegged at some lower limit.
90	Uncertain [Sub-Normal] (High Limited)	The value's quality is uncertain since the data is derived from multiple sources. The tag value pegged at some higher limit.
91	Uncertain [Sub-Normal] (Constant)	The value's quality is uncertain since the data is derived from multiple sources. The tag value is a constant and cannot change.
192	Good [Non-Specific]	The value's quality is good.
193	Good [Non-Specific] (Low Limited)	The value's quality is good. The tag value pegged at some lower limit.
194	Good [Non-Specific] (High Limited)	The value's quality is good. The tag value pegged at some higher limit.
195	Good [Non-Specific] (Constant)	The value's quality is good. The tag value is a constant and cannot change.
216	Good [Local Override]	The value's quality is good. The value was overwritten by a forced value.
217	Good [Local Override] (Low Limited)	The value's quality is good. The value was overwritten by a forced value. The tag value pegged at some lower limit.
218	Good [Local Override] (High Limited)	The value's quality is good. The value was overwritten by a forced value. The tag value pegged at some higher limit.
219	Good [Local Override] (Constant)	The value's quality is good. The value was overwritten by a forced value. The tag value is a constant and cannot change.

See also

Back up FactoryTalk Edge Gateway configuration

Note: Applicable only for standalone version.

You can create a manual backup of your FactoryTalk Edge Gateway configuration.

Tip: The configuration has password protection. This procedure uses the password you created when you first ran FactoryTalk Edge Gateway.

Tip: When you move the backup data outside of the defined trust boundary, it is recommended to apply additional security controls (e.g. use password-protected package) to protect entire backup during transit.

To back up a FactoryTalk Edge Gateway configuration

Tip: Before beginning this procedure, determine the location of your backup file. This example uses C:\fteg-ct\backup\resources.

1. Launch the configuration tool.
2. If prompted, upload the configuration from the gateway to resolve differences.
3. Exit the configuration tool.
4. Browse to the location of your resources directory. For example, C:\Program Files (x86)\Rockwell Software\FactoryTalk EdgC:\Program Files (x86)\Rockwell Software\FactoryTalk Edge Gateway\fteg-ct.
5. Copy the resources directory from that location.
6. Browse to your backup location. For example, C:\fteg-ct\backup\resources.
7. Save the resources directory.

See also

Restore FactoryTalk Edge Gateway configuration

If you created a backup of the resources directory, which restores your FactoryTalk Edge Gateway configuration backup. To restore the FactoryTalk Edge Gateway configuration:

Tip: To restore the configuration on a new machine, enter the password you created when you first ran FactoryTalk Edge Gateway configuration tool. The password must match the configuration. Restoring a backup by using a different password requires clearing the old password by using Windows Credential Manager.

To restore a FactoryTalk Edge Gateway configuration

1. Exit the configuration tool if running.
2. Browse to the resource directory location you created in the backup procedure. For example, C:\fteg-ct\backup\resources.
3. Copy the resources directory from that location.

4. Browse to the location where you want to restore the resources directory. For example, C:\Program Files (x86)\Rockwell Software\FactoryTalk Edge Gateway\fteg-ct\resources.
5. Paste the resources directory to C:\Program Files (x86)\Rockwell Software\FactoryTalk Edge Gateway\fteg-ct\resources.
6. Start the configuration tool.
7. From the menu, select **Online** to go online with the gateway.
8. When prompted, download the configuration to the gateway.

See also

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Rockwell Automation support

Use these resources to access support information.

Technical Support Center	Find help with how-to videos, FAQs, chat, user forums, and product notification updates.	rok.auto/support
Knowledgebase	Access Knowledgebase articles.	rok.auto/knowledgebase
Local Technical Support Phone Numbers	Locate the telephone number for your country.	rok.auto/phonesupport
Literature Library	Find installation instructions, manuals, brochures, and technical data publications.	rok.auto/literature
Product Compatibility and Download Center (PCDC)	Get help determining how products interact, check features and capabilities, and find associated firmware.	rok.auto/pcdc

Documentation feedback

Your comments help us serve your documentation needs better. If you have any suggestions on how to improve our content, complete the form at rok.auto/docfeedback.

Waste Electrical and Electronic Equipment (WEEE)

At the end of life, this equipment should be collected separately from any unsorted municipal waste.

Rockwell Automation maintains current product environmental information on its website at rok.auto/pec.

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