User Manual

DeviceBridge App User Manual

Ver 1.2

Revision index

Version	Revision	Author	Date
1.0	User Manual	Praveen Ramachandran	18-02-2022
1.1	Updated Manual for ctrlX	Praveen Ramachandran	28-07-2022
1.2	Updated Review Comments	Praveen Ramachandran	01-08-2022

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1 Legal Notice and Disclaimer

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Note:

All other brands or names are the property of their respective holders.

2 Safety Regulations and Warnings

2.1 Safety Regulations

- It is recommended to first go through the user manual before the installation setup.
- Every small error or warning during the installation needs to be addressed.
- Ensure that the system has the needed requirements before installation.
- If the available language is not sufficient, feel free to contact us for the documentation in the required language.
- The software is mainly intended to be used in the manufacturing industry for Data acquisition for monitoring and visualization purposes only. The software is NOT intended to be used in the following sectors: health care area, medical field, insurance sector, defense sector, and banking sector. It should NOT be used for closed-loop control of time-critical processes without getting the approval of the use case from BGSW.

2.2 Warnings

- Any change in the software or any of the modules is not permitted and is strictly prohibited.
- The product should be used only for specified purposes.
- The product should neither be used nor be shared with others without proper authorization or license.
- Do not try to install without following the manual as it may lead to inactive applications.

2.3 Acronyms and Abbreviations

Acronyms	Abbreviations
BGSW	Bosch Global Software Technologies Private Limited.
DAS	Data Acquisition System
PLC	Programmable Logic Controller
CNC	Computer Numerical Control (CNC) is the automation of Machine tools that are operated by precisely Programmed commands encoded on a storage medium.
KPI	Key Performance Indicator
MES	Manufacturing Execution System
MQTT	Message Queuing Telemetry Transport is an ISO standard (ISO/IEC PRF 20922) publish-subscribe-based lightweight messaging protocol. It works on top of the TCP/IP protocol. It is designed for connections with remote locations where a "small code footprint" is required or the network bandwidth is limited.

RFID	Radio Frequency Identification (RFID) uses electromagnetic fields to automatically identify and track tags attached to the objects. The tags contain electronically stored information.
TCP	Transmission Control Protocol is a standard that defines how to establish and maintain a network conversation via which application programs can exchange data. TCP works with the Internet Protocol (IP), which defines how computers send packets of data to each other.
OPC	OPC is an interoperability standard for secure and reliable exchange of data between industrial systems and equipment. The standard is developed by the OPC foundation.
OPC DA	Open Platform Communications Data Access
OPC UA	OPC UA is a communication protocol for industrial automation developed by the OPC Foundation. It is used for communication with industrial equipment and systems for data extraction and control.
DB	Database

Tab. 1: **Acronyms and Abbreviations**

3 Introduction

3.1 Purpose

DeviceBridge is an Industry 4.0 software that connects to a wide variety of shop floor devices, acquires process/machine-related data seamlessly, and delivers to the top IT applications like MES, Database, File systems, and Cloud.

3.2 Features and Benefits

The DeviceBridge is a scalable Software and has the flexibility to be deployed in a compatible hardware system. The DeviceBridge defines the Smart Business Logic, thus making this device more powerful. The configuration and deployment tool allows simple user screens for end-to-end configurations, Test and Deployment. Post-deployment, the application will run in the background on multiple threads not to compromise on the performance. It has a service monitoring tool to monitor the data collected in real-time...

3.3 Working Overview

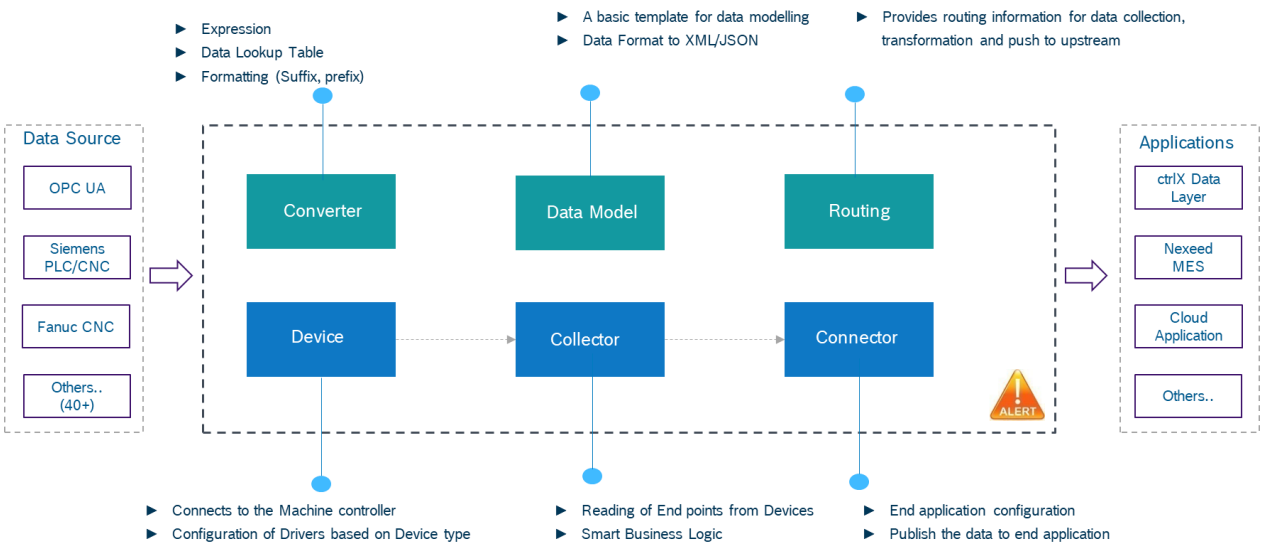


Fig. 1: Working Overview

4 DeviceBridge Home

The DeviceBridge Menu options can be seen on the left side of the window after the installation.

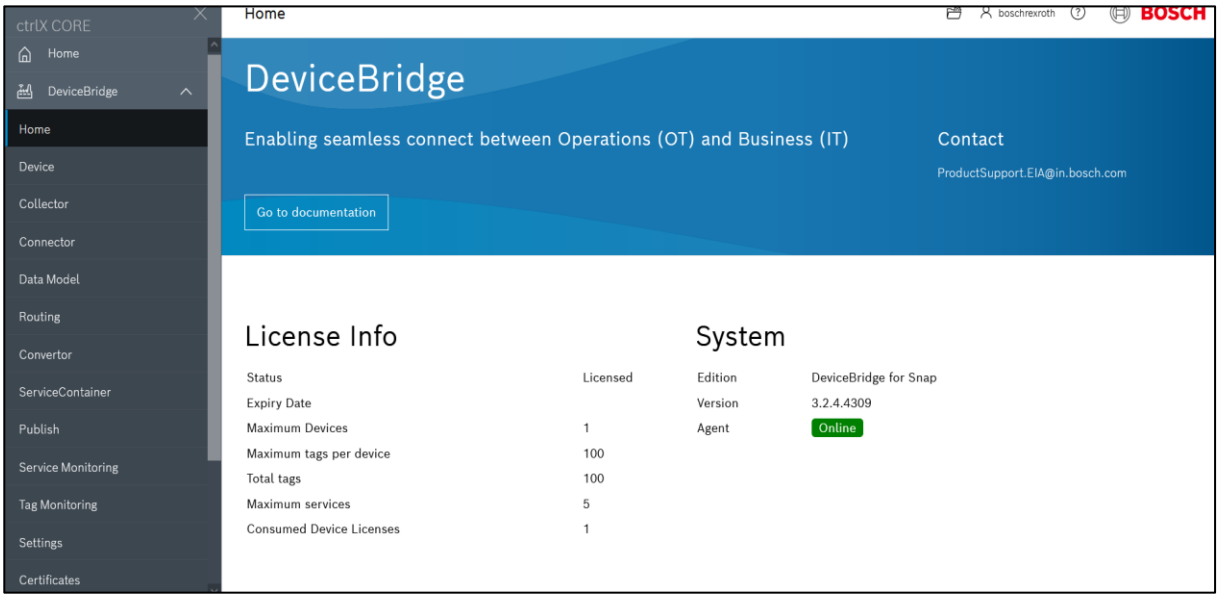


Fig. 2: DeviceBridge Menu options – Home

5 DeviceBridge Components

The DeviceBridge Components will be displayed on left side panel after installation.

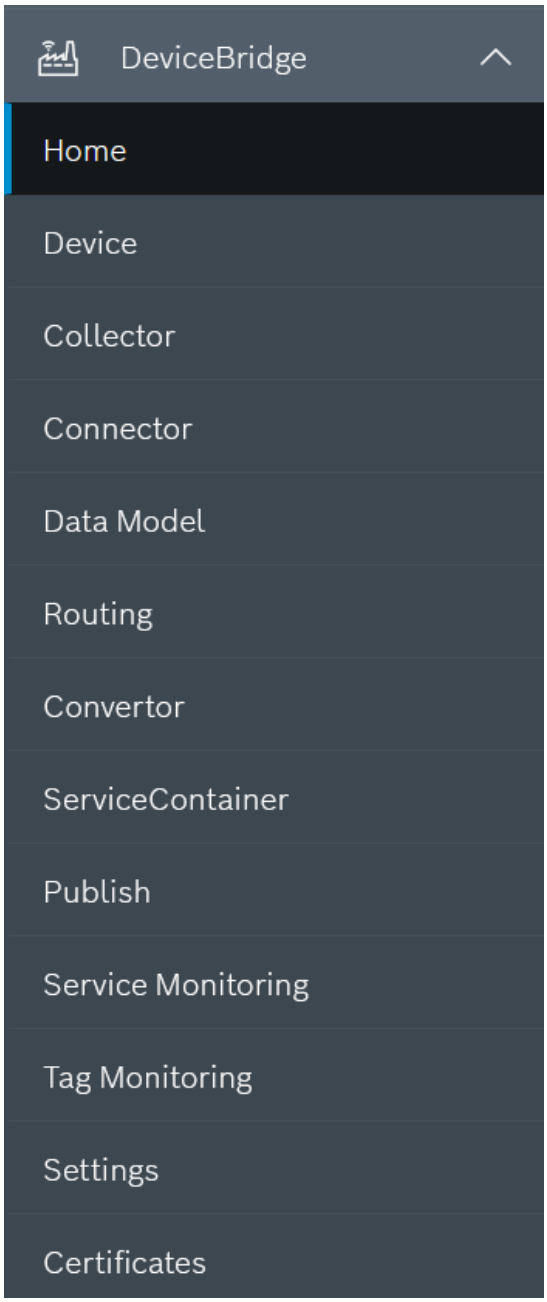


Fig. 3: DeviceBridge window

On the left side window, the below options will be displayed:

1. **Device:** To create a new Device for collecting data or modifying the existing Device configurations.

2. **Collector:** To create a new Collector for configuring tags or modifying the existing Collector configurations.
3. **Connector:** To create a new Connector for pushing data upstream or modifying the existing configurations.
4. **Routing:** To create a new Route for logical bounding of Collector and Connector or modify the existing configurations.
5. **Converter:** To create a new Converter for converting values in the desired input or modifying the existing configurations.
6. **Data Model:** To create a new Transformation for pushing data in other formats, like JSON, etc., or modifying the existing configurations.
7. **Service Container:** To create a new Service Container for grouping the Routing configurations or modifying the existing configurations
8. **Publish:** To publish the projects to collect and upstream the data.
9. **Tag Monitoring:** To monitor the value of selected tags.
10. **Service Monitoring:** To Monitor the collectors which are published.
11. **Certificate:** To manage the certificates.
12. **Settings:** To manage the application Settings.

5.1 Devices

Devices enables to connect to industrial machine in shop floor. It has in built communication drivers implementing widely used industrial protocols. It allows the User to collect data from various industrial Devices in a unified way using tags

5.2 List of Devices

The DeviceBridge applications support the following devices:

Sl. No	Controller Make	Model
1	Siemens	S7 PLCs – S7 200/300/400/1200/1500
2	Mitsubishi	Q-Series
3	Allen Bradley	CompactLogix, MicroLogix
4	OPC UA	
5	OPC Tunneler	For OPC DA server
6	Modbus TCP	Modbus TCP supported controllers
7	Protocols	MQTT
8	CISS Sensor	

Tab. 2: **List of Devices supported by DeviceBridge app**

Note:

The controllers mentioned above can directly be configured, provided the pre-requisites are met. In case of any new controller needs to be communicated, the feasibility of the interface to the DeviceBridge will be studied and finalized by the BGSW.

5.2.1 Add Device

Following are the steps to add a new Device:

1. Click **Device** in the left-hand panel. Then click **Add icon**.

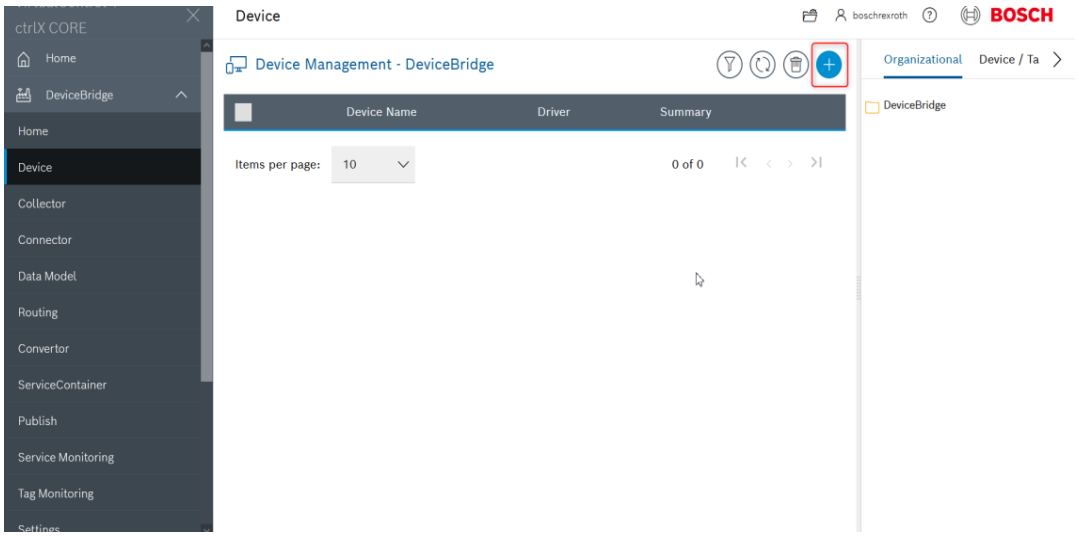


Fig. 4: DeviceBridge – Device tab

2. Select the **Device type** from the list of Devices from the drop-down menu.

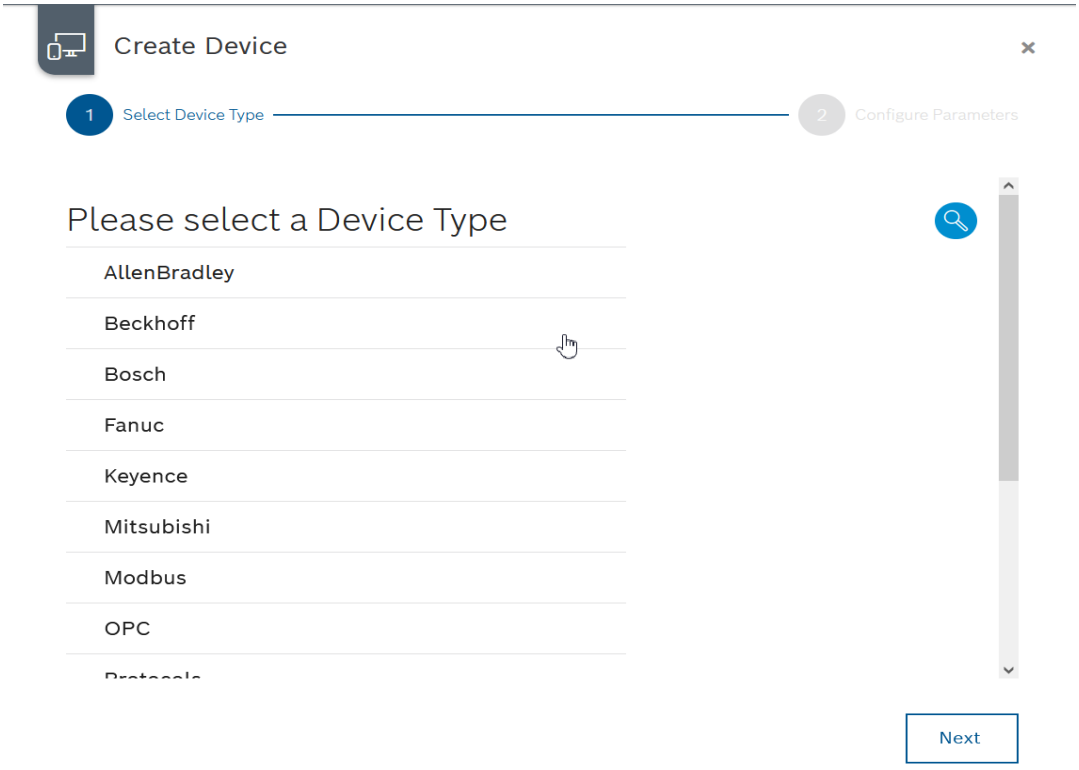


Fig. 5: Device type window

Note:

Device configuration screen is dependent on the device types which user had selected while installing the DeviceBridge. Different devices will have different configuration fields.

3. Click **Next** after selecting the Device. The respective Device Configuration screen will appear.

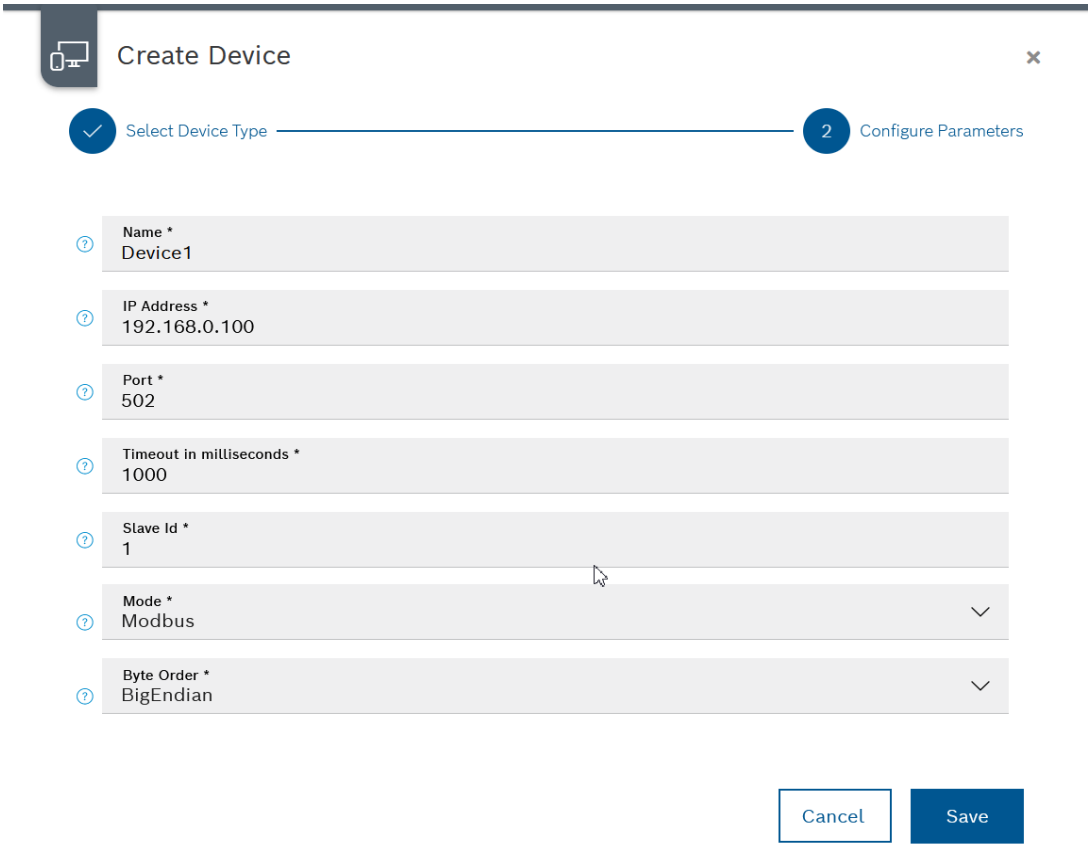


Fig. 6: Device Configuration screen

4. Enter all the relevant details for the Device configuration.

Name	Description
Name	Enter the name of the Device/Station. It is recommended to add a unique identification of that machine as a suffix to the Device name for easy Identification/understanding. Ex: **(Modbus_TCP)**
IP address	Enter the IP address of the Device
Port	Port is configured value of the Device
Time Out	Device Communication time out settings
Slave Id	Address of the slave connected to Modbus network
Mode	Modbus for normal tcp communication, modbus rtu for encapsulated rtu over tcp
Byte Order	Indicates if a device is little endian or big endian byte order

Tab. 3: **Device configuration**

5. Click **Save**.
6. The Device will be updated in the List and Device Hierarchy as shown below.

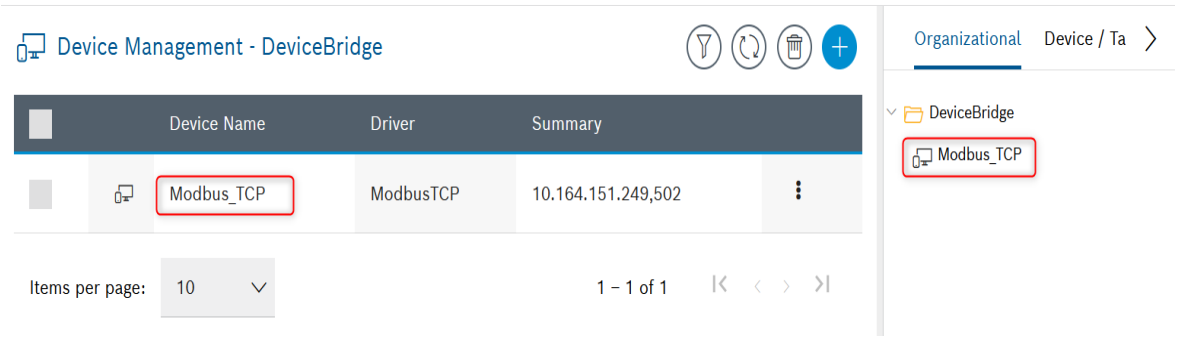


Fig. 7: Device hierarchy

5.2.2 Adding Siemens Device

1. Click **Devices** in the Left-hand panel. Then click **Add icon**.

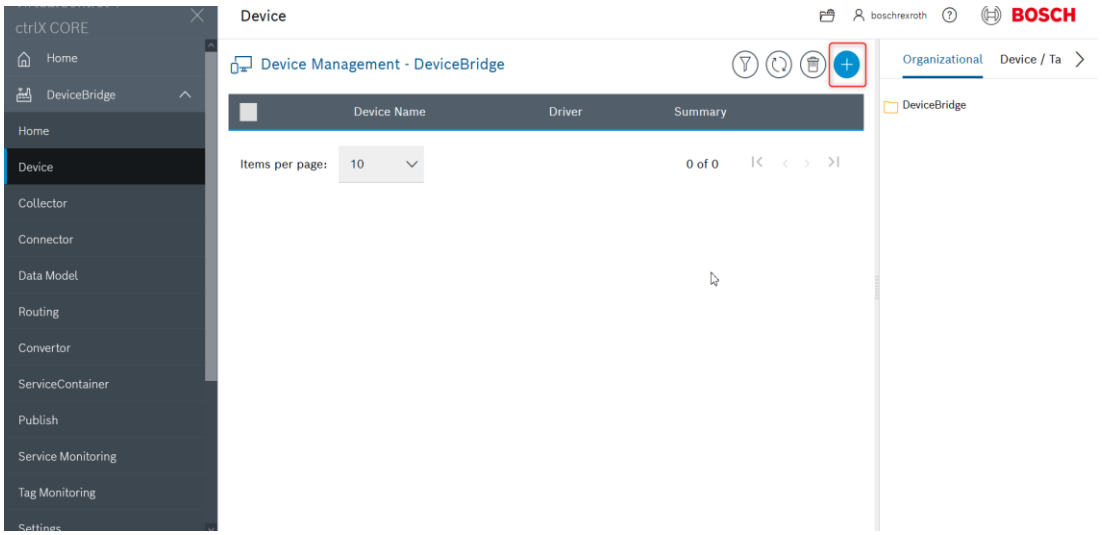


Fig. 8: Device management – Device tab

2. Select **SiemensS7** from the drop-down menu.
3. Siemens S7 Device Configuration window appears as shown below.

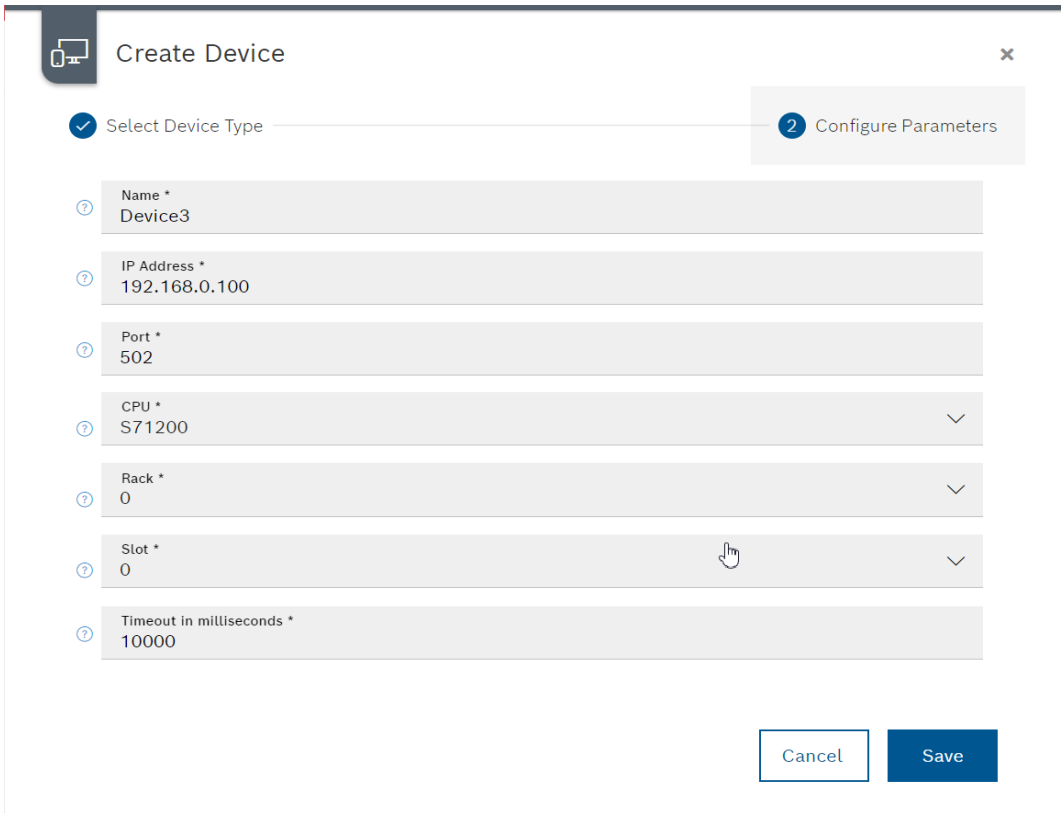


Fig. 9: SiemensS7 Device Configuration window

Name	Description
Name	Enter the name of the Device/Station. It is recommended to add a unique identification of that machine as a suffix to the Device name for easy Identification/understanding. Ex:_
IP address	Enter the IP address of the client machine.
Port	Port is configured value in .ini file on the client machine.
Time Out	Device Communication time-out settings.

Fig. 10: SiemensS7 Device Configuration options

5.2.3 Clone a Device

Following are the steps to Clone the Device:

1. Select a device to be cloned and click **Action button** or right-click on the Device name in the hierarchy and click **Clone**.

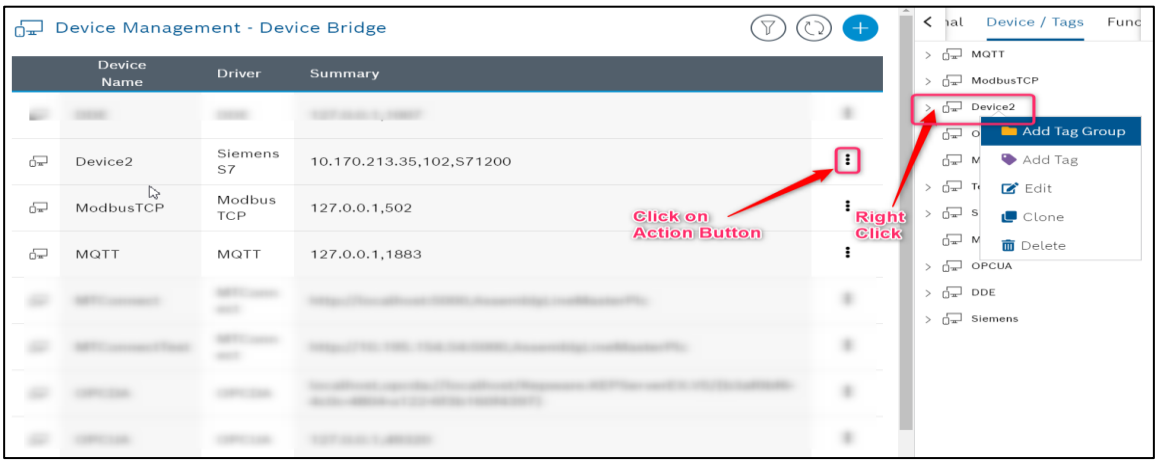


Fig. 11: Clone the device window – option 1

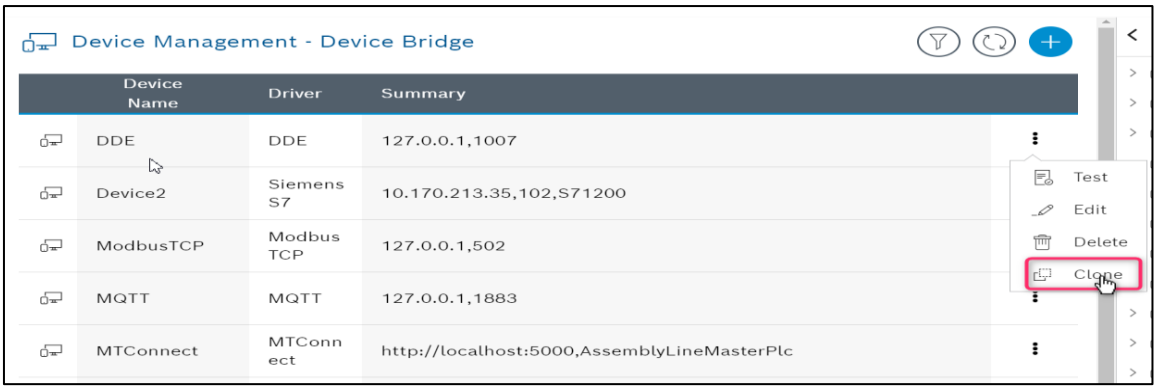


Fig. 12: Clone the device window – option 2

2. Enter the **Name of the device** and click **Ok**.

Fig. 13: Enter device name

3. The new Clone device will be created including Tags if any.

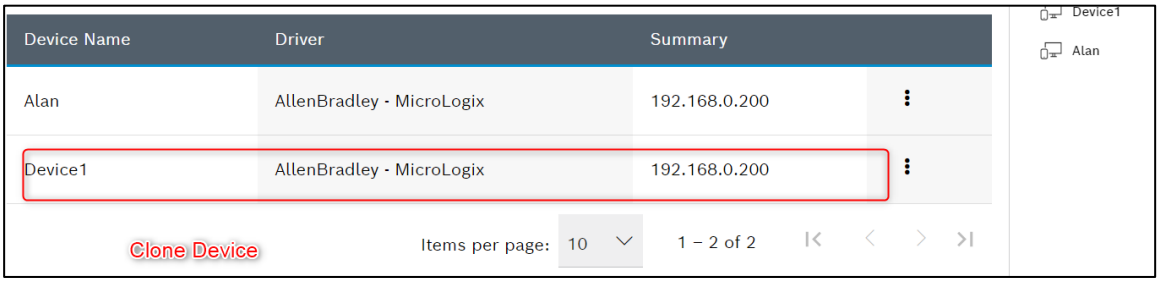


Fig. 14: Clone device with tags

5.2.4 Delete Device

Following are the steps to delete a Device:

1. Select a **Device** to be deleted and click **Action button** or right-click on the Device name in the hierarchy and click **Delete**.

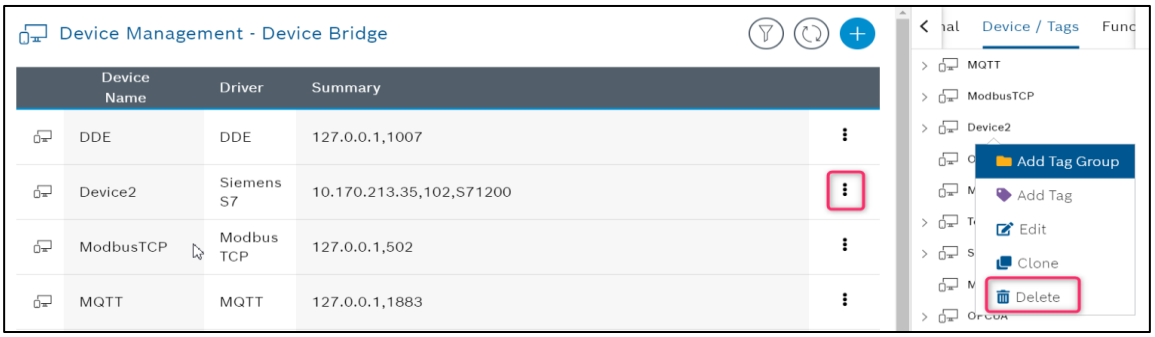


Fig. 15: Delete DeviceBridge – Option 1

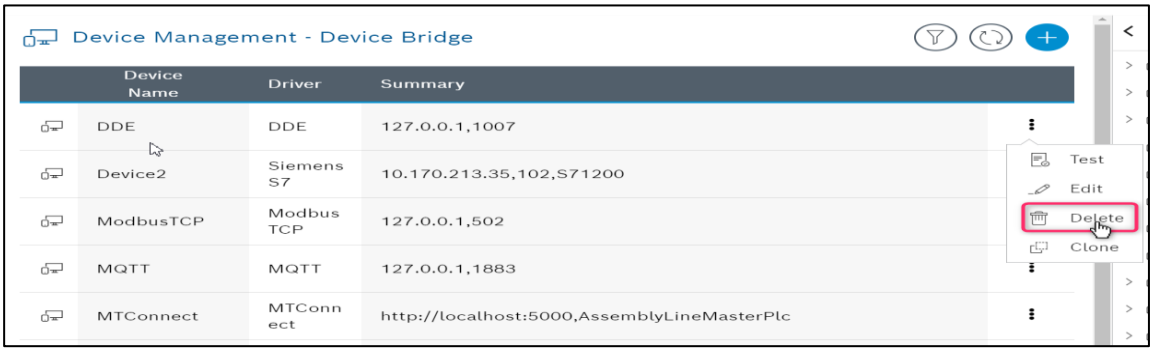


Fig. 16: Delete DeviceBridge – Option 2

2. A confirmation message will be displayed. Click **Ok** if needs to be deleted or else click **Cancel**.

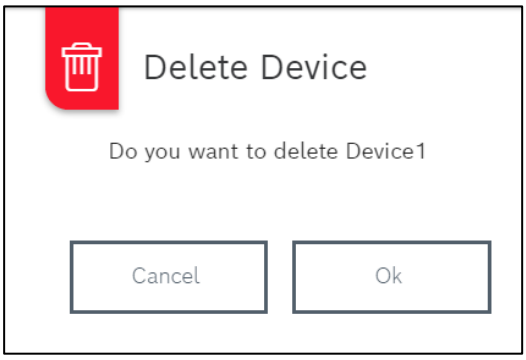


Fig. 17: Confirmation message to delete

5.2.5 Update Device

Following are the steps to Update the Device configuration details:

1. Select a device to be edited and click **Action Button** or right-click on the Device name in the hierarchy. Click **Edit /Update**.

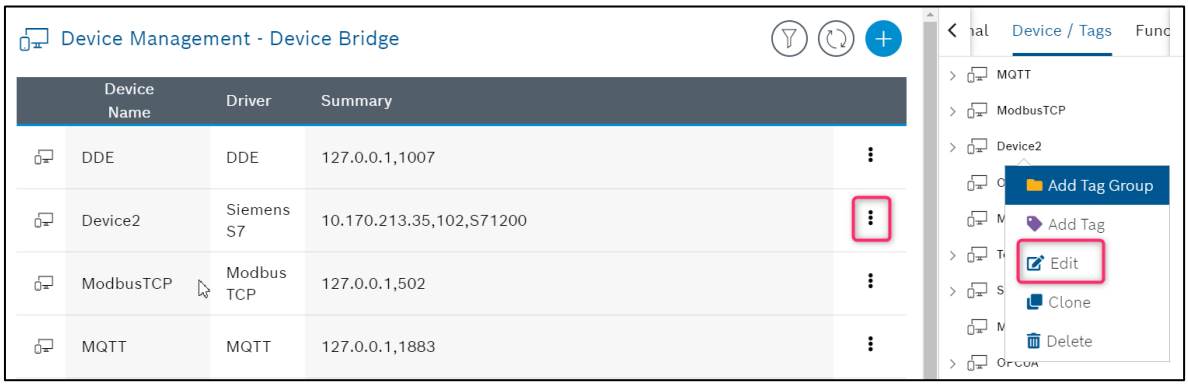


Fig. 18: Update the DeviceBridge window – Option 1

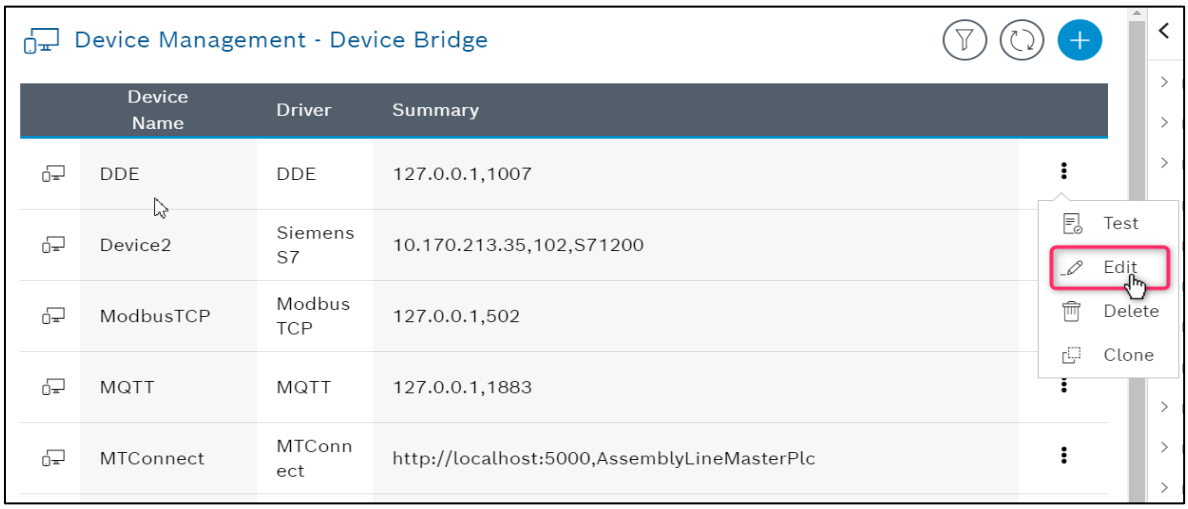


Fig. 19: Update the DeviceBridge window – Option 2

2. Click **Edit/Update**, the below screen appears.

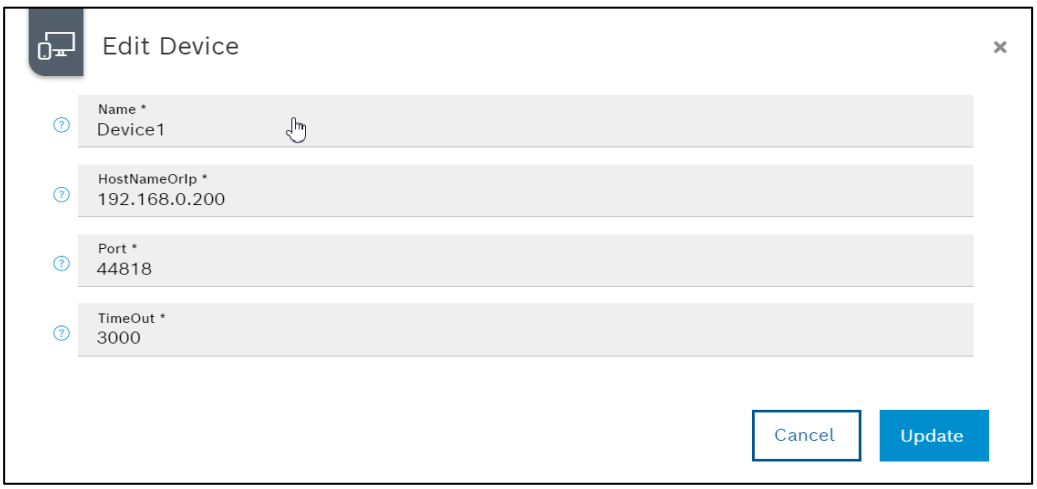


Fig. 20: Edit options

3. Update the required details.
4. Click **Update** button.

5.2.6 Device Filter

Following are the steps to filter the devices from the Device Management screen:

1. Select **Filter icon** to filter the device from the Device Management screen.

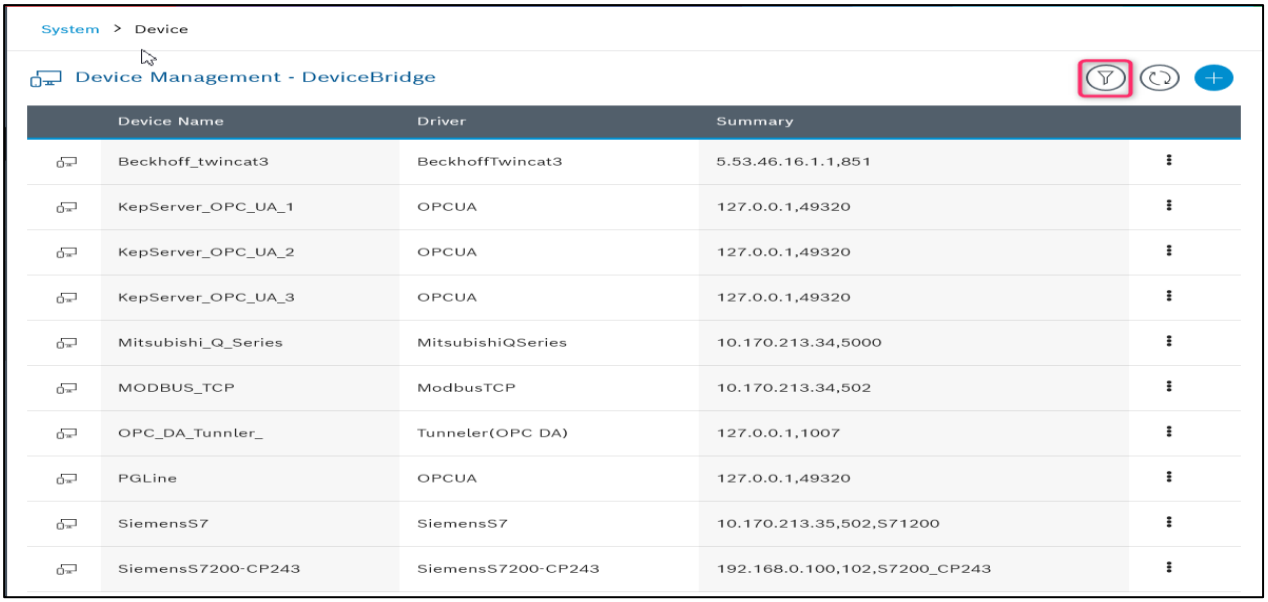


Fig. 21: Filter device from device management screen

2. The user will be able to see the Filter panel.
3. Enter the **Device name** in the filter panel (Ex: Mitsubishi). The user will be able to see the filtered device from the device list.

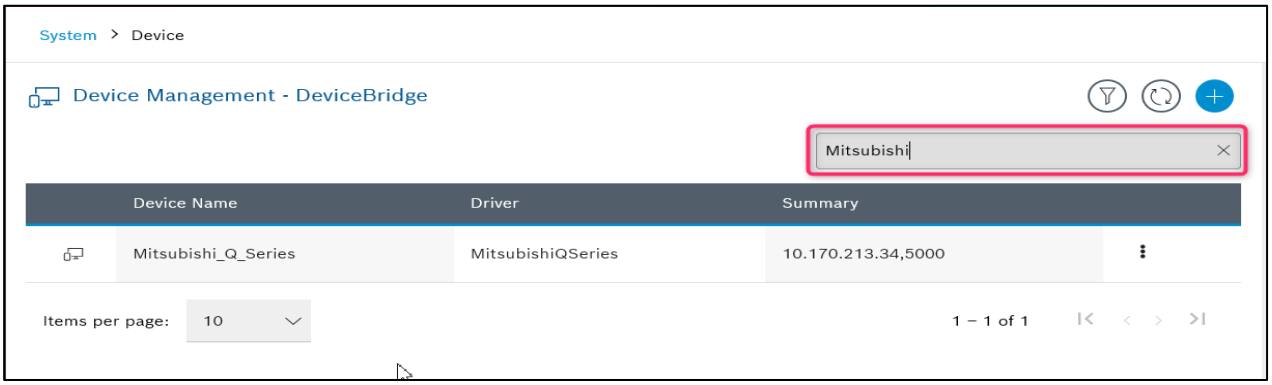


Fig. 22: Filter device

5.2.7 Test Connection

The Test connection function checks whether the DeviceBridge can connect to the configured devices.

- The connection to the device is established using the respective Device driver support protocol. If the connection is successful, the default system tag will be read.
- If the connection fails, then the DeviceBridge will try to reach the device by ping command. This will ensure the device is in the network and reachable.

Following are the steps to test a device connection:

1. Select a device to test. Click **Action button** and then click **Test connection**.

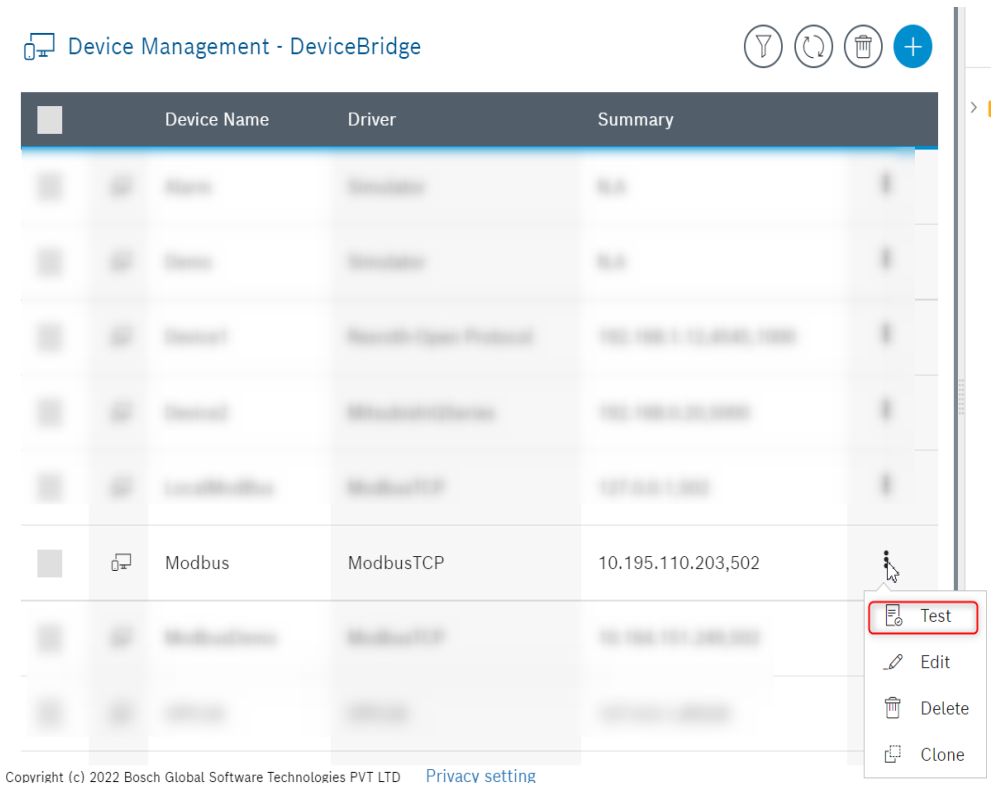


Fig. 23: Test the device connection

2. The Run device Test window appears. Click **Run button**.

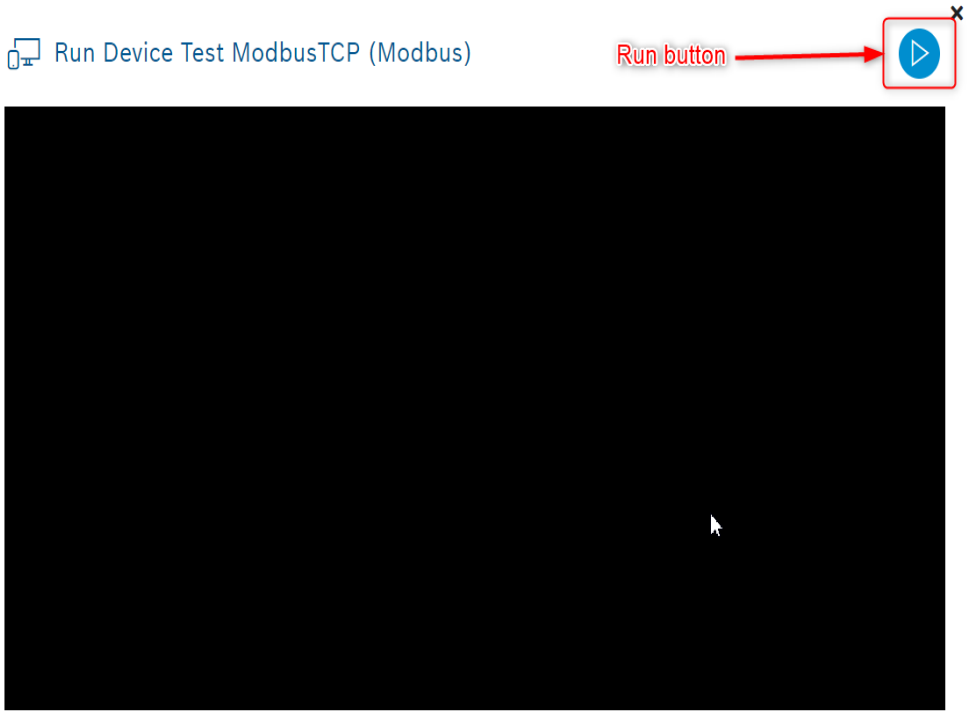


Fig. 24: Run device test window

3. If the test is successful, the **Test Connection** result will be shown like below.

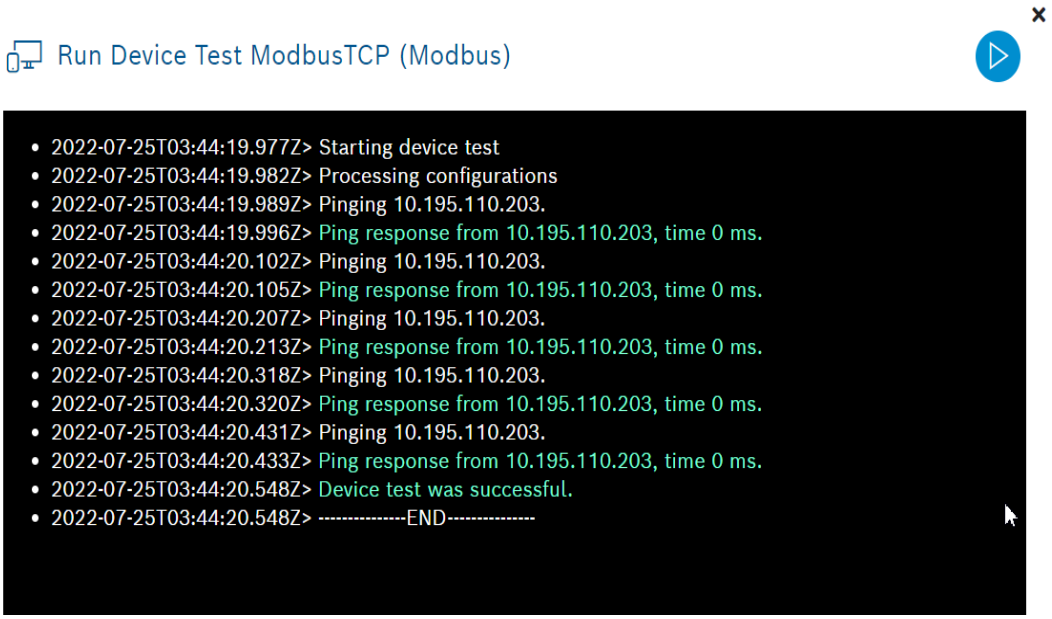


Fig. 25: Test connection result

5.2.8 Tag Creation

Tag is a name you assign to an address of the device/PLC. It is also called "variable" or "symbol" depending on the manufacture of the device/PLC. You must configure the tag using a configuration.

The Tag configuration screen is dependent on the Device types that the user selects. Different devices will have different user fields for Tag creation. For a few devices, it supports multiple data types for read and write. Created tags will be mapped to the Collectors.

Following are the steps to create the tags for a Device:

1. Click on the Device and then click **Add** icon or right-click on the device in the hierarchy to create a tag.

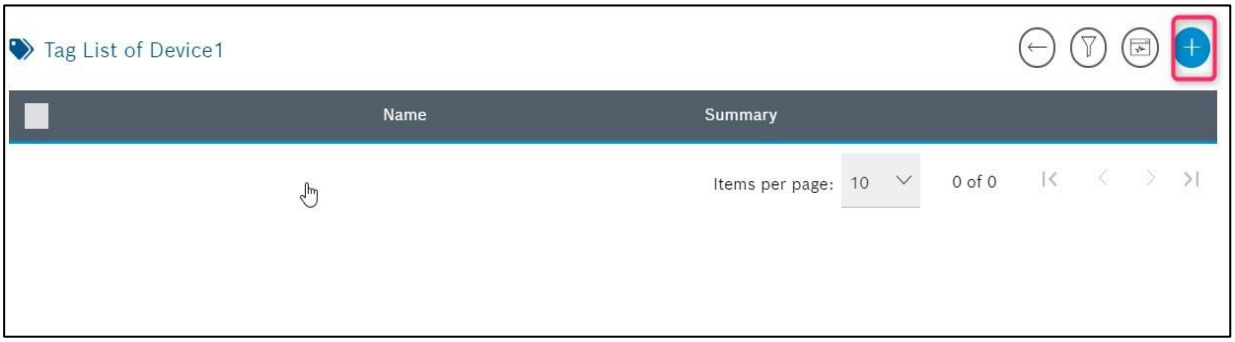


Fig. 26: Creating the tag – Option 1

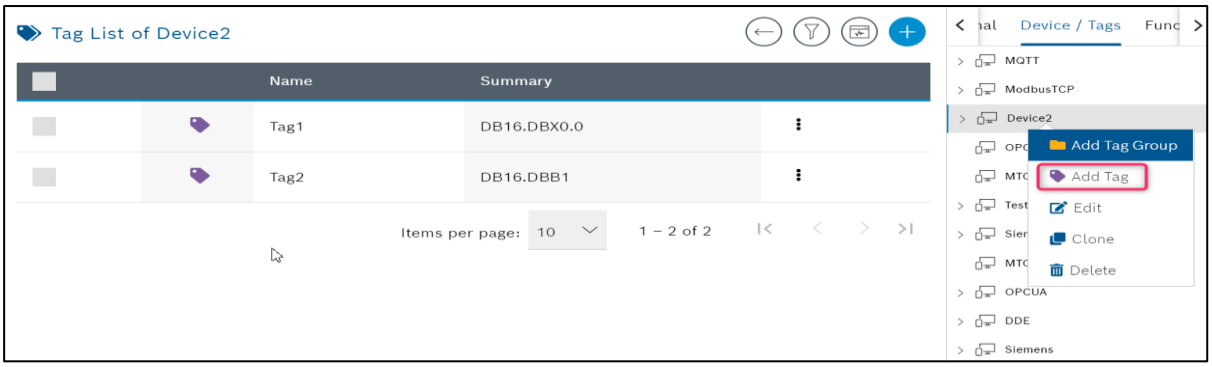


Fig. 27: Creating the tag – Option 2

2. Tag Creation Wizard window appears.

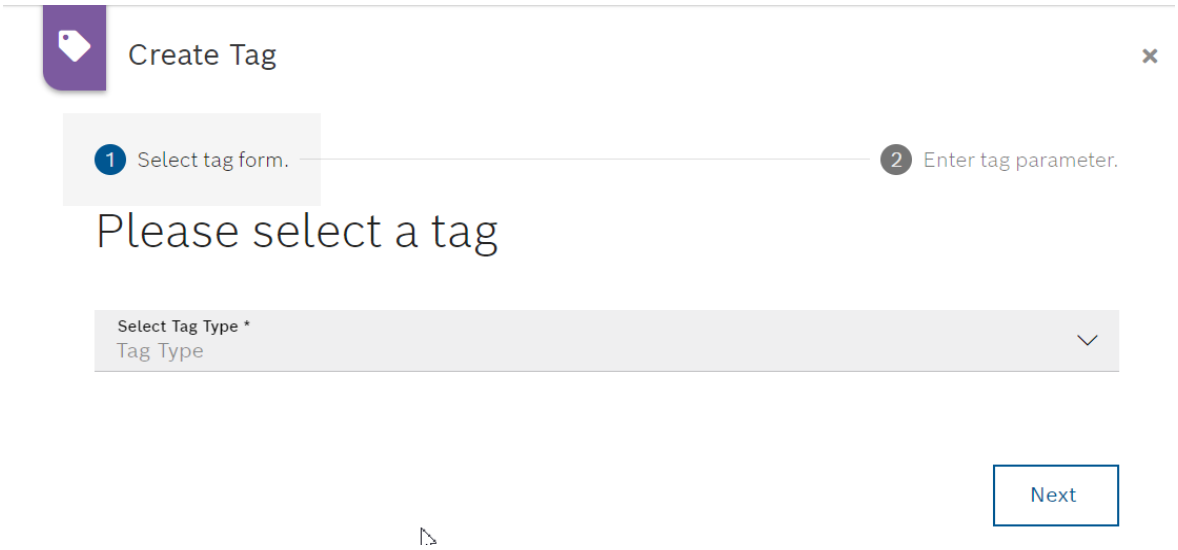


Fig. 28: Tag creation welcome wizard

3. Select an option from **Please Select a Tag** based on the functionality and click **Next**. e.g. String Reader for reading the data from the string.

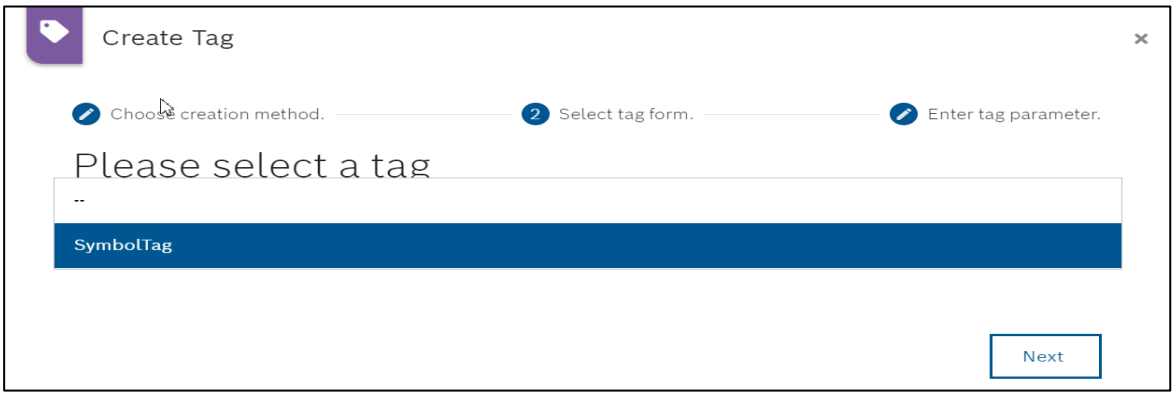


Fig. 29: Tag selection in Create tag window

4. Provide the user-defined name for the tag in the **Name** field and Device Attribute/Address in the **Symbol Name** field and then click **Save** button.

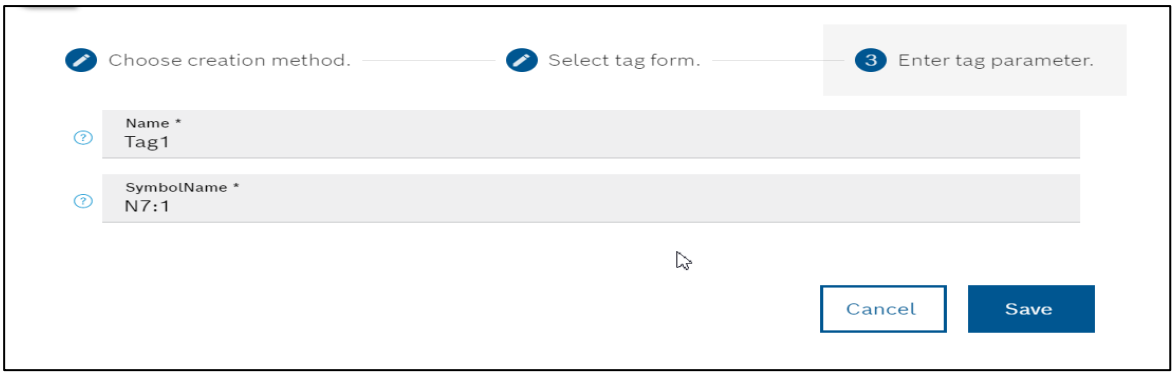


Fig. 30: Create tag window

5. To read the value of any tag, the user should navigate to the **Tag Monitoring Screen**. Select the tag to monitor and click **Monitor** button.

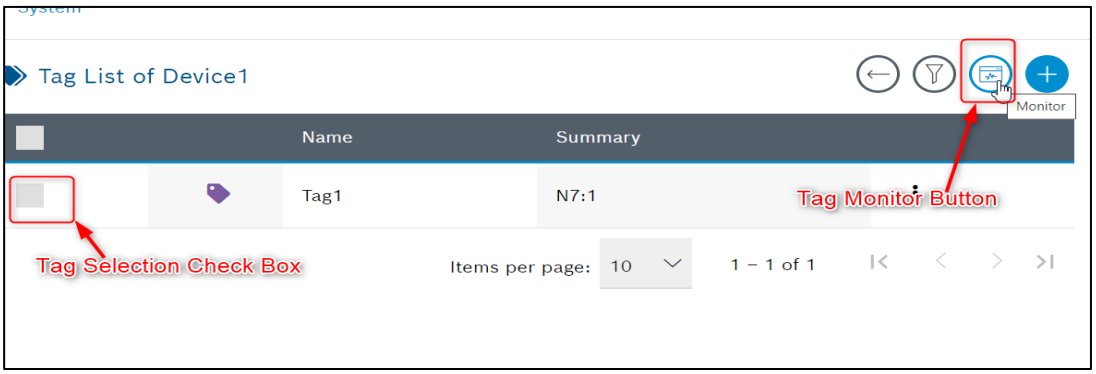


Fig. 31: List of tags

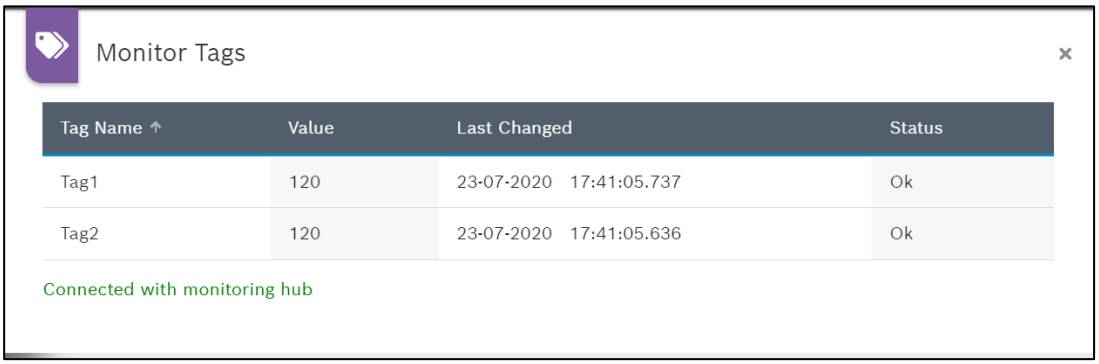


Fig. 32: Monitor tags

Note:

The user can monitor multiple tags at a time. Select multiple tags and click **Monitor** button, the Data will be shown for all tags as shown above.

5.2.9 Group Tag

The purpose of the tag group is to easily identify the parameters of the different types.

(**For Ex:** If there are 15 to 20 tags related to the process, those can be created and configured under one group named **Process Parameters** for easy identification).

1. To Group Tags, Right-click on the Device/Tags name in the hierarchy
2. Select **Add Tag Group** as shown below

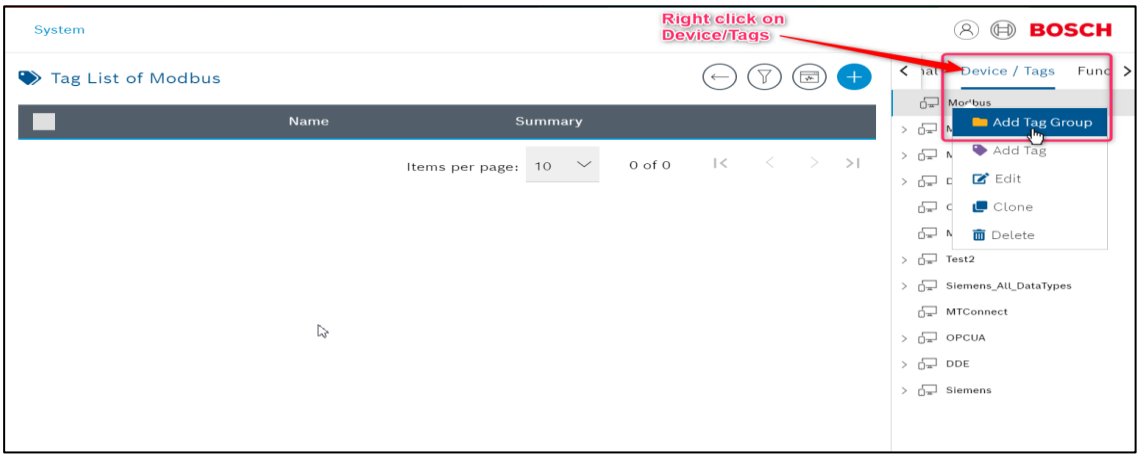


Fig. 33: Add tag group

3. Enter the **Tag Group Name** in the window and click **Ok**.

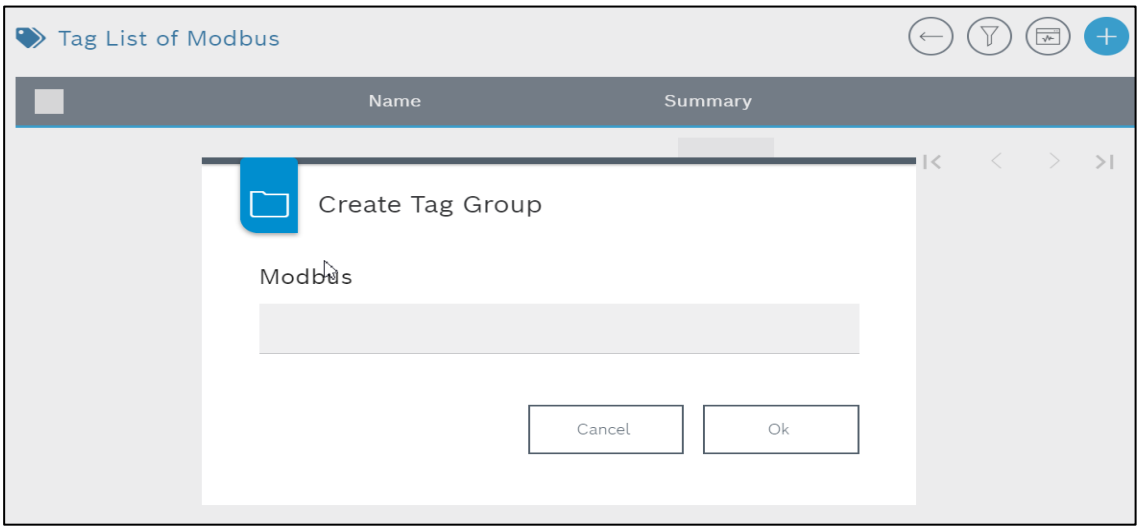


Fig. 34: Tag group name

4. The Tag Group name gets added in the Tag List window.
5. To create the required number of tags under the same Tag Group, select **Edit** under the Actions button.

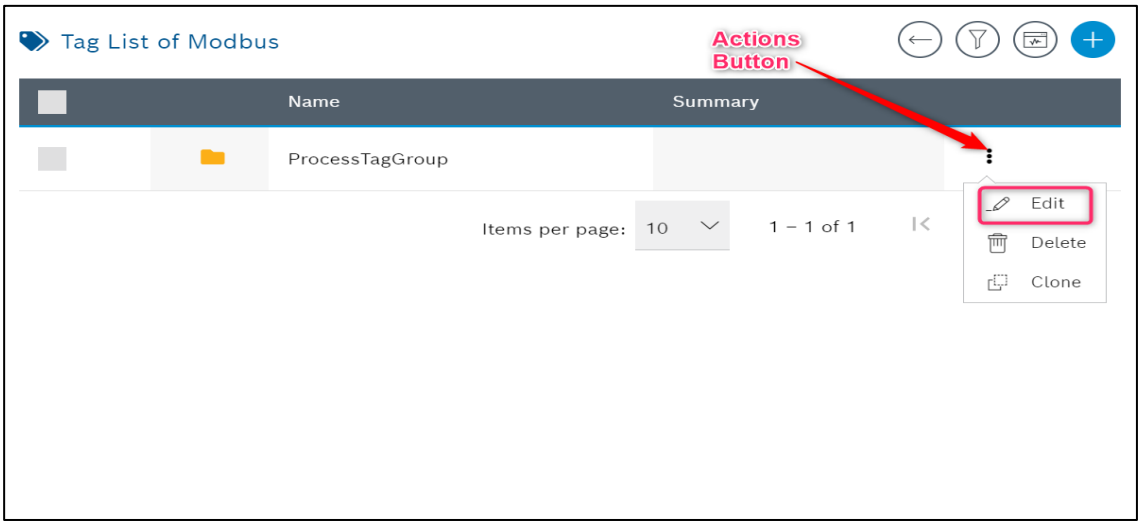


Fig. 35: Tag list window

6. Click the created **Tag Group**, the below window appears.

7. Configure the tags one by one for the Tag Group.

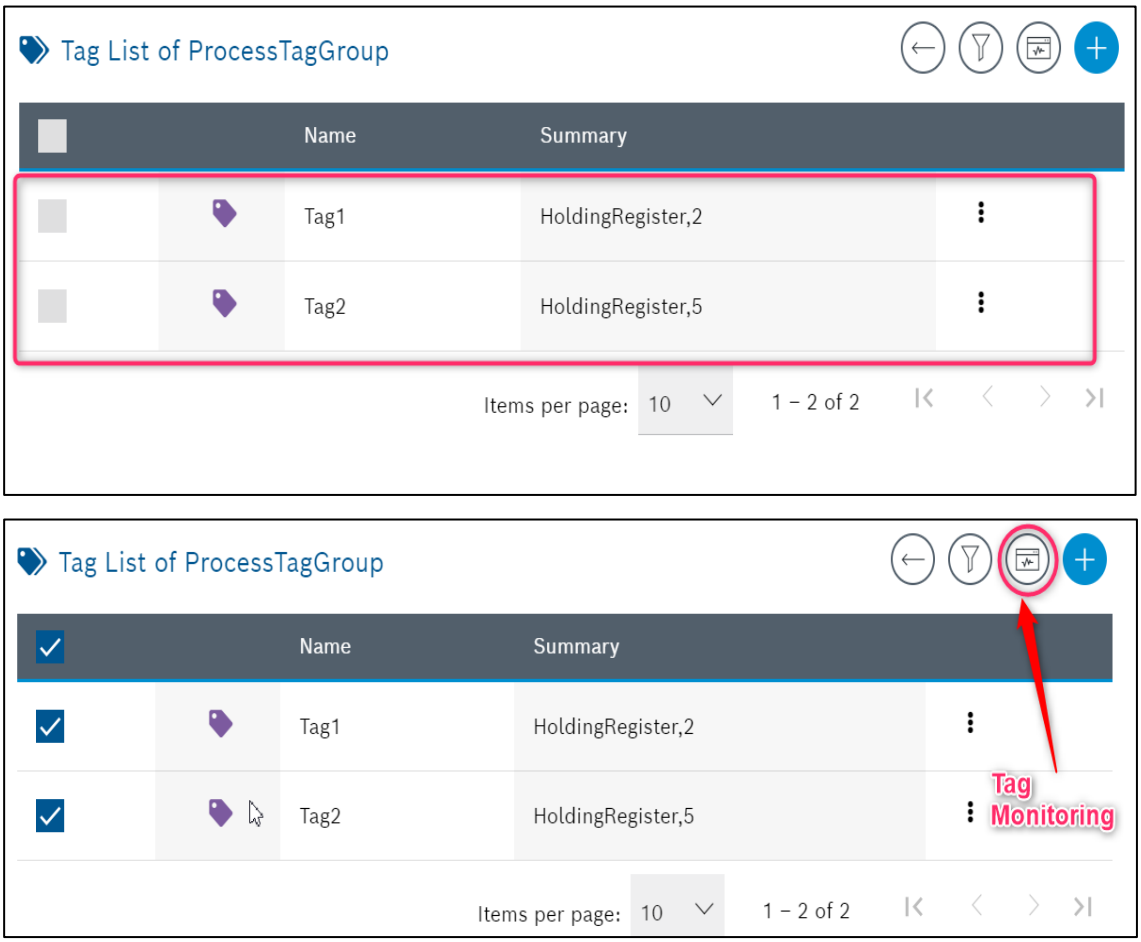


Fig. 36: Tag list of ProcessTagGroup – Group tag monitoring

8. Check the configured tags to be monitored and click **Tag Monitoring** icon as shown above.

5.2.10 Clone Tag

1. To clone a tag, click **Action button** or right-click on the name of the tag in the hierarchy which needs to be cloned and click **Clone**. The tag will be cloned.

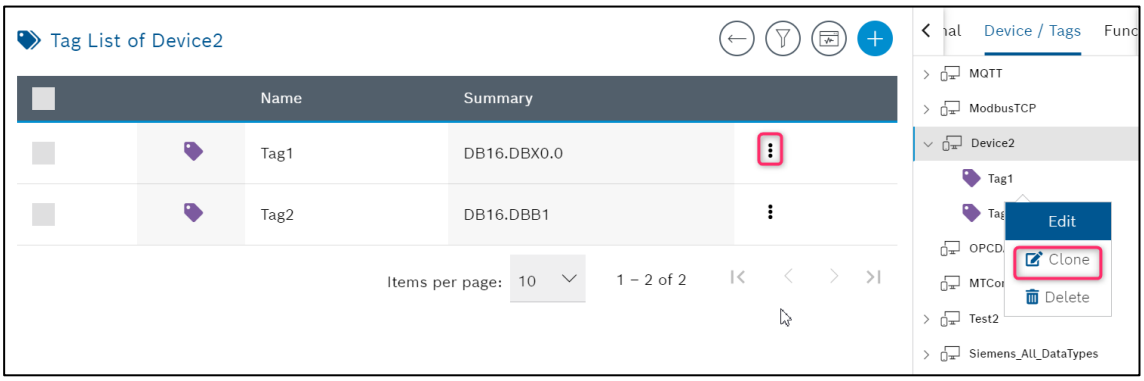


Fig. 37: Clone the tag

2. Update the details of the Tag if required and click **OK** button.

5.2.11 Edit Tag

1. To edit the tag, either click **Action button** or right-click on the selected tag in the hierarchy which needs to be edited. Cick **Edit** tag button.

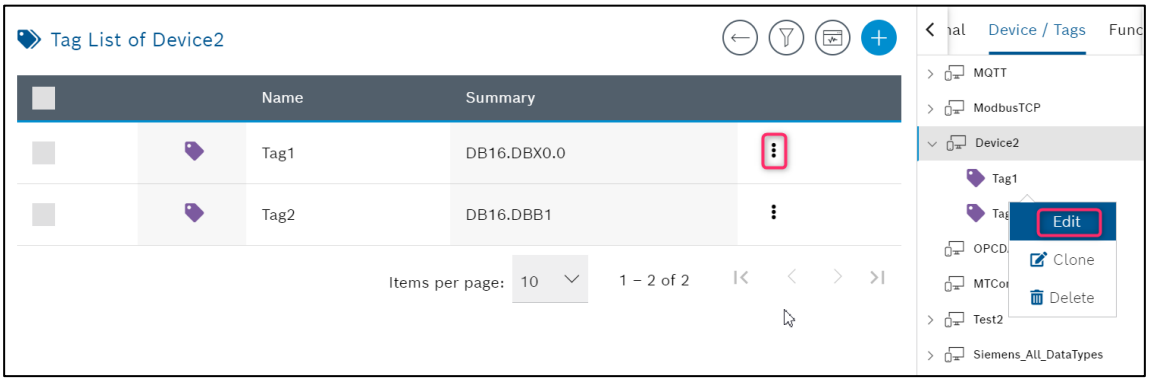


Fig. 38: Edit/update tag

2. Update the details of the Tag if required and click **Update** button.

5.2.12 Delete Tag

1. To delete a tag, either click **Action button** or right-click on the selected tag in the hierarchy which needs to be deleted and click **Delete** button.

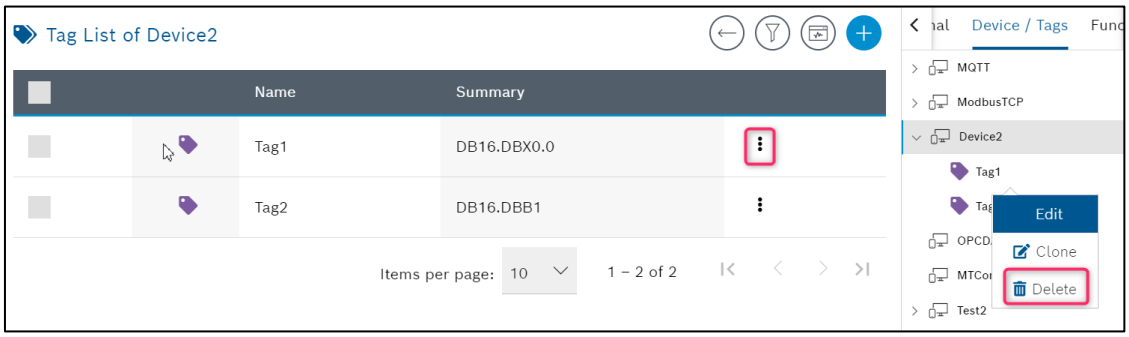


Fig. 39: Delete tag

2. A confirmation message will be displayed.

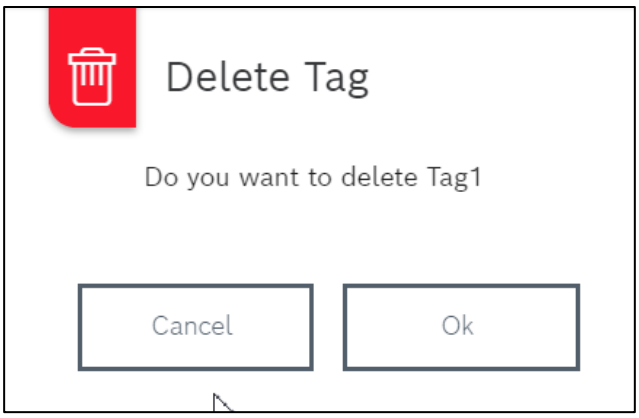


Fig. 40: Confirmation message to delete tag

3. Select **Ok** if needs to be deleted else click **Cancel**.

Read and Write Tags:

- The Tag refers to a memory address or a unique identifier. It is used to write or read the live values from and to the data sources.
- The Tag applies to all the devices. The user can test connectivity and data readability from the device in this window. Once the tag read is successful, then tags can be mapped in the collector.

5.2.13 Filter Tag

Following are the steps to filter the Tag from the Tag list screen:

1. Select **Filter icon** to filter the Tags from the Tag list.

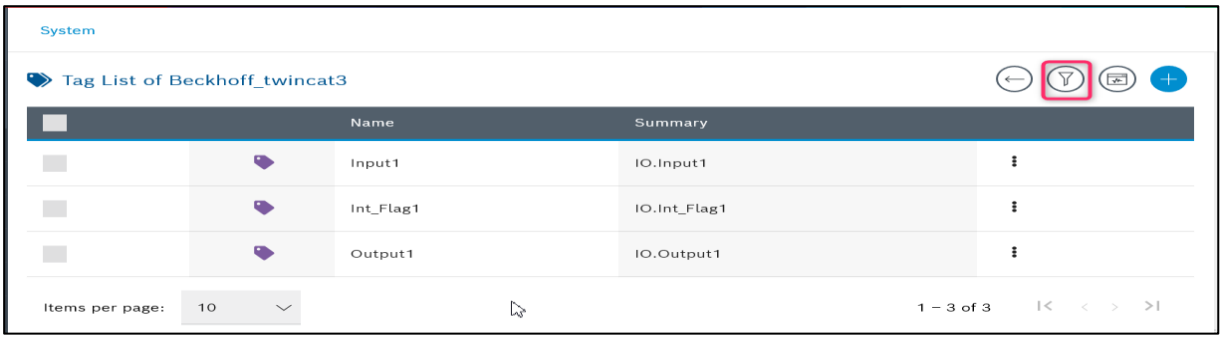


Fig. 41: Tag list window

2. The user will be able to see the Filter panel.
3. Enter the **Tag name** in the filter panel (Ex: Output1). The user will be able to see the filtered tag from the tag list.

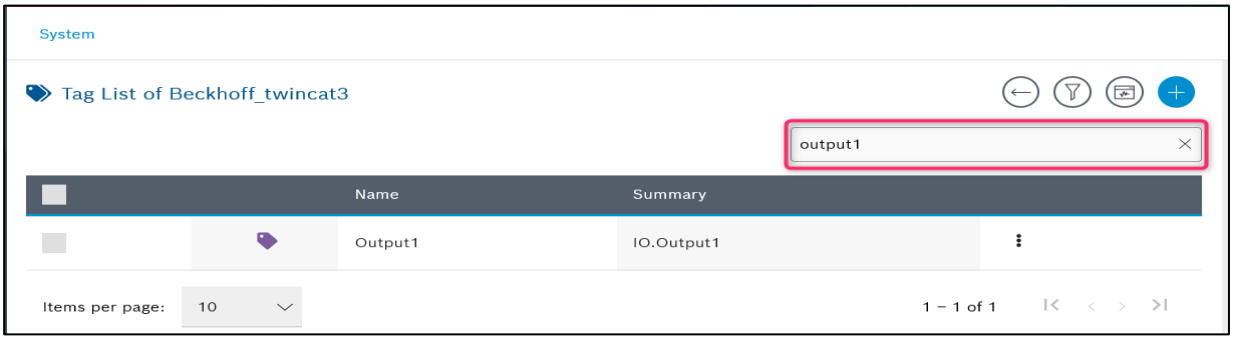


Fig. 42: Filter tag from tag list

5.3 Collectors

The collector is the section which Business Logic is defined

Collectors are used to read and process data from Devices. End points can be created in collectors and mapped to Device tags. The data thus collected can be send to one or more upstream IT Applications.

Specific customized collector templates are available for standard use cases, such as Nexeed PDA/MDA, Nexeed PPM use case. These templates are used to convert data to upstream in the demanded format (Ex: Nexeed MES, Nexeed PPM). The templates add all the required fields and attributes that may not be available from PLC. (Ex: 5 tags are collected from PLC and total of 20 end points are sent to MES. The addition includes location data, Ma-chine data, type info, etc. that are required by MES in a single telegram)

5.3.1 List of Collectors

Collector	Description
PDA/MDA Collector	Event-based collector. Collect the part processed information based on event trigger by device and send information to MES server. Error information also can be captured.
JSON Collector	Time-based collector. Collect parameter values based on the collection interval specified. Send the information to the specified Upstream Server.
PPM Machine Message Collector	Event-based collector. Collect the Machine message and information based on the collection interval. Send the information to the PPM Server based on the data send interval.
PPM Measurement Message Collector	Time and Event-based collector. Collect the parameter information based on the collection interval. Send the measurement parameter information to the PPM Server based on the data send interval
PPM Process Message Collector	Time-based collector. Collect the process and part information and measurement data based on the collection interval. Send process-related information to the PPM Server based on the data send interval

Dynamic Collector	Use the libraries and graphical blocks to represent code concepts like variables, logical expressions, and many more as and when required
CM Control Collector	Time and event-based collector. Collect parameter values based on the collection interval specified. Send the Parameters to the specified Upstream Server.
Fanuc Alarm Collector	Event-based collector. Collect the alarms information based on the event triggered by the device and send the information to the Upstream Server.
Generic Alarm Collector	Event-based collector. Collect the alarms information based on the event triggered by the device and send the information to the Upstream Server.
NC Alarm Collector	Event-based collector. Collect the alarms information based on the event triggered by the device and send the information to the Upstream Server.
PDA/MDA Alarm Collector	Event-based collector. Collect the alarms information based on the event triggered by the device and send the information to the Upstream Server.
Quality Collector	Event-based collector. Collect parameter values based on the collection interval specified. Send the Parameters to the specified Upstream Server.

Tab. 4: **List of collectors**

5.3.2 Add Collector

Following are the steps to create the Collector:

1 Go to the **Collectors** menu under System Section and click **Add** icon.

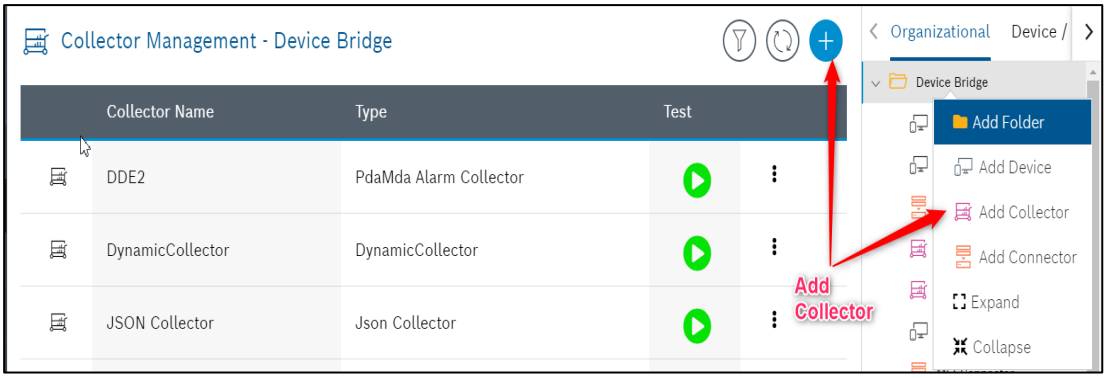


Fig. 43: Add collector

2 Click **Next** button on the Welcome wizard.

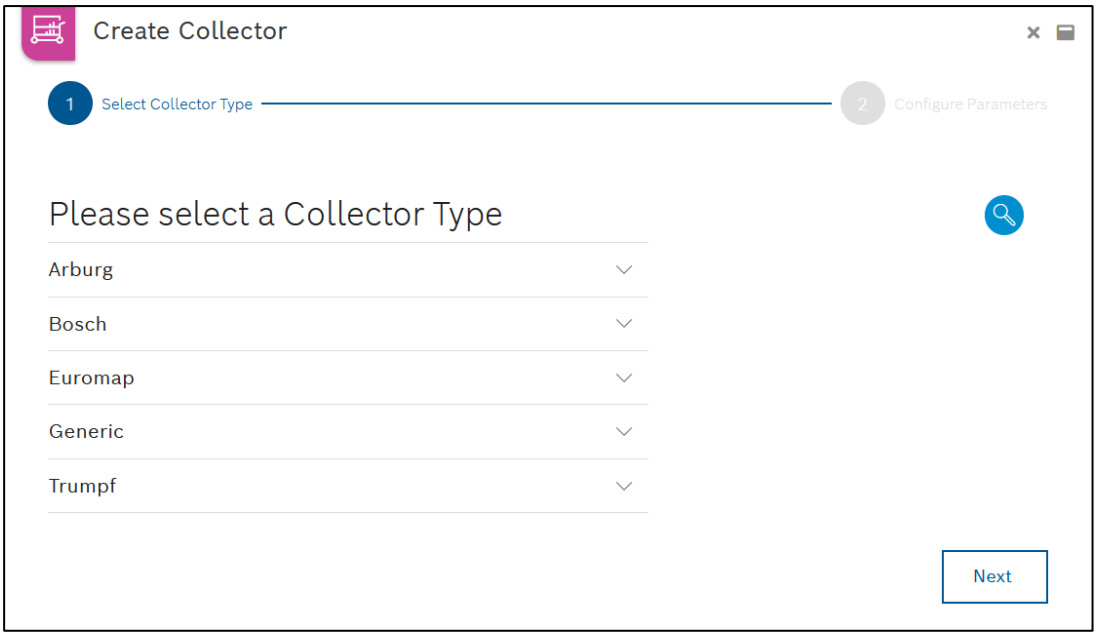


Fig. 44: Welcome wizard to add collector

3 Select a Collector from the dropdown menu and then click **Next.**

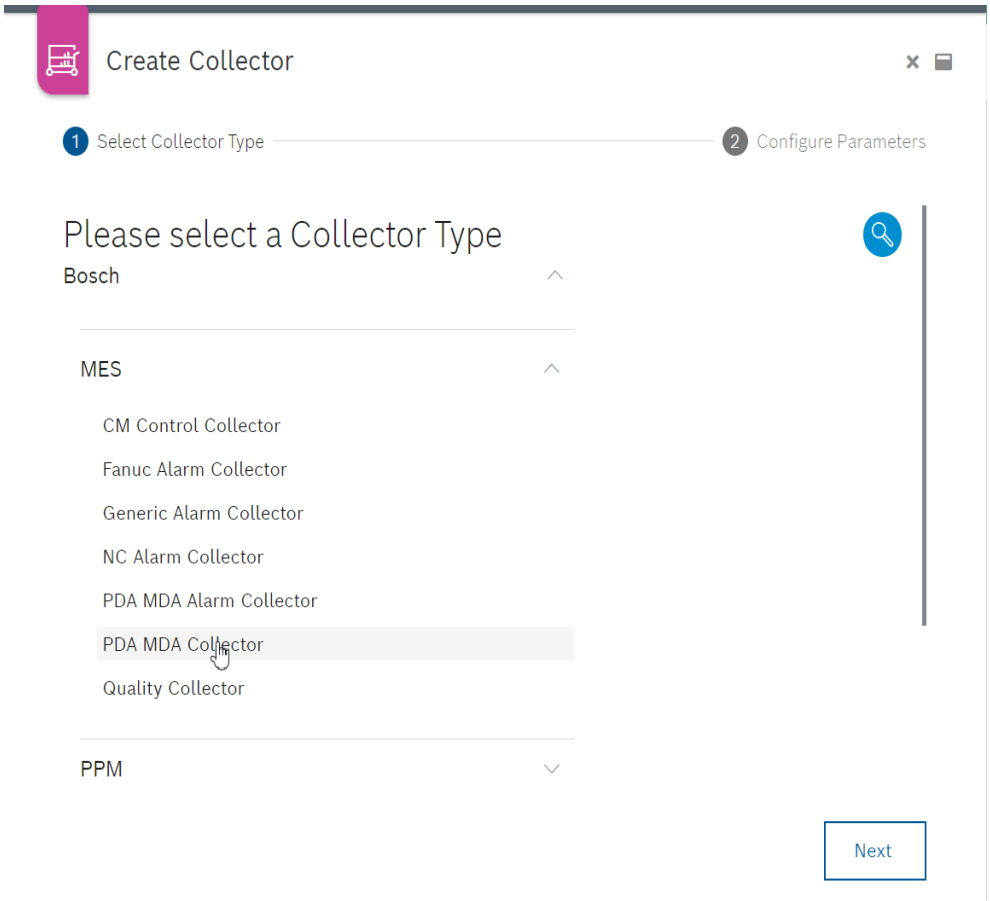


Fig. 45: Select collectors from dropdown

4 Provide the Name, Description, and Collection interval for the collector.

Name of the collector	Description
Description	Description of the collector to understand the use of collector
Collection Interval	Time in which data will be collected from the device

Tab. 5: **Name and description of collector**

5 Select the **Tag Option**. To map a tag, click **Browse Tag** symbol, to browse the tag. This will list the devices added in the Device Section. The user can browse the tags in the window which shows the list of devices and their tag attributes. Select the required tag from the list to map a tag or enter text for the attribute.

Tag: Configured in the device, to pull the data based on the configuration values will be updated in the collector.
Text: A constant text will be uploaded based on the configuration.

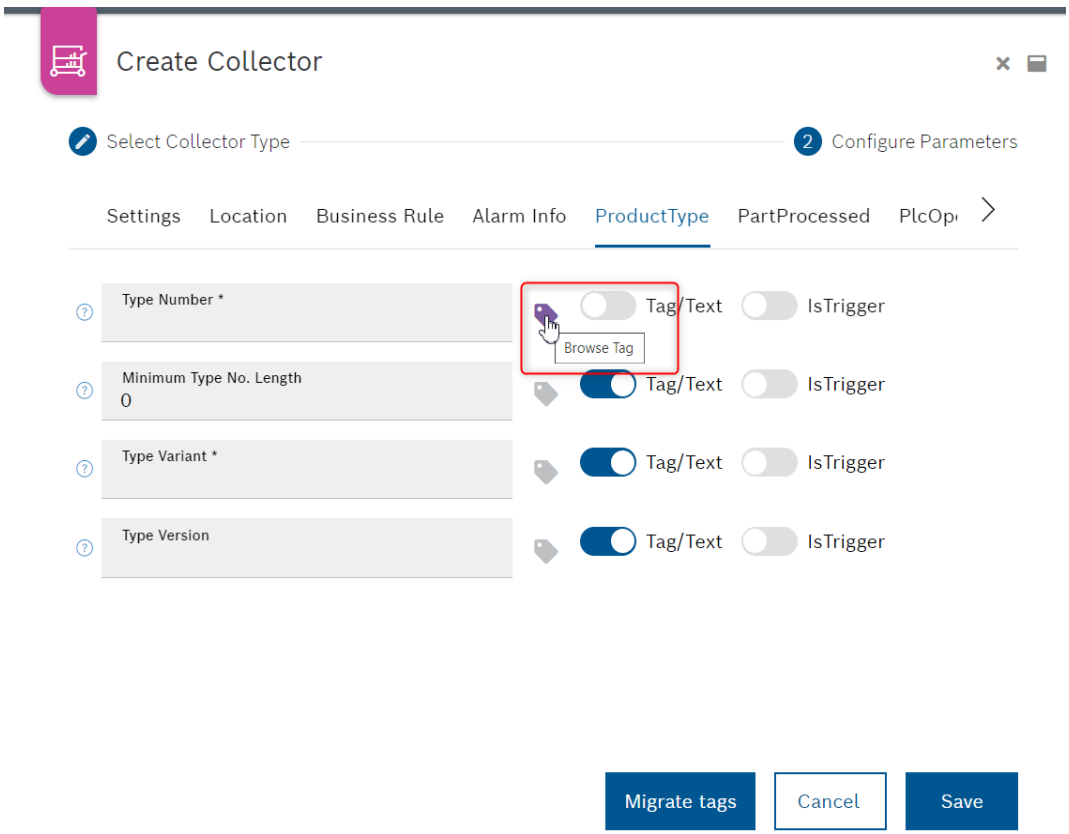


Fig. 46: Tag option – Product type tab

6 After selecting the tag, click **OK** and then click **Save**. The added collector will be displayed as shown below.

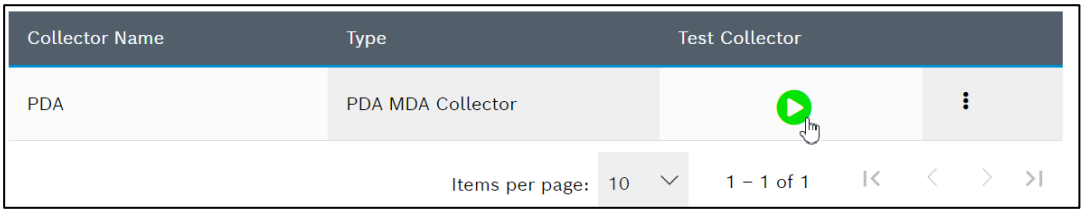


Fig. 47: List of added collectors

5.3.3 Dynamic Tag

The Dynamic Endpoint mapping can be used to create the additional tags as and when required (For Ex: **NC Alarm Collector**).

1. Navigate to Collector - Add **NC Alarm collector** as shown below.

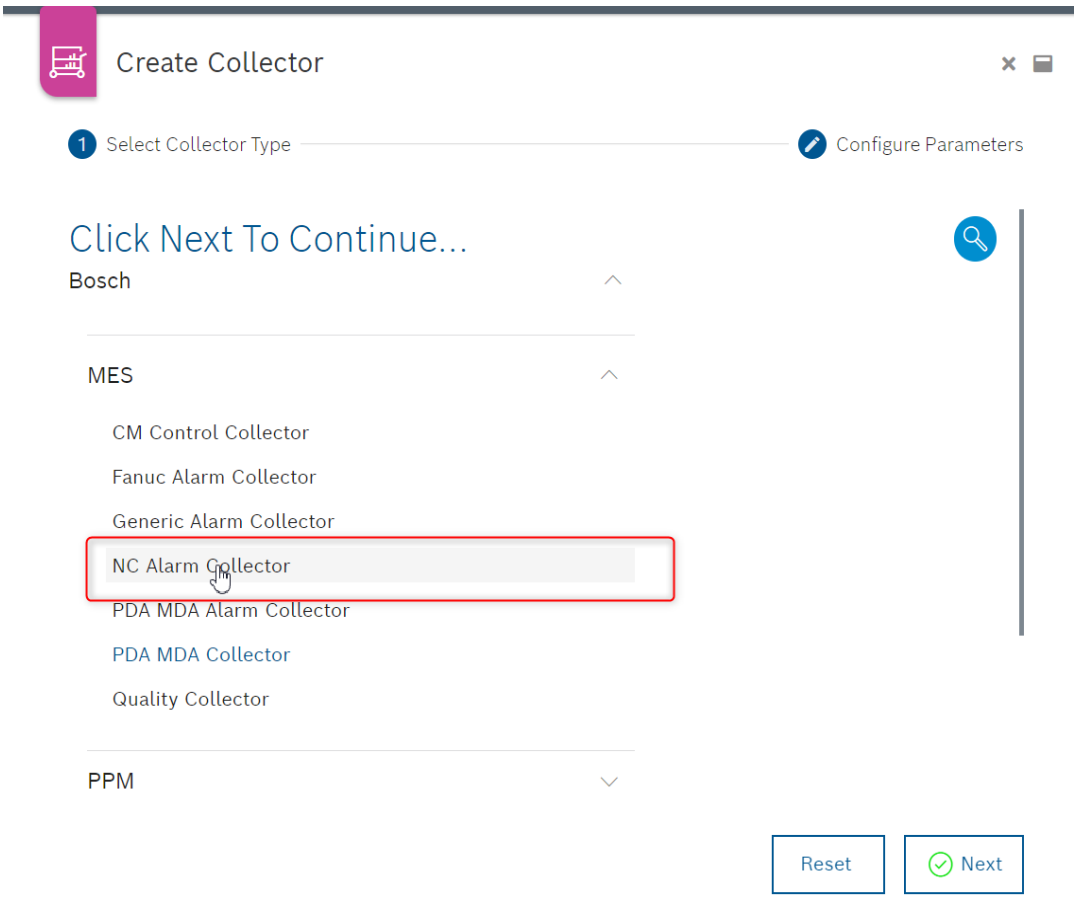


Fig. 48: Dynamic endpoint mapping

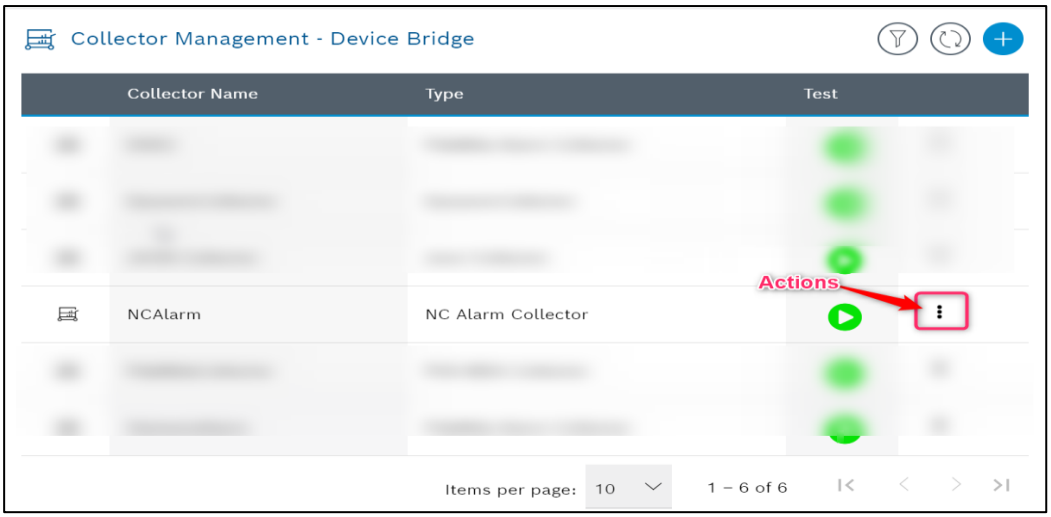


Fig. 49: Added NC alarm collector

2. Select **Edit** option to edit/update the collector under Actions button.

3. The NC Alarm collector window appears. Select **Settings tab** and enter the mandatory details.

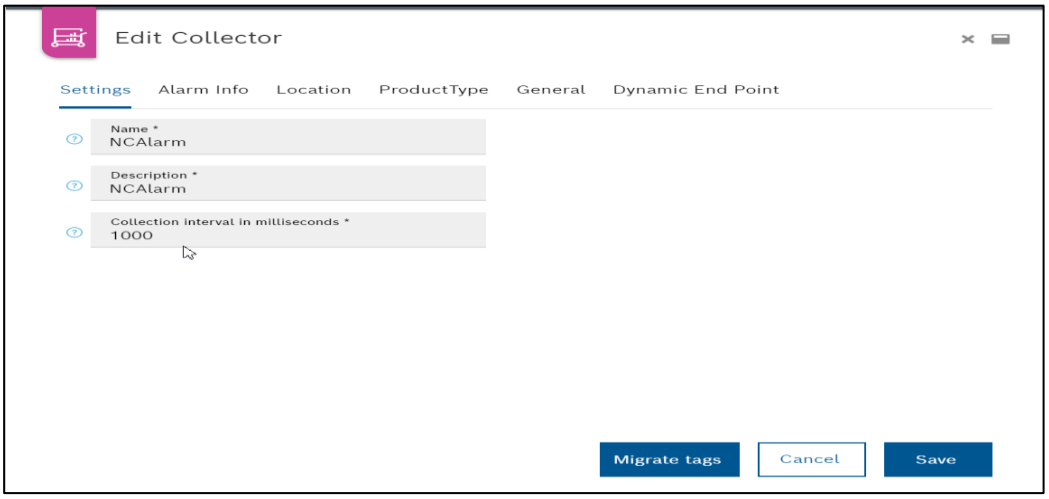


Fig. 50: NC Alarm collector window – settings tab

4. Click **Save**. Switch to the Alarm Info tab.
5. Copy Paste the Alarms into the Alarm Info tab as shown below. It is possible to copy only the three columns with the same heading as below.

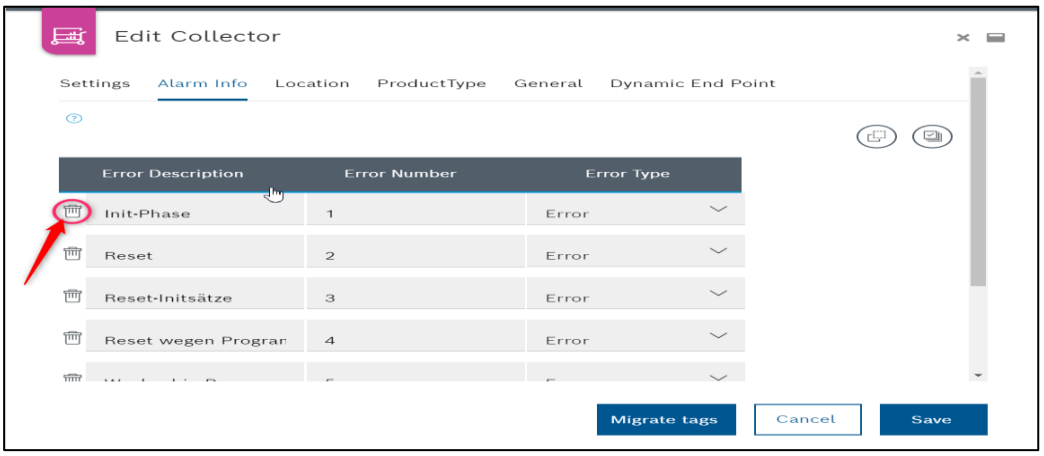


Fig. 51: NC Alarm collector window – alarm info tab

6. Click **Save**.
7. The Alarms can be deleted if it is not required, using the **Delete** icon on the left to delete the Alarm. **Delete All** option is also available at the right of the Alarm Info window to delete the multiple alarms.

8. Switch to the **Location**, **Product Type** tab and fill in all the mandatory fields like Line No, Station, and Type Number details as shown below.

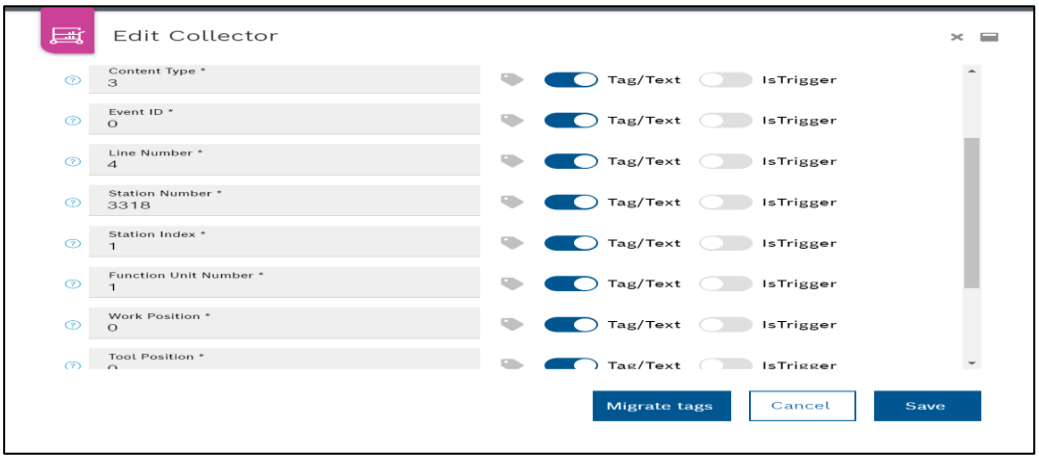


Fig. 52: NC Alarm collector window – location tab

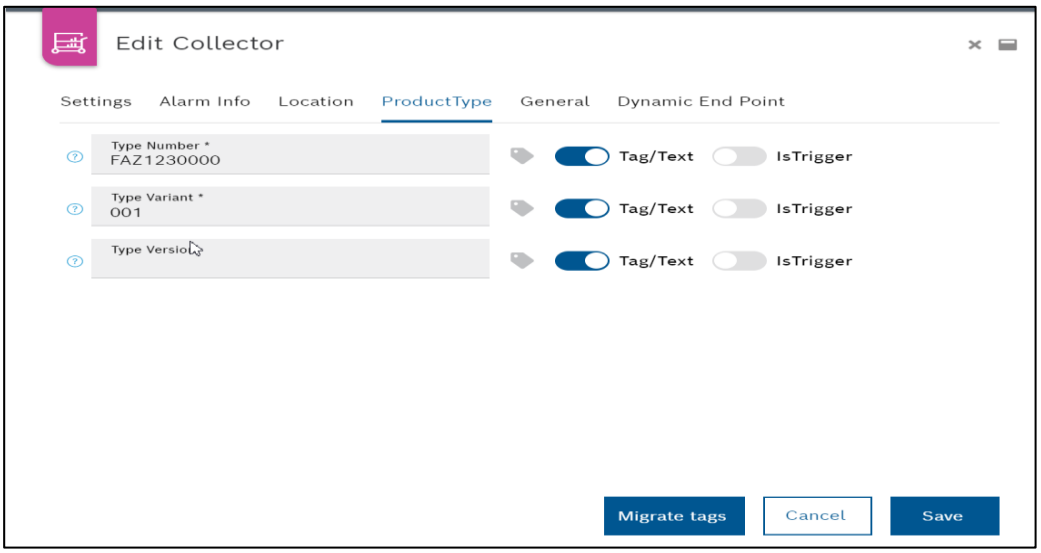


Fig. 53: NC Alarm collector window – product type tab

9. Enter the mandatory fields in the **General tab** or else the important fields show the red indication, then the Collector could neither be saved nor published.

10. While switching to the next tab, the unfilled tab shows the red indication as shown below:

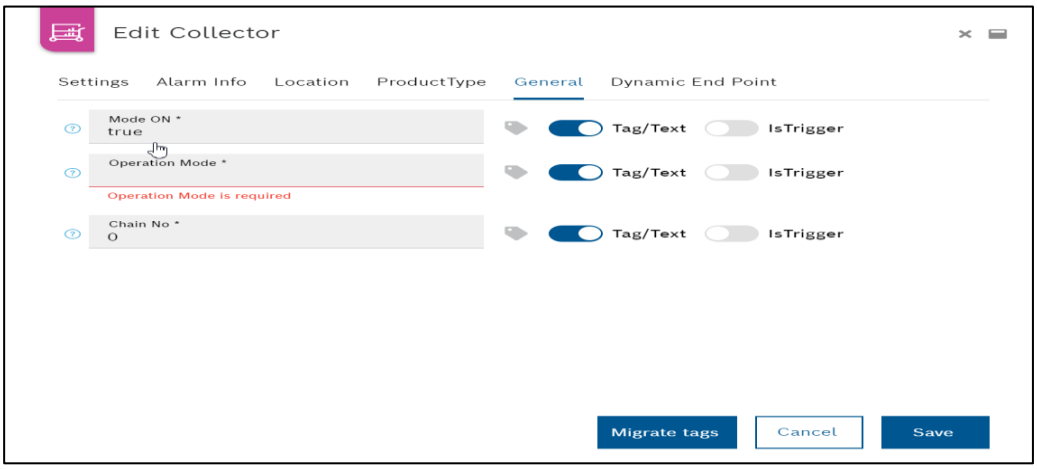


Fig. 54: NC Alarm collector window – general tab

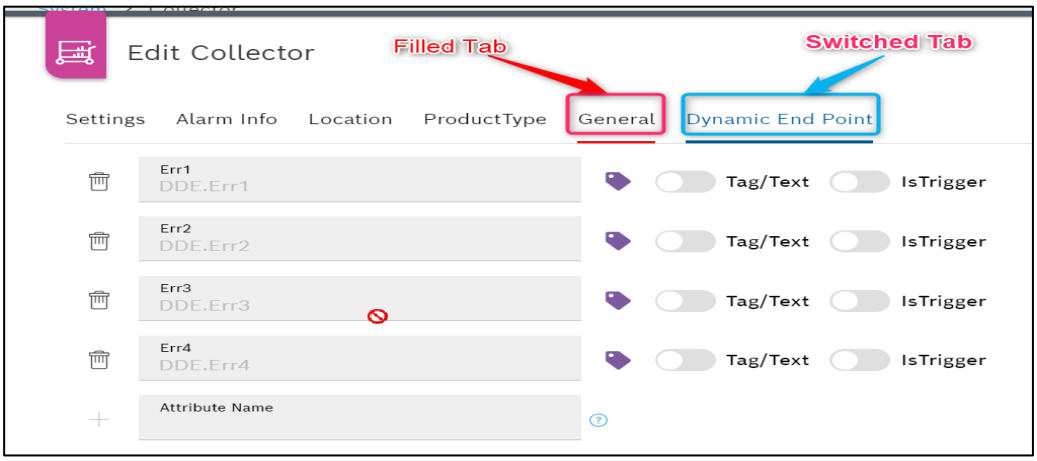


Fig. 55: Difference between filled and switched tab

11. Move on to the **Dynamic End Point tab**, Map the Tags from the Device configured as shown below:

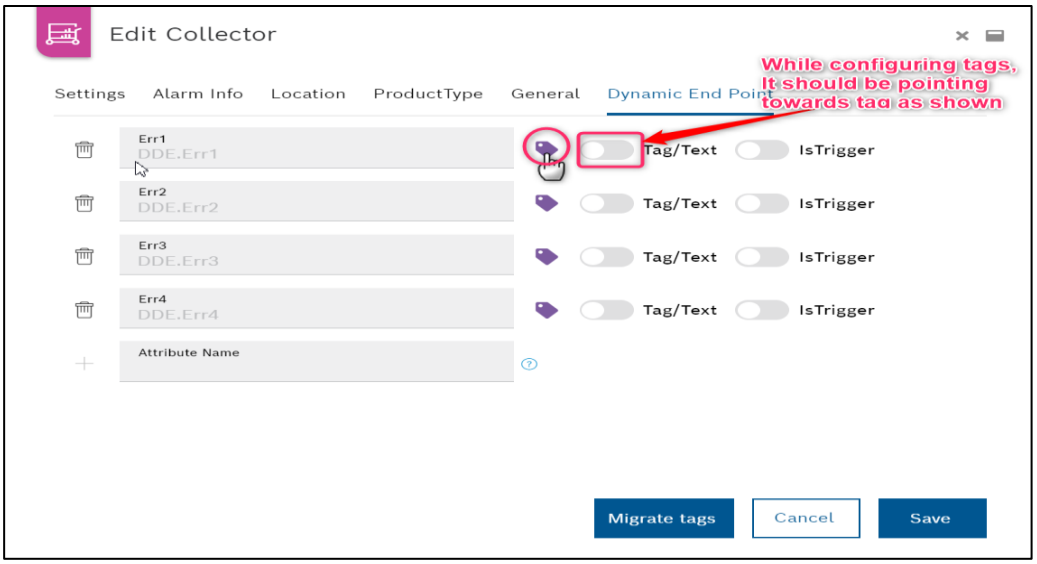


Fig. 56: NC Alarm collector window – dynamic end point tab

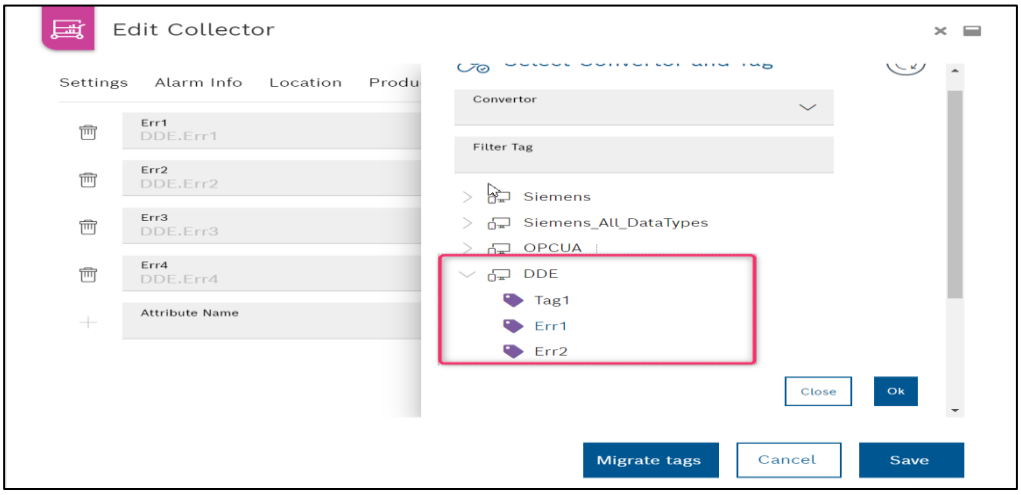


Fig. 57: NC Alarm collector window – filter tag

12. Select the tags from the device (For Ex: **DDE**) and click **OK**.
13. Click **Save**. The collector will be saved with these tags.

5.3.4 Execute Collector

The user can run the Collector after completing the configurations to verify whether the collector configuration is correct or not and mapped tags are readable. The user can verify the values of each tag as per the business logic defined in the collector.

By executing the Collector from this screen, Collector will run and collect the data. Collected data will not be processed unless there is already a result service deployed and running.

By running the collector, ideally it would collect data from the Device based on the predefined triggers, and then saves the data in the local RESULT folder to the DeviceBridge Control Center installation location. If the Result service is running, then the data will be transferred to the chosen Connector. So the user can test the collector.

If any error occurred while running the Collector, it can be seen at the end of the Collector along with other process variables. Once the testing is complete, stop the Collector from running state.

1. Click **Execute icon** to show the list of tags and their corresponding values from the device.

Fig. 58: Execute icon in the tag list

2. Collector configuration details will be displayed after execution.

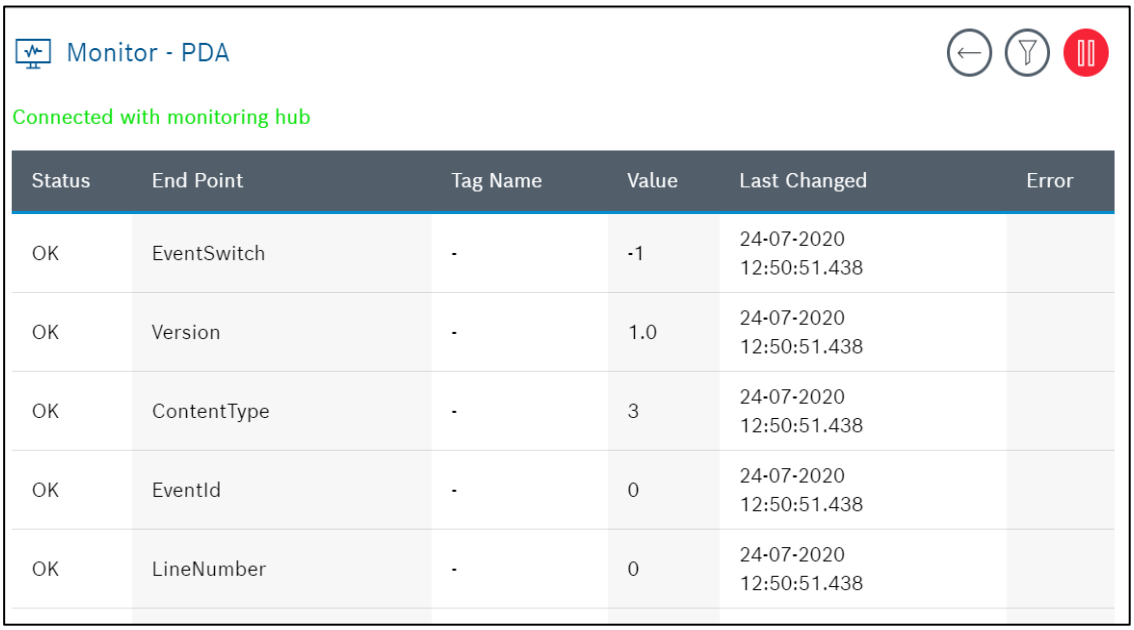


Fig. 59: Collector configuration details

5.3.5 Clone Collector

Following are the steps to Clone a Collector:

1. Click **Action button** of the Collector which needs to be cloned and click **Clone**.

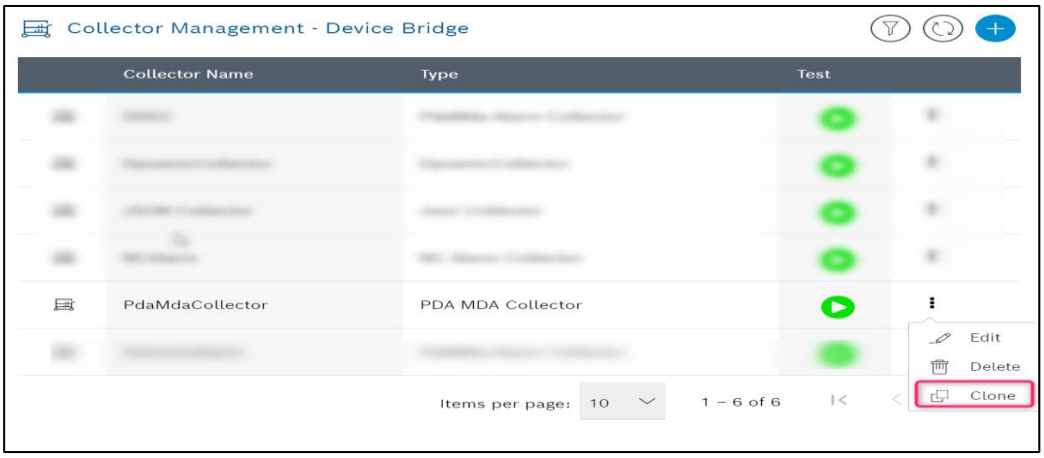


Fig. 60: Clone collector

2. A new Collector will be created with the user-defined name for the cloned collector.

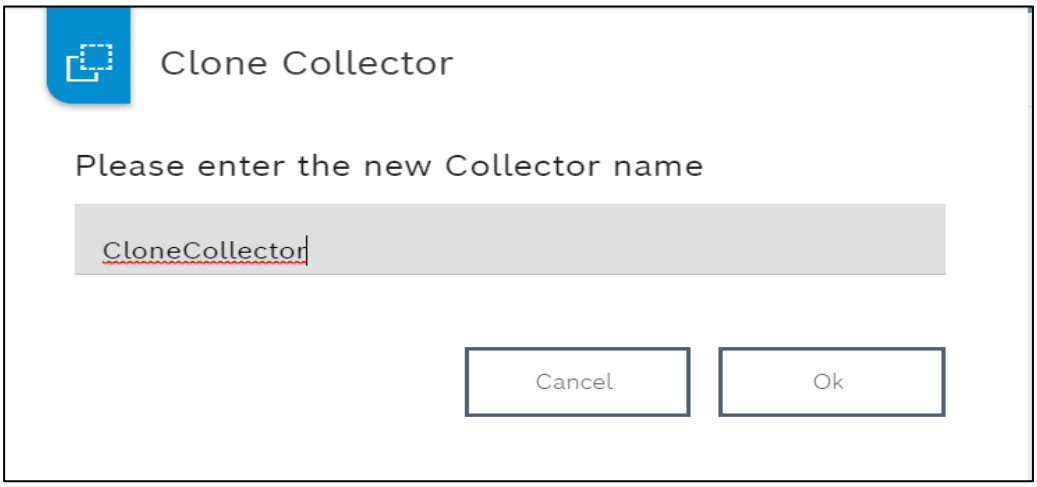


Fig. 61: Clone collector window

5.3.6 Delete Collector

Following are the steps to delete the Collector:

1. Select the **Collector** to be deleted, click **Action button**, and click **Delete**.

Fig. 62: Delete collector

2. A confirmation message will be displayed. Click **OK**, if you need to delete the collector.

5.3.7 Edit Collector

Following are the steps to edit the Collector details:

1. Select the **Collector** to be edited and click **Action button** and click **Update** to edit.

Fig. 63: Edit collector

2. Click **Save**, once the editing of the collector configuration is completed.

5.3.8 Search Collector

Following are the steps to find the Collector from the collector list:

1. Select **Search icon** to search the collector from the collector list.

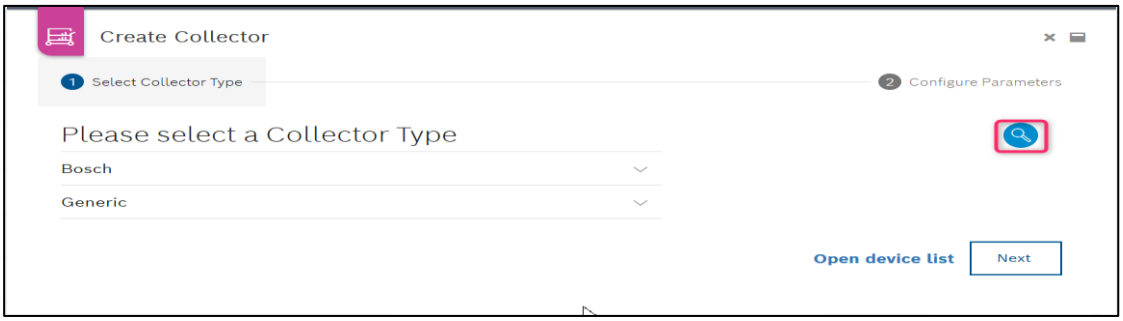


Fig. 64: Search collector

2. User will be able to see the search panel.

3. Enter the **Collector name** in the search panel (Ex: Dynamic Collector). The user will be able to see the collector section from the collector list.

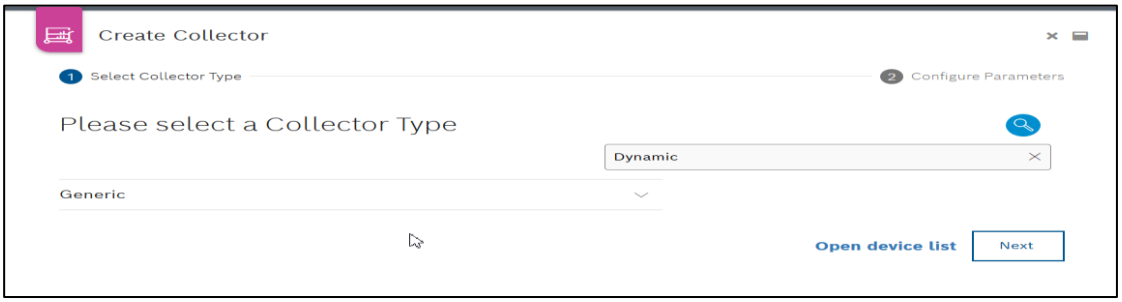


Fig. 65: Collector list

5.3.9 Filter Collector

Following are the steps to filter the collector from the collector list screen:

1. Select **Filter icon** to filter the collector from the collector list.

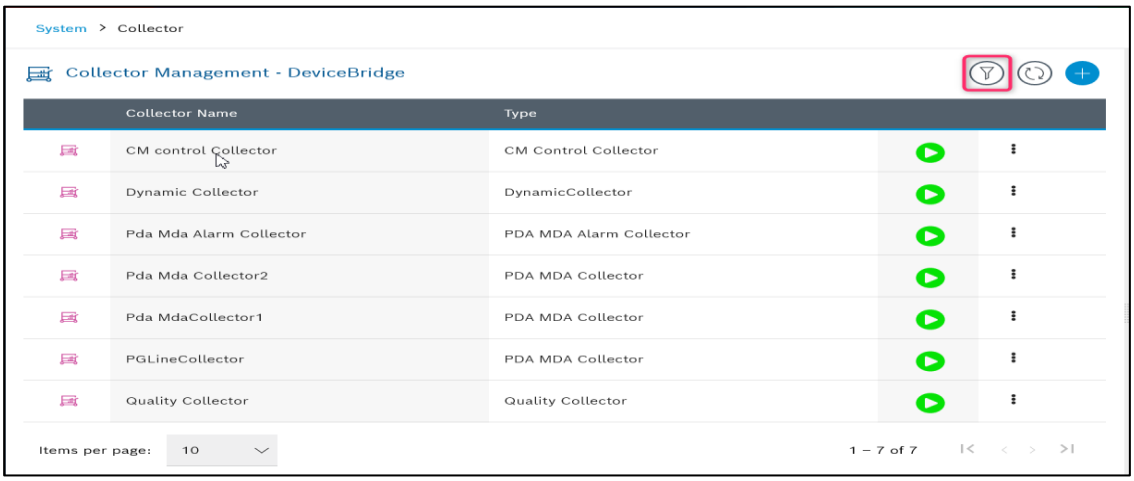


Fig. 66: Filter collector

2. The user will be able to see the Filter panel.

3. Enter the **Collector name** in the Filter panel (Ex: Dynamic Collector). The user will be able to see the collector from the collector list.

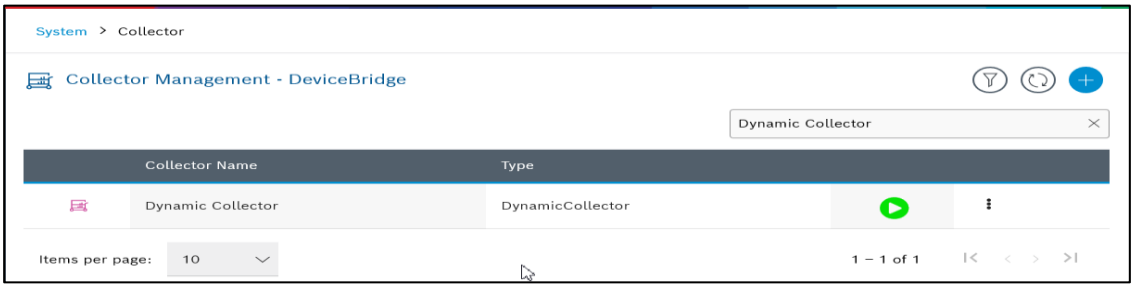


Fig. 67: Filter collector list

5.4 Connector

Connectors help user define the connection parameters for upstream IT application in order to transfer data to the preferred target system.

5.4.1 List of Connectors

Connectors	Description
DataLayer Connector	Send data to ctrlX DataLayer
Mqtt Publisher	Publishes data to MQTT broker
Azure Iot Hub	Send data to Azure Iot Hub
BoschIotHub	Send data to Bosch Iot Hub
CSV Connector	Store/Dump data to Server in CSV format
DDL Connector	Send data to Direct Data Link as XML
Kafka Connector	Send data to Kafka Message Broker as JSON/XML
AWS Iot Core	Send data as Mqtt Publisher
ADO Connector	Push data to MSSQL/MYSQL/ORACLE database
Bosch PPM Connector	Send data as PPMP protocol
Generic File Connector	Create simple flat files containing Json/xml/ plain text
Production Visualizer	Send data to Indus Platform
Solace Connector	Send data to Solace Message Broker as JSON/XML
Influx DB	Send time series data to Influx DB
Raw TCP/UDP Connector	Send data to Node Red or generic TCP/UDP server
WebService (SAP ME / SAP MII)	Connect to web servers supporting REST protocol

Tab. 6: **List of connectors**

5.4.2 Add Connector

Following are the steps to add a Connector:

1. Click **Connector** in the system section and then click **Add** button. Now choose Connector from the **Select Connector Types** dropdown list and then click **Next**.

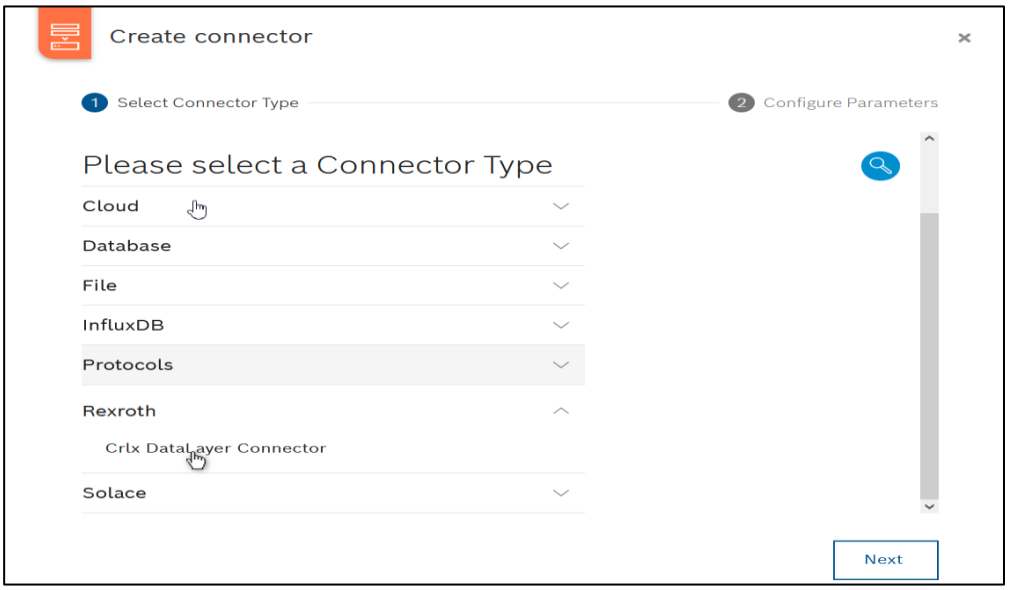


Fig. 68: Select connector types

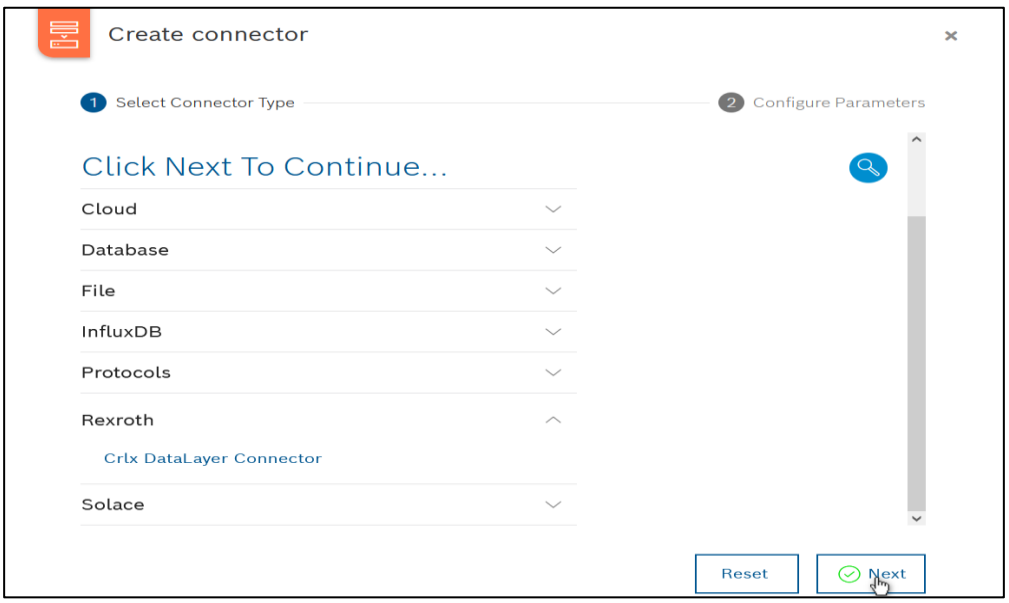


Fig. 69: Selected connector type from dropdown

2. Describe the connector based on the use case and then click **Save**.

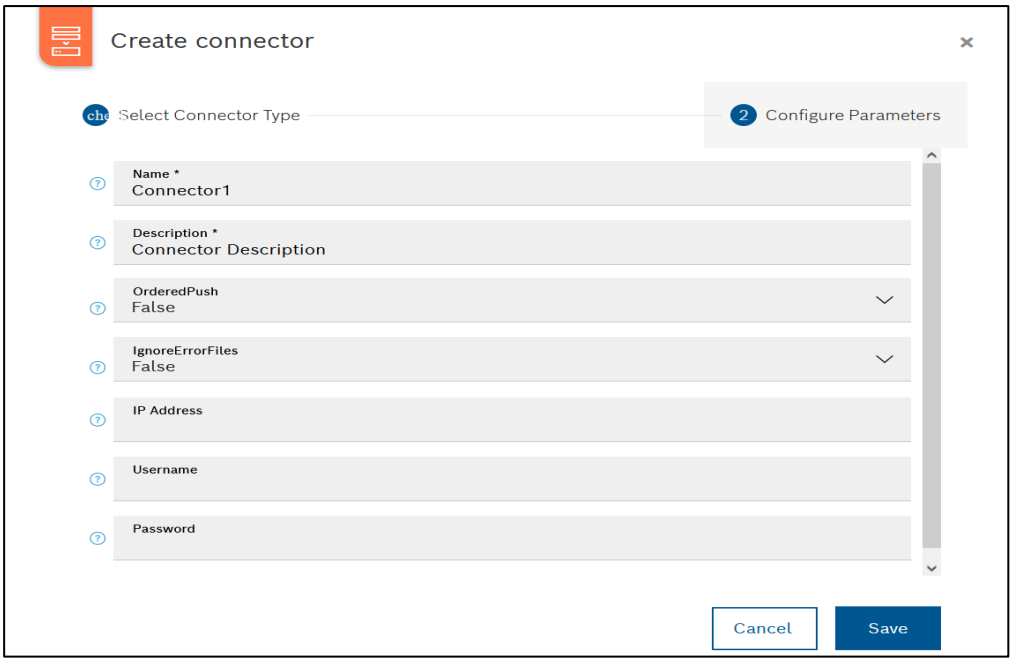


Fig. 70: Configure parameters

Name	Name of the connector
Description	Description of connector or use of the connector
IP Address	If Empty, it uses IPC (Industrial PC) communication
Username	If Empty, it uses IPC (Industrial PC) communication
Password	If Empty, it uses IPC (Industrial PC) communication

Tab. 7: **Configure parameter names with description**

Note:

The Clone, Edit, and Delete options will be displayed in the different connector screens as shown below, but please do follow the same steps to Clone, Edit, and Delete the CtrlX DataLayer Connector as well.

5.4.3 Clone Connector

1. Select a **Connector** to be cloned. Click **Action button** and click **Clone**.

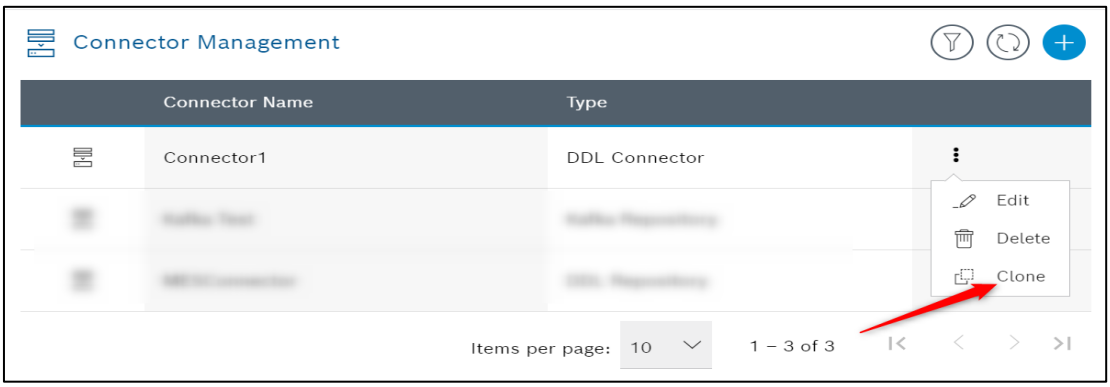


Fig. 71: Clone connector

2. The Connector will be cloned and renamed as user-defined.

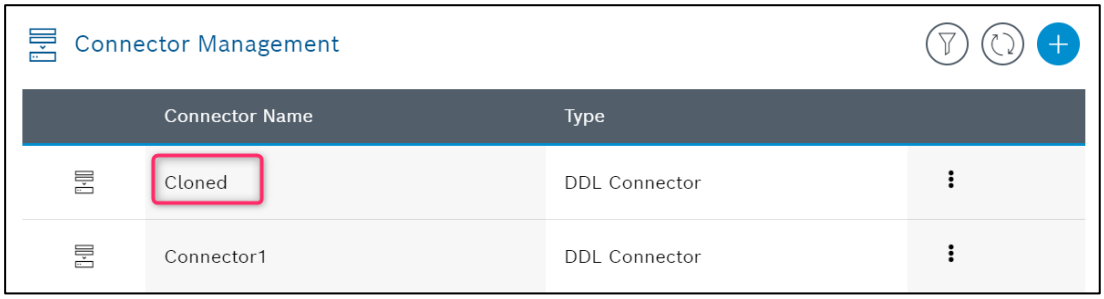


Fig. 72: Cloned connector window

5.4.4 Edit Connector

Following are the steps to edit the Connector:

1. Click **Action Button** on the selected connector or right-click the Connector in the hierarchy and click **Edit Connector**.

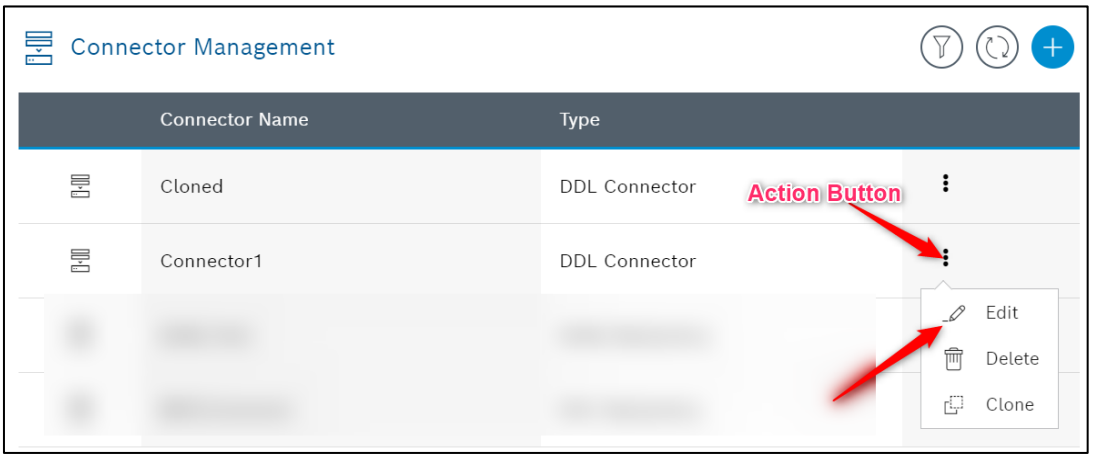


Fig. 73: Edit connector

2. Edit the configuration details and click **Save**.

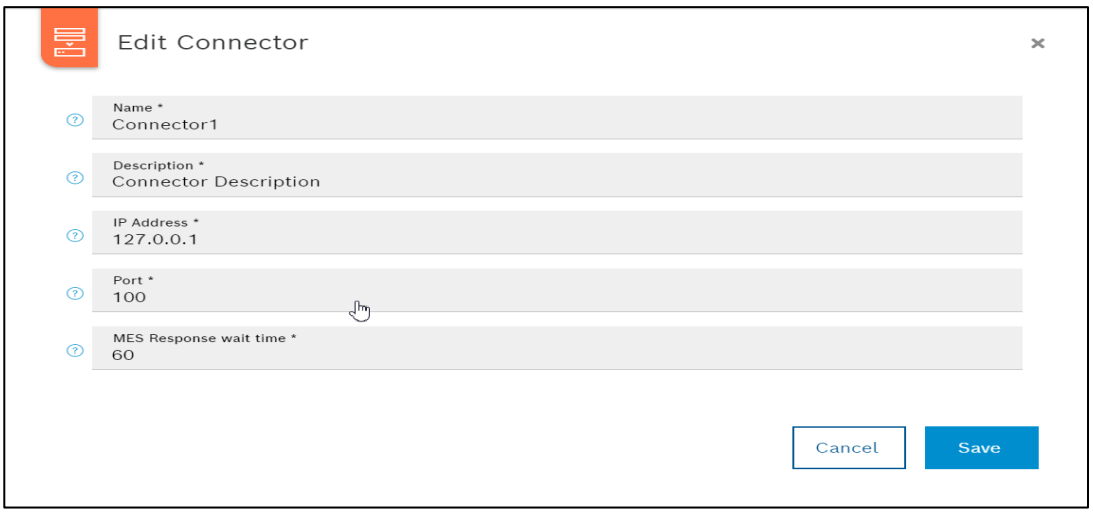


Fig. 74: Edit configuration details

5.4.5 Delete Connector

Following are the steps to delete the Connector:

1. Click **Action Button** on the selected Connector or right-click the Connector name in the hierarchy and click **Delete**.

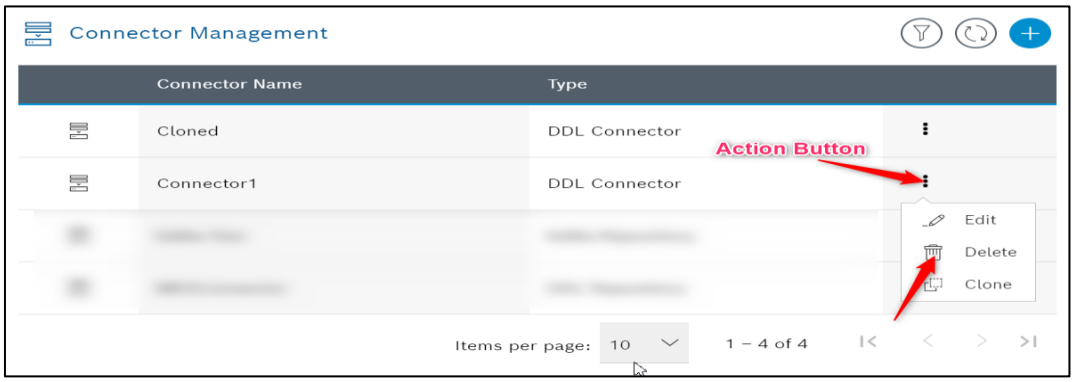


Fig. 75: Delete connector

2. A confirmation message will be displayed. Click **Ok** if needs to be deleted or else **Cancel**.

5.4.6 Search Connector

Following are the steps to find the Connector from the connector list:

1. Select **Search icon** to search the connector from the collector list.

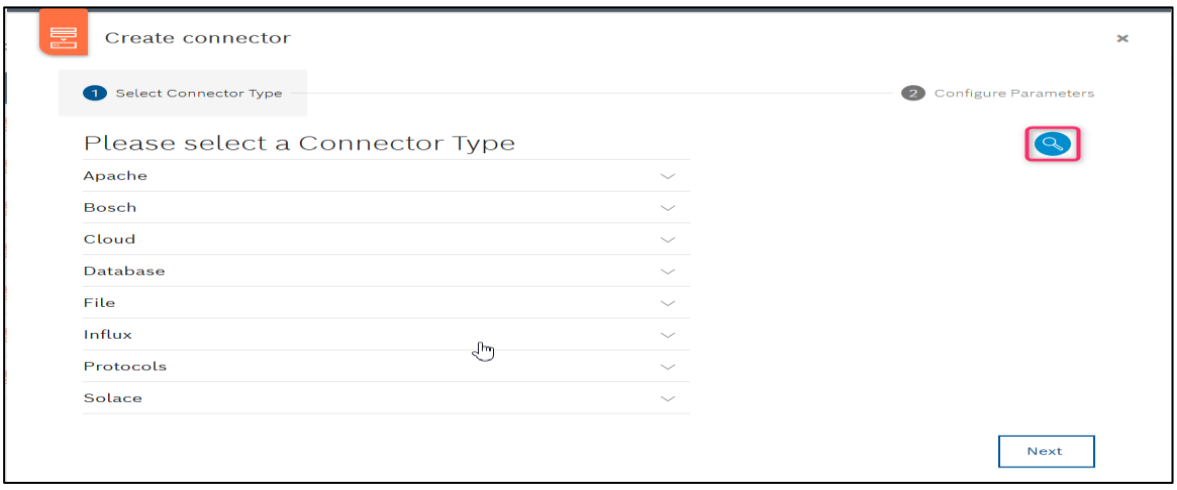


Fig. 76: Search connector

2. The user will be able to see the search panel.
3. Enter the **Connector name** in the search panel (Ex: Mqtt Connector). The user will be able to see the connector section from the connector list.

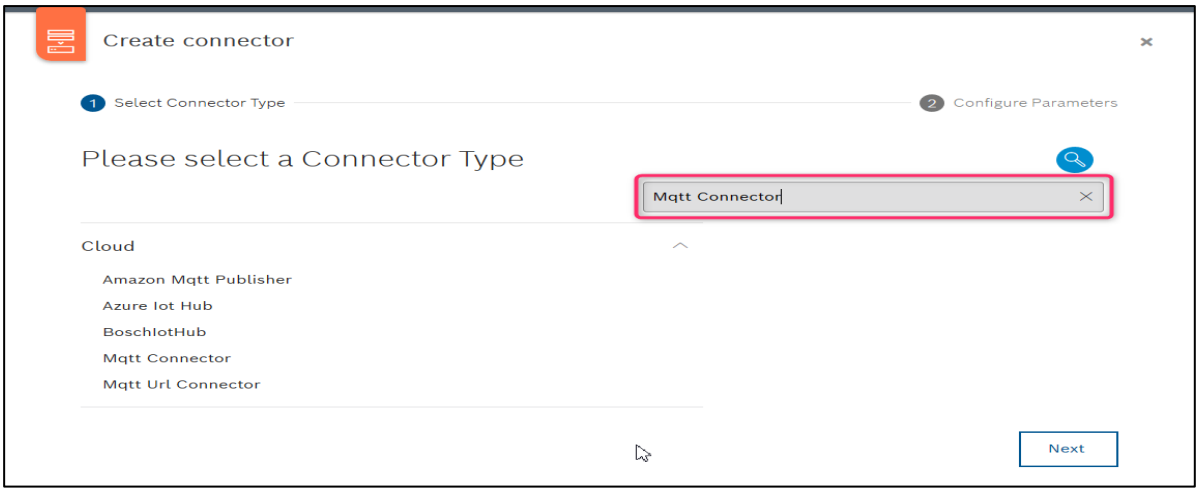


Fig. 77: Select connector type

5.4.7 Filter Connector

Following are the steps to filter the connector from the connector list screen:

1. Select **Filter icon** to filter the connector from the connector list.

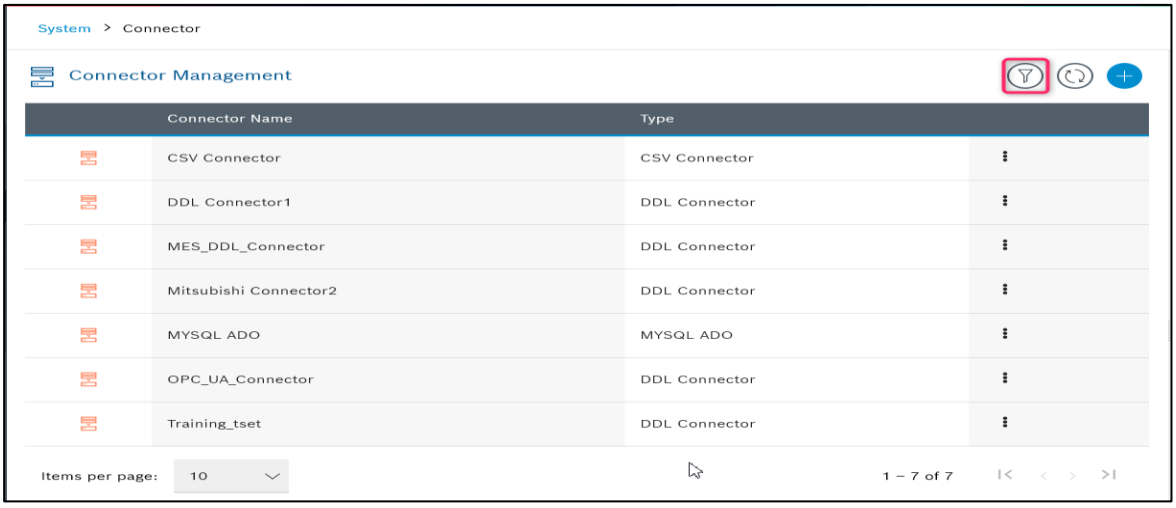


Fig. 78: Filter connector

2. The user will be able to see the Filter panel.

3. Enter the **Connector name** in the filter panel (Ex: MySql ADO). The user will be able to see the Connector from the connector list.

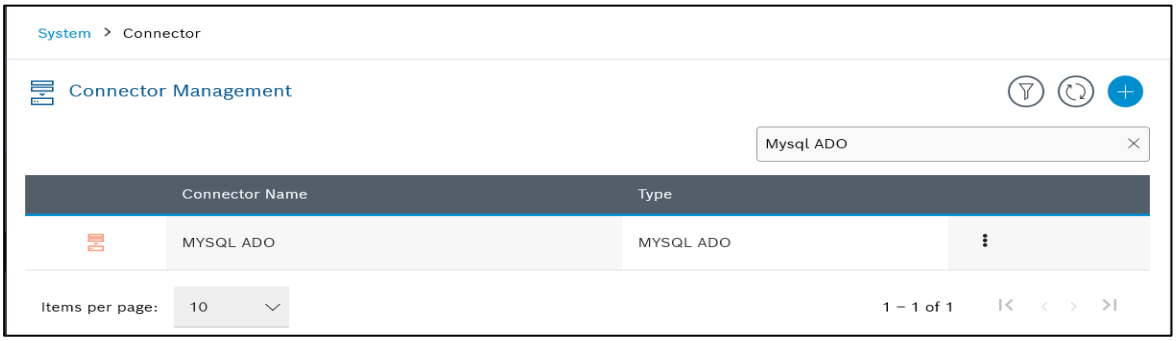


Fig. 79: Filter connector list

5.5 Data Model

The DeviceBridge application can pull the data from the different devices and send it to the different Connectors with the defined transformation format. Data models allow Users to create a specific data structure to send to IT Applications.

5.5.1 Add Data Model

Following are the steps to add the Data Model:

1. Click **Data Model** and then click **Add icon** on the right as shown below.

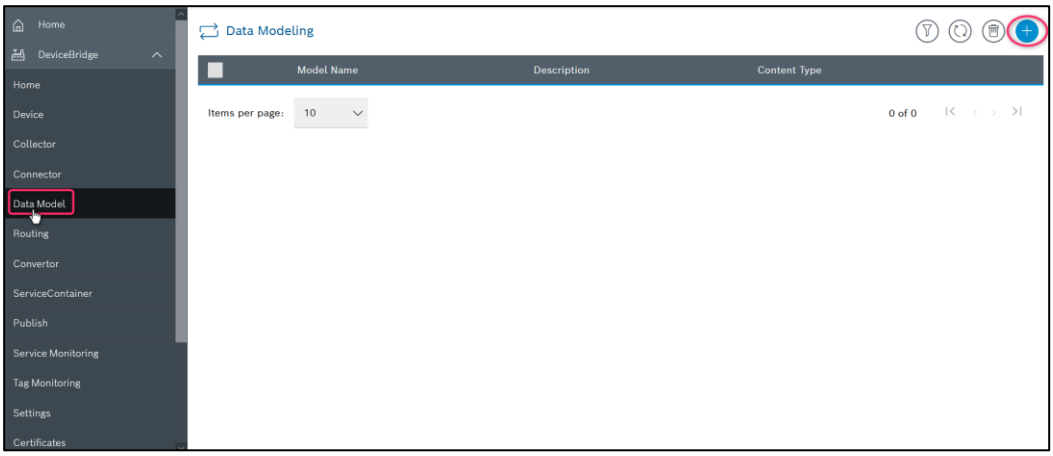


Fig. 80: Data model window

2. The **Welcome to data model creation wizard** window appears and click **Next**.

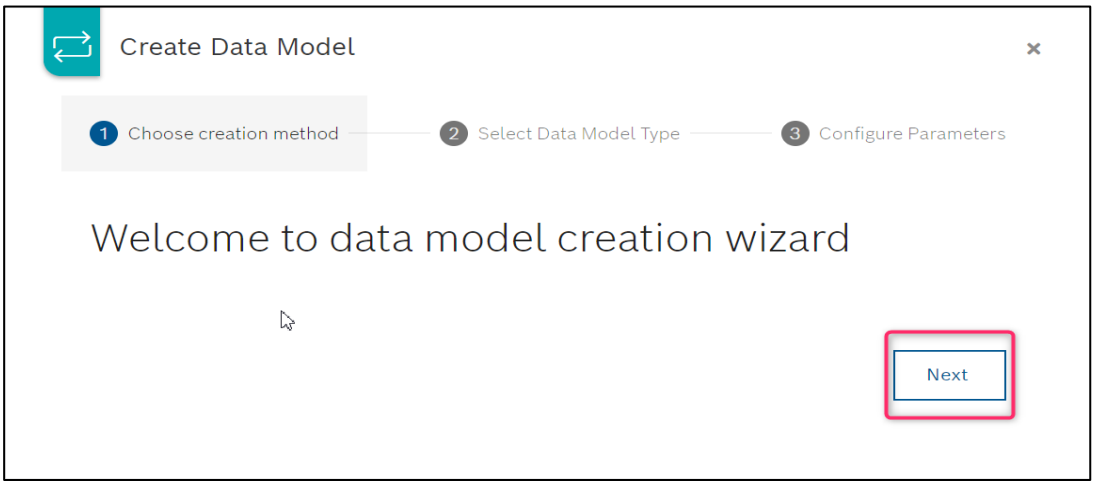


Fig. 81: Create data model welome window

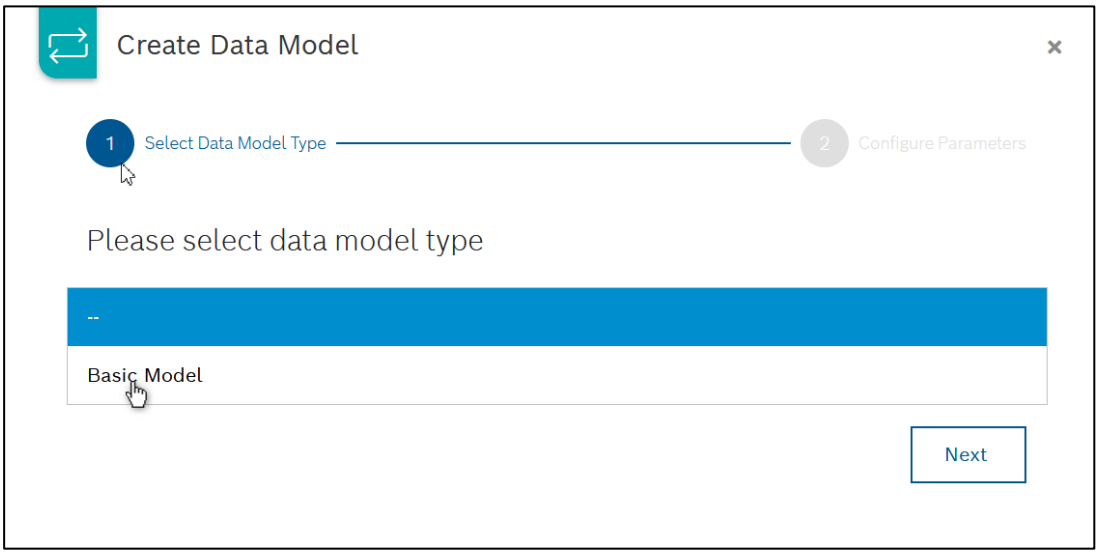


Fig. 82: Select data model type

3. Select the **Data model type** from the dropdown as **Basic Model** as shown above.

4. Click **Next**. The Create Data Model page appears as shown below.

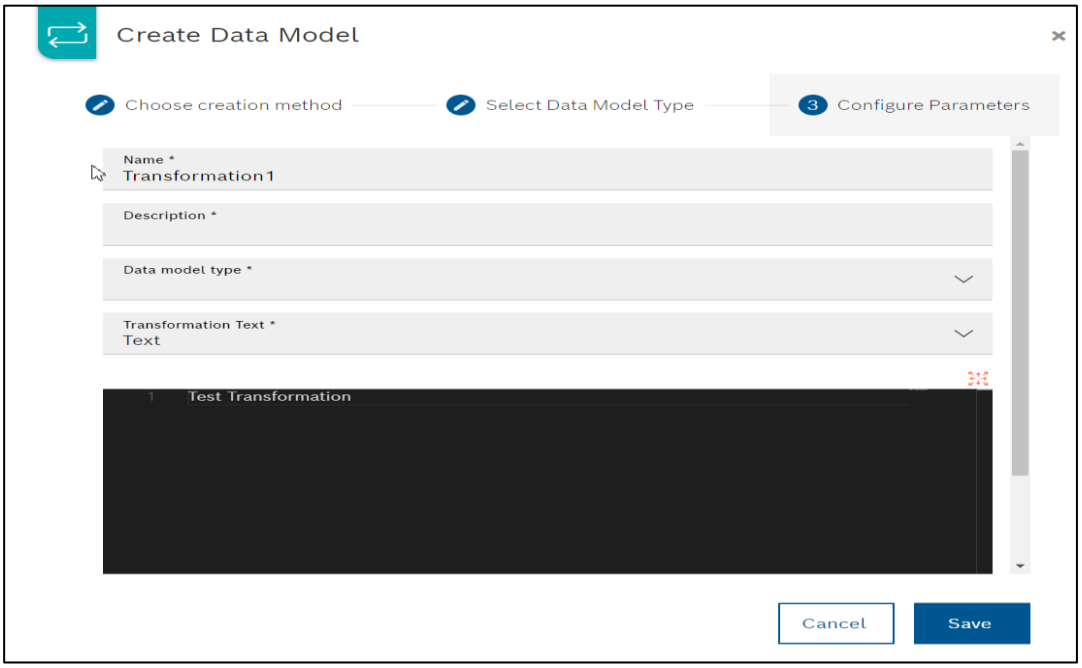


Fig. 83: Create data model window

5. Enter Name and Description details.

6. Select the **Data model type** from the dropdown. For Ex: **Simple**.

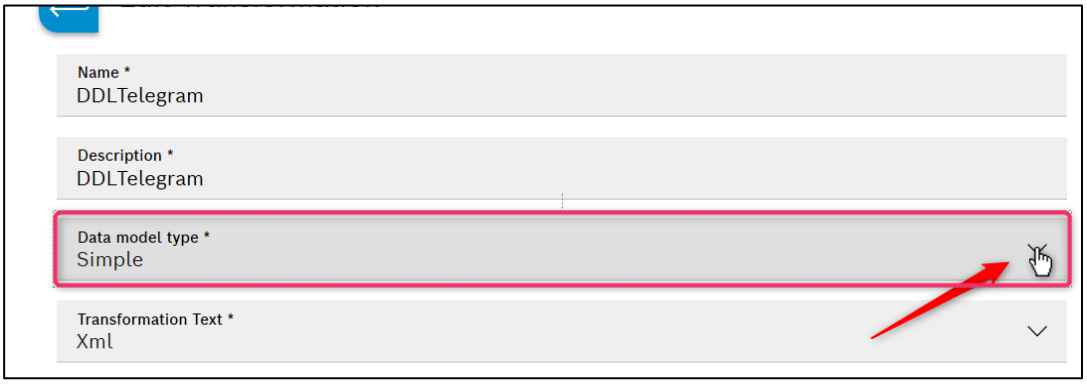


Fig. 84: Select data model type

7. Select **Transformation text type** from the dropdown as shown below.

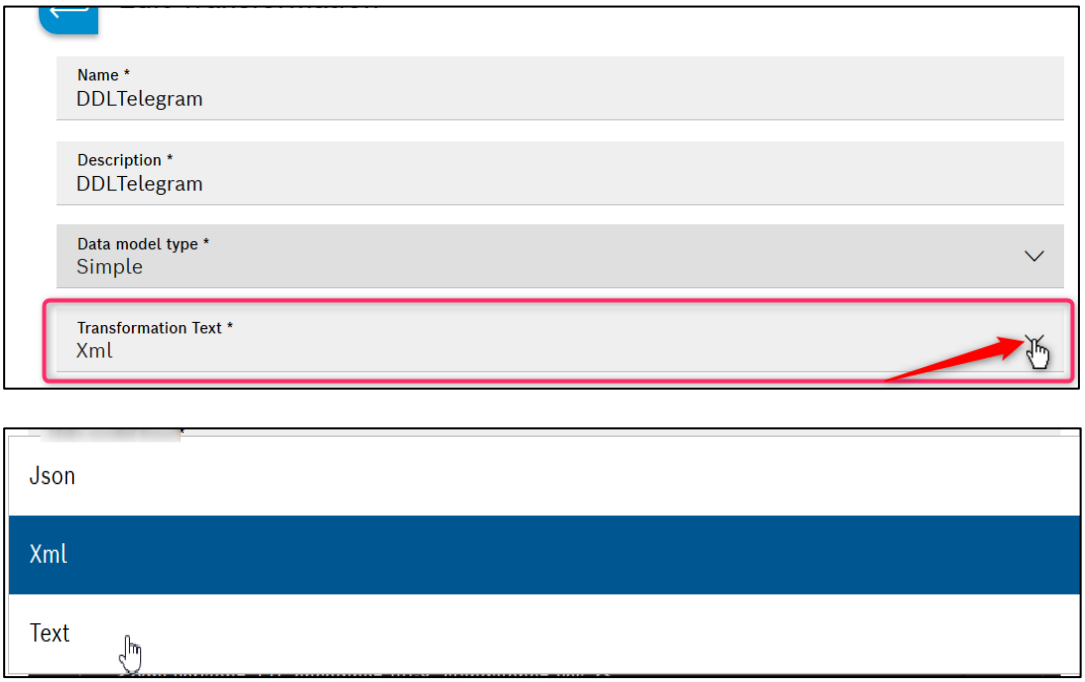


Fig. 85: Transformation text type

8. Select the **XML Transformation** Text from the dropdown list.
9. Copy the XML format to be transformed on the black screen as shown below.

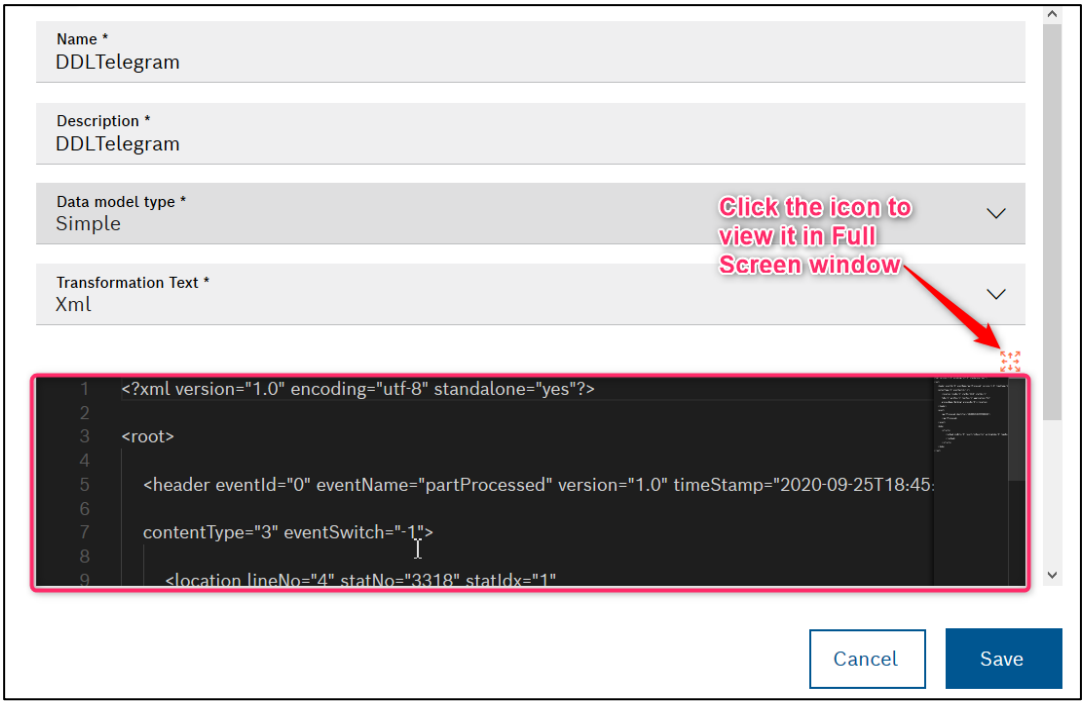


Fig. 86: Xml format window

Fig. 87: Xml format window – full screen

10. Click **Save**.
11. Similarly, select the Transformation text as **JSON**.

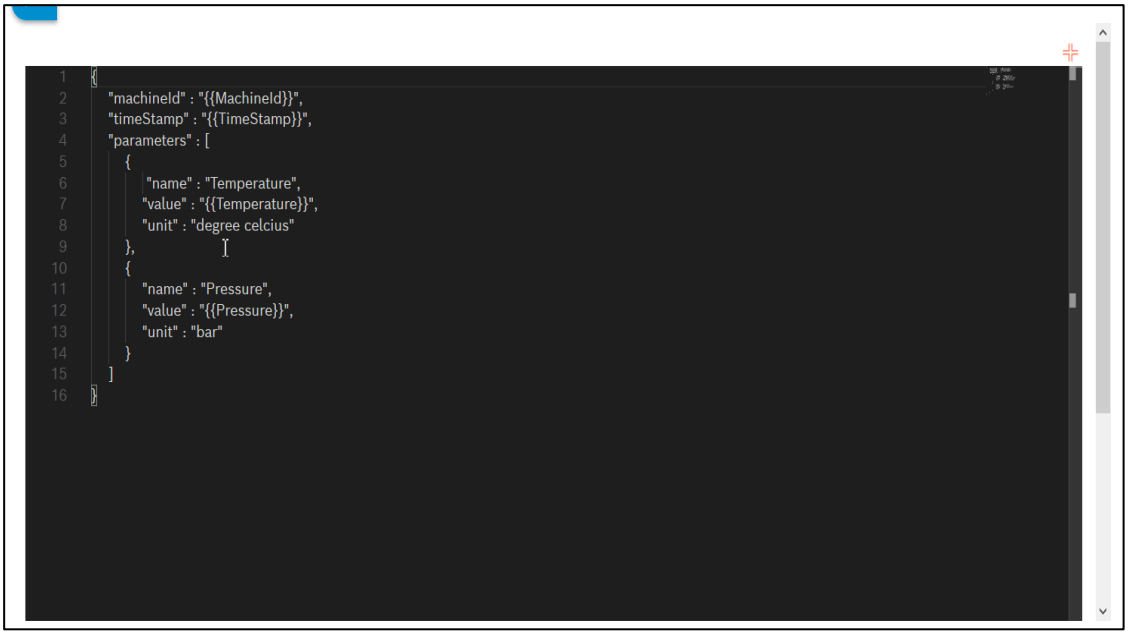


Fig. 88: Transformation text

Note:

Once the transformed XML is mapped to the appropriate collector, the result file will be generated in the Transformed format.

12. The Saved data model will get displayed in the Data Model home screen as shown below.

Fig. 89: Data model window

5.5.2 Edit Data Model

Following are the steps to edit the Data Model:

1. Click **Actions button** on the created data model as shown below.
2. Select **Edit**.

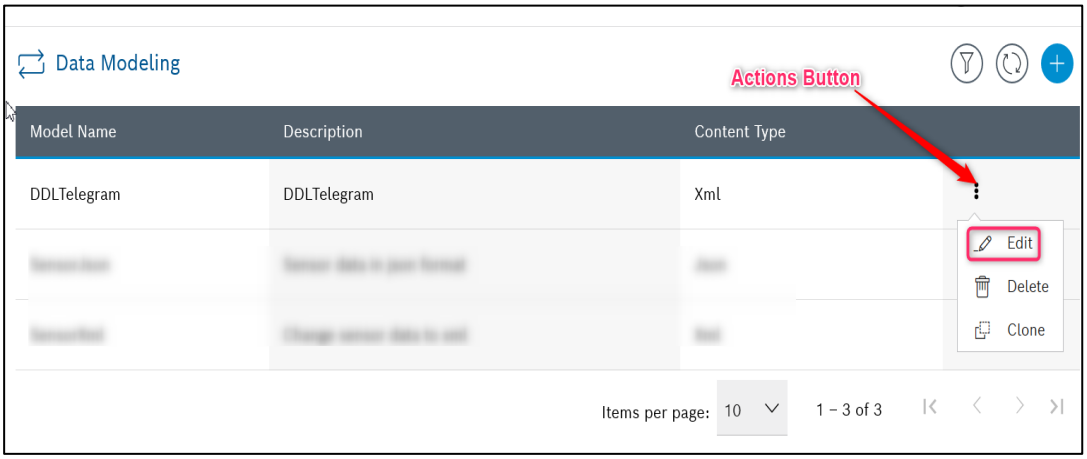


Fig. 90: Data model edit option

3. Edit the **Configurations details** and click **Save**.

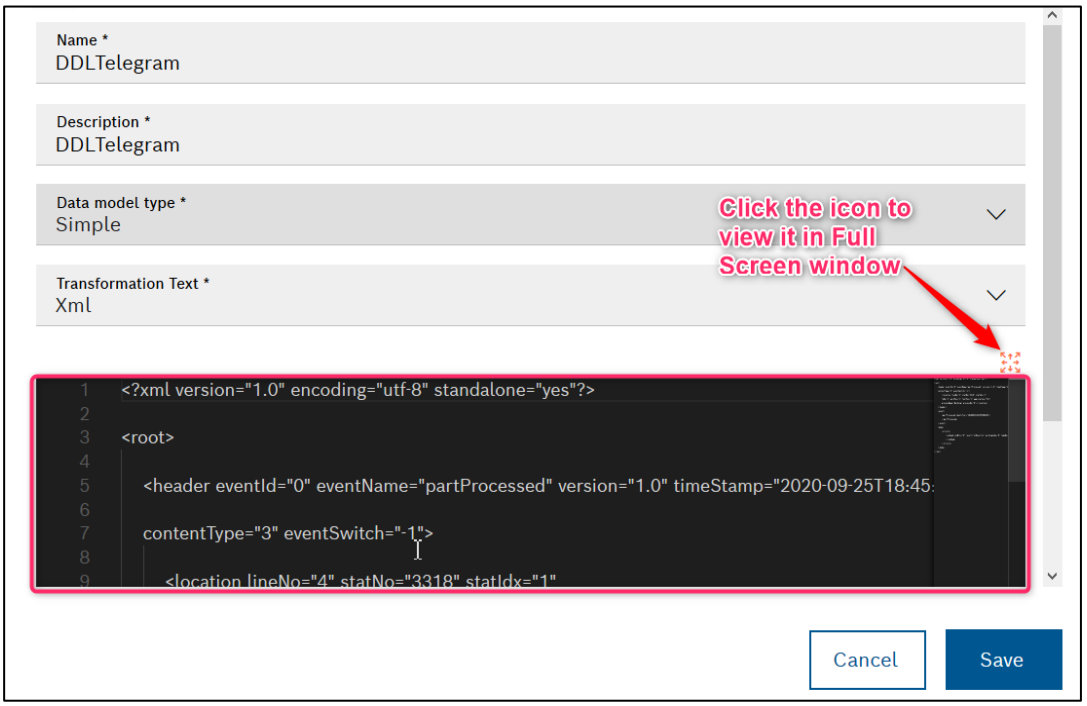


Fig. 91: Configuration details

5.5.3 Delete Data Model

Following are the steps to delete the Data Model:

1. Click **Actions button** on any of the data models as shown below.
2. Select **Delete**.

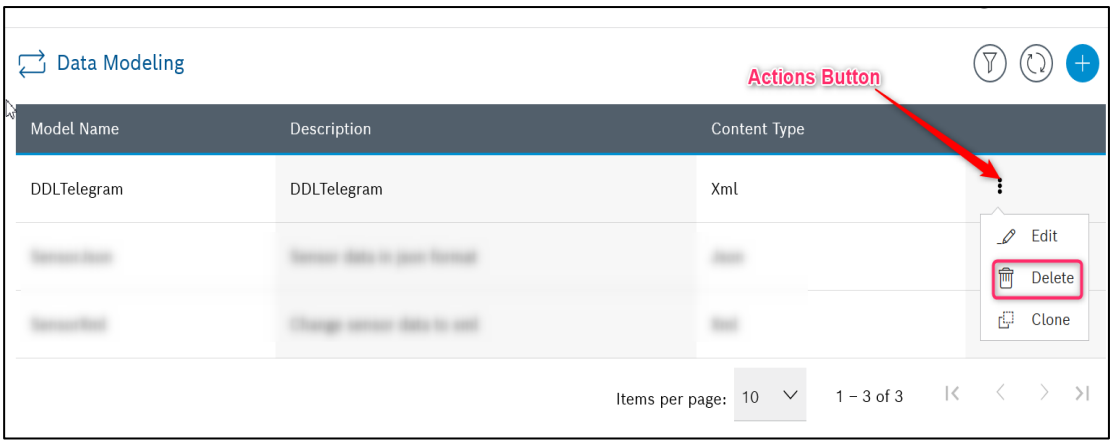


Fig. 92: Data model delete option

3. A confirmation message will be displayed. Click **OK** to delete or else click **Cancel**.

5.5.4 Clone Data Model

Following are the steps to delete the Data Model:

1. Click **Actions button** on any of the data models as shown below.
2. Select the data model to be cloned and click **Clone**.

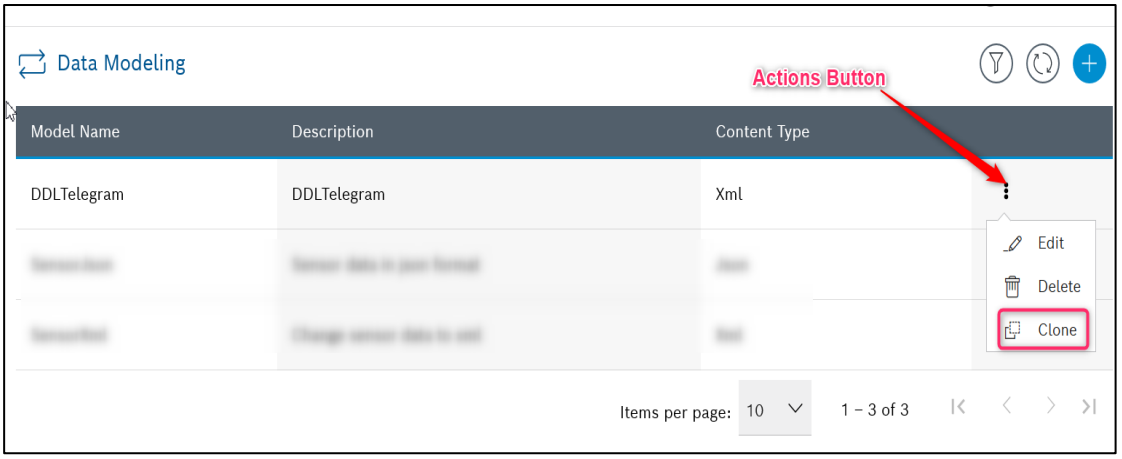


Fig. 93: Data model clone option

3. The selected data model will be cloned to a new data model as shown below.

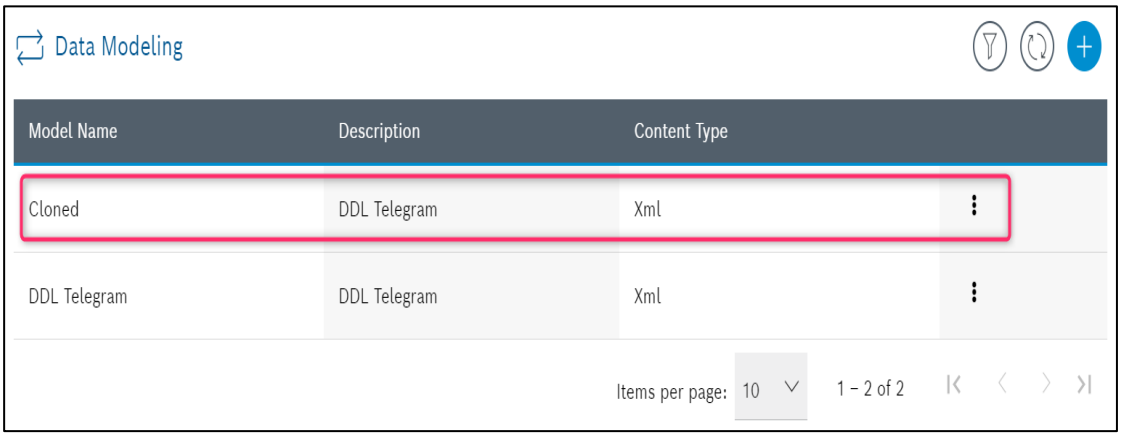


Fig. 94: Cloned data model

5.5.5 Filter Data Model

Following are the steps to filter the Data Model from the Data Modeling list screen:

1. Select **Filter icon** to filter the Data Model from the Data Model list.

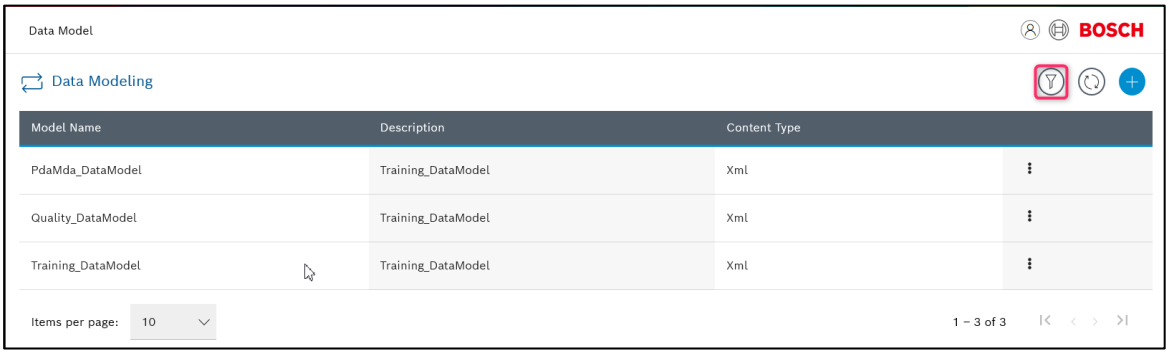


Fig. 95: Filter data model

2. The user will be able to see the Filter panel.
3. Enter the **Data Model name** in the filter panel (Ex: PdaMda_DataModel). The user will be able to see the Data Model from the Data Model list.

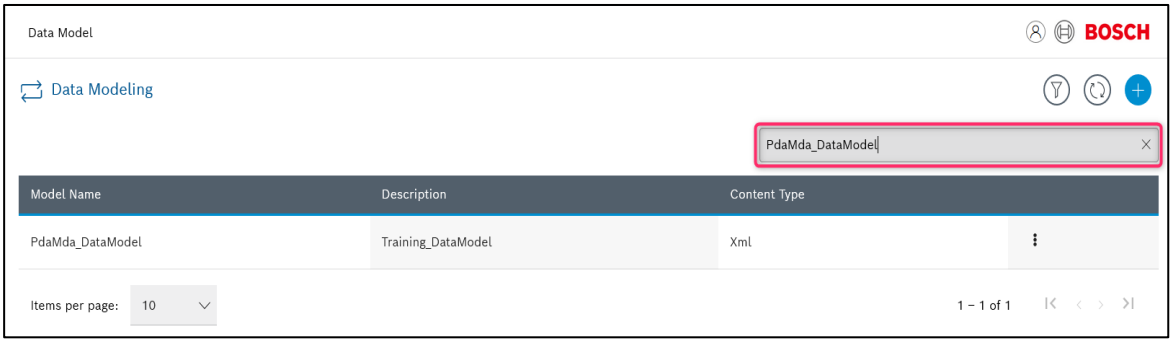


Fig. 96: Data model list

5.6 Convertor

Converter function is used when the raw data received from the Device is not suitable to be sent directly to upstream system. Converter functionality offers the below features

• Formatting – Convert data to standard format to improve the quality of data (Ex: 3 Digit variant type is provided by PLC whereas MES expects 8-digit value. The User can add Suffix, expand length or add Prefix to Variant Type Data)

- Add simple Expressions (Ex: Engineering value conversion. Convert Temperature value from Celsius to Fahrenheit)
- Add Lookup table (Ex: Add Error table mapping with error description”)

5.6.1 Add Convertor

Following are the steps to add a Convertor:

1. Click **Convertor** and then click **Add button**.

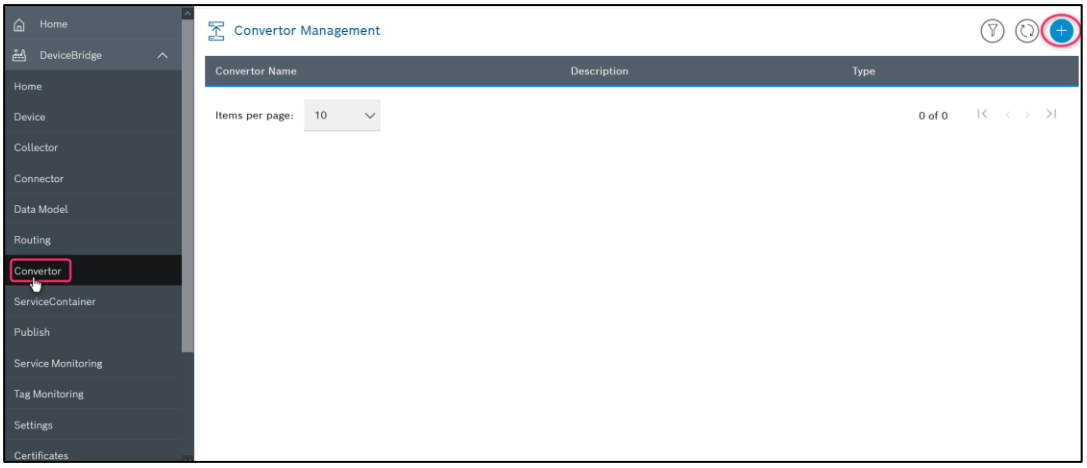


Fig. 97: Add converter

Fig. 98: Add converter fields

2. Enter the Name and Description of the converter. The Description is mandatory.
3. There are three types of convertors - Format, Expression, and Lookup Table.
4. To add Expression, select Type as **Expression** from Type Dropdown.

Fig. 99: Add converter expression dropdown fields

5. Enter the Expression and Null Value to start the index and click **Save**. Ex: X+10.

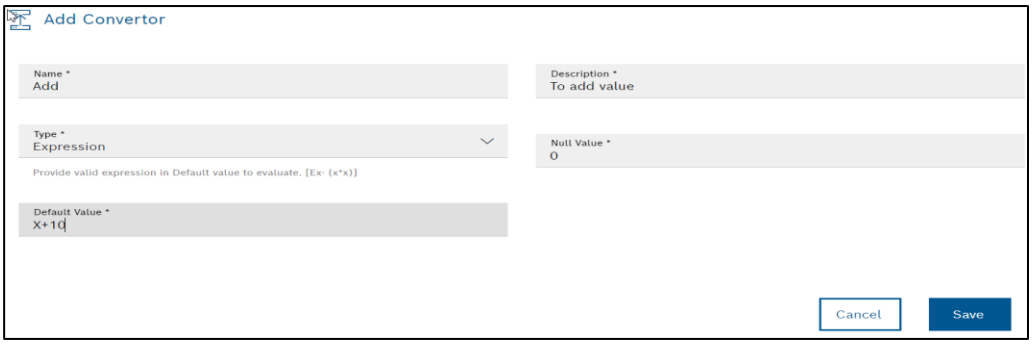


Fig. 100: Add converter field names

6. The variable X will replace the value from the PLC.
7. To add a Lookup table, follow steps from 1 to 2.

8. To add a Lookup table, select type as **Lookup Table** from the Type Dropdown list.

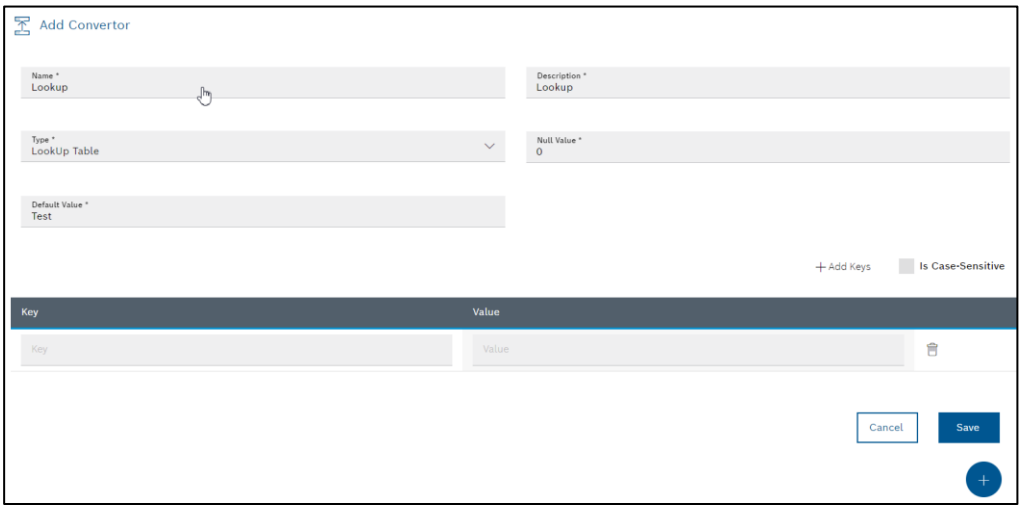


Fig. 101: Select lookup table

Name	Name of the convertor
Description	Description of convertor
Type	Types of convertor, Lookup or Expression
Null Value	To handle the null values from the device
Default Value	To handle the data which is not defined in the lookup table For the expression convertor, the default value will contain mathematical expressions. E.g (X+10)
Is Case Sensitive	If the user is defining String Key Value for the lookup table, then the case-sensitive field is considered.

Tab. 8: **Converters and description**

For example, 1 = True and 2 = False, this means, if value 1 is read from PLC, the data **True** will send, and 2 is read from PLC then the data **False** will send.

Note:

Based on the key value, the pair value will be sent, if there is a random value then the default value will be sent.

9. Click **Add Key**, to add more items.
10. Click **Delete icon** to delete a row.
11. Follow the steps from 1 to 2 to add a Format table.
12. Select Type as **Format** from the Type Dropdown list, to add a Format table.
13. Enter the format that you need, the data to be formatted in the **Default Value tab**. For Ex: CDB{0:3} - this expands the value by 3 characters.

Fig. 102: Default value tab

14. Click **OK** to save the convertor.

5.6.2 Map the convertor to a collector

If a Convertor is mapped to endpoint in Collector returns a data, which is equal to one of the keys in the table, then respective **value** from the table will be returned to Collector for processing the data. If the data is not found in the list of keys, then the default value will be assigned as endpoint value.

Converter mapping can be done by any power user or Administrator. It is not allowed by the application engineer in the collector. The user will see the option for mapping the Convertor in the application (DeviceBridge).

Following are the steps to map the Collectors:

1. Go to the **Collectors section** and click **Configured Collector**. For Ex: PDAMDA collector.

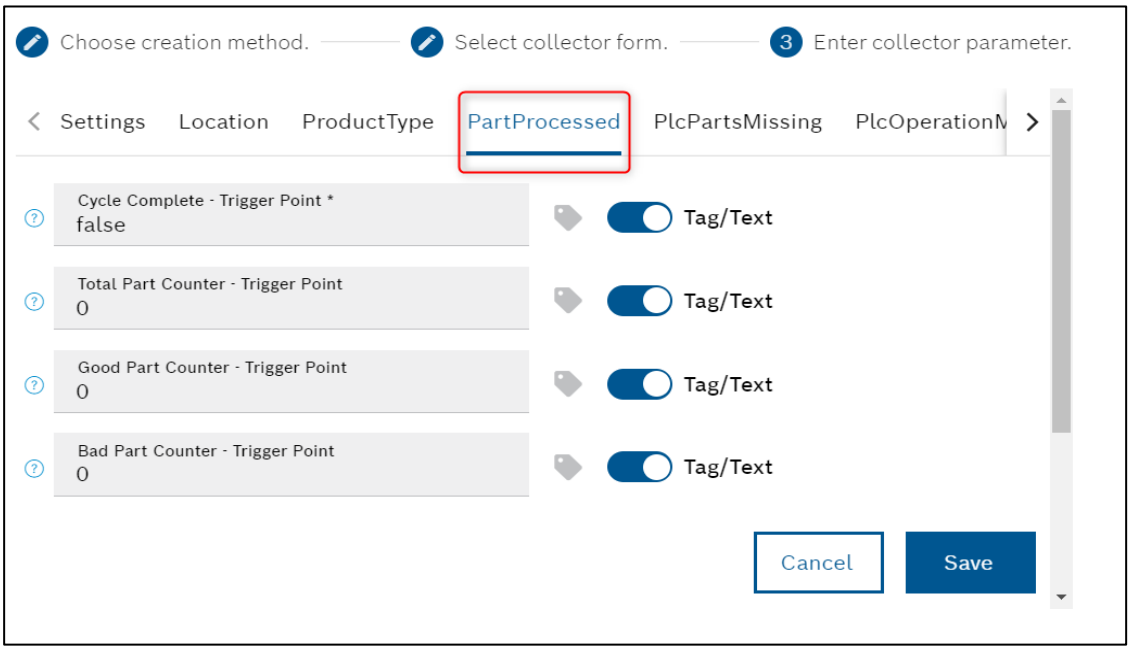


Fig. 103: Configured collector

2. Click **PartProcessed** tab as shown above and select the endpoint (variable) against which the Translation table needs to be mapped.

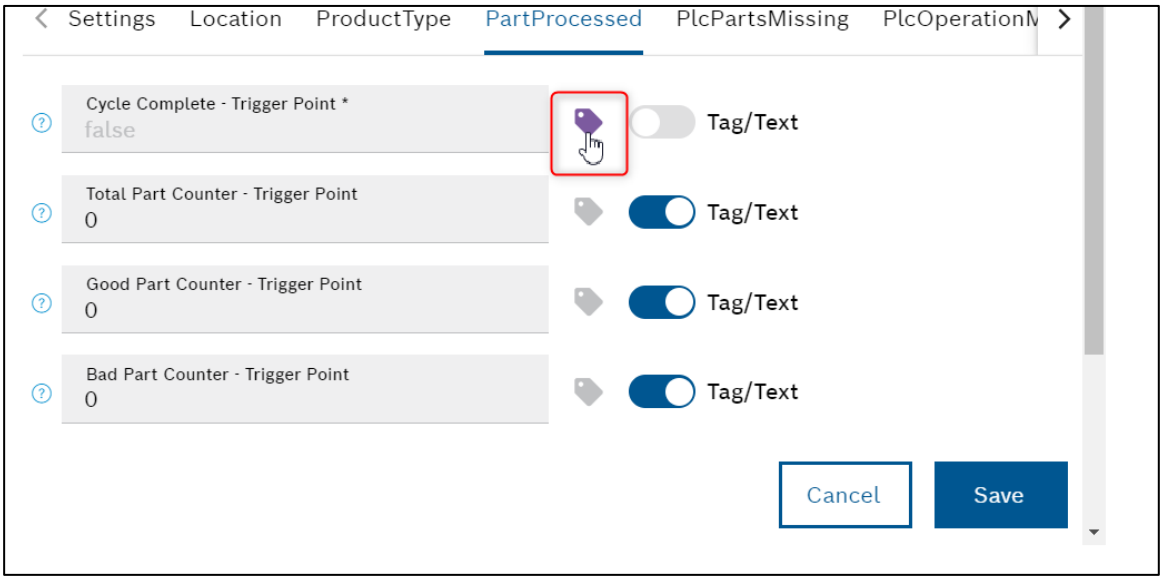


Fig. 104: Part processed tab

3. Click **Browse** Tag. The **Select Convertor and tag** Window appears.

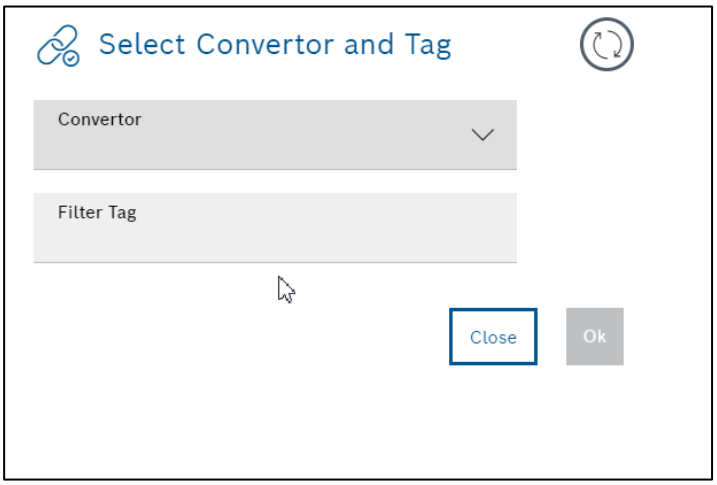


Fig. 105: Select convertor and tag window

4. Expand Convertor dropdown. Select the desired Convertor from the dropdown menu to map. Click **Ok**.

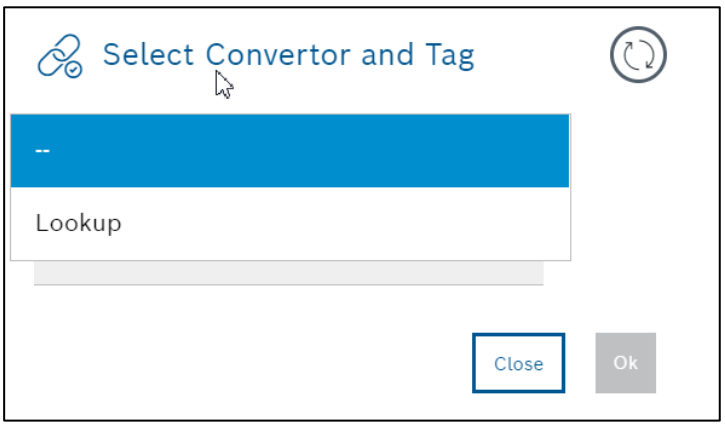


Fig. 106: Converter dropdown

5. The Mapped Endpoint window appears as shown below and click **Save**.

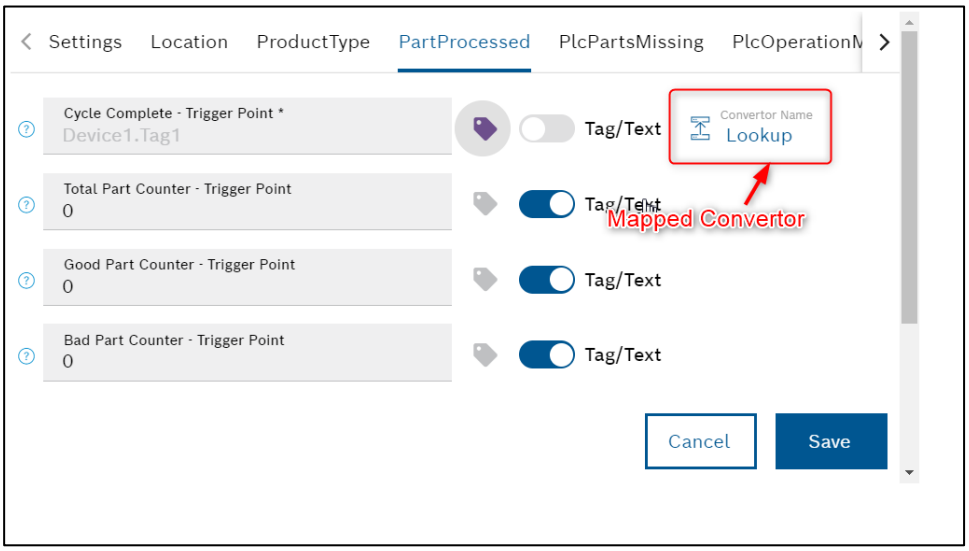


Fig. 107: Mapped endpoint converter window

5.6.3 Edit Convertor

Following are the steps to edit the Convertor:

1. Click **Actions button** on the created Convertor as shown below.
2. Select **Edit**.

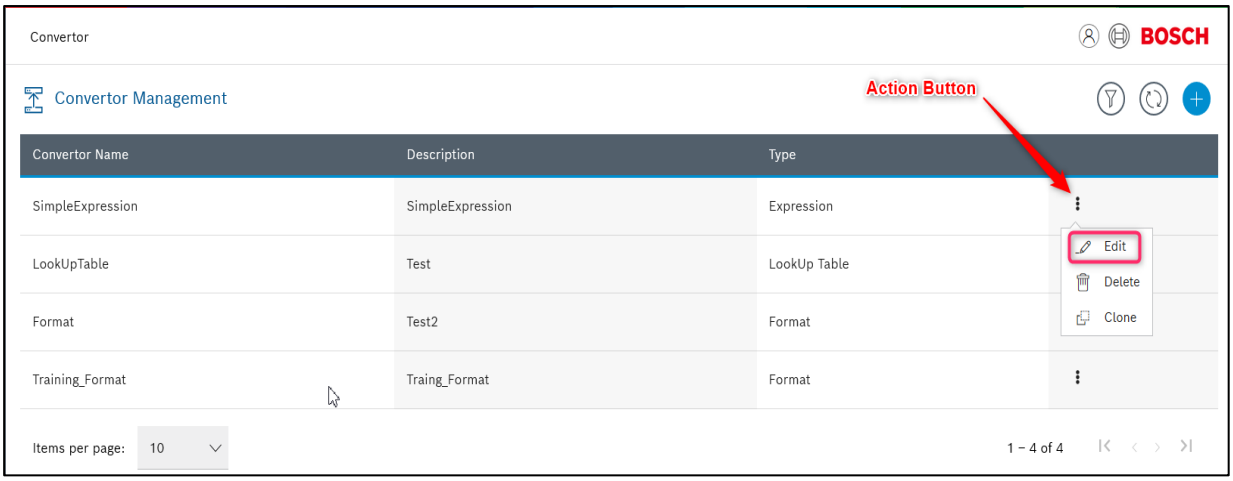


Fig. 108: Edit convertor window

3. Edit the configuration details and click **Save**.

Fig. 109: Edit configuration details

5.6.4 Delete Convertor

Following are the steps to delete the convertor:

1. Click **Actions button** on any of the convertors as shown below.
2. Select **Delete**.

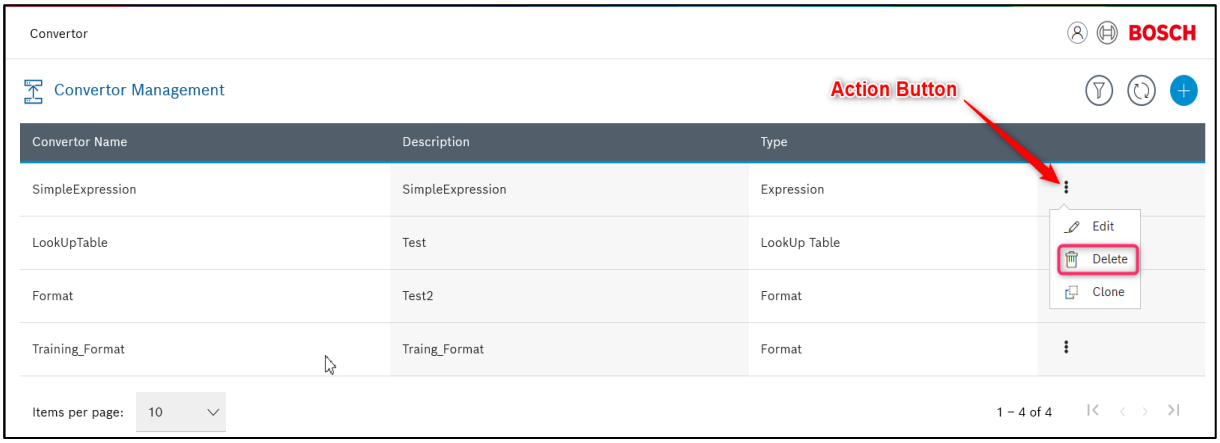


Fig. 110: Delete convertor

3. A confirmation message will be displayed. Click **Ok** to delete or else click **Cancel**.

5.6.5 Clone Convertor

Following are the steps to clone the Convertor:

1. Click **Actions button** on any of the convertors as shown below.
2. Select the convertor to be cloned and click **Clone**.

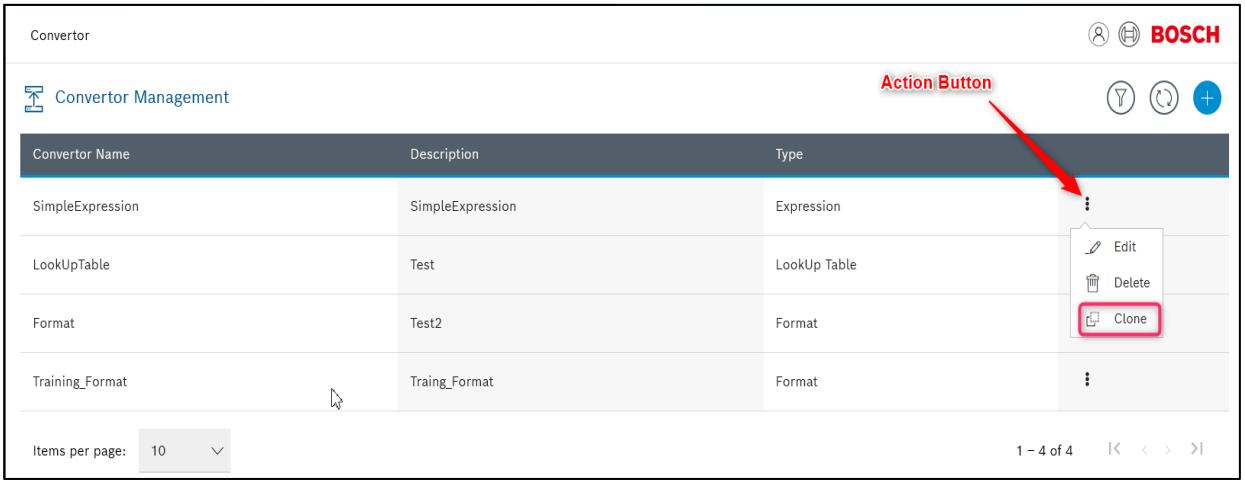


Fig. 111: Clone convertor option

3. The selected Convertor will be cloned to a new convertor as shown below.

Fig. 112: Cloned convertor

5.6.6 Filter Convertor

Following are the steps to filter the Convertor from the convertor list screen:

1. Select **Filter icon** to filter the convertor from the convertor list.

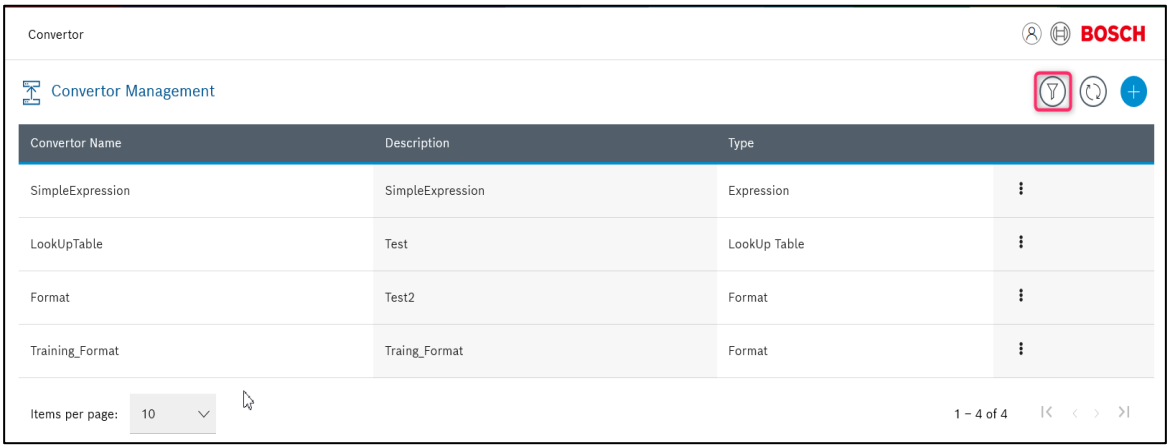


Fig. 113: Filter convertor

2. The user will be able to see the Filter panel.
3. Enter the Convertor name in the Filter panel (Ex: SimpleExpression). The user will be able to see the Convertor from the convertor list.

Fig. 114: Convertor list

5.7 Routing

Routes are used to configure data flow from Device to the IT Applications. It allows selection of a collector, and one or more connectors and data models (optional).

Routing allows User to send the same data to one or more destination.

Before adding Routing, the user should have configured Collectors and Connectors to create a Routing.

5.7.1 Add Routing

Following are the steps to add Routing:

1. Click **Routing** and then click **Add button**.

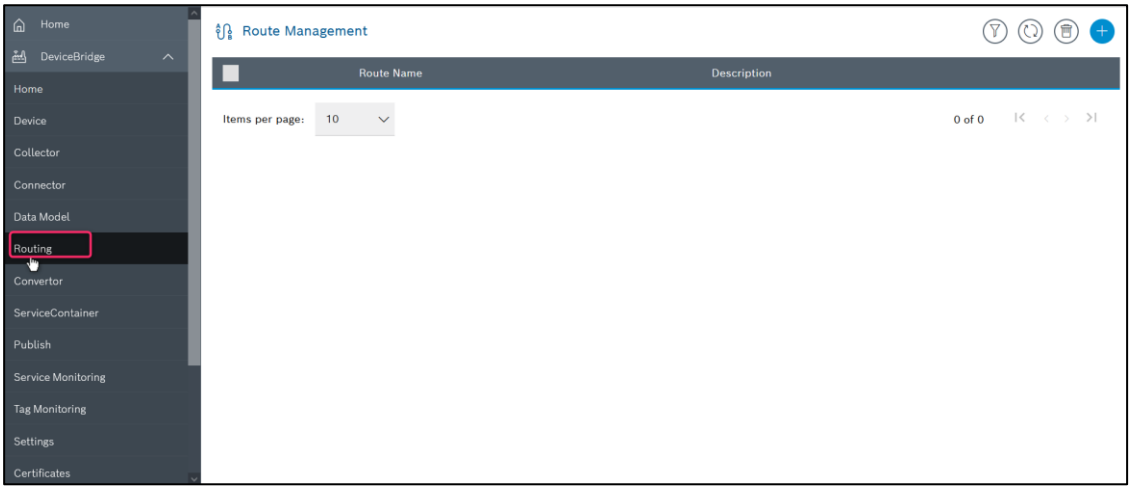


Fig. 115: Routing window

2. The Routing Configuration Screen appears as shown below.

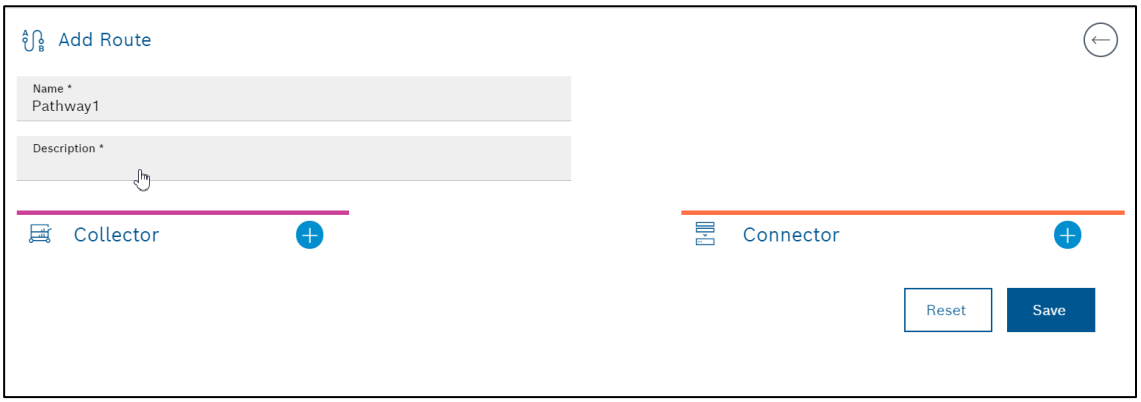


Fig. 116: Routing configuration screen

3. Enter the Routing Name, Description, and select a Collector by clicking the **Add Icon**.

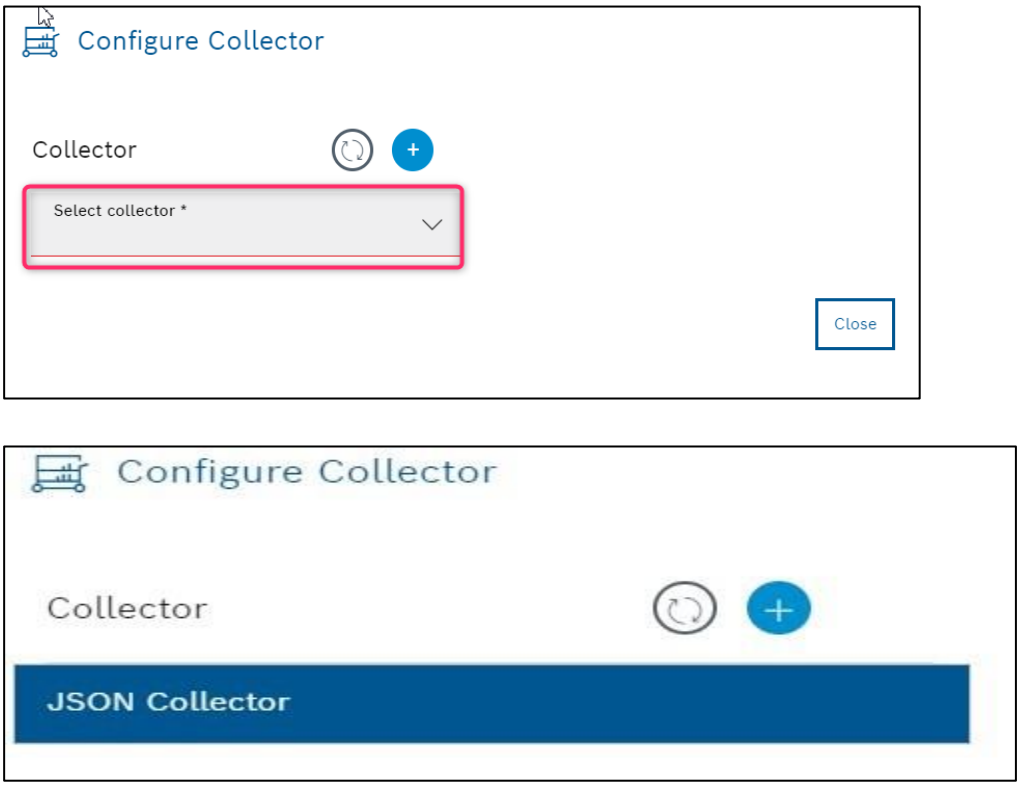


Fig. 117: Select collector drop down option

4. Once Collector is selected, the Router will be displayed as shown below.

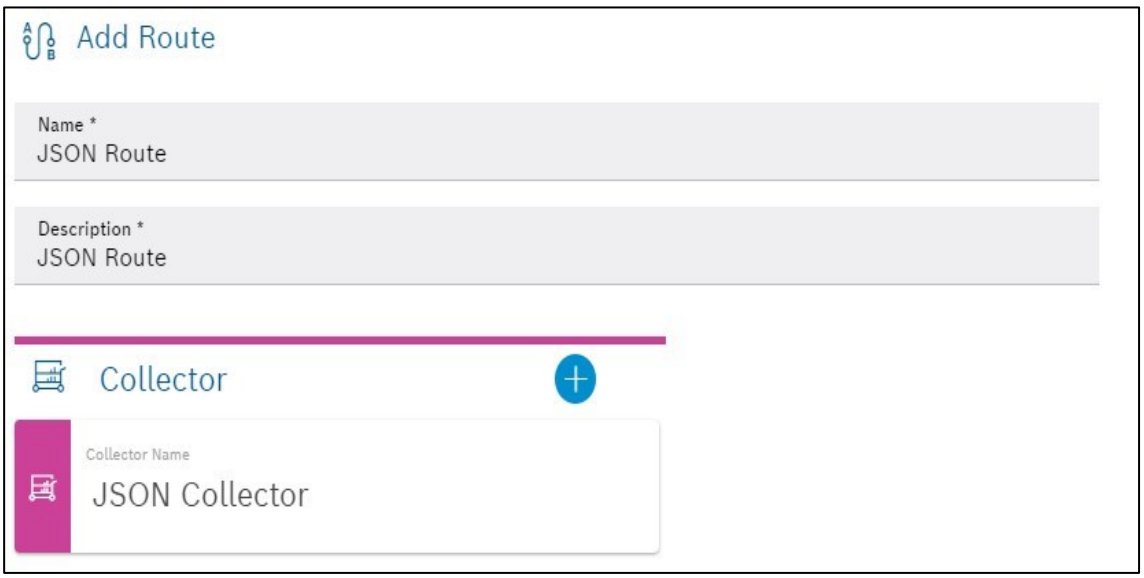


Fig. 118: Collector window after select

5. Select a Connector by clicking the **Add Icon** and select the respective Data Model, then click **Add** button.

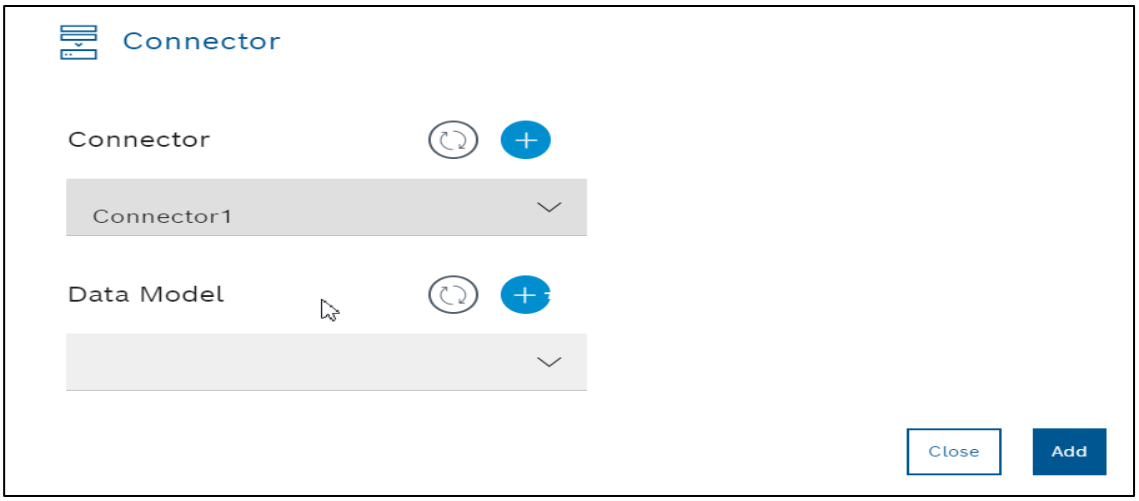


Fig. 119: Select connector

6. Click **Save** or **Reset**, to reset the mapping. Once you add a Connector, the Router window appears as shown below.

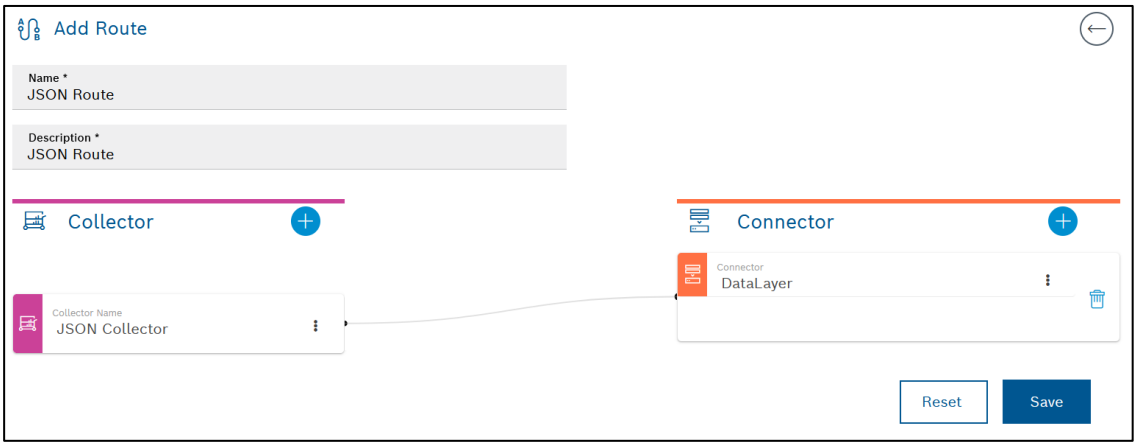


Fig. 120: Add router window

Note:

If the user wants to add a new Collector, Connector, or Data Model, the user can add from the same screen by clicking the **Add icon**.

5.7.2 Edit Route

Following are the steps to Edit Route:

1. Click **Action button** of the route to be edited and click **Update** button.

Fig. 121: Edit route window

2. Change the configurations and click **Save**.

5.7.3 Clone Route

Following are the steps to Clone Route:

1. Click **Action button** of the route to be cloned and click **Clone**.

Fig. 122: Clone route window

2. Click **Clone Button** and rename the Route.
3. Click **OK** to save.

5.7.4 Delete Route

1. To delete the Route, click **Action button** of the Route to be deleted.

Fig. 123: Delete route window

2. Click **Delete** button.

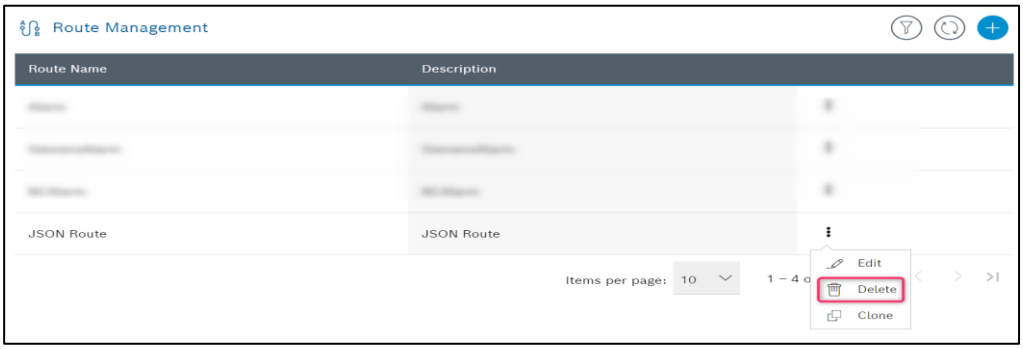


Fig. 124: Delete route list

3. A confirmation message will be displayed. Click **Ok** to delete or **Cancel**.

5.7.5 Filter Route

Following are the steps to filter the Route from the route list screen:

1. Select **Filter icon** to filter the Route from the Route list.

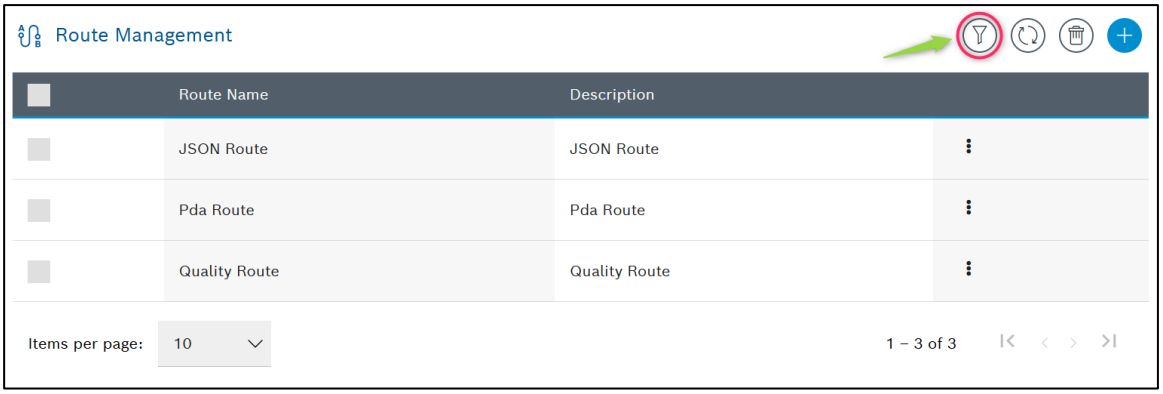


Fig. 125: Filter route

2. The user will be able to see the Filter panel.
3. Enter the Route name in the filter panel (Ex: Qu). The user will be able to see the Route from the route list.

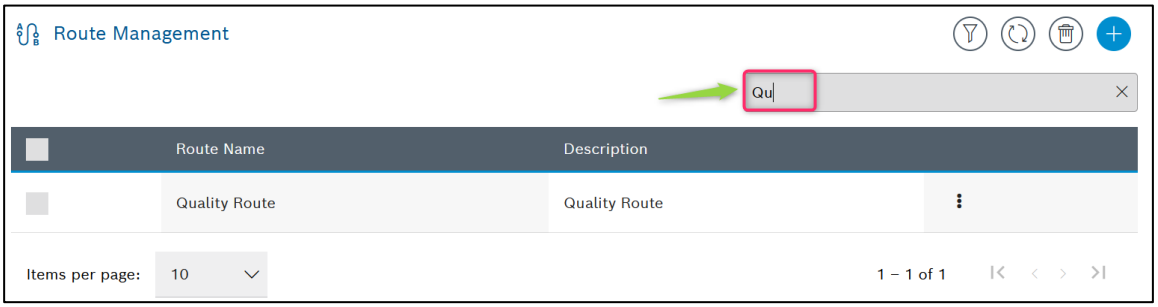


Fig. 126: Route list

5.8 Service Container

Service Container is used to group Routes, based on the logic. It helps the user to Group multiple Routes in a single container.

To create a service container, the user should have one or more routes.

5.8.1 Add Service Container

Following are the steps to add the Service Container:

1. Click **Service Container** and then click **Add button**.

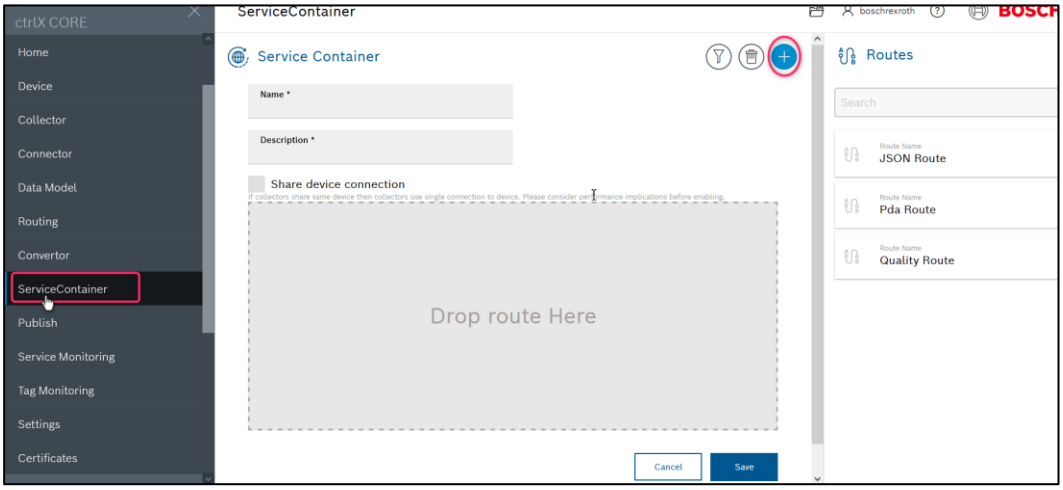


Fig. 127: Service container

2. Enter the Service Container Name and Description.

3. Drag and drop the routes in dropbox and click **Save**.

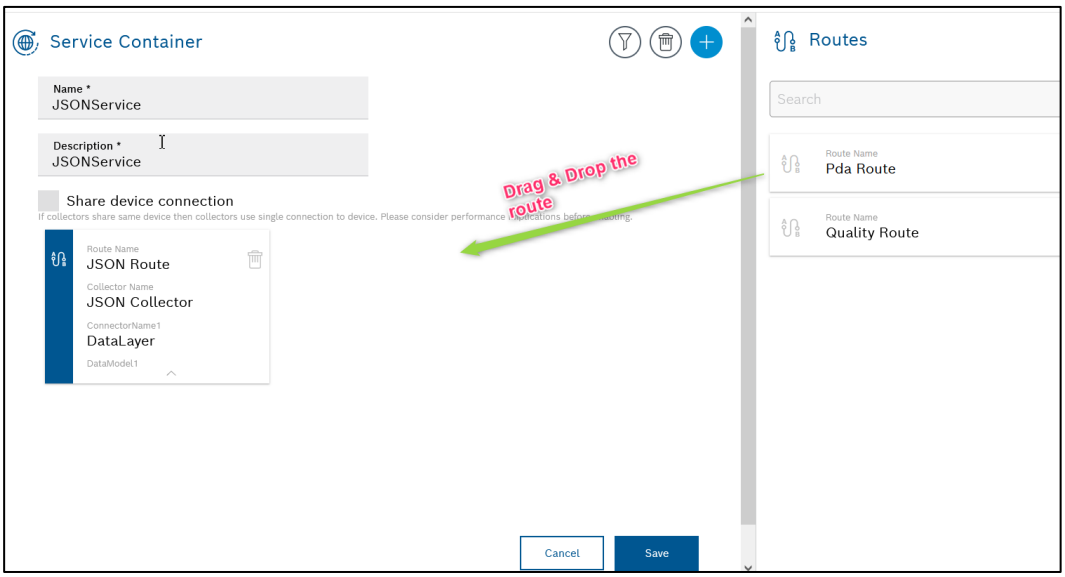


Fig. 128: Service container drop down list

4. Once saved, the Service Container appears as shown below.

Fig. 129: Service container name

5.8.2 Service Container User Type

User type is a mode by which the service will be installed in the system.

Following are the user type supported services:

- Network Service
- Local Service
- Local System
- Custom user

By default, Network Service will be selected.

Account Type	Description
Network Service	Publishes the service as **N/w Service** account by default (Recommended to Use)
Local Service	Publish the service to collect data with **anonymous** credentials
Local System	Publish the service as **Local System** account specifically for OPC DA connectivity
Custom User	Publish the service as **Custom User** account only if specific user must be connected to the device

5.8.3 Service Container User Type Custom User

Following are the steps to change the user type of Service Container:

1. To Change the user type, click **User icon** in the Service Container.

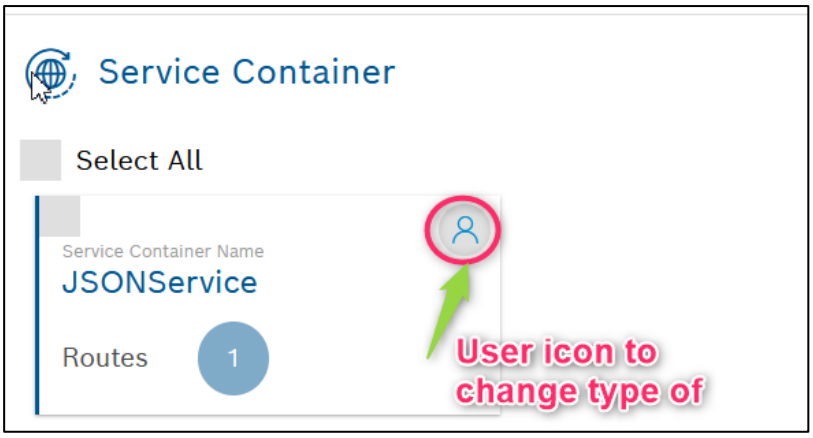


Fig. 130: Service container user icon

2. Select the user types as **Custom user**.

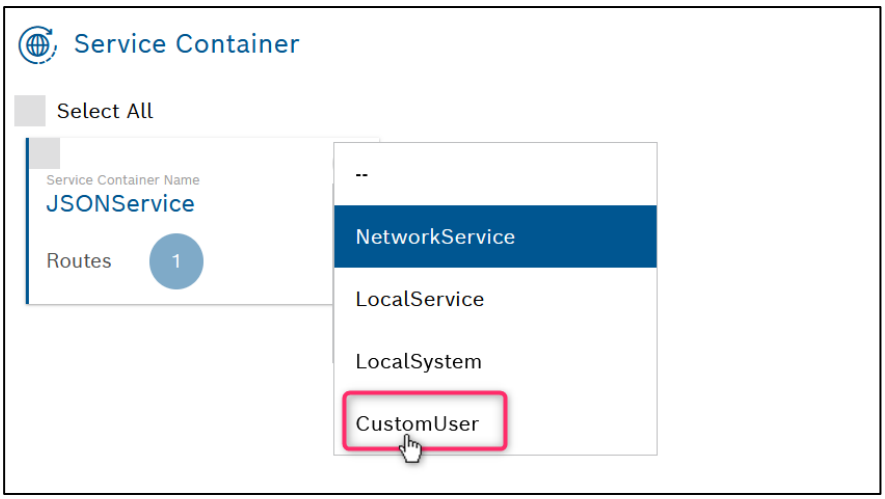


Fig. 131: Service container user drop down

3. Enter the **Username** and **Password** as shown below and click **Save**.

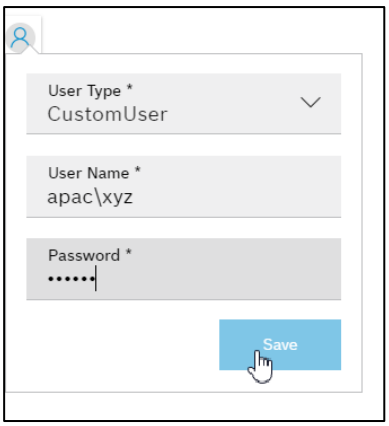


Fig. 132: Login window

5.8.4 Edit Service Container

Following are the steps to edit the Service Container.

1. Click **Action button** of the Service Container to be edited and click **Update**.

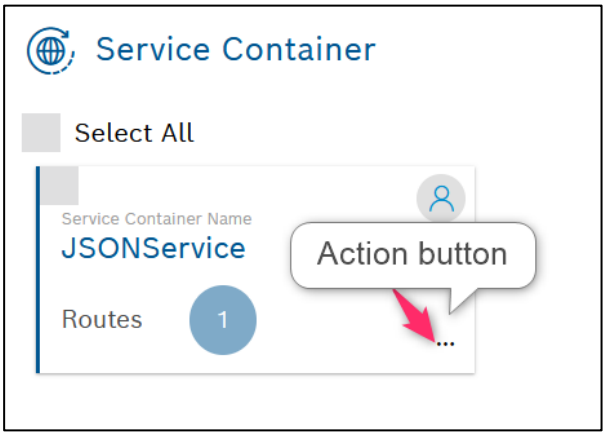


Fig. 133: Service container

2. Change the configurations and click **Save**.

5.8.5 Delete Service Container

Following are the steps to delete the Service Container.

1. Click **Action button** of the Service Container to be deleted.

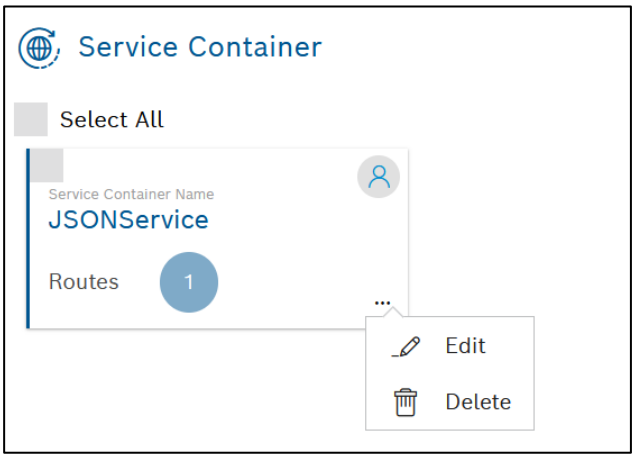


Fig. 134: Delete service container

2. Click **Delete**. Delete Confirmation popup window will appear.

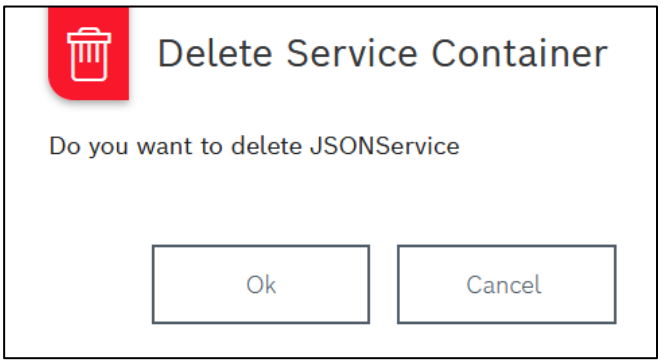


Fig. 135: Delete confirmation window

3. Click **Ok** to delete or else **Cancel** to keep the Service Container.

5.8.6 Filter Service Container

Following are the steps to filter the service container from the service container list screen:

1. Select **Filter icon** to filter the Service Container from the service container list.

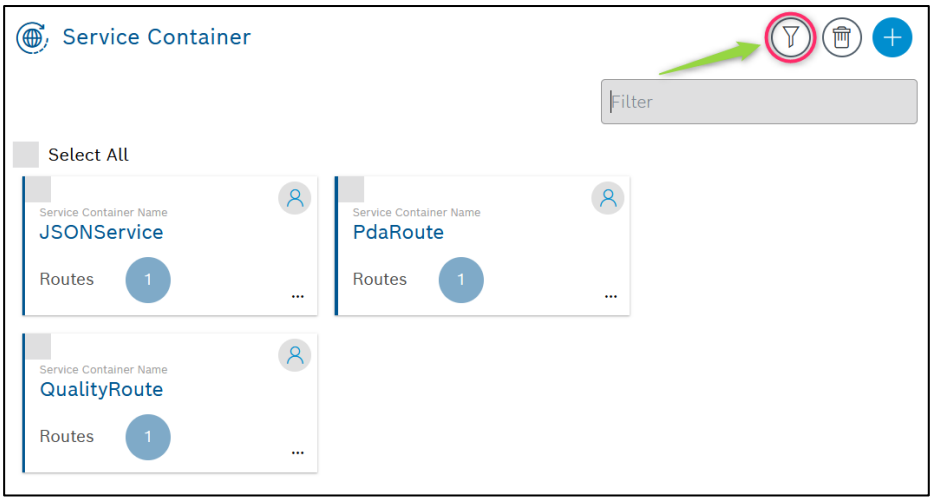


Fig. 136: Filter service container

2. The user will be able to see the Filter panel.

3. Enter the Service Container name in the filter panel (Ex: Qual). The user will be able to see the Service Container from the service container list.

5.9 Publish

Publish DeviceBridge component after the configuration of Devices, Collectors, and Connectors. Publish creates background data collection. Before Publish, the user should have completed the Collector, Device, and Connector configuration including Routing and Service Container.

Following are the steps to Publish:

1. Click **Publish** and click **Publish button**  .

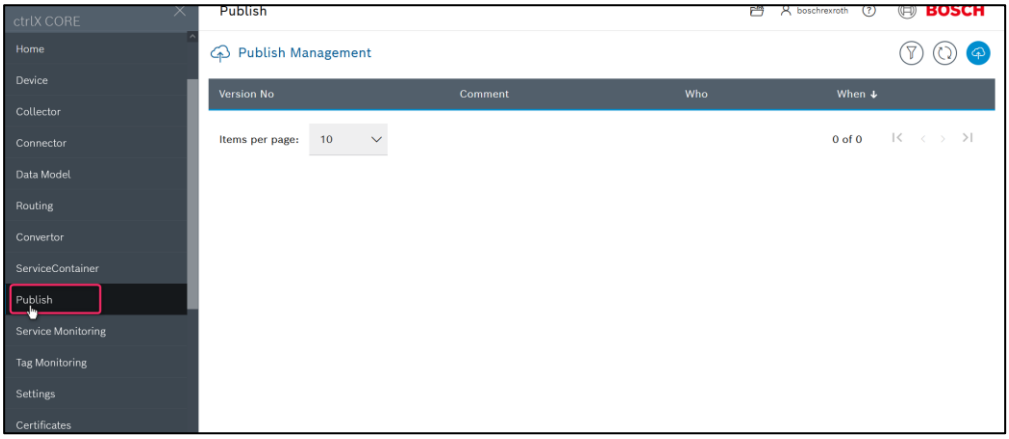


Fig. 137: Publish management window

2. **Publish creation wizard** window appears and click **Next**

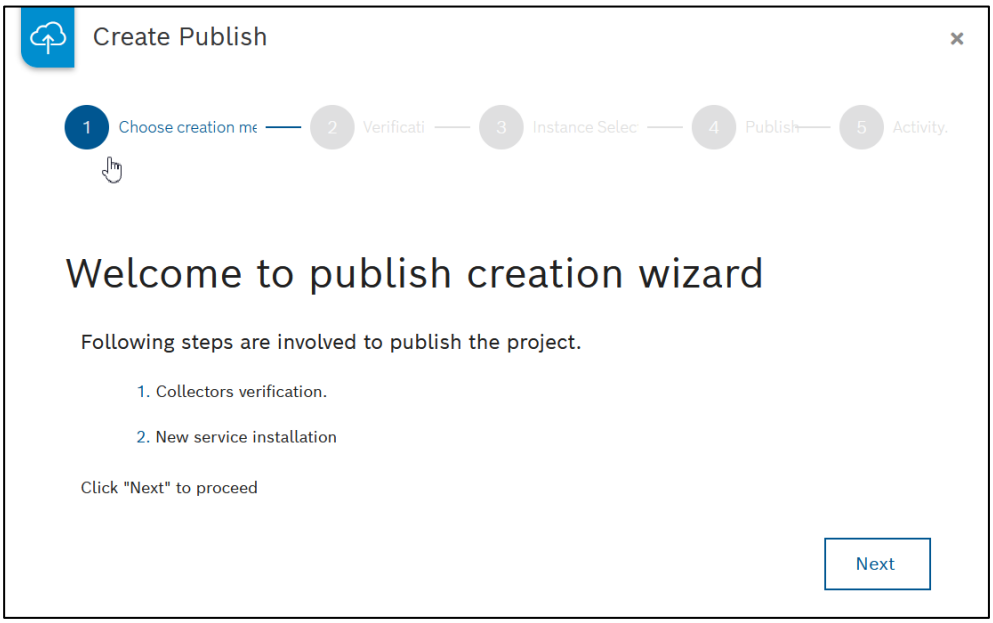


Fig. 138: Welcome to publish creation wizard

3. Verification Window appears. Click **Next**, it will verify the License, Agent, Collectors, etc.

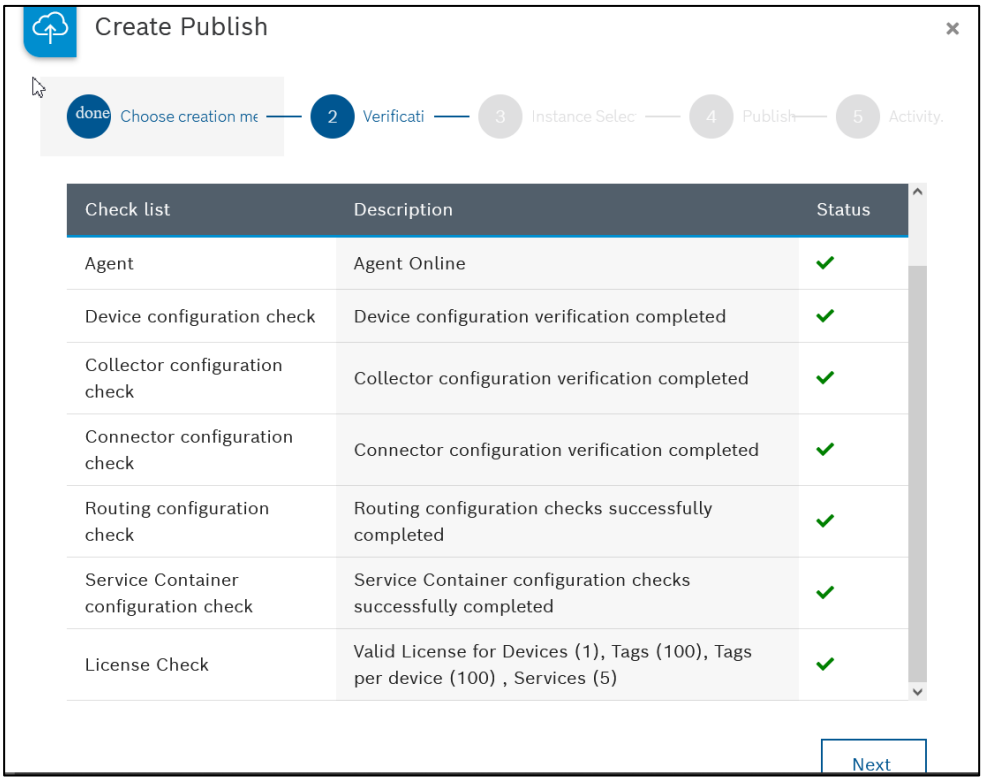


Fig. 139: Verification window

Check List	Description
Agent	It validates the Agent availability
Device Configuration Check	It validates the Device Configuration
Collector Configuration Check	It validates the Collector Configuration
Connector Configuration Check	It validates the Connector Configuration
Routing Configuration Check	It validates the Route Configuration
Service Container Configuration Check	It validates the Service Container configuration atleast has one route
License Check	It validates the configured devices/tags match with the licenses issued

Tab. 9: **Check list**

Note:

If any verification point is not matching, the status will show **X** and the Next button will be disabled.

Ex: My agent is offline

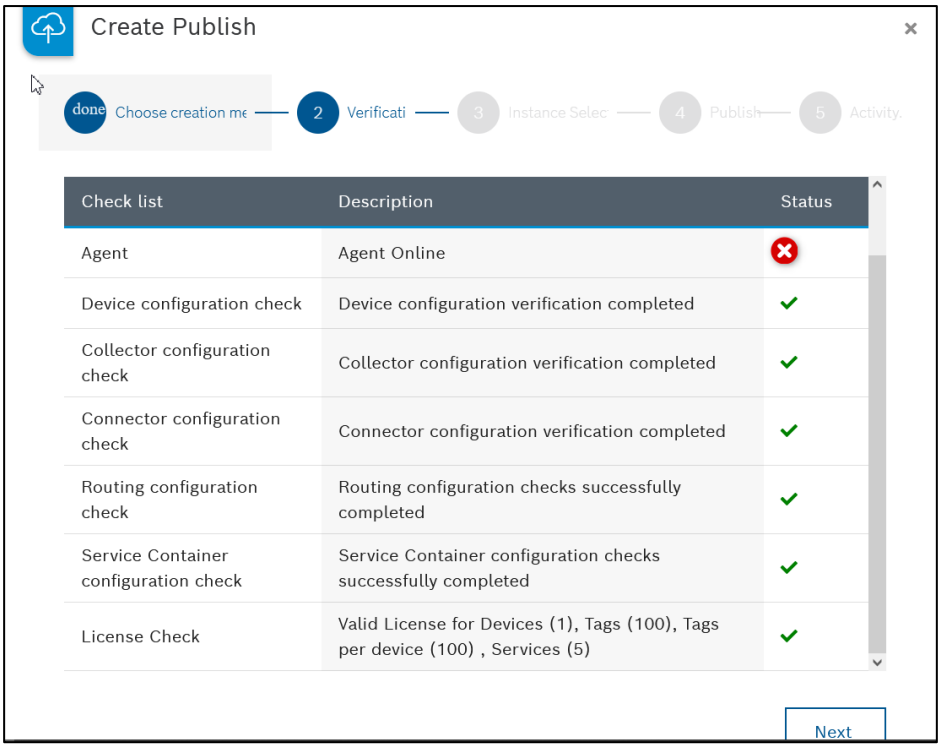


Fig. 140: Create publish window

4. Instance Selection Window appears. Currently, there are 3 types:
   i. **Service Container:** All the configured Service Container will be installed.
   ii. **One Service per Route:** For each route 1 separate service will be installed.
   iii. **As a single Service:** for all Routes, a single service will be installed.

5. Select **Service Container** and click **Next**, when all services are needed to publish.

Fig. 141: Service container with next tab

6. Click **Next (Advanced)**, when the user doesn't want to disturb the existing running service, the user can enable the check boxes to restart the services later.

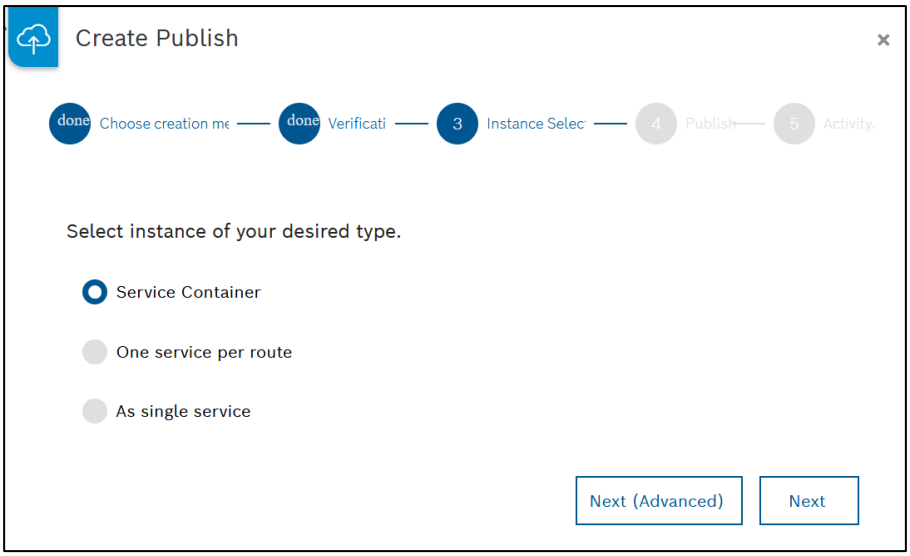


Fig. 142: Service container with next (advanced) tab

7. If the user didn't select the Skip Restart check box, it will be published along with the newly added service.

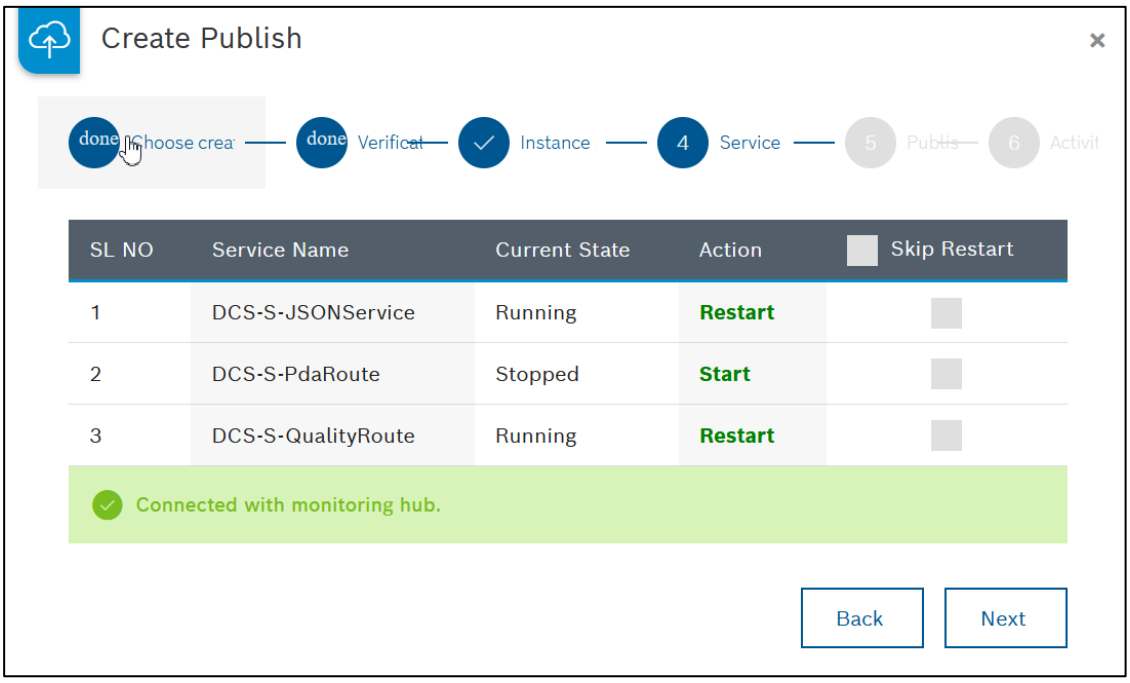


Fig. 143: Connected monitoring hub with skip restart option

8. Create Publish screen appears, user can provide meaningful comments to trace back the changes made for every publish.

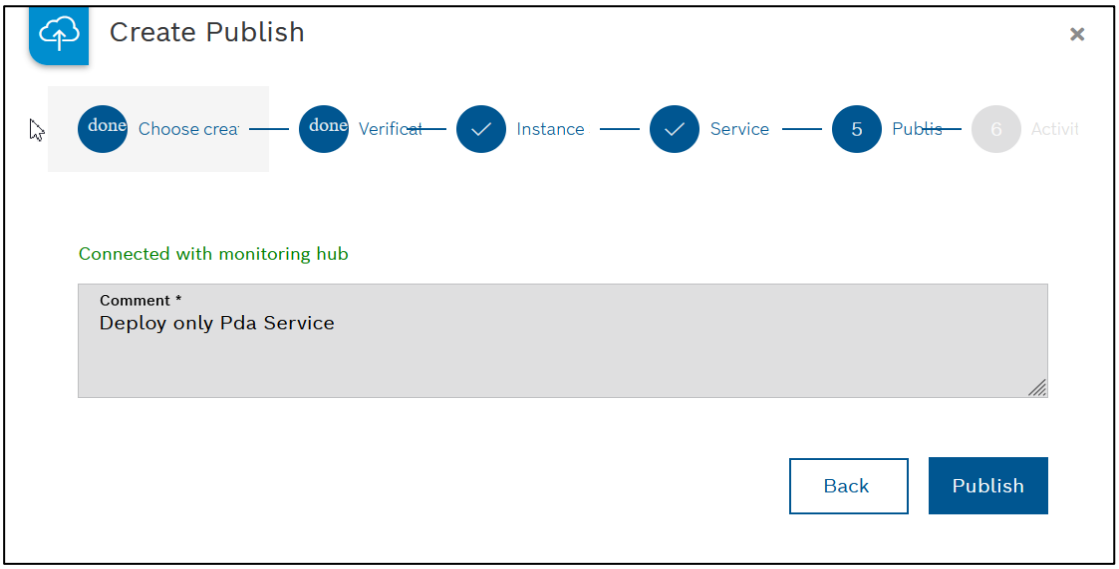


Fig. 144: Create publish window

9. If the service is installed, the **Published Successfully** message will be displayed.

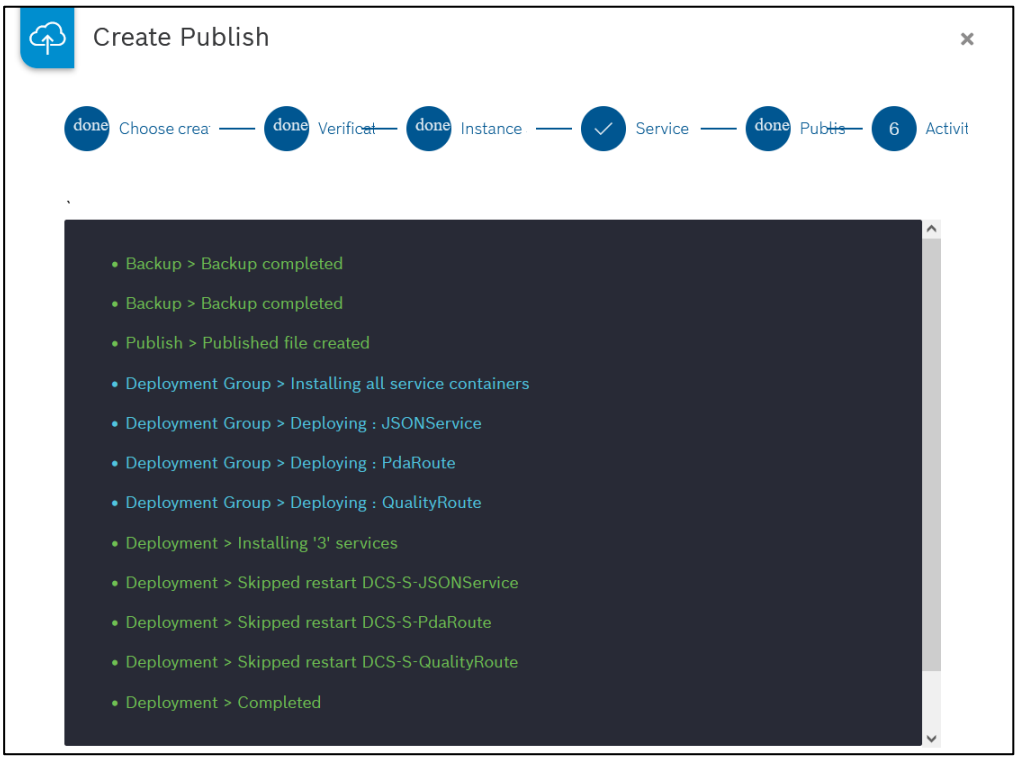


Fig. 145: Service installation message

10. Click **Close** to close the Published details window on the screen.

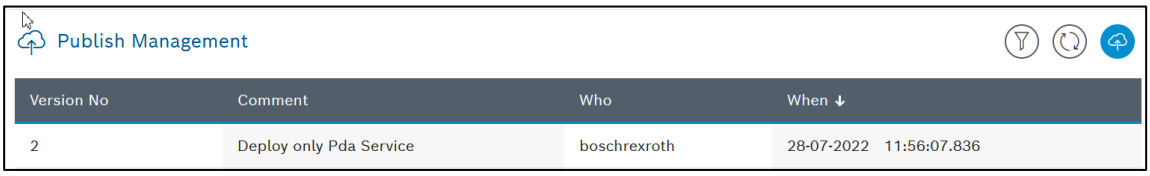


Fig. 146: Published details window

11. Service status can be monitored, and the status can be changed using the **Action button** in the Service Monitoring screen.

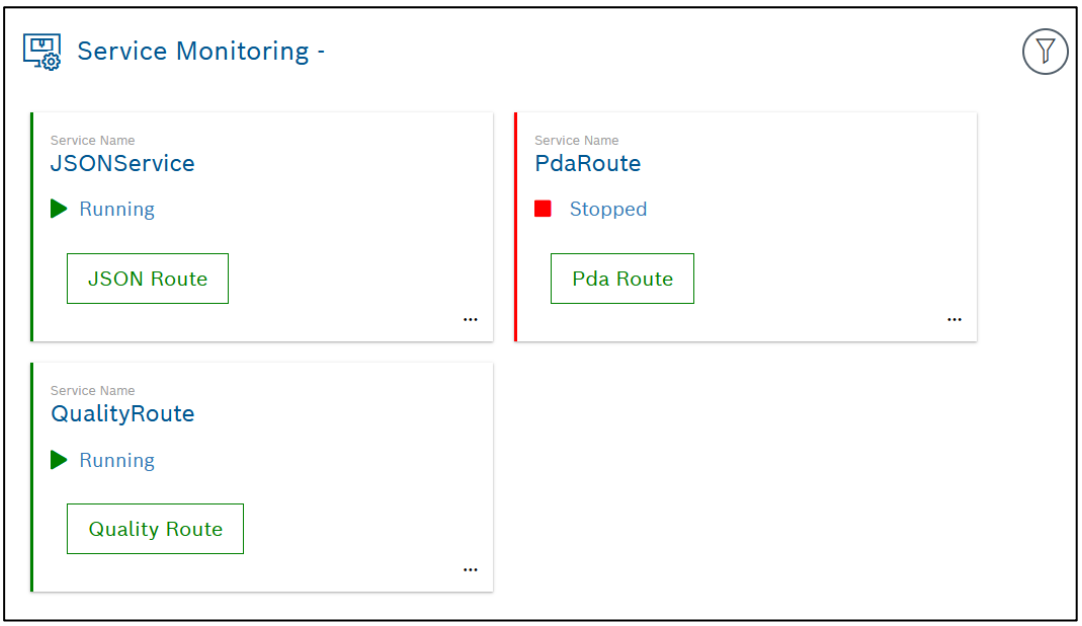


Fig. 147: Service monitoring screen

12. The user can select the other installation by changing the installation type.

    II. **One Service per Route:** For each route 1, a separate service will be installed.

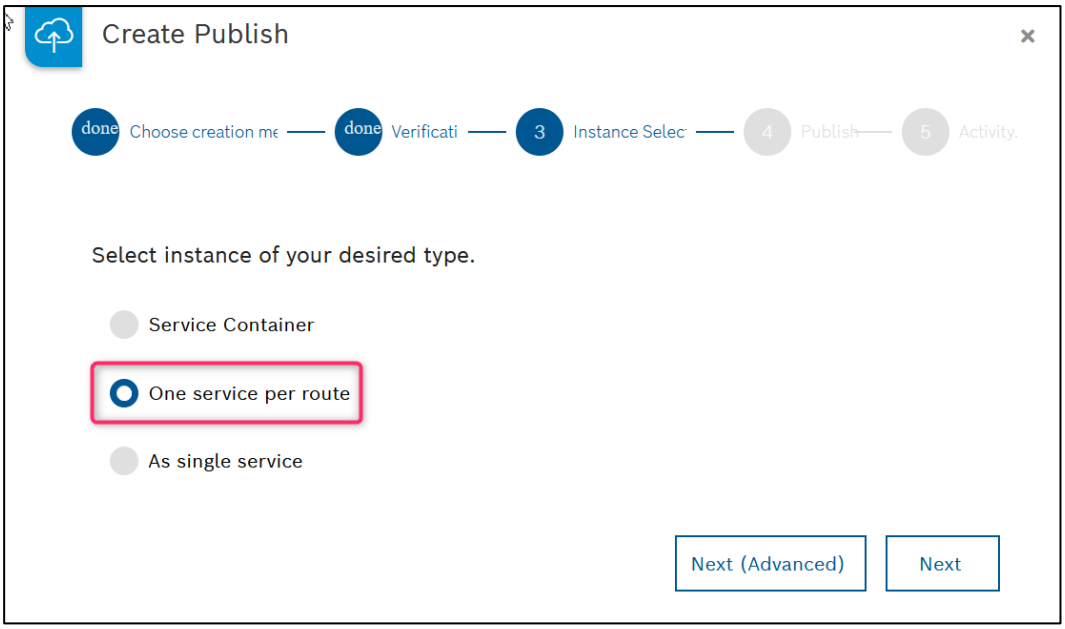


Fig. 148: One service per route

13. The below 3 example services are created in Route management.

Fig. 149: Route management

14. After publishing, the service can be monitored in the Service Monitoring (see below).

Fig. 150: Service monitoring

15. The user can select the other installations by changing the Installation type.

III. **As a Single Service:** A single service will be installed for all the Routes.

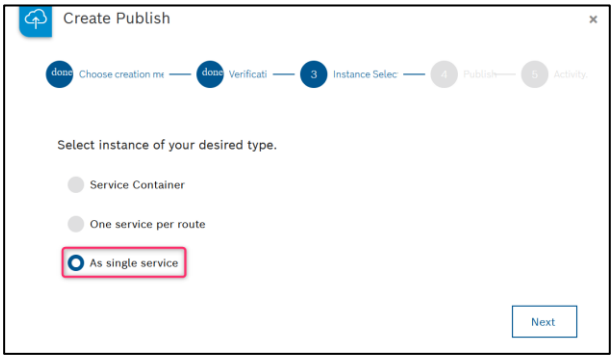


Fig. 151: As single service

16. After publishing, the service can be monitored in the Service Monitoring (see below).

Fig. 152: Service monitoring

5.9.1 Filter Publish

Following are the steps to filter the Publish from the publish list screen:

1. Select **Filter icon** to filter the Publish from the Publish list.

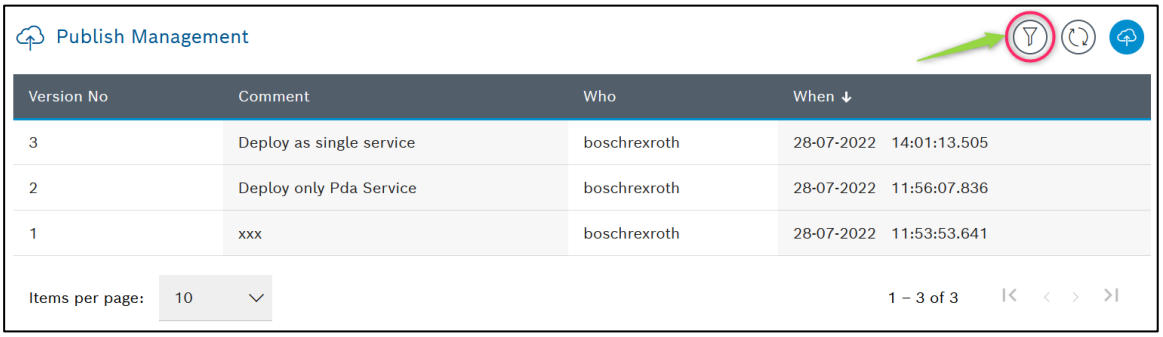


Fig. 153: Filter publish list

2. The user will be able to see the Filter panel.
3. Enter the published comment name in the Filter panel (Ex: Version Upgraded). The user will be able to see the published Version No, Comment, Who, and When information from the Publish list.

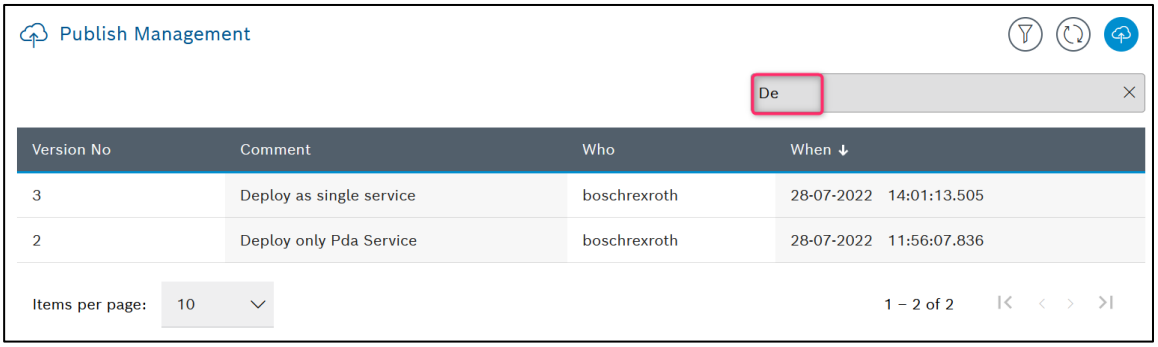


Fig. 154: Publish management

5.10 Service Monitoring

Service Monitoring allows the User to visualize the running container instance. Individual collectors are monitored to look at processed values for each use case. Key info like Device Scan time, Process Time can be viewed.

The successfully delivered messages can be seen in the Result tab with single and double ticks.

- Single Tick (✓) -> Message delivered but not reached the upstream
- Double Tick (✓✓) -> Message delivered to the upstream

Service Monitoring View

If the service is installed successfully, the below screen appears:

1. Click **Service Monitoring**.

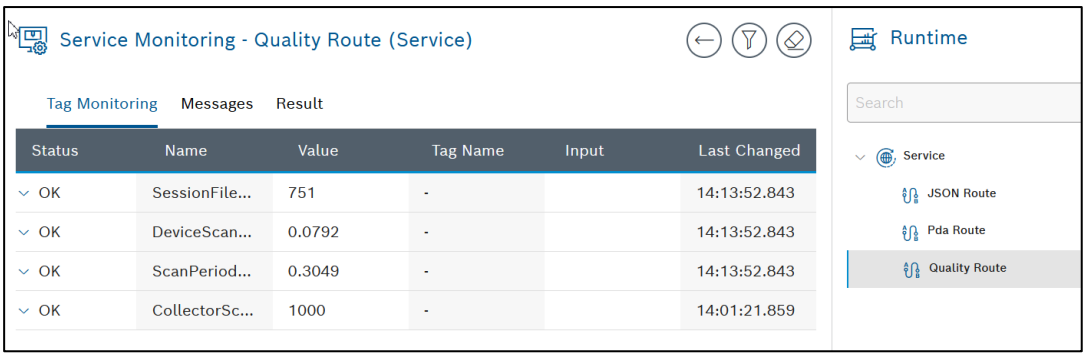


Fig. 155: Service monitoring

2. Real-time data will be shown on the screen, the details of the header are as follows:

   i. **Status:** It will show the device status.
   ii. **Name:** It will show the endpoint name.
   iii. **Tag Name:** It will show the tag name.
   iv. **Value:** It will show the value or data.
   v. **Last Change:** It will show the last changed time.
   vi. **Error:** It will show the errors (if any) while collecting the data.

5.10.1 Filter Service Monitor

Following are the steps to filter the Service from the service monitoring screen:

1. Select **Filter icon**.

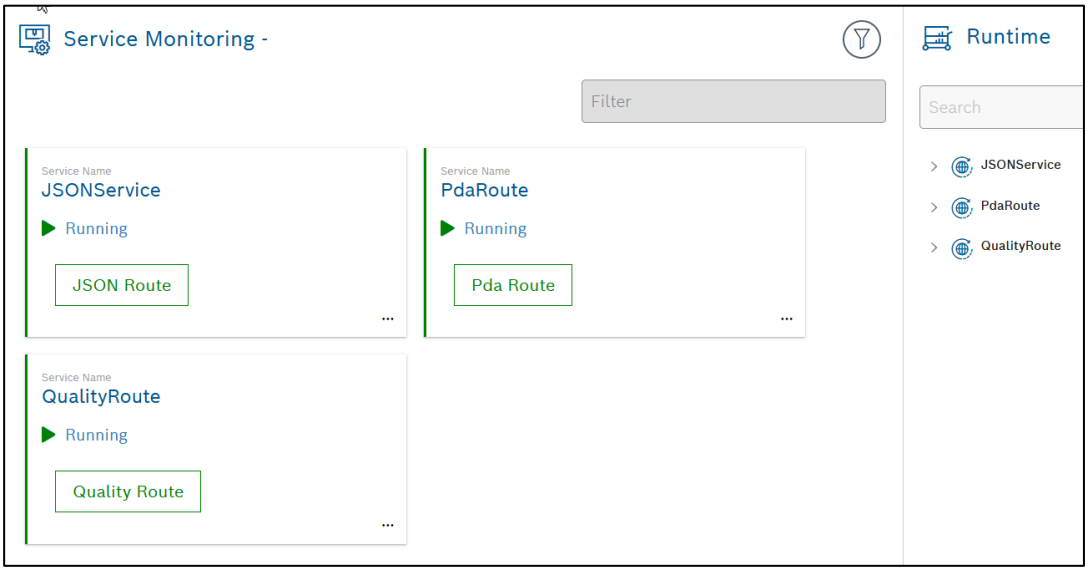


Fig. 156: Service monitoring screen

2. The user will be able to see the Filter panel.

3. Enter the Service Name in the filter panel (Ex: Line1002_siemensS7_ST1). The user will be able to see the filter service from the service list screen.

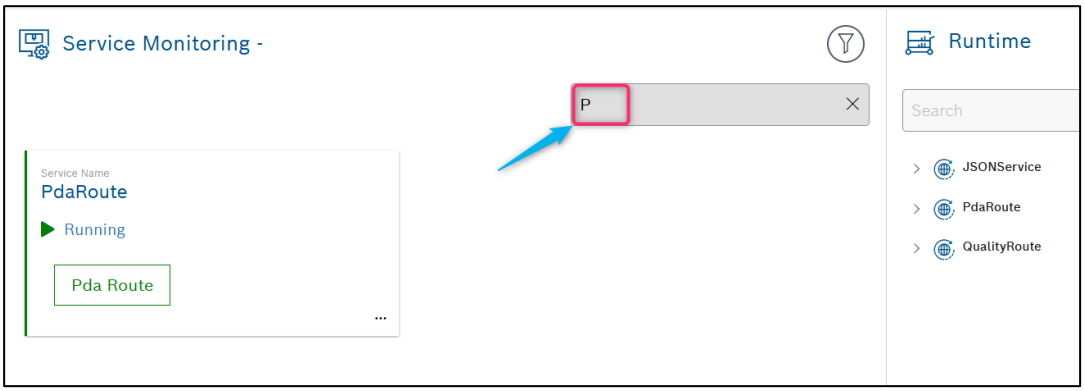


Fig. 157: Filter service

5.11 Tag Monitoring

Tag Monitoring helps the user to monitor the tags configured in the devices and displays the data from the device. We can drag and drop all the configured tags to this screen.

Following are the steps to monitor the tag:

1. Click **Service Monitoring**. The Tag Monitoring window appears.

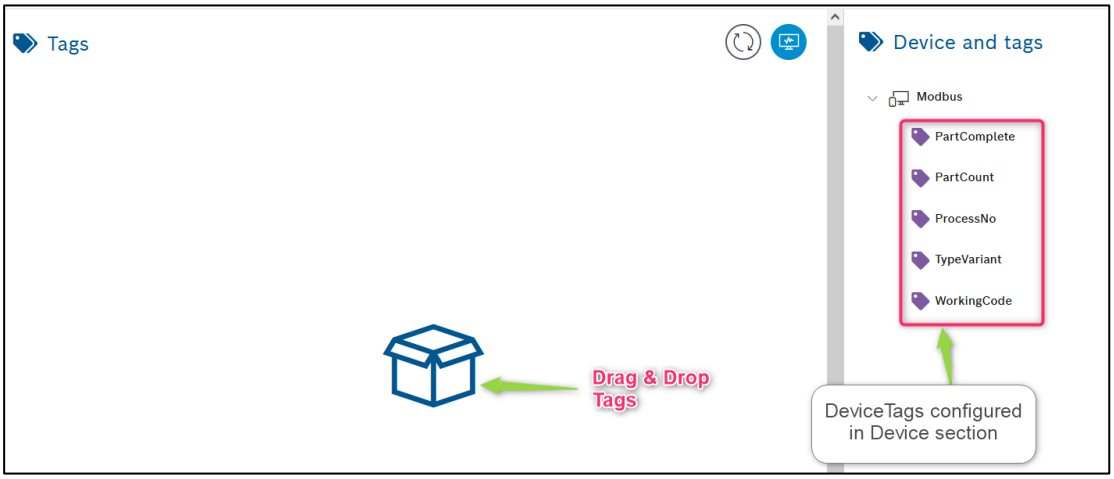


Fig. 158: Tag monitoring window

2. Drag and drop the tags on the Dropbox to monitor in the Tag Monitoring window, can add multiple tags.

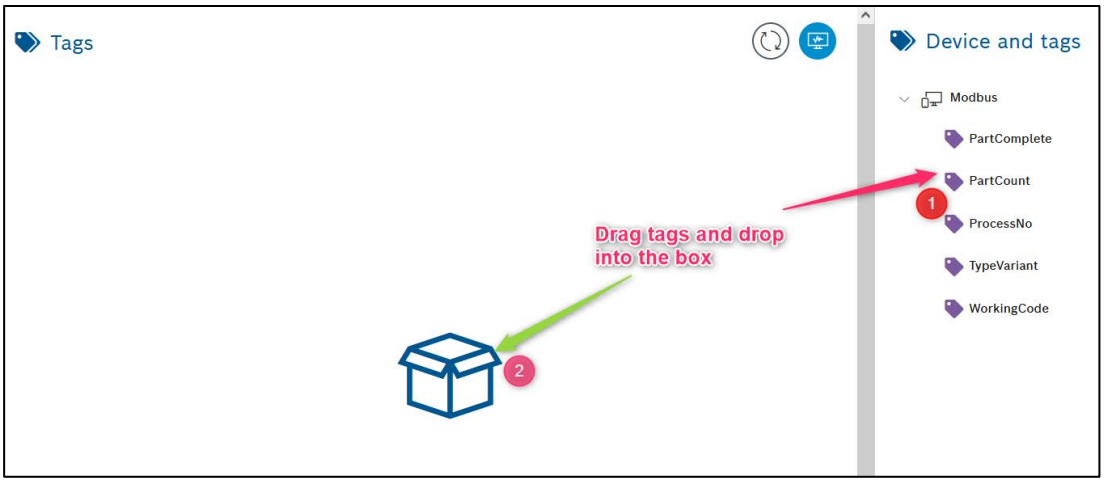
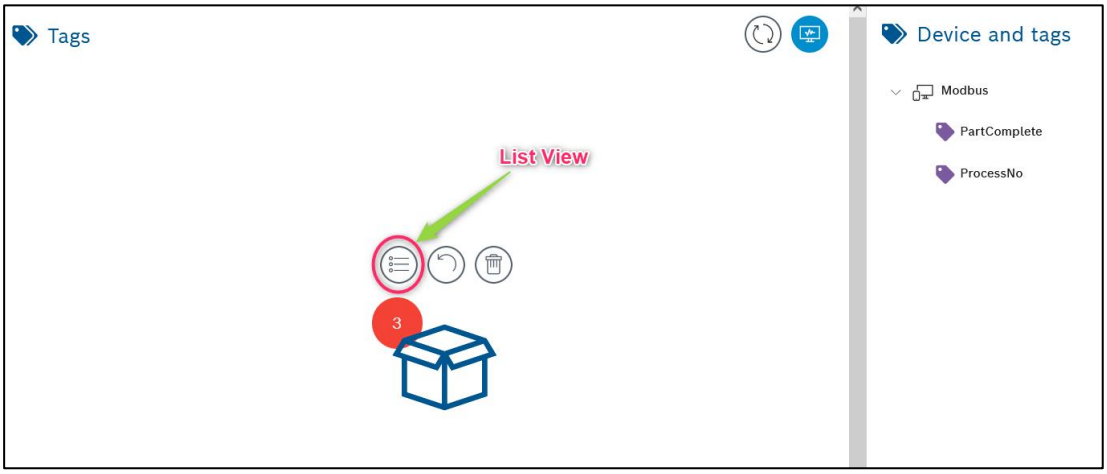


Fig. 159: Dropbox to monitor the tags

3. Click **List Icon,** to view in list format.



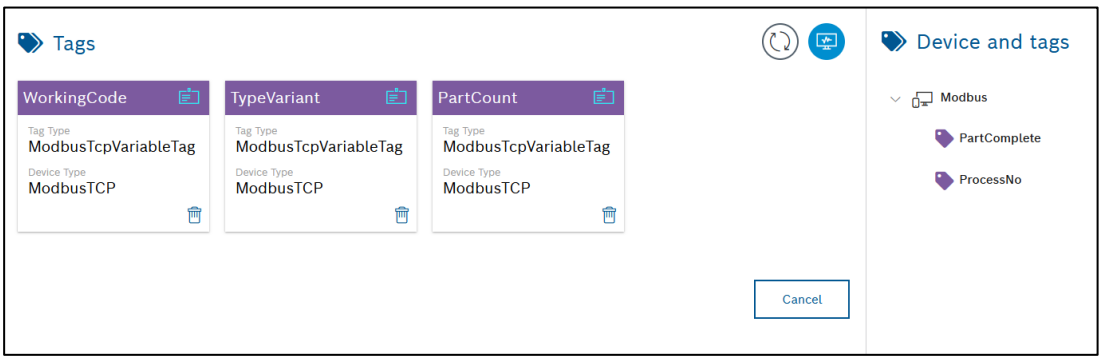


Fig. 160: List icon

4. Click **Monitor** icon, to monitor the Tags.

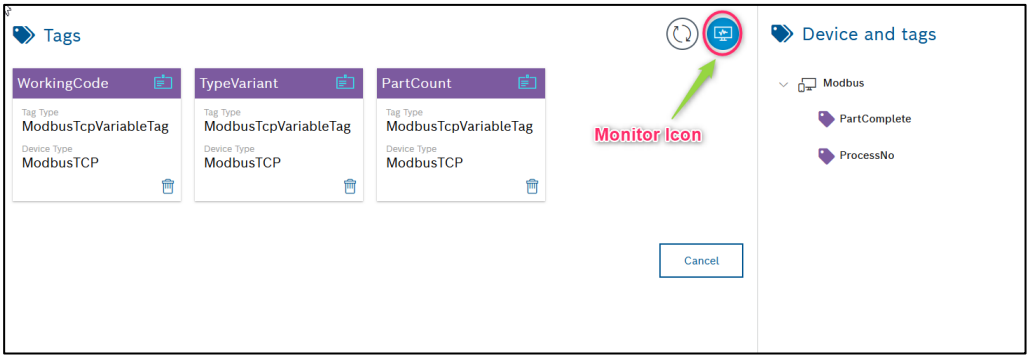


Fig. 161: Monitor icon

5. Monitor Tags window appears.

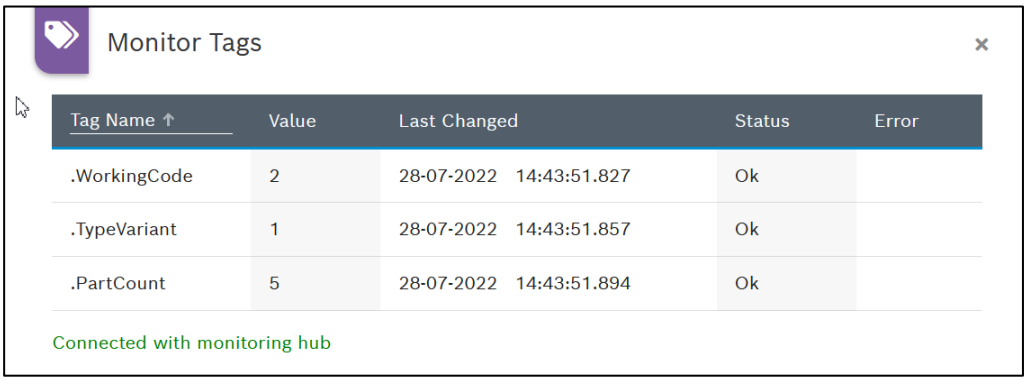


Fig. 162: Monitor Tag window

6. To refresh the tag monitoring window, click **Refresh** button.

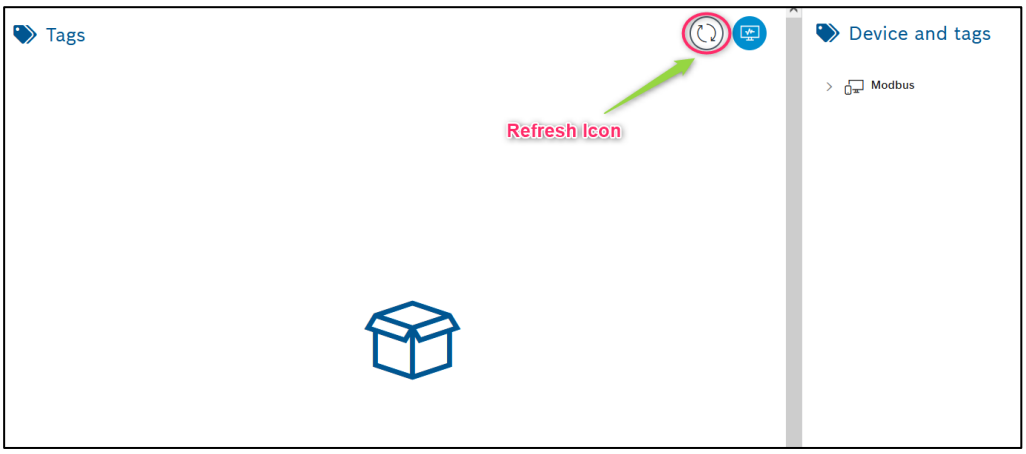


Fig. 163: Refresh icon

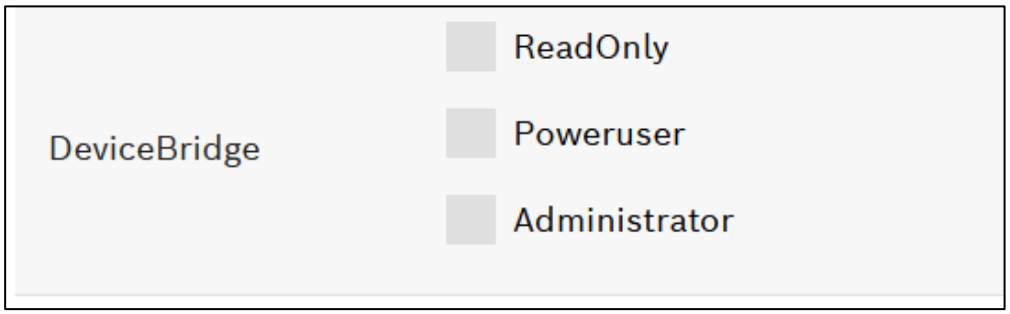
5.12 User Management

This module helps the user to manage the user details to Create, Delete, and Update the users according to the requirement.

5.12.1 User Roles

The DeviceBridge application has 3 user roles with different privileges. Below are the standard roles available in the application:

i. ReadOnly
ii. Poweruser
iii. Administrator



The user management in of DeviceBridge app is integrated with ctrlX's user management

5.12.2 Roles and Responsibilities of each User

Sl. No.	Features	Admin	Power User	ReadOnly
1	Login	Yes	Yes	Yes
	System			
2	Configure Devices	Yes	Yes	Read-only
	Test Device Connectivity	Yes	Yes	No
	Device Tag Monitoring	Yes	Yes	Yes
3	Configure Collectors	Yes	Yes	Read-Only
	Test Collector	Yes	Yes	Yes
4	Configure Connectors	Yes	Yes	Read-only
5	Configure Routes	Yes	Yes	Read-only
6	Configure Data Model	Yes	Yes	Read-only
7	Configure Convertors	Yes	Yes	Read-only
8	Configure Service Containers	Yes	Yes	Read-only
9	Create Publish	Yes	Yes	No
10	Monitor Services	Yes	Yes	Yes
	Start/Stop Services	Yes	Yes	No
11	Tag Monitoring	Yes	Yes	Yes
13	Settings Configuration	Yes	Yes	No
14	Backup Restore	Yes	No	No
15	Certificate Management	Yes	Yes	No

Tab. 10: **Roles and responsibilities of each user**

5.12.3 Users and Permissions

This feature helps to create, update and delete users individually.

1. Select **Settings** in the left pane**,** a new window will open on the right pane

2. Click on **Users & Permissions** as shown below

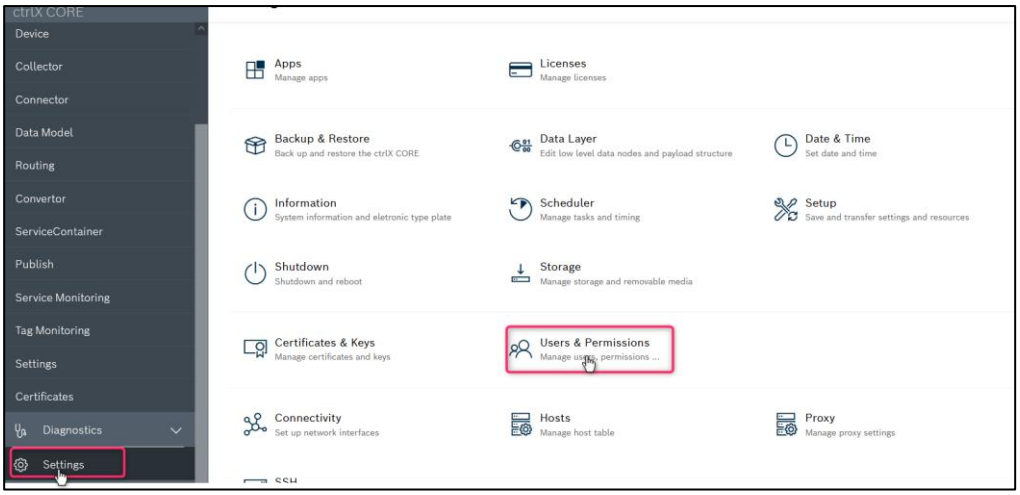


Fig. 164: Settings screen

3. The user will be redirected to the **Users & Permissions** screen

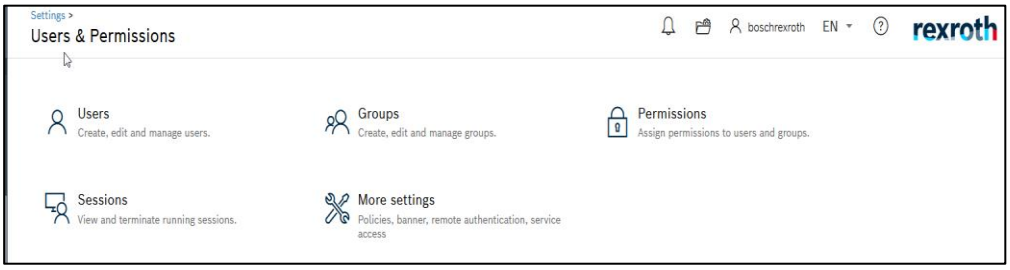


Fig. 165: Users & Permission Screen

4. Select **Users** among the list to create, edit and manage users
5. Click **Add (+)** icon as shown below to add a new user to list
6. Input the new username and password, Click **Add User**

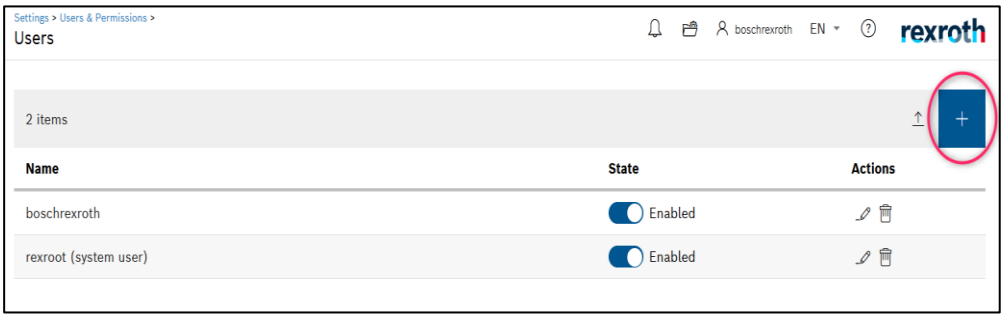
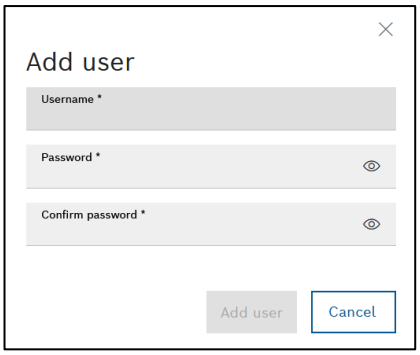


Fig. 166: Add new user window



7. The user is displayed on the screen. Click **Edit** as shown below

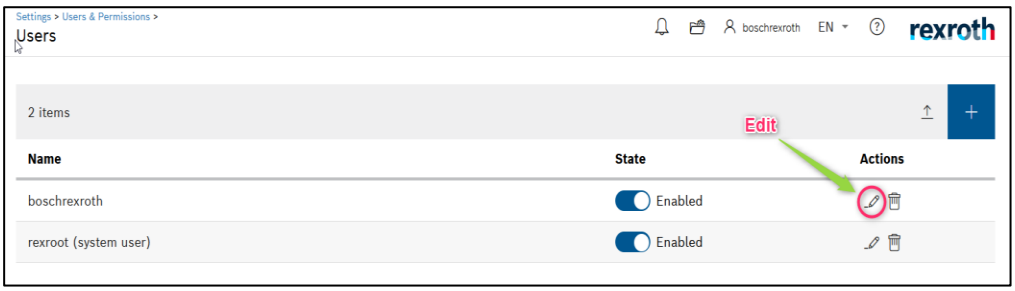


Fig. 167: Display list of users

8. The new screen is displayed to manage Groups and Individual Permissions

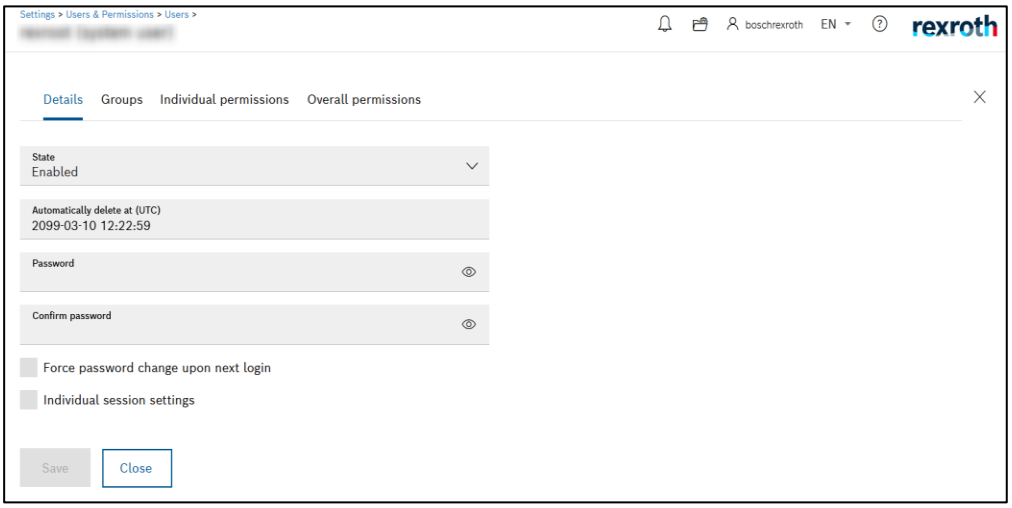
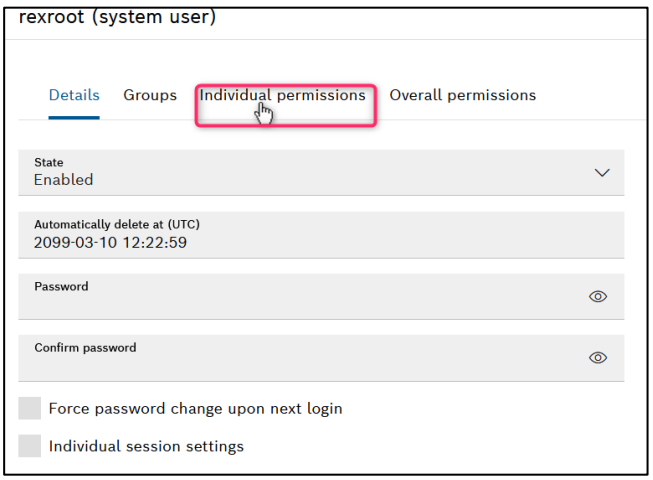


Fig. 168: Edit user screen

9. The user can also select the checkbox **Force Password** to change the password upon next login

10. Click on **Individual Permission**



11. User is redirected to the **Permission** screen as shown below

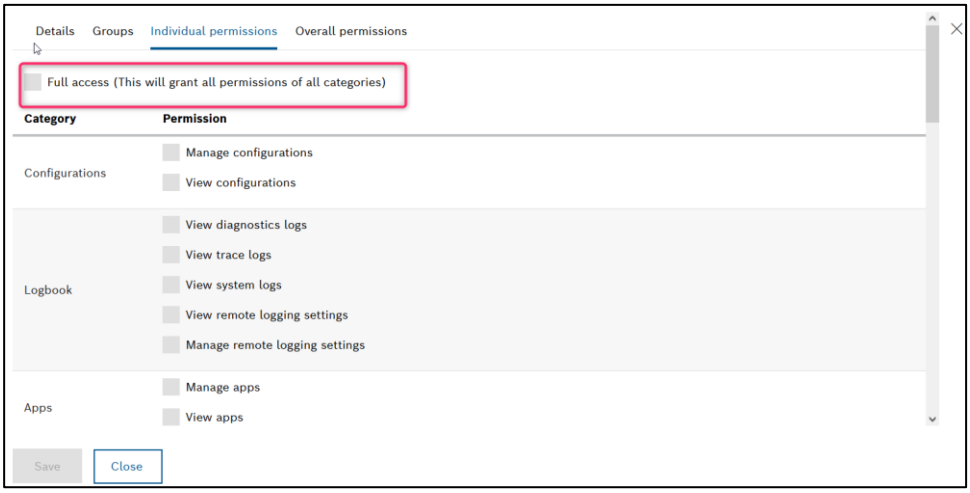
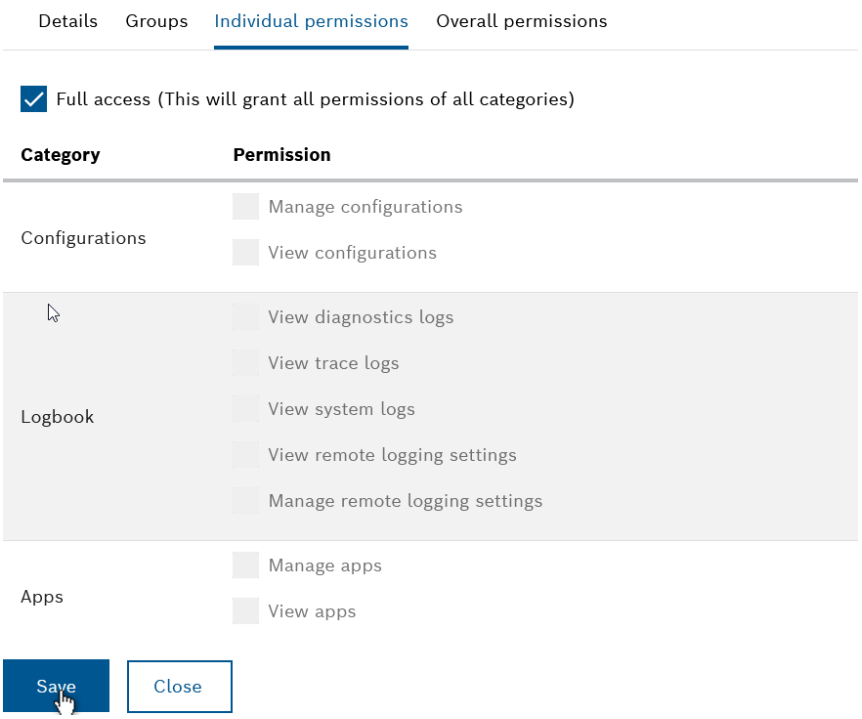


Fig. 169: Manage Permission screen

12. Click the checkbox **Full access (This will grant all permission of all categories)**
13. Click **Save**



5.13 Settings

In this module, the user can set the application setting according to the requirements.

The following are the Configuration Settings:

1. Proxy Settings
2. Mail Settings

5.13.1 Proxy Settings

In this tab, the user can set Proxy settings for the application.

Following are the steps to configure the Proxy settings:

1. Click **Settings** menu, the default screen will be displayed as shown below.

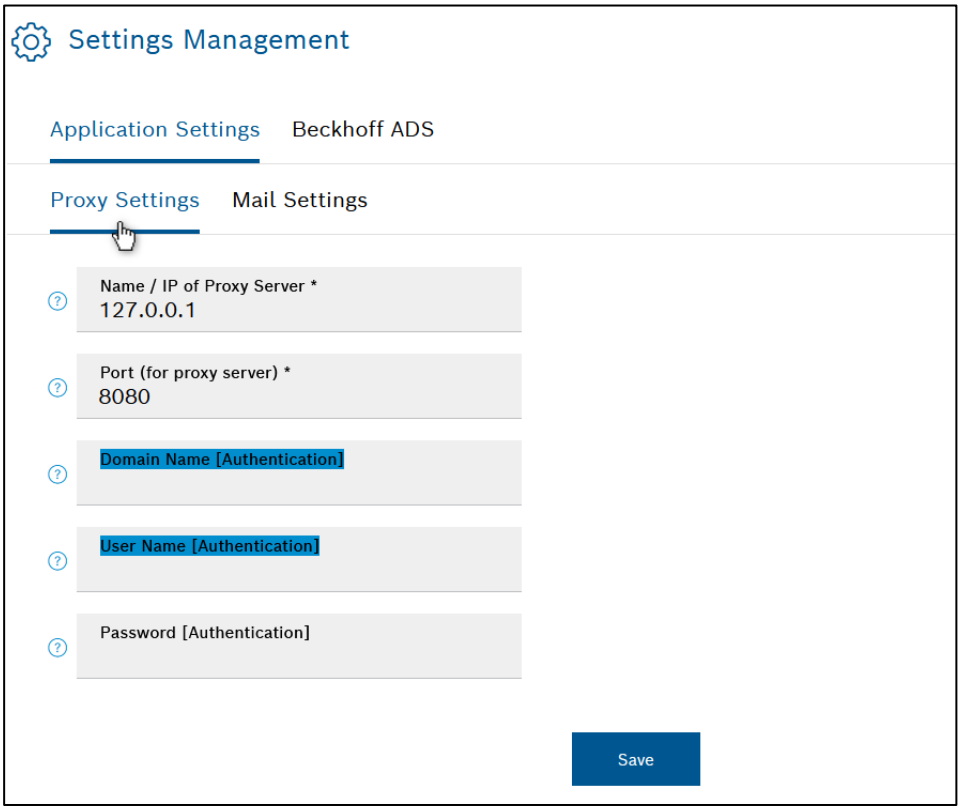


Fig. 170: Settings management

2. Click **Proxy Settings** tab.

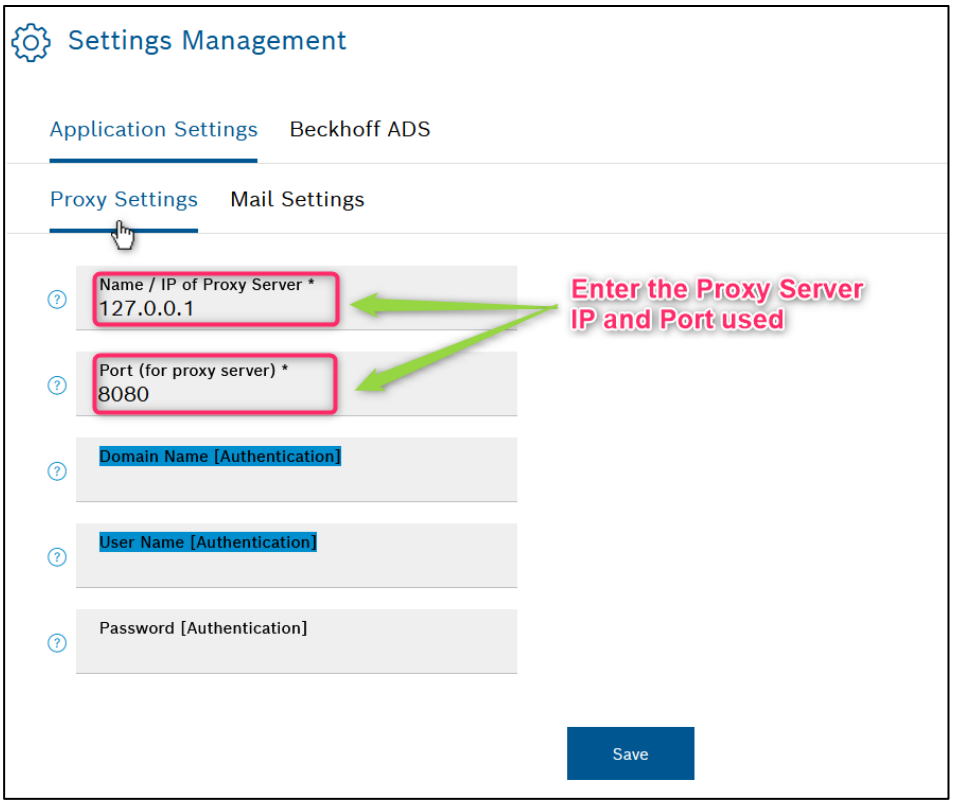


Fig. 171: Settings management proxy settings tab

3. Enter **IP Address / Name of Proxy Server**.
4. Set the proxy **Port**.

5. Click **Save**.

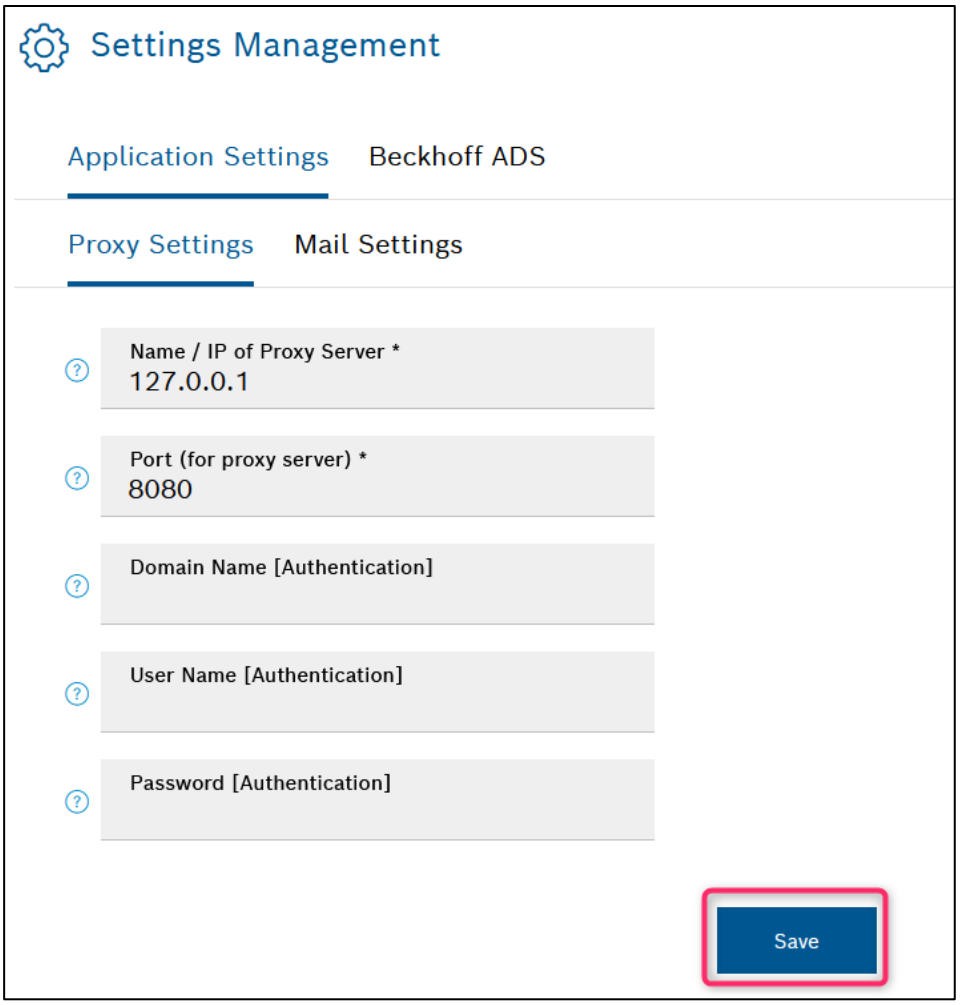


Fig. 172: Proxy settings details

5.13.2 Mail Settings

In this tab, the user can set email notification settings for the application.

The E-Mail & Notification trigger mechanism is still under development for ctrlX version and will be updated in the upcoming version of ctrlX

5.14 Certificate Management

In this module, the user can upload the Certificate for devices or connectors and can manage certificates according to the requirements.

5.14.1 Adding certificate

Following are the steps to add the Certificate:

1. Click **Certificates**.

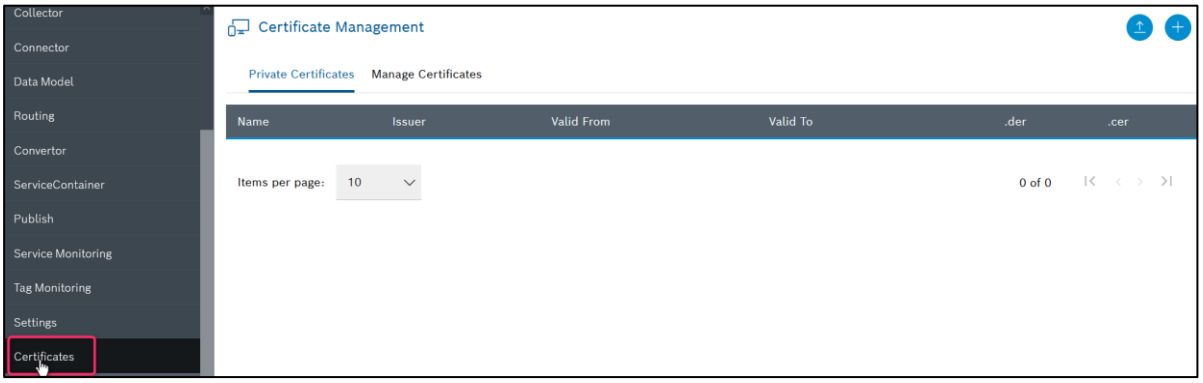


Fig. 173: Certificate management

2. Click **Upload** button.

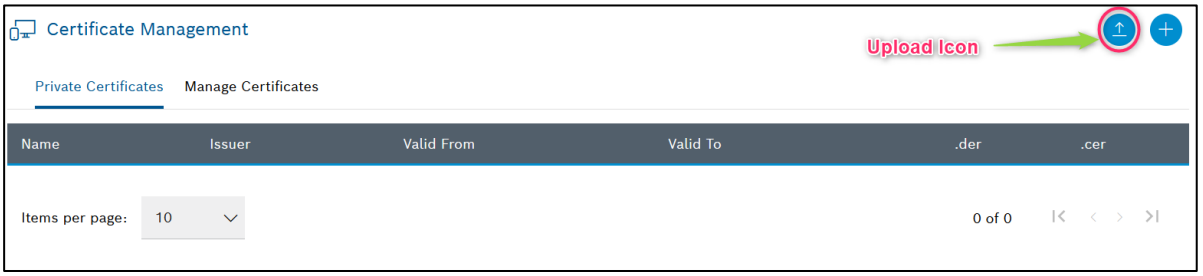


Fig. 174: Certificate management private certificates tab

3. Browse and select the **Certificate** from the file explorer window (The Certificate should be in **.pfx** format and cannot upload to any other formats).

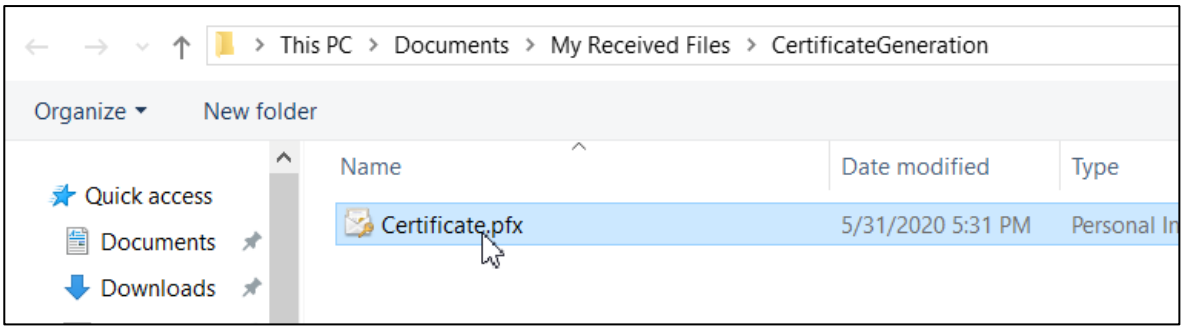


Fig. 175: File explorer browser window

4. Enter the **Password** for the certificate and click **OK**.

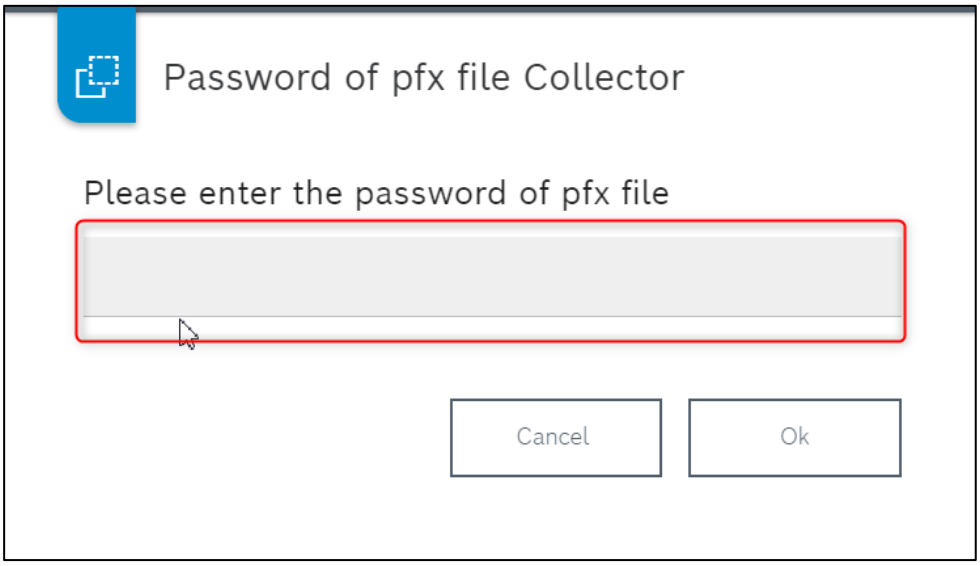


Fig. 176: Password for the certificate

5. The added Certificate will be displayed as shown below.

Fig. 177: Success message window

6. To delete the certificate, click **Delete** button as shown below.

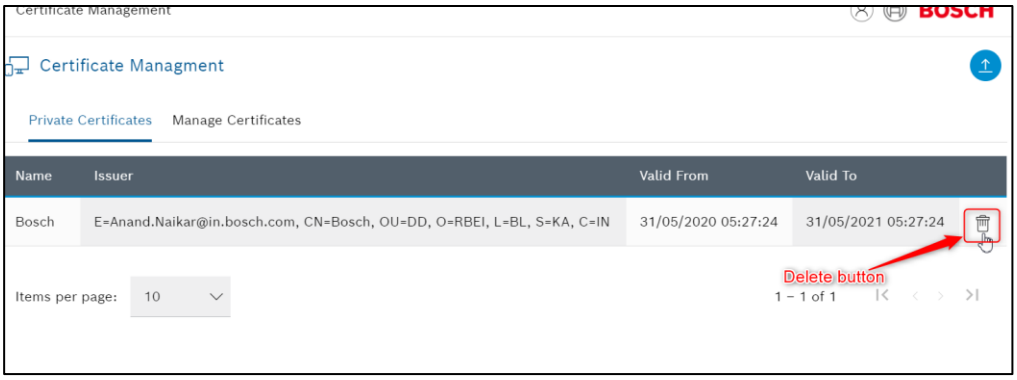


Fig. 178: Certificate management delete option

7. A popup window appears for confirmation, click **Ok** to delete the certificate or click **Cancel**.

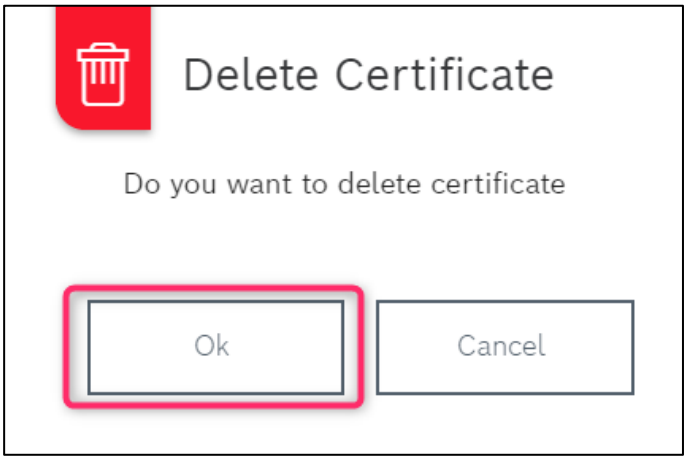


Fig. 179: Delete certificate confirmation window

5.15 Backup & Restore

In this module, the user can take the backup of data. If the active data is lost, it can be recovered and restored.

5.15.1 Backup

Following are the steps to create a backup:

1. Select **Home** from the ctrlX menu on the left pane.
2. The below screen will be displayed for the user.
3. To create a backup, the user can select the **Manage app data** option as shown below.

Note: Before taking backup, Please ensure the ctrlX version has been switched to Operation mode

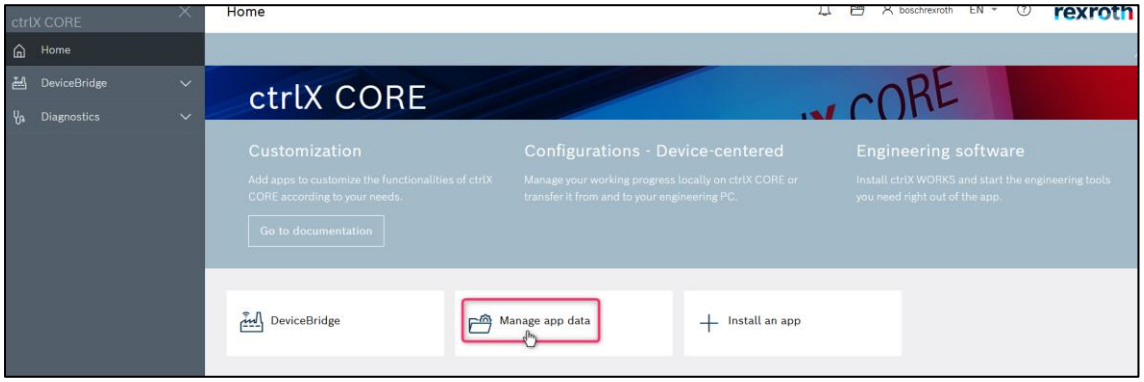
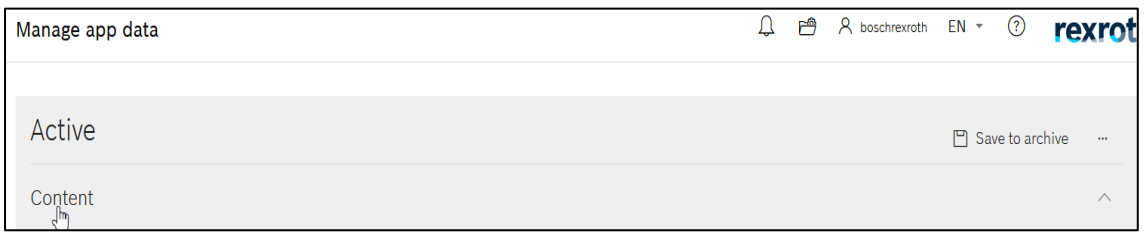
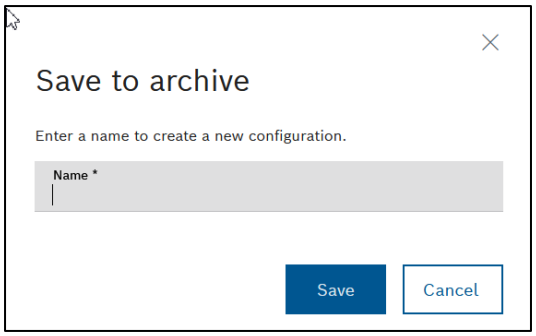


Fig. 180: Backup and restore window

4. Click **Manage app data**.
5. By default, the below screen will be displayed for the user with **Save to archive** option.

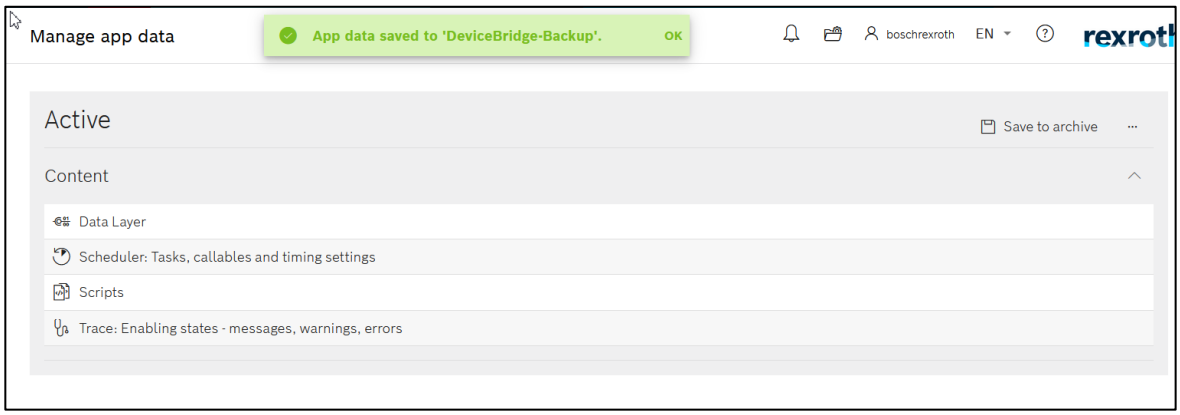


Select Save to archive to take backup

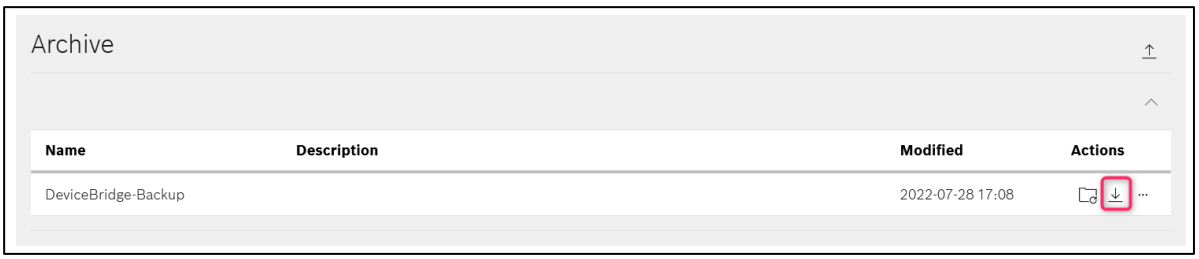


6 Enter a name and select **Save**

7 App data backup successfully taken and the message is shown to the user as below



8 The second half of the window displays the completed backup, which can be downloaded to the server/pc by the user by clicking on the download icon as shown below



5.15.2 Restore

The user can restore the data by selecting the **Load Configuration** icon shown below

Following are the steps to restore:

1. From the previous window, select the **Load Configuration** option

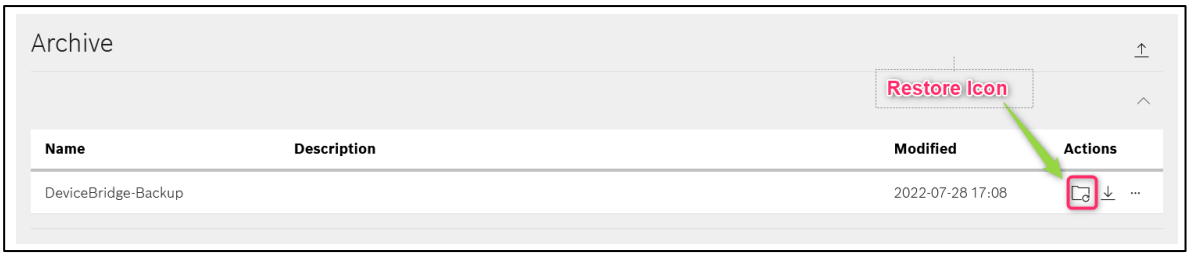
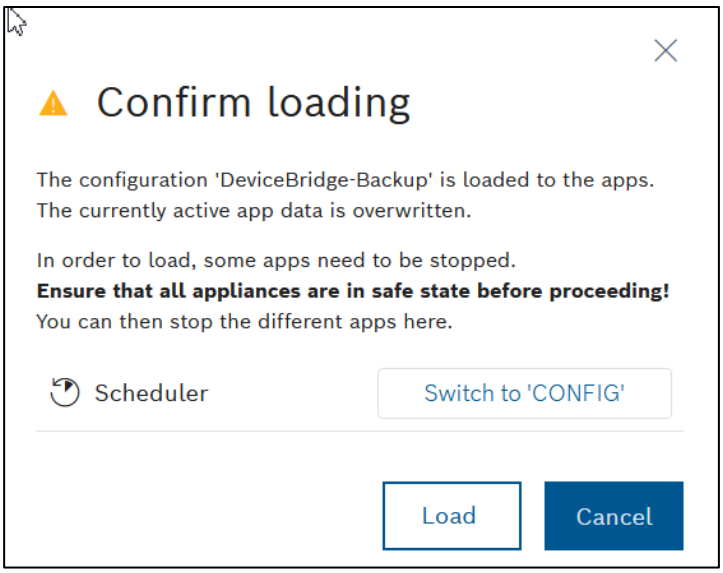


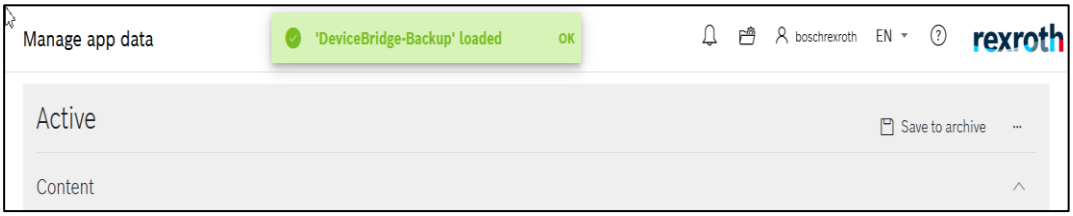
Fig. 181: Backup and restore window

2. The user will be prompted with a small dialog box as shown below



3. Select **Load**

4. After Load, all the DeviceBridge application configurations and settings will be reloaded and the below message will be displayed to the user



5. Backup restored successfully

6. Support

For support related clarifications, please contact

ProductSupport.EIA@in.bosch.com