SIEMENS

# Industrial Edge App

# Ethernet IP Connector for Industrial Edge V3.0

**Application Manual**




**12/2023**

A5E53092165-AA

## Legal information

### Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

**⚠ DANGER**

indicates that death or severe personal injury **will** result if proper precautions are not taken.

**⚠ WARNING**

indicates that death or severe personal injury **may** result if proper precautions are not taken.

**⚠ CAUTION**

indicates that minor personal injury can result if proper precautions are not taken.

**NOTICE**

indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

### Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

### Proper use of Siemens products

Note the following:

**⚠ WARNING**

Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

### Trademarks

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### Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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# Preface

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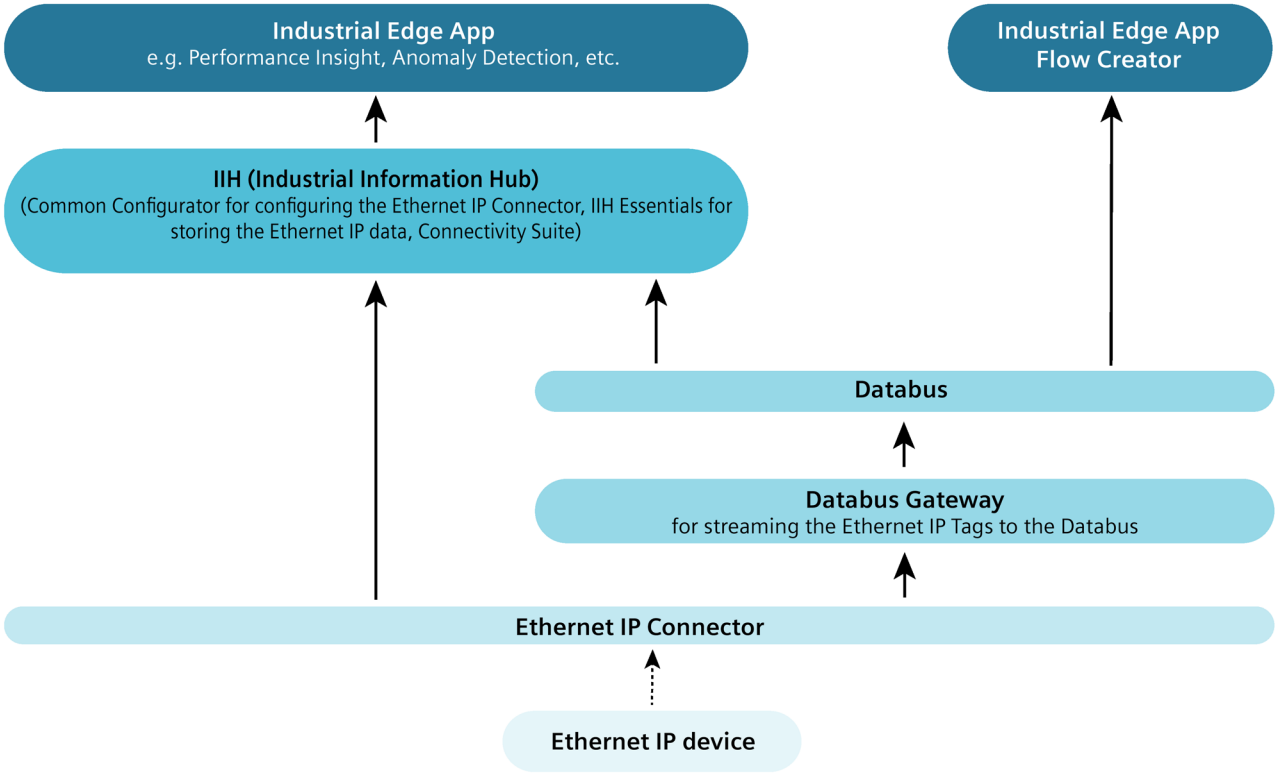
## 1.1 Introduction to Ethernet IP Connector

Ethernet IP Connector is an app that runs on the respective Industrial Edge device. You can install Ethernet IP Connector on all Industrial Edge devices you want to connect to your PLCs. Ethernet IP Connector sends the tags from the PLC to Databus or IIH in order to analyze and visualize the values of the Ethernet IP tags in apps such as Performance Insight.

Ethernet IP Connector can be used with the following PLC types:

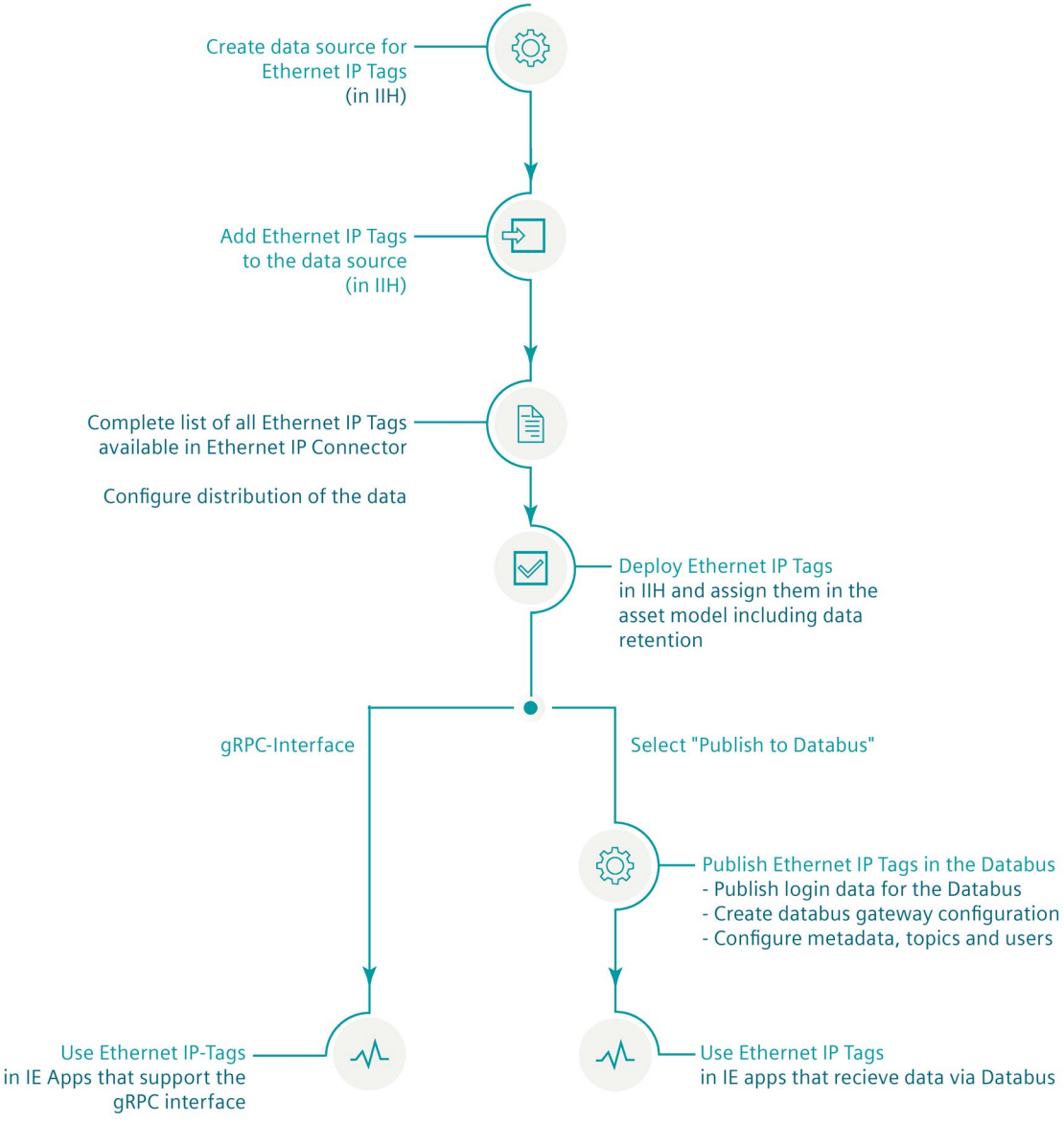
- ControlLogix
- CompactLogix
- MicroLogix
- Micro800
- PLC5
- SLC500
- LogixPCCC
- Omron

Because Ethernet IP Connector is a Connectivity Suite (CS) connector, you can also make the values of the Ethernet IP tags available directly in IIH without using the Databus. You can find more information on the Common Configurator under Common Configurator (https://support.industry.siemens.com/cs/document/109820608/iih-configurator-for-industrial-edge?dti=0&lc=en-GB).



## Configuring data streams of Ethernet IP tags

You make the values of the Ethernet IP tags in Ethernet IP Connector available by creating a data source and its associated tags.



# 1.2 Legal information

## 1.2.1 Cybersecurity information

Siemens provides products and solutions with industrial cybersecurity functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial cybersecurity concept. Siemens' products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For additional information on industrial cybersecurity measures that may be implemented, please visit
https://www.siemens.com/cybersecurity-industry.

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Cybersecurity RSS Feed under
https://new.siemens.com/cert.

### 1.2.2 Security Information for Industrial Edge Apps

Security information (assumptions/constraints) for Industrial Edge Apps is as follows:

- Only authorized internal operators will have access to Industrial Edge Device within a secure network using VPN connection.
- Perimeter firewall configuration responsibility lies with the end customer.
- The security guidelines for usage of USB Flash Drives in the shop floor area are applied accordingly.
- Creating users with appropriate access rights upon commissioning is the responsibility of the operator.
- The customer is responsible for configuring the application on the basis of the system requirements and technical capabilities of the documented App according to the Installation / User Manual such that the automation system performance is not impacted.
- The system is installed in an environment ensuring that physical access is limited to authorized maintenance personnel only. Managing unauthorized attachment of removable devices is the responsibility of the operator.
- The platform including hardware, firmware and operating system is securely configured and maintained by the operator.
- The operator is capable of protecting the environment from malware infection.
- Centralized IT security components (Active Directory, Centralized IT Logging Server) are provided and well secured by the operator and are trustworthy.
- The operator personnel accessing the system is well trained in the usage of the system and general information security aspects like password handling, removable media, etc.
- The operator is responsible for the CIA (Confidentiality, Integrity and Availability) of data stored outside the Industrial Edge Device.
- The operator is responsible for configuring the PLCs with appropriate read/write authorizations (legitimization) and for configuring the Industrial Edge apps with suitable passwords for acquiring data from PLCs.
- The customer takes care about the time synchronization of Industrial Edge Management and Industrial Edge Device.

### 1.2.3 Note on EU General Data Protection Regulation (GDPR)

#### Data protection

Siemens observes the principles of data protection, in particular the principle of data minimization (privacy by design). For the Ethernet IP Connector  product, this means that:

#### Personal data

the product processes / stores the following personal data:

- Databus access data
- Tag data and metadata of field devices

| **NOTICE** |
| --- |
| **Protection of personal data**<br>If you link the above data with other data (e.g. shift schedules) or if you store personal data on the same medium (e.g. hard disk) and thus create a personal reference, you must ensure that the data protection guidelines are observed. |

#### Purpose

The above data is required for the following purposes:

- Access protection and security measures
- Reporting system for traceability and availability

The storage of data is appropriate and limited to what is necessary, as it is essential to identify the authorized operators.

#### Securing data

The above data will not be stored anonymously or pseudonymized, because the purpose (identification of the operating personnel) cannot be achieved otherwise.

The following data will only be used within the product and Edge ecosystem and will not be automatically shared with third parties or unauthorized individuals:

- Databus access data
- Legitimation data

The above data is protected against loss of integrity and confidentiality by state-of-the-art security measures.

Tag data and metadata of field devices is used only within the product and is not automatically shared with third parties or unauthorized individuals.

You must ensure access protection as part of your process configuration.

# 1.3 Notes on the documentation

## 1.3.1 Validity of the documentation

### Description

The "Ethernet IP Connector for Industrial Edge" documentation is valid for the installation of the app on an Industrial Edge Device (IED).

## 1.3.2 Overview of additional documentation

### Overview

The following documents supplement this description:

| Documentation | Main contents |
|---|---|
| Industrial Edge Marketplace (https://www.dex.siemens.com/?selected=edge) | Platform to purchase app licenses |
| Industrial Edge Hub (https://iehub.eu1.edge.siemens.cloud) | This page describes the functions of the Siemens Industrial Edge platform and the functionalities of the Edge Management System.<br>All the documentation for the IE platform can be found under "Documents". |
| System overview (https://new.siemens.com/global/en/products/automation/topic-areas/industrial-edge/production-machines.html) | This page provides an overview of all Edge solutions. |
| Industrial Edge in 10 minutes (https://cache.industry.siemens.com/dl/dl-media/991/109772991/att_1010695/v1/109772991_V16_Highlights_V2_web/start.htm#!/en/12329) | Web Based Training: Integrate IT in the production with Siemens Industrial Edge |
| Databus (https://support.industry.siemens.com/cs/ww/en/view/109805958) | Documentation on Databus |
| Industrial Information Hub (IIH) (https://support.industry.siemens.com/cs/de/en/view/109803582) | You can find the IIH manual here. |

### See also

SIMATIC SCADA Export for TIA Portal
(https://support.industry.siemens.com/cs/de/en/view/109748955)

# What's new in Ethernet IP Connector V3.0?

# 2

### General improvements

- Overall performance has been improved.
- The Ethernet IP Connector is now a Connectivity Suite connector. You can also make the values of the Ethernet IP tags available directly in IIH without using the Databus.
- More details can be found in the SIOS Portal (https://support.industry.siemens.com/cs/ww/en/view/109797635).

# Installing Ethernet IP Connector 3

## 3.1 System requirements

Note the following system requirements for the installation of the Edge apps.

### Software requirements

The following Internet browsers are required:

- Google Chrome, Version ≥ 72

The apps are available in the Industrial Edge Marketplace. From there, you can transfer the latest version of the app to your Industrial Edge Management (IEM) and then install it on your Industrial Edge Device (IED):

| App/Component | Description | Source |
|---|---|---|
| IIH Semantics<br>(IE App) | Optional | Industrial Edge<br>Marketplace |
| IIH Registry Service<br>(Connectivity Suite) | Obligatory | |
| Ethernet IP Connector<br>(IE App) | | |
| Common Configurator<br>(IE App) | Required if you want to configure PLCs and data streams with it.<br>You can also load the configuration as a file. | |
| Databus Gateway<br>(Connectivity Suite)<br>Databus (IE App) | Required if you want to publish the values of tags to the Databus. | |

**Note**

**Installation of the apps**

All apps that you need in your configuration for Ethernet IP Connector must be installed on the same IED.

**Note**

**Installation of multiple connectors**

The Databus Gateway supports parallel use of multiple connectors of the Connectivity Suite, including third-party connectors.

### Hardware requirements

- A device on which Industrial Edge Management (IEM) is running.
- An Edge device (IED) that is compatible with Industrial Edge Management:
  - IED model: For example, SIMATIC IPC 227E Nanobox, SIMATIC IPC 427E, IPC127E and IPC827E, virtual Edge device
  - Hard disk: At least 10 GB available
  - RAM: 2 GB RAM available
- The Edge device must have been onboarded to Industrial Edge Management.

IEM, IED, and Internet browser must have been synchronized within the UTC time zone.

### Update of apps

- If you update Common Configurator, also update the Databus Gateway.
- If you only deploy tags directly to the IIH, the Databus Gateway is not required. These tags are only available via the gRPC interface and not via MQTT.

# 3.2 Installing Ethernet IP Connector on an IED

## 3.2.1 Overview of the installation process

### Introduction

Industrial Edge apps are available in the Industrial Edge Hub Library. The Industrial Edge Hub (IE Hub for short) is the central repository for all available Industrial Edge apps (IE apps) from Siemens and other app partners in the ecosystem.

The installation of an IE app involves the following steps:

- Copying an IE app from the IE Hub to Industrial Edge Management (IEM)
- Installing an app on one or more Industrial Edge devices (IEDs)
- Starting an installed app on an IED

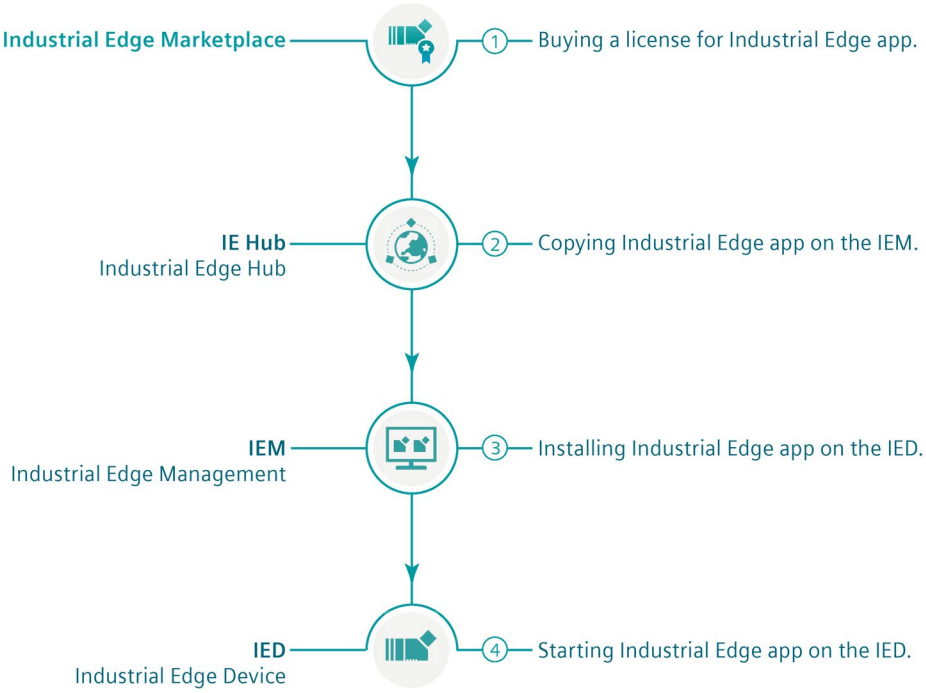
**Note**

The installation steps are demonstrated in a video at the following link:

How do I install an Industrial Edge app? (English)
(https://support.industry.siemens.com/cs/ww/en/view/109824882)

## Overview of the entire IE app purchase process

The following figure shows the steps required to install and start an Industrial Edge app purchased from the Industrial Edge Marketplace on an IED:




## Purchasing a license for an IE app

You can purchase licenses for individual IE apps in the Industrial Edge Marketplace. You can find detailed instructions at:

How to buy on the Siemens Industrial Edge Marketplace? (https://www.youtube.com/watch?v=V8092mmK3q4)

You can find more information on purchasing IE apps and managing your account at the following link:

Frequently Asked Questions (https://www.dex.siemens.com/ccrz__CCPage?pageKey=faq)

### 3.2.2 Copying Ethernet IP Connector from the IE Hub to the IEM catalog

#### Introduction

This section provides information on how to transfer an IE app from the IE Hub to the IEM catalog of one or more IEM instances.

Industrial Edge Management (IEM) is a control level for managing all devices, apps, and users of a shop floor.

**Note**

The installation steps are demonstrated in a video at the following link:

How do I install an Industrial Edge app? (English)

#### Requirement

The following requirements must be met:

- Internet connection
- Access to the IE Hub
- Available IEM instance

#### Procedure

To copy an app to the IEM catalog, follow these steps:

1. Open the IE Hub and enter your credentials.

   The home screen of the IE Hub is displayed.
2. Open the "Library" tab in the Industrial Edge Hub.

   The library contains all the apps for which you have purchased a license and all system apps.
3. Click the desired app.

   The app details are displayed.
4. In the drop-down list, select all IEM instances to which you want to copy the app.
5. Click "Copy latest version to IEM".

   The app is copied, and a corresponding job is created. You can follow the job status in the status window of the corresponding IEM instance.

#### See also

IE Install Video (https://support.industry.siemens.com/cs/ww/en/view/109824882)

### 3.2.3 Installing Ethernet IP Connector on the IED

#### Introduction

This section provides information on how to install an IE app from an IEM instance on an IED.

**Note**

The installation steps are demonstrated in a video at the following link:

How do I install an Industrial Edge app? (English)
(https://support.industry.siemens.com/cs/ww/en/view/109824882)

#### Requirement

The following requirement must be met:

- Access to the IEM instance in whose catalog the IE app to be installed is available.

#### Procedure

To install the IE app on the IED, follow these steps:

1. Open the IEM home page and log in.
2. Open the IEM catalog and click the app you want to install.
3. Click the "Install" button.

   The "Install App" dialog window is displayed. If you already have a configuration file, for example, a configuration file that you downloaded from another IED, you can upload it here.
4. Click "Next".

   The "Install App" dialog window is displayed. If you already have a configuration file, for example, a configuration file that you downloaded from another IED, you can upload it here.
5. Select one or more IEDs on which you want to install the app. The devices must be switched on and online.
6. Select one of the following installation options:

   Click "Install Delayed" or "Install Later" to start the installation at a later time.

   Click "Install Now" to install the app immediately.
7. Click the "Job Status" tab to view the installation progress.

After the installation you can check to see which apps were installed on which IEDs under "My Installed Apps".

### 3.2.4 Starting Ethernet IP Connector on the IED

#### Introduction

This section provides information on how to start an IE app installed on the IED.

**Note**

The installation steps are demonstrated in a video at the following link:

How do I install an Industrial Edge app? (English)
(https://support.industry.siemens.com/cs/ww/en/view/109824882)

#### Requirement

The following requirement must be met:

- Access to the IED on which the IE app is installed.

#### Procedure

To start an app, follow these steps:

1. Open the IED home page and log in.
2. Open the "Apps" tab.
3. Click the IE app you want to start.

   The app is opened in a new tab.

## 3.2.5 Upgrade from an older version of the Ethernet IP Connector

### Description

The older Ethernet IP Connector v2.1.0 is not a Connectivity Suite connector based on Databus (MQTT). The new Ethernet IP Connector (v3.0.0 or higher) is based on the Connectivity Suite interface (gRPC), which has exceptional performance compared with MQTT. To be compatible with Ethernet IP Connector v2.1.0, the new Ethernet IP Connector should cover all the functions (configuration parameters) defined by v2.1.0.

A seamless migration process is available so that the previously configured connections and data points can be migrated to the new connector.

| **NOTICE** |
| --- |
| **Data backup**<br>Before upgrading, use the "Backup" function of Common Configurator to back up the connection and configuration. The backup file can be used after the upgrade to restore the connection and configuration. |

### Requirements

The migration process of the Ethernet IP Connector is dependent on the Registry Service app and Common Import Converter app. The required components are as follows:

| Component | Version | Remark |
| --- | --- | --- |
| Common Configurator | V1.8.1-1 | An older version can be used but this has not been tested and is not recommended. |
| Common Import Converter | V2.1.0-0 or later | Imports tags or converts configuration files from V2.1.0 to V3.0.0. |
| Registry Service | V1.8.0 or later | Service management |

## Procedure

To upgrade from an older version of the Modbus TCP Connector, install the latest version of the app according to the instructions in the section: Auto-Hotspot.

The Databus and acquisition cycle settings are lost during the upgrade and must therefore be specified again.

The following steps are executed during the upgrade:

1. When Ethernet IP Connector is started, a check is made first for presence of the file FullDownloadData.json.tmp. If present, this means that FullDownloadData.json (the old configuration file) was successfully converted previously; the migration process is then canceled. Otherwise, step 2 is executed.
2. A check is made for presence of FullDownloadData.json. If the file does not exist, the migration process is canceled. Otherwise, step 3 is executed.
3. "QueryRegisteredService" is sent to the Registry Service to check for the presence of Common Import Converter and to obtain its service information. If the service information of Common Import Converter is available, step 4 is executed. Otherwise, step 3 is repeated three times. If all 3 attempts fail, the migration process is canceled.
4. The file FullDownloadData.json is read and its content is sent to Common Import Converter.
5. The content of the converted file (.json) from Common Import Converter is received. If the conversion fails, the migration process is canceled.
6. The content of the converted file is written to the file cs_ethernetip_config.json, and the file FullDownloadData.json is copied to the folder FullDownloadData.json.tmp.

The migration process is now complete.

# Supported data types

# 4

## 4.1 Supported data types

### CPU type: ControlLogix, CompactLogix, Micro800 and Omron

| Data type | Length |
|---|---|
| Bool | 1 bit |
| SInt | 8 bits |
| USint | 8 bits |
| Int | 16 bits |
| UInt | 16 bits |
| DInt | 32 bits |
| UDInt | 32 bits |
| LInt | 64 bits |
| ULInt | 64 bits |
| Real | 32 bits |
| LReal | 64 bits |
| String | 1 - 82 characters |

### CPU type: MicroLogix, PLC5, SLC500 and LogixPCCC

| Data type | Length |
|---|---|
| Bool | 1 bit |
| Int | 16 bits |
| UInt | 16 bits |
| DInt | 32 bits |
| UDInt | 32 bits |
| Real | 32 bits |
| String | 1 - 82 characters |

## 4.2 Address areas

### CPU type: SLC500 and PLC5, MicroLogix

| Address areas | Bool | SInt | USInt | Int | UInt | DInt | UDInt | Real | String |
|---|---|---|---|---|---|---|---|---|---|
| N | N3:0/0 - N999:199 9/15 | -- | -- | N3:0 - N999:199 9 | N3:0 - N999:199 9 | N3:0 - N999:199 9 | N3:0 - N999:199 9 | N3:0 - N999:19 99 | N3:0 - N999:199 9 |
| R | R3:0.EN - R999:199 9.ER - R999:199 9.DN - R999:199 9.FD - R999:199 9.IN - R999:199 9.EU - R999:199 9.EM - R999:199 9.UL | -- | -- | R3:0.LEN - R999:199 9.POS | R3:0.LEN - R999:199 9.POS | -- | -- | -- | R3:0.LEN - R999:199 9.POS |
| C | C3:0.DN - C999:199 9.CU - C999:199 9.CD - C999:199 9.OV - C999:199 9.UN | -- | -- | C3:0.PRE - C999:199 9.ACC | C3:0.PRE - C999:199 9.ACC | -- | -- | -- | C3:0.PRE - C999:199 9.ACC |
| T | T3:0.EN - T999:1999 .TT - T999:1999 .DN | -- | -- | T3:0.PRE - T999:199 9 .ACC | T3:0.PRE - T999:199 9 .ACC | -- | -- | -- | T3:0.PRE - T999:199 9 .ACC |
| B | B3:0/0 - B999:1999 /15 | -- | -- | B3:0 - B999:199 9 | B3:0 - B999:199 9 | -- | -- | -- | B3:0 - B999:199 9 |
| S | S2:0/0 - S2:127/65 535 | -- | -- | S2:0 - S2:127 | S2:0 - S2:127 | -- | -- | -- | S2:0 - S2:127 |
| I | I1:0/0 - I999:255/1 5 | -- | -- | I1:0 - I999:255 | I1:0 - I999:255 | -- | -- | -- | I1:0 - I999:255 |
| O | O0:0/0 - O999:255/ 15 | -- | -- | O0:0 - O999:255 | O0:0 - O999:255 | -- | -- | -- | O0:0 - O999:255 |
| F | -- | -- | -- | -- | -- | F3:0 - F999:199 9 | F3:0 - F999:199 9 | F3:0 - F999:199 9 | F3:0 - F999:199 9 |
| D | D3:0/0 - D999:199 9/15 | -- | -- | D3:0 - D999:199 9 | D3:0 - D999:199 9 | -- | -- | -- | D3:0 - D999:199 9 |
| A | A3:0/0 - A999:1999 /15 | A3:0 - A999: 1999 | A3:0 - A999: 1999 | A3:0 - A999:199 9 | A3:0 - A999:199 9 | A3:0 - A999:199 9 | A3:0 - A999:199 9 | A3:0 - A999:19 99 | A3:0 - A999:199 9 |
| ST | ST3:0/0 - ST999:19 99/15 | ST3:0 - ST999: 19 99 | ST3:0 - ST999: 19 99 | ST3:0 - ST999:19 99 | ST3:0 - ST999:19 99 | ST3:0 - ST999:19 99 | ST3:0 - ST999:19 99 | ST3:0 - ST999:1 999 | ST3:0 - ST999:19 99 |

| Address areas | Bool | SInt | USInt | Int | UInt | DInt | UDInt | Real | String |
|---|---|---|---|---|---|---|---|---|---|
| N | N3:0/0 - N999:1999/15 | -- | -- | N3:0/0 - N999:1999/15 | N3:0/0 - N999:1999/15 | N3:0/0 - N999:1999/15 | N3:0/0 - N999:1999/15 | N3:0/0 - N999:1999/15 | N3:0/0 - N999:1999/15 |
| R | R3:0.EN - R999:1999.ER - R999:1999.DN - R999:1999.FD - R999:1999.IN - R999:1999.EU - R999:1999.EM - R999:1999.UL | -- | -- | R3:0.LEN - R999:1999.POS | R3:0.LEN - R999:1999.POS | -- | -- | -- | R3:0.LEN - R999:1999.POS |
| C | C3:0.DN - C999:1999.CU - C999:1999.CD - C999:1999.OV - C999:1999.UN | -- | -- | C3:0.PRE - C999:1999.ACC | C3:0.PRE - C999:1999.ACC | -- | -- | -- | C3:0.PRE - C999:1999.ACC |
| T | T3:0.EN - T999:1999.TT - T999:1999.DN | -- | -- | T3:0.PRE - T999:1999.ACC | T3:0.PRE - T999:1999.ACC | -- | -- | -- | T3:0.PRE - T999:1999.ACC |
| B | B3:0/0 - B999:1999/15 | -- | -- | B3:0 - B999:1999 | B3:0 - B999:1999 | -- | -- | -- | B3:0 - B999:1999 |
| S | S2:0/0 - S2:127/65535 | -- | -- | S2:0 - S2:127 | S2:0 - S2:127 | -- | -- | -- | S2:0 - S2:127 |
| I | I1:0/0 - I999:277/17 | -- | -- | I1:0 - I999:277 | I1:0 - I999:277 | -- | -- | -- | I1:0 - I999:277 |
| O | O0:0/0 - O999:277/17 | -- | -- | O0:0 - O999:277 | O0:0 - O999:277 | -- | -- | -- | O0:0 - O999:277 |
| F | -- | -- | -- | -- | -- | F3:0 - F999:1999 | F3:0 - F999:1999 | F3:0 - F999:1999 | F3:0 - F999:1999 |
| D | D3:0/0 - D999:1999/15 | -- | -- | D3:0/0 - D999:1999/15 | D3:0/0 - D999:1999/15 | -- | -- | -- | D3:0/0 - D999:1999/15 |

| Address areas | Bool | SInt | USInt | Int | UInt | DInt | UDInt | Real | String |
|---|---|---|---|---|---|---|---|---|---|
| A | A3:0/0 - A999:1999/15 | A3:0/0 - A999:1999/15 | A3:0/0 - A999:1999/15 | A3:0/0 - A999:1999/15 | A3:0/0 - A999:1999/15 | A3:0/0 - A999:1999/15 | A3:0/0 - A999:1999/15 | A3:0/0 - A999:1999/15 | A3:0/0 - A999:1999/15 |
| ST | ST3:0/0 - ST999:1999/15 | ST3:0/0 - ST999:1999/15 | ST3:0/0 - ST999:1999/15 | ST3:0/0 - ST999:1999/15 | ST3:0/0 - ST999:1999/15 | ST3:0/0 - ST999:1999/15 | ST3:0/0 - ST999:1999/15 | ST3:0/0 - ST999:1999/15 | ST3:0/0 - ST999:1999/15 |

## CPU type: CJ2

| Address areas | Bool | DInt | Dword | Int | LInt | Lreal | Lword | Real |
|---|---|---|---|---|---|---|---|---|
| I/O | I/O 0.0 - I/O 6143.15 | I/O 0 - I/O 6142 | I/O 0 - I/O 6142 | I/O 0 - I/O 6143 | I/O 0 - I/O 6140 | I/O 0 - I/O 6140 | I/O 0 - I/O 6140 | I/O 0 - I/O 6142 |
| HR | HR 0.0 - HR 511.15 | HR 0 - HR 510 | HR 0 - HR 510 | HR 0 - HR 511 | HR 0 - HR 508 | HR 0 - HR 508 | HR 0 - HR 508 | HR 0 - HR 510 |
| AR | AR 0.0 - AR 1471.15 | AR 0 - AR 1470 | AR 0 - AR 1470 | AR 0 - AR 1471 | AR 0 - AR 1468 | AR 0 - AR 1468 | AR 0 - AR 1468 | AR 0 - AR 1470 |
| DM | DM 0.0 - DM 32767.15 | DM 0 - DM 32766 | DM 0 - DM 32766 | DM 0 - DM 32767 | DM 0 - DM 32764 | DM 0 - DM 32764 | DM 0 - DM 32764 | DM 0 - DM 32766 |
| EM | EM 0.0:0 - EM 32767.15:25 | EM 0:0 - EM 32766:25 | EM 0:0 - EM 32766:25 | EM 0:0 - EM 32767:25 | EM 0:0 - EM 32764:25 | EM 0:0 - EM 32764:25 | EM 0:0 - EM 32764:25 | EM 0:0 - EM 32766:25 |
| T | T 0 - T 4095 | T 0 - T 4094 | T 0 - T 4094 | T 0 - T 4095 | NA | NA | NA | NA |
| C | C 0 - C 4095 | C 0 - C 4094 | C 0 - C 4094 | C 0 - C 4095 | NA | NA | NA | NA |
| TCF | TCF 0 - TCF 4095 | NA | NA | NA | NA | NA | NA | NA |
| CCF | CCF 0 - CCF 4095 | NA | NA | NA | NA | NA | NA | NA |

| Address areas | Bool | DInt | Dword | Int | LInt | Lreal | Lword | Real |
|---|---|---|---|---|---|---|---|---|
| I/O | I/O 0 - I/O 6143 | I/O 0 - I/O 6142 | I/O 0 - I/O 6142 | I/O 0 - I/O 6143 | I/O 0 - I/O 6143 | I/O 0 - I/O 6140 | I/O 0 - I/O 6140 | I/O 0 - I/O 6143 |
| HR | HR 0 - HR 511 | HR 0 - HR 510 | HR 0 - HR 510 | HR 0 - HR 511 | HR 0 - HR 511 | HR 0 - HR 508 | HR 0 - HR 508 | HR 0 - HR 511 |
| AR | AR 0 - AR 1471 | AR 0 - AR 1470 | AR 0 - AR 1470 | AR 0 - AR 1471 | AR 0 - AR 1471 | AR 0 - AR 1468 | AR 0 - AR 1468 | AR 0 - AR 1471 |
| DM | DM 0 - DM 32767 | DM 0 - DM 32766 | DM 0 - DM 32766 | DM 0 - DM 32767 | DM 0 - DM 32767 | DM 0 - DM 32764 | DM 0 - DM 32764 | DM 0 - DM 32767 |
| EM | EM 0:0 - EM 32767:25 | EM 0:0 - EM 32766:25 | EM 0:0 - EM 32766:25 | EM 0:0 - EM 32767:25 | EM 0:0 - EM 32767:25 | EM 0:0 - EM 32764:25 | EM 0:0 - EM 32764:25 | EM 0:0 - EM 32767:25 |
| T | NA | T 0 - T 4094 | T 0 - T 4094 | T 0 - T 4095 | T 0 - T 4095 | NA | NA | T 0 - T 4095 |
| C | NA | C 0 - C 4094 | C 0 - C 4094 | C 0 - C 4095 | C 0 - C 4095 | NA | NA | C 0 - C 4095 |
| TCF | NA | NA | NA | NA | NA | NA | NA | NA |
| CCF | NA | NA | NA | NA | NA | NA | NA | NA |

### CPU type: CS1

| Address areas | Bool | DInt | Dword | Int | LInt | Lreal | Lword | Real |
|---|---|---|---|---|---|---|---|---|
| I/O | I/O 0.0 - I/O 6143.15 | I/O 0 - I/O 6142 | I/O 0 - I/O 6142 | I/O 0 - I/O 6143 | I/O 0 - I/O 6140 | I/O 0 - I/O 6140 | I/O 0 - I/O 6140 | I/O 0 - I/O 6142 |
| HR | HR 0.0 - HR 511.15 | HR 0 - HR 510 | HR 0 - HR 510 | HR 0 - HR 511 | HR 0 - HR 508 | HR 0 - HR 508 | HR 0 - HR 508 | HR 0 - HR 510 |
| AR | AR 0.0 - AR 959.15 | AR 0 - AR 958 | AR 0 - AR 958 | AR 0 - AR 959 | AR 0 - AR 956 | AR 0 - AR 956 | AR 0 - AR 956 | AR 0 - AR 958 |
| DM | DM 0.0 - DM 32767.15 | DM 0 - DM 32766 | DM 0 - DM 32766 | DM 0 - DM 32767 | DM 0 - DM 32764 | DM 0 - DM 32764 | DM 0 - DM 32764 | DM 0 - DM 32766 |
| EM | EM 0.0:0 - EM 32767.15:25 | EM 0:0 - EM 32766:25 | EM 0:0 - EM 32766:25 | EM 0:0 - EM 32767:25 | EM 0:0 - EM 32764:25 | EM 0:0 - EM 32764:25 | EM 0:0 - EM 32764:25 | EM 0:0 - EM 32766:25 |
| T | T 0 - T 4095 | T 0 - T 4094 | T 0 - T 4094 | T 0 - T 4095 | NA | NA | NA | NA |
| C | C 0 - C 4095 | C 0 - C 4094 | C 0 - C 4094 | C 0 - C 4095 | NA | NA | NA | NA |
| TCF | TCF 0 - TCF 4095 | NA | NA | NA | NA | NA | NA | NA |
| CCF | CCF 0 - CCF 4095 | NA | NA | NA | NA | NA | NA | NA |

| Address areas | Bool | DInt | Dword | Int | LInt | Lreal | Lword | Real |
|---|---|---|---|---|---|---|---|---|
| I/O | I/O 0 - I/O 6143 | I/O 0 - I/O 6142 | I/O 0 - I/O 6142 | I/O 0 - I/O 6143 | I/O 0 - I/O 6143 | I/O 0 - I/O 6140 | I/O 0 - I/O 6140 | I/O 0 - I/O 6143 |
| HR | HR 0 - HR 511 | HR 0 - HR 510 | HR 0 - HR 510 | HR 0 - HR 511 | HR 0 - HR 511 | HR 0 - HR 508 | HR 0 - HR 508 | HR 0 - HR 511 |
| AR | AR 0 - AR 959 | AR 0 - AR 958 | AR 0 - AR 958 | AR 0 - AR 959 | AR 0 - AR 959 | AR 0 - AR 956 | AR 0 - AR 956 | AR 0 - AR 959 |
| DM | DM 0 - DM 32767 | DM 0 - DM 32766 | DM 0 - DM 32766 | DM 0 - DM 32767 | DM 0 - DM 32767 | DM 0 - DM 32764 | DM 0 - DM 32764 | DM 0 - DM 32767 |
| EM | EM 0:0 - EM 32767:25 | EM 0:0 - EM 32766:25 | EM 0:0 - EM 32766:25 | EM 0:0 - EM 32767:25 | EM 0:0 - EM 32767:25 | EM 0:0 - EM 32764:25 | EM 0:0 - EM 32764:25 | EM 0:0 - EM 32767:25 |
| T | NA | T 0 - T 4094 | T 0 - T 4094 | T 0 - T 4095 | T 0 - T 4095 | NA | NA | T 0 - T 4095 |
| C | NA | C 0 - C 4094 | C 0 - C 4094 | C 0 - C 4095 | C 0 - C 4095 | NA | NA | C 0 - C 4095 |
| TCF | NA | NA | NA | NA | NA | NA | NA | NA |
| CCF | NA | NA | NA | NA | NA | NA | NA | NA |

### CPU type: CJ1

| Address areas | Bool | DInt | Dword | Int | LInt | Lreal | Lword | Real |
|---|---|---|---|---|---|---|---|---|
| I/O | I/O 0.0 - I/O 6143.15 | I/O 0 - I/O 6142 | I/O 0 - I/O 6142 | I/O 0 - I/O 6143 | I/O 0 - I/O 6140 | I/O 0 - I/O 6140 | I/O 0 - I/O 6140 | I/O 0 - I/O 6142 |
| HR | HR 0.0 - HR 511.15 | HR 0 - HR 510 | HR 0 - HR 510 | HR 0 - HR 511 | HR 0 - HR 508 | HR 0 - HR 508 | HR 0 - HR 508 | HR 0 - HR 510 |
| AR | AR 0.0 - AR 959.15 | AR 0 - AR 958 | AR 0 - AR 958 | AR 0 - AR 959 | AR 0 - AR 956 | AR 0 - AR 956 | AR 0 - AR 956 | AR 0 - AR 958 |
| DM | DM 0.0 - DM 32767.15 | DM 0 - DM 32766 | DM 0 - DM 32766 | DM 0 - DM 32767 | DM 0 - DM 32764 | DM 0 - DM 32764 | DM 0 - DM 32764 | DM 0 - DM 32766 |
| T | T 0 - T 4095 | T 0 - T 4094 | T 0 - T 4094 | T 0 - T 4095 | NA | NA | NA | NA |
| C | C 0 - C 4095 | C 0 - C 4094 | C 0 - C 4094 | C 0 - C 4095 | NA | NA | NA | NA |
| TCF | TCF 0 - TCF 4095 | NA | NA | NA | NA | NA | NA | NA |
| CCF | CCF 0 - CCF 4095 | NA | NA | NA | NA | NA | NA | NA |

| Address areas | Bool | DInt | Dword | Int | LInt | Lreal | Lword | Real |
|---|---|---|---|---|---|---|---|---|
| I/O | I/O 0 - I/O 6143 | I/O 0 - I/O 6142 | I/O 0 - I/O 6142 | I/O 0 - I/O 6143 | I/O 0 - I/O 6143 | I/O 0 - I/O 6140 | I/O 0 - I/O 6140 | I/O 0 - I/O 6143 |
| HR | HR 0 - HR 511 | HR 0 - HR 510 | HR 0 - HR 510 | HR 0 - HR 511 | HR 0 - HR 511 | HR 0 - HR 508 | HR 0 - HR 508 | HR 0 - HR 511 |
| AR | AR 0 - AR 959 | AR 0 - AR 958 | AR 0 - AR 958 | AR 0 - AR 959 | AR 0 - AR 959 | AR 0 - AR 956 | AR 0 - AR 956 | AR 0 - AR 959 |
| DM | DM 0 - DM 32767 | DM 0 - DM 32766 | DM 0 - DM 32766 | DM 0 - DM 32767 | DM 0 - DM 32767 | DM 0 - DM 32764 | DM 0 - DM 32764 | DM 0 - DM 32767 |
| T | NA | T 0 - T 4094 | T 0 - T 4094 | T 0 - T 4095 | T 0 - T 4095 | NA | NA | T 0 - T 4095 |
| C | NA | C 0 - C 4094 | C 0 - C 4094 | C 0 - C 4095 | C 0 - C 4095 | NA | NA | C 0 - C 4095 |
| TCF | NA | NA | NA | NA | NA | NA | NA | NA |
| CCF | NA | NA | NA | NA | NA | NA | NA | NA |

## 4.3 Default data types in IE

### Description

In the current version of the Common Configurator, the Connectivity Suite data types are published as standard Industrial Edge data types. A different configuration of types is not possible in the current version of Common Configurator.

| Connectivity Suite data type | Industrial Edge data type |
|---|---|
| Bool | Bool |
| UInt16 | UInt |
| Int16 | Int |
| UInt32 | UDInt |
| Int32 | DInt |
| UInt64 | ULInt |
| Int64 | LInt |
| Float32 | Real |
| Float64 | LReal |
| String | String |

So that the Connectivity Suite data is converted to the appropriate Industrial Edge data types, you can also configure the Databus Gateway manually. You can find the configuration file in the "Management" tab of the Databus Gateway app.

# Configuring data streams

# 5

## 5.1 Managing data sources and tags

In the "Tags" tab, you can manage the data sources and tags.

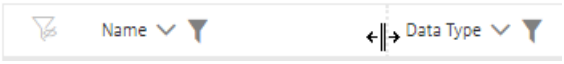
These features support you in this.

### Adjust column width

The width of all columns can be changed.

1. Move the mouse pointer over a column separator in the column header.

   The mouse pointer changes its appearance.




2. Drag the column separator to the new position while holding down the right mouse button.

### Showing and hiding columns

You can show or hide any columns.

1. Click  .
2. Select the columns to be displayed from the drop-down menu.

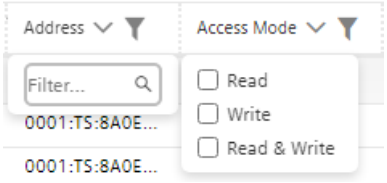
### Filter view

The view in the "Tags" tab can be filtered by each property. You can enable filters for multiple columns.

1. Click the filter icon in the column header.
2. Enter a character string.

   - or -

   Select one or more of the available options.



The filter becomes active. The filter icon is displayed in blue.

3. Click the filter icon.

   The display is filtered.

4. To delete a filter, click X in the filter input field or disable all options.

## 5.2 Managing data sources

### 5.2.1 Adding a data source

#### Description

You can configure an Ethernet IP data source in the Common Configurator. You can use the Common Configurator to configure the Ethernet IP communication channel to the PLCs for data acquisition.

#### Requirement

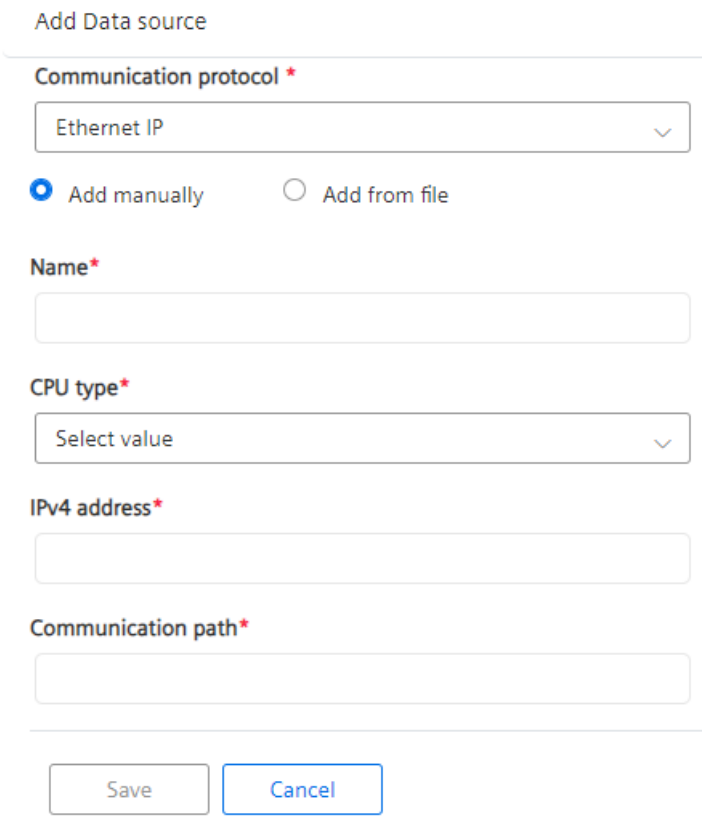
- Ethernet IP Connector is running.

#### Procedure

To add an Ethernet IP data source, follow these steps:

1. Open the "Get Data" tab.
   The available connectors are shown.
2. Click the Ethernet IP Connector tile.
   The "Overview" page opens.
3. Open the "Tags" tab.
4. Click on Add data source.
   The "Add Data source" page is displayed.

5. Select "Ethernet IP" from the "Communication protocol" selection list.
   The configuration options are displayed.



6. Enter the following information:

| Field name | Description |
|---|---|
| Name | Defines the name of the data source.<br>The name must be unique across all connectors. |
| CPU type | Select the CPU type corresponding to the PLC from the selection list. The following options are available:<br>• ControlLogix<br>• CompactLogix<br>• MicroLogix<br>• Micro800<br>• PLC5<br>• SLC500<br>• LogixPCCC<br>• Omron |
| IPv4 address | Defines the IP address of the PLC to be connected.<br>The address format is decimal, e.g. 192.168.1.10. |
| Communication path | Set the CIP path from the Ethernet module to the PLC. This is used to establish a logical connection between the Ethernet module and PLC even if the two devices are in different CIP networks.<br>Routing via DH+ Bridge is possible.<br>Example: "1,0" or "1,2,A:0:5"<br>In rare cases when communication with an OMRON PLC is not functioning, the communication path can be modified to "18, <IP address>" or "19, <IP address>".<br>Here, 18 or 19 depends on the PLC slot used. |

7. Click "Save".

## Result

You have added a data source. It is displayed in the "Tags" tab.

## 5.2.2 Editing a data source

### Description

In the "Tags" tab, you can edit an existing data source and update the configuration.

### Requirement

- Ethernet IP Connector is running.

### Procedure

To edit an existing data source, proceed as follows:

1. Open the "Get Data" tab.
   The available connectors are shown.
2. Click the Ethernet IP Connector tile.
   The "Overview" page opens.
3. Open the "Tags" tab.
4. Click on  next to the data source that you want to edit.
   A shortcut menu opens.
5. Select "Edit data source".
   The configuration options of the data source are displayed.
6. Adapt the options as appropriate.
7. Click "Save".

### Result

You have edited the data source.

## 5.2.3 Deleting a data source

### Description

You can delete an existing data source in the "Tags" tab.

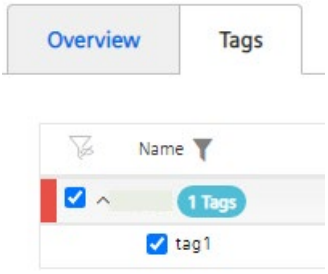
### Requirement

- Ethernet IP Connector is running.

### Procedure

To delete an existing data source, proceed as follows:

1. Open the "Get Data" tab.
   The available connectors are shown.
2. Click the Ethernet IP Connector tile.
   The "Overview" page opens.
3. Open the "Tags" tab.
4. To delete a data source, you have the following two options:

| | |
|---|---|
| 1. Click on  next to the data source that you want to delete.<br>A shortcut menu opens.<br>2. Select "Delete data source". | 1. Select the check box next to the data source you want to delete.<br>The tags it contains will also be selected.<br>  <br>2. Click  Delete selected . |

   A prompt is displayed asking if you really want to delete the data source.
5. Confirm the prompt.
   The data source is removed from the table.
6. To delete the data source in runtime, click "Deploy".

### Result

You have deleted the data source.

# 5.3 Managing tags

## 5.3.1 Adding tags

### Description

You can add tags to an existing data source in the "Tags" tab.

### Requirement

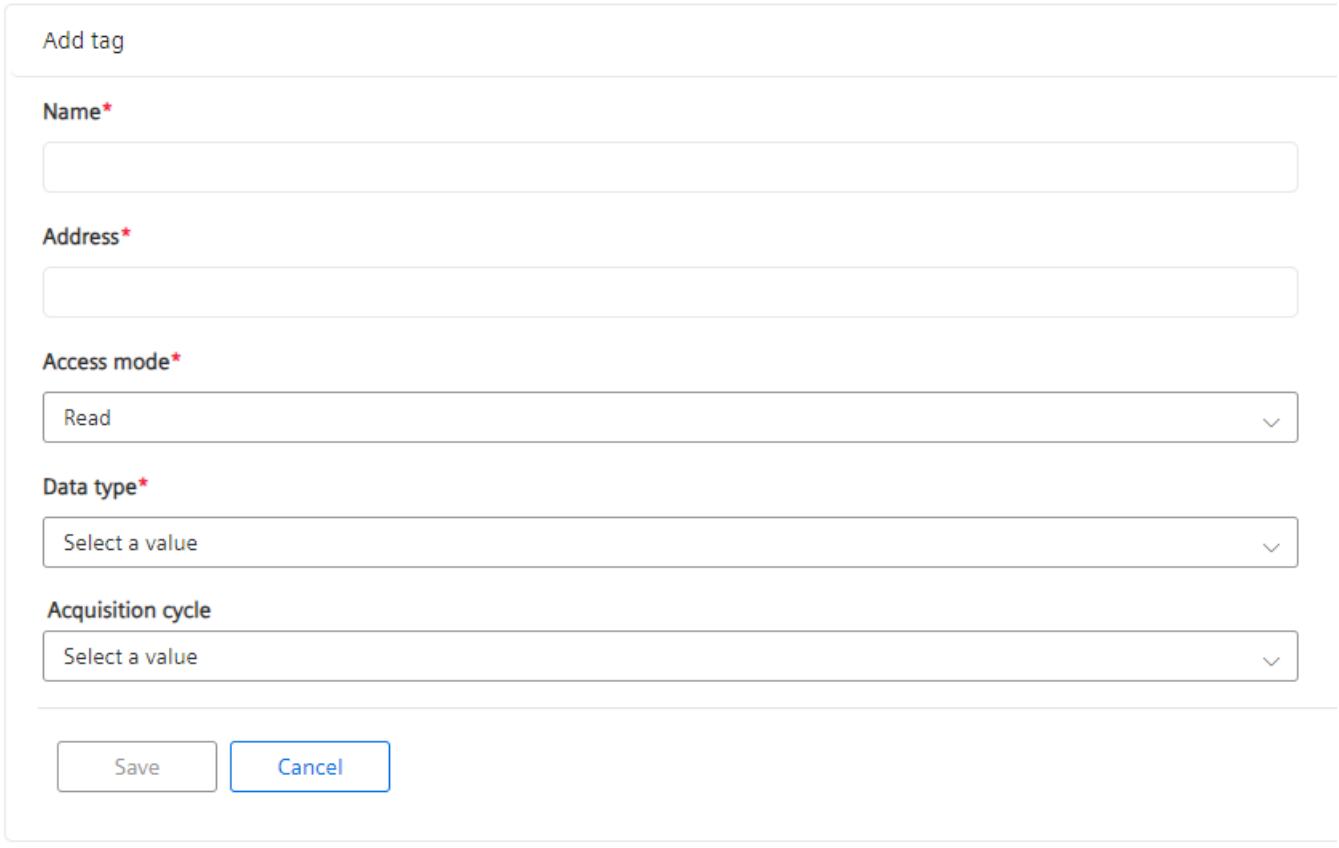
- Ethernet IP Connector is running.
- A data source has already been created.

### Procedure

To add tags to an existing data source, proceed as follows:

1. Open the "Get Data" tab.
   The available connectors are shown.
2. Click the Ethernet IP Connector tile.
   The "Overview" page opens.
3. Open the "Tags" tab.
4. Click on  next to the data source to which you want to add tags.
   A shortcut menu opens.
5. Select "Add tag".
   The "Add Tag" page is displayed.

6. Enter the following information:



| Field name | Description |
|---|---|
| Name | Defines the name of the tag.<br>The name must be unique in the data source. |
| Address | Defines the memory address of the tag in the PLC or on the server. |
| Access mode | Defines the access mode of the data. The following options are available:<br>• Read<br>• Read and write |
| Data type | Defines the data type of the tag.<br>You can find more information about data types here: Supported data types (Page 22). |
| Acquisition cycle | Defines the acquisition cycle for sending the data. The following options are available:<br>• 100 milliseconds<br>• 250 milliseconds<br>• 500 milliseconds<br>• 1 second<br>• 2 seconds<br>• 5 seconds<br>• 10 seconds<br>The "1 second" acquisition cycle is generally used. |

7. Click on "Save".
   The tag is added to the data table.
8. Repeat steps 4 - 7 for more tags.

## Result

You have added the tags.

## 5.3.2 Importing tags

### 5.3.2.1 Importing tags with the Tag Converter tool

With the Tag Converter Tool, you can export tags from an existing TIA Portal project as an .xlsx file. You can import it in the Common Configurator.

#### Exporting tags

#### Requirement

- You have downloaded and installed the latest version of the Tag Converter Tool. You can download the tool here: TagConverter for WinCC (TIA Portal) (https://support.industry.siemens.com/cs/document/56078300/tagconverter-for-wincc-(tia-portal)?dti=0&lc=en-WW).

#### Procedure

To export tags with the Tag Converter Tool, follow these steps:

1. Open the tool.
2. Click "Create a new converter job".
3. To select the path for the template file, click "..." next to "Path".
4. Select "Allen Bradley" as the format.
5. To select the source file, click "..." next to "Source" and select the corresponding .l5k or .l5x file.
6. Click "Create".
7. Enter a connection name.
8. To select the path for the target file, click "..." next to "Target".
9. Click the objects to be imported.
10. Click "Convert".
    The file is generated in the specified path.

#### Result

You have exported the tags as an .xlsx file.

**Note**

**Importing XLSX file**

After you have exported an XLSX file from WinCC TagConverter, you must first open the file in MS Excel and then save it again. The content and type of the file remain unchanged.

## Importing tags

### Requirements

- Ethernet IP Connector is running.
- The file to be imported has already been created. You can find more information here: Exporting tags (Page 38).
- The Common Import Converter app (V2.1 or later) has been installed on the IED. You can find more information here: Common Import Converter (https://www.dex.siemens.com/edge/build-your-solution/common-import-converter?cclcl=en_US).

### Procedure

To import the tags, follow these steps:

1. Open the "Get Data" tab.
   The available connectors are shown.
2. Click the Ethernet IP Connector tile.
   The "Overview" page opens.
3. Open the "Tags" tab.
4. Click on  next to the data source to which you want to add tags.
   A context menu opens.
5. Select "Import Tags".
6. Select the .xlsx file with the exported tags and click Open.
   The tags are imported.
7. Select the tags and deploy them.

### Result

You have imported and deployed the tags in the .xlsx file.

### 5.3.2.2 Importing tags in the Common Configurator via a configuration file

#### Description

You can import tags using a JSON configuration file. You can import this file in the Common Configurator.

This approach is more practical when configuring a large number of tags because the needed configuration files can created or extended using scripts.

#### Requirement

- You have created a configuration file for Ethernet IP Connector containing the tags to be imported. You can find an example configuration file in the appendix: Example configuration file (Page 53).

#### Procedure

To import tags using a configuration file, follow these steps:

1. Open the "Get Data" tab.
   The available connectors are shown.
2. Click the Ethernet IP Connector tile.
   The "Overview" page opens.
3. Open the "Tags" tab.
4. Click "Restore".
5. Select your configuration file.
   The tags are imported.
6. Select the tags and deploy them.

#### Result

You have imported and deployed the tags in the configuration file.

## 5.3.3 Editing tags

### Description

In the "Tags" tab, you can edit one or more tags.

### Editing a tag

To edit a tag, follow these steps:

1. Double-click the entry for a tag.
   The fields of the properties are displayed in edit mode.

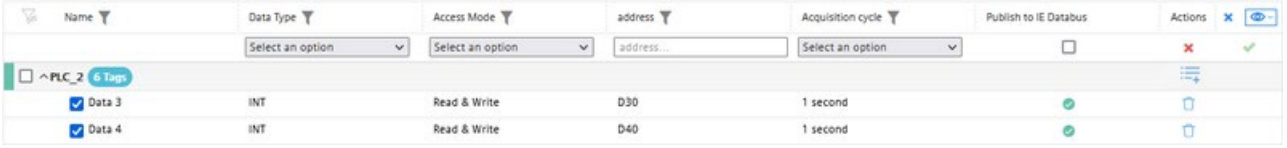

2. Change the properties.
3. To save the change, click ✔.
4. To discard the change, click ✖.

### Editing multiple tags

Properties can be edited together for selected tags.

To edit multiple tags, proceed as follows:

1. Select multiple tags.
2. Click ✎.
   The fields for editing the properties are displayed.




3. Change the properties for the selected tags.
4. To save the change, click ✔.
5. To discard the change, click ✖.
6. To exit edit mode, click ✖.

## 5.3.4 Deploying tags

### Description

After configuring the tags, select the tags you need and deploy them.

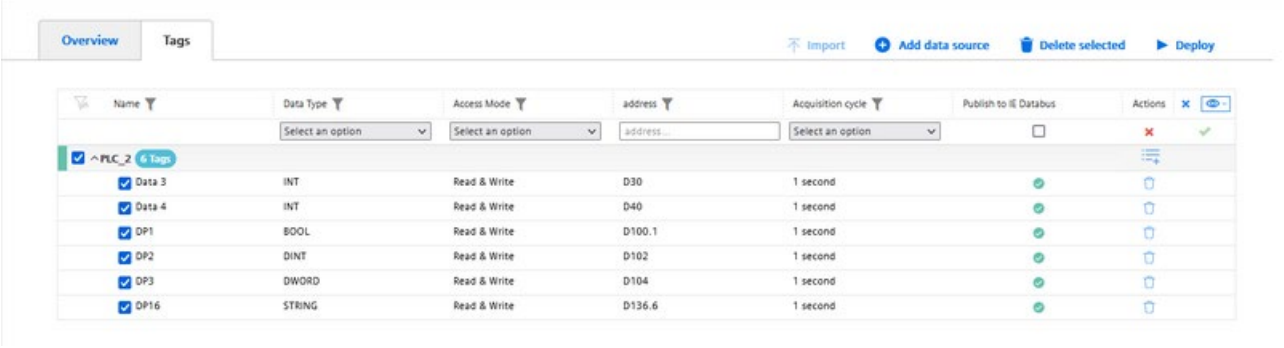
### Procedure

**Note**
**Large quantities of tags**

If too many tags are deployed and the required PLC performance is not available, not all tags are initialized. In this case, only the supported quantity of tags is initialized. You are informed of this in a status message or in the log files. The quality code of the tags that could not be initialized is set to "bad".
For example, if you deploy 1000 tags in a MicroLogix PLC with an acquisition cycle of 1 second, the PLC performance is strongly burdened and the connector allows only 100 tags.

To deploy tags, follow these steps:

1. Select the PLC and the tags you want to activate in the IIH:




2. Click "Deploy".

### Result

The IIH generates the configuration file for Ethernet IP Connector in the background. The configuration file is sent directly to Ethernet IP Connector. You have now defined which tags are available for the IIH.

You can find the configuration file in the "Management" tab of the IED.

**Note**
**No gRPC subscription**

If you do not select "Publish to Databus" and you have no gRPC subscription, the connection status is shown as red ("Bad"). It turns green when data is successfully called.

## 5.3.5 Deleting tags

### Description

You can delete existing tags in the "Tags" tab.

### Requirement

- Ethernet IP Connector is running.

### Procedure

To delete tags, proceed as follows:

1. Open the "Get Data" tab.
   The available connectors are shown.
2. Click the Ethernet IP Connector tile.
   The "Overview" page opens.
3. Open the "Tags" tab.
4. To delete a tag, click next to the tag you want to delete.
5. To delete multiple tags at once, select the check box next to the tags you want to delete and click Delete selected.

   A prompt is displayed asking if you really want to delete the data source.
6. Confirm the prompt.
   The tags are removed from the table.
7. To delete the tags in the runtime, click "Deploy".

### Result

You have deleted tags.

## 5.4 Configuring via Databus (optional)

### 5.4.1 Enter credentials for Databus (Common Configurator)

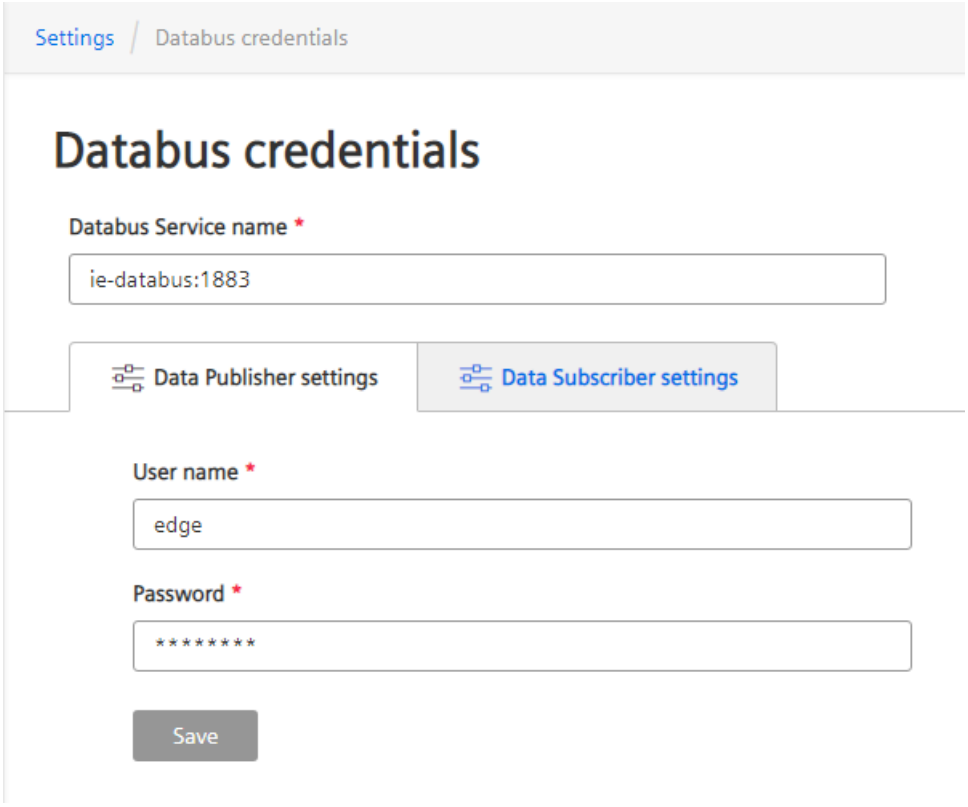
#### Description

To publish the Ethernet IP data in Databus, you must enter the credentials appropriately in Common Configurator.

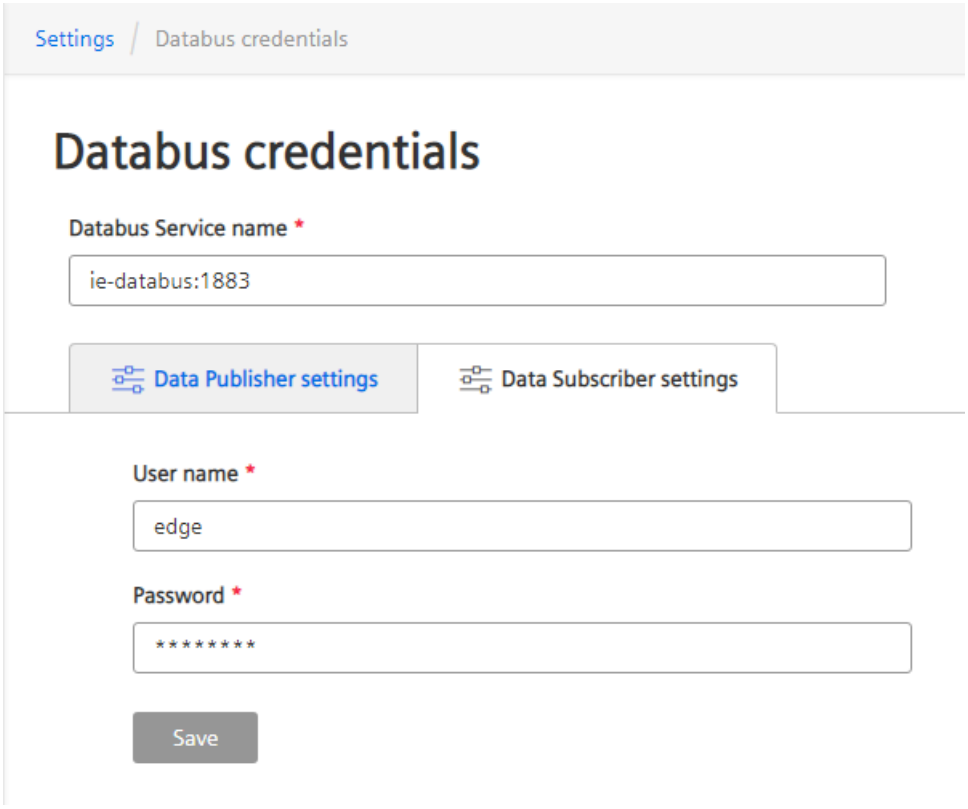
#### Procedure

To enter the credentials, follow these steps:

1. Open the "Settings > Databus Credentials" tab.
2. Enter the Databus service name, e.g. `ie-databus:1883`.
3. In the "Data Publisher Settings" tab, enter the corresponding credentials:



4. In the "Data Subscriber Settings" tab, enter the corresponding credentials:




5. Click "Save".

## 5.4.2 Configuring metadata topics and users (Databus)

The apps Databus and Databus Gateway are only required if data have to be available in the IED via MQTT.

### Description

The apps Databus and Databus Gateway are only required to access the data in the IED via MQTT. Ethernet IP Connector sends the transferred data to Databus on the IED. The data can then be further processed.

You must create a user and one or more topics that contain the Ethernet IP data in the Databus configuration. The following topics are required:

- `ie/m/j/simatic/v1/eipl/dp` for Ethernet IP metadata
- `ie/d/j/simatic/v1/eipl/dp/#` for Ethernet IP data

### Requirement

- You are logged into the Industrial Edge Management (IEM).

### Procedure

To configure Databus, follow these steps:

1. Open the "Data Connections" tab.
2. Click on the "Databus" tile.
3. Select the appropriate IED.
4. To create your own user, click (+) next to "Users".
5. Define the username and password for the user.
6. To create the topic, click (+) next to "Topics".
7. Enter `ie/#` as the topic name.

8. Define the "Publish and Subscribe" permission under "Permission".
   The configuration looks like this:


9. To deploy the configuration, click "Deploy".

**Note**

More information on the configuration of the Databus can be found here: Databus configuration (https://support.industry.siemens.com/cs/document/109818812/industrial-edge-databus-configurator-v1-4?dti=0&lc=en-WW)

## Result

You have configured Databus and deployed the configuration.

## 5.4.3 Deploying Ethernet IP tags in Databus (Common Configurator)

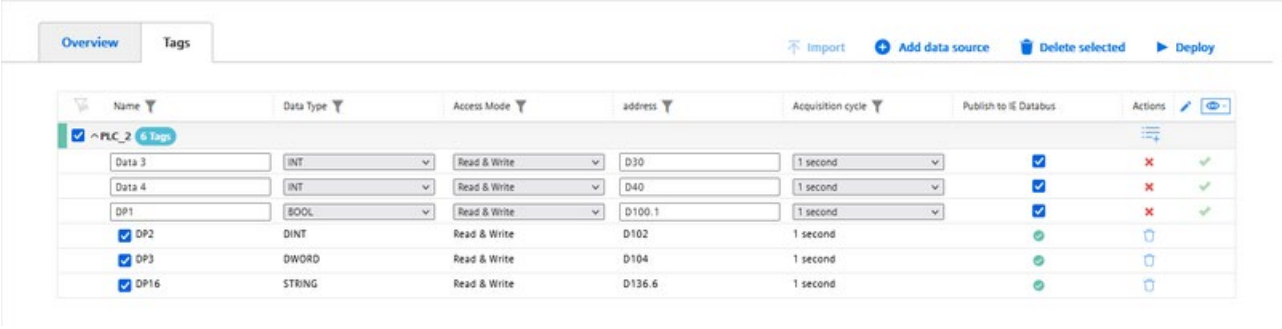
### Description

Ethernet IP tags are made available in Databus after you have selected the corresponding option for selected tags.

### Procedure

To deploy tags in Databus, proceed as follows:

1. Activate the option "Publish to Databus" either for all or for selected individual Ethernet-IP tags:




2. Click "Deploy".

   The configuration file for the Databus Gateway is created automatically.

### Result

The IIH generates the configuration file for Ethernet IP Connector in the background and sends it to Ethernet IP Connector. This defines which tags are available for the Databus Gateway. A connection is established by configuring the Databus Gateway.

The tags subscribed to by the Databus depends on which tags were found by the Databus Gateway and forwarded to the Databus.

You can find the configuration files in the "Management" tab of the IED.

**Note**

**Credentials for IE Databus**

Enter the credentials for Databus in the settings to enable the connection to Databus to be established. You can find additional information here: Enter credentials for Databus (Common Configurator) (Page 44)

# Configuration scales

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## 6.1 Tested PLCs

The Ethernet IP Connector has been tested with the following PLCs:

- ControlLogix 1756-L73
- CompactGuard Logix 5370
- SLC 500 5/05 1747-L553
- MicroLogix 1500 1764-28BXB
- CompactLogix 1769-L32E
- PLC-5/40E
- OMRON NX701-1700

## 6.2 Ethernet IP Connector

### Performance

The performance of this version has been improved for the Allen Bradley ControlLogix and CompactLogix PLCs in particular, since these support multiple requests per packet.

The performance, i.e. number of supported tags, of a particular acquisition cycle without data loss is dependent of many factors, including:

- Network quality (IED or PLC)
- PLC model (and the corresponding Ethernet IP adapter)
- PLC utilization
- CPU utilization of the IED
- IED model

### Test environment

- Ethernet IP Connector V3.0.0
- Common Configurator V1.8.1-1
- Common Import Converter V2.1.0-2
- Databus V2.0.0-
- Databus Gateway V1.8.0-4
- IIH Semantics V1.8.0
- Registry Service V1.8.0-4

### Test scenario

| Number of tags | Data type | Number of connections | Server speed | IED acquisition cycle | IED | Test client | Data loss | CPU of the IED | Memory in MB |
|---|---|---|---|---|---|---|---|---|---|
| 1500 | INT 16 | 1 | 2 s | 1 s | IPC 427E | GRPC client | 0% | 12% | 156 |
| 30000 | | 20 | 2 s | 1 s | IPC 427E | GRPC client | 0% | 56% | 271 |

# Known restrictions

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### Databus Gateway

- Only the JSON format "timeseries" is supported. "bulk" and "binary" are not supported.

### Ethernet IP Connector

- After deploying a new configuration, a reboot is performed automatically. Communication is interrupted during this time.
- The data type Raw is not supported.
- Reading and writing of arrays is not supported.
- Multiple read operations per packet are supported for PLCs of the Control/Compact Logix series. Only single read operations are supported for other PLCs.
- User-defined structures are not supported in this version.
- If too many tags are deployed and the required PLC performance is not available, not all tags are initialized. In this case, only the supported quantity of tags is initialized. You are informed of this in a status message or in the log files. The quality code of the tags that could not be initialized is set to "bad".
  For example, if you deploy 1000 tags in a MicroLogix PLC with an acquisition cycle of 1 second, the PLC performance is strongly burdened and the connector allows only 100 tags.

### Databus Gateway and Ethernet IP Connector

The following limitations apply when both apps are used together:

| Function | Supported by Databus Gateway |
|---|---|
| Subscribe to data points | Yes |
| Write data points | Yes |
| Read data points individually | No |
| Driver status events | Yes |
| PLC alarms | No |

### Connectivity Suite Connectors

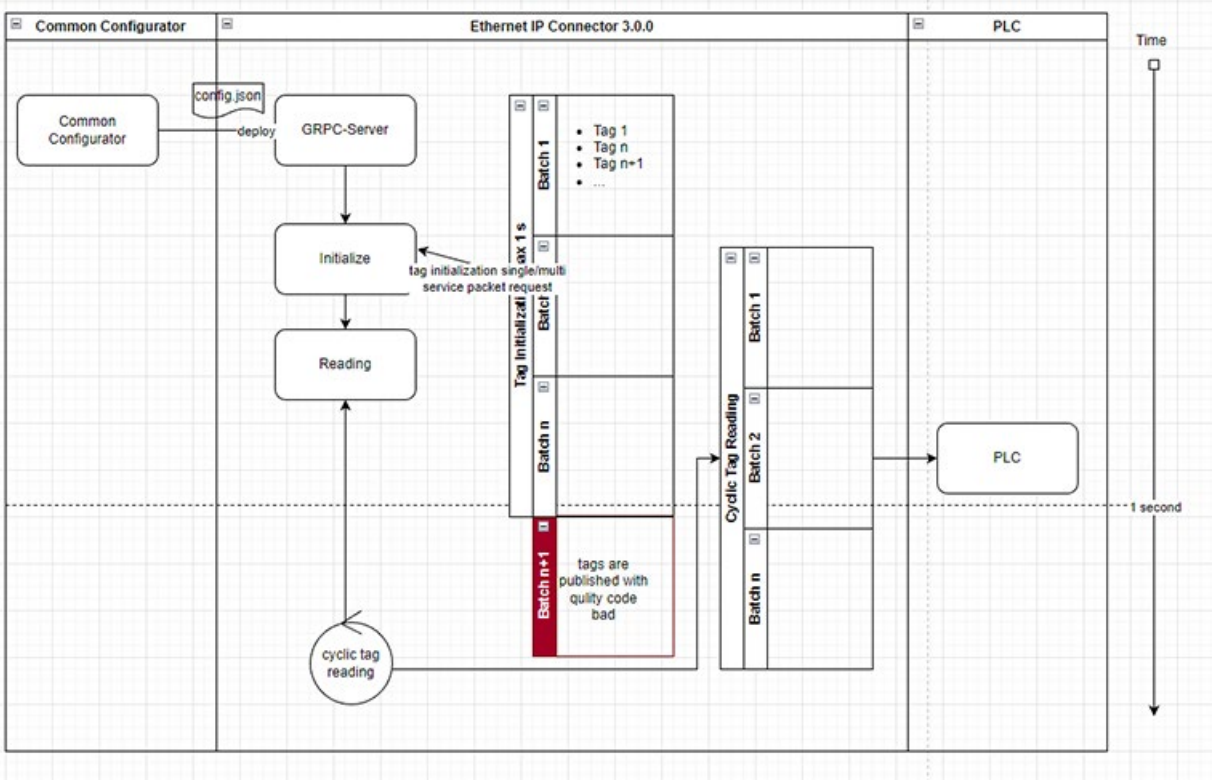
- Diagnostics are only possible to a limited extent, e.g. based on the app log file.
- After you have exported an XLSX file from TIA Portal or from WinCC TagConverter, you must first open the file in MS Excel and then save it again. The content and type of the file remain unchanged.

## Common Configurator

- Dedicated device data types are not supported. The Databus Gateway uses standard Edge data types.
  This limitation only applies if you create the configuration of the subscriptions with Common Configurator. If you create the configuration manually, there are no restrictions.
  You can find more information about standard Edge data types in: Default data types in IE (Page 28).

## Initialization of tags

As soon as the deployment action is executed and the data transmission has been started by the client, the initialization of the tags begins.
Depending on the PLC type, the tags in a request are initialized with a single service packet or with multiple service packets. For a request with a single service packet, one tag after the other is initialized. For requests with multiple service packets, the tags are initialized in batches. As soon as the request is complete and a batch of tags has been initialized, the exclusive reading of these tags begins. Tags not initialized within the time limit of 1 second are published with the quality status "Bad". The result of the initialization for each tag is shown in the columns of the connector. The displays (IM Essentials and in the Databus GW) indicate the connection status: Resources exhausted.
The following diagram shows the process:



# Appendix

# 8

## 8.1 Example configuration file

```
{
 "configs": [
 {
 "$schema":
"https://siemens.com/connectivity_suite/schemas/eip/3.0.0/config.jso
n",
 "config": {
 "connections": [
 {
 "name": "TestCompactLogix",
 "parameters": {
 "ip_address": "192.168.3.67",
 "communication_path": "1.0",
 "plc_type": "compactlogix"
 },
 "datapoints": [
 {
 "name": "TestInt1",
 "data_type": "Int",
 "access_mode": "rw",
 "address": {
 "address_string": "TestInt1"
 }
 },
 {
 "name": "Real1",
 "data_type": "Real",
 "access_mode": "rw",
 "address": {
 "address_string": " RealTag1"
 }
 }
 ]
 }
 ]
 }
 }
 ]
}
```

### Additional information

You can enter the following texts for the PLC types when setting plc_type:

- compactlogix
- controllogix
- micrologix
- slc500
- micro800
- plc5
- logixpccc
- omron-njnx

You can find more information on the possible data types in Supported data types (Page 22).

You can find more information on the other settings in Adding a data source (Page 30) and Adding tags (Page 35).