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How to Connect dataFEED OPC Suite to IBM Cloud

data  **FEED®**

How to Connect *dataFEED OPC Suite* to *IBM Cloud*

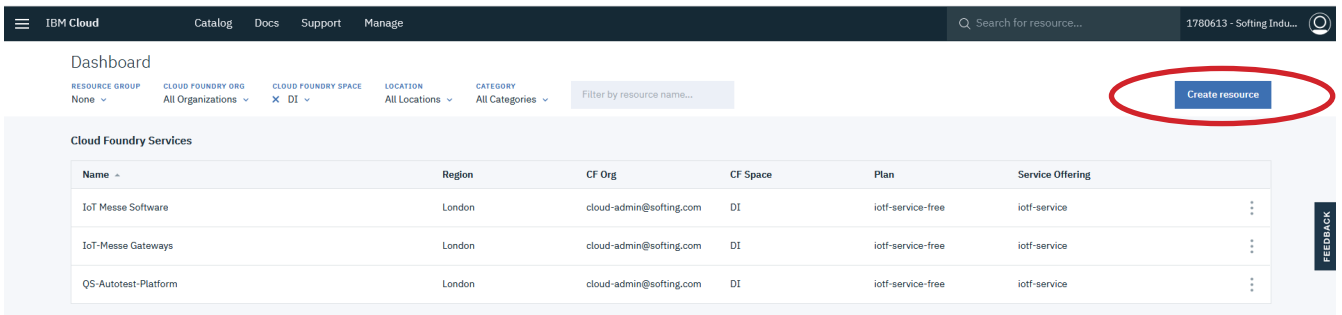
IBM Cloud Configuration Steps

1. Login at *IBM Cloud*

At <https://console.bluemix.net/> login at **IBM Cloud** using your IBMid and password

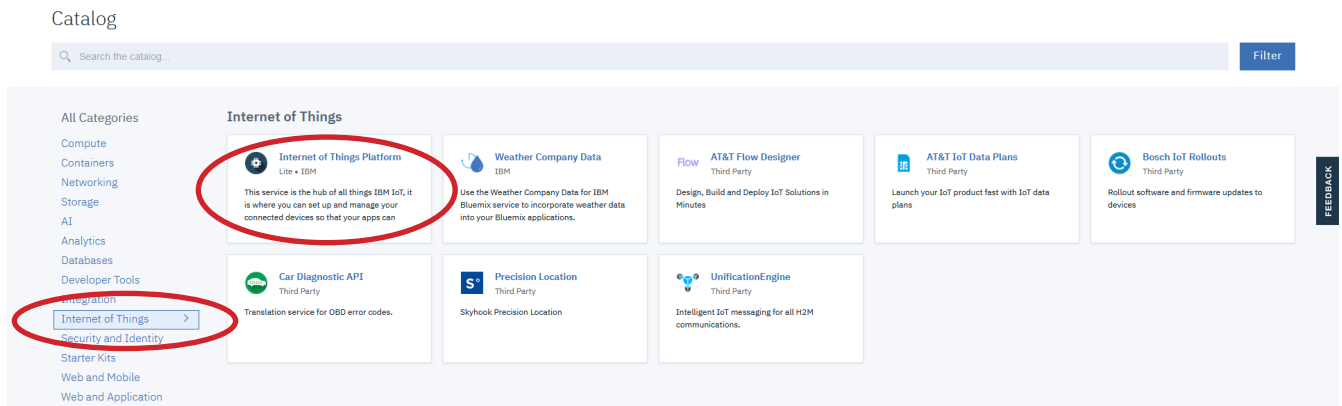
2. Create Internet of Things Resource

An Internet of Thing resource is required for connecting *dataFEED OPC Suite* to *IBM Cloud*. Follow the steps described in this section, if you have not created an Internet of Thing resource yet. Otherwise proceed with section 3.



The screenshot shows the IBM Cloud Dashboard. At the top, there is a navigation bar with 'IBM Cloud', 'Catalog', 'Docs', 'Support', and 'Manage'. A search bar is on the right. Below the navigation bar, there are filters for 'RESOURCE GROUP', 'CLOUD FOUNDRY ORG', 'CLOUD FOUNDRY SPACE', 'LOCATION', and 'CATEGORY'. A 'Filter by resource name...' input field is also present. On the right side of the dashboard, a 'Create resource' button is circled in red. Below the filters, there is a table titled 'Cloud Foundry Services' with columns: Name, Region, CF Org, CF Space, Plan, and Service Offering. The table lists three services: 'IoT Messe Software', 'IoT-Messe Gateways', and 'QS-Autotest-Platform'.

- Press **Create resource** button



The screenshot shows the IBM Cloud Catalog. At the top, there is a search bar and a 'Filter' button. Below the search bar, there is a list of categories on the left: 'All Categories', 'Compute', 'Containers', 'Networking', 'Storage', 'AI', 'Analytics', 'Databases', 'Developer Tools', 'Integration', 'Internet of Things', 'Security and Identity', 'Starter Kits', 'Web and Mobile', and 'Web and Application'. The 'Internet of Things' category is circled in red. In the main area, there is a grid of tiles. The first tile, 'Internet of Things Platform', is also circled in red. Other tiles include 'Weather Company Data', 'AT&T Flow Designer', 'AT&T IoT Data Plans', 'Bosch IoT Rollouts', 'Car Diagnostic API', 'Precision Location', and 'UnificationEngine'.

- Select **Internet of Things**
- Click on **Internet of Things Platform** tile
- At **Internet of Things Platform** page:
 - Define **Service name**
 - **Choose an organization**
 - Select **Pricing Plan**
 - Press **Create** button for completing resource creation

3. Add *dataFEED OPC Suite* as Service

- Click **IBM Cloud** for display of **Cloud Foundry Services**
- Click on service to be used for **dataFEED OPC Suite** connection

NOTE:

Within the scope of this manual the service “**dataFEED OPC Connection**” is used for connecting **dataFEED OPC Suite**.

Dashboard

RESOURCE GROUP: None | CLOUD FOUNDRY ORG: All Organizations | CLOUD FOUNDRY SPACE: X DI | LOCATION: All Locations | CATEGORY: All Categories | Filter by resource name... | Create resource

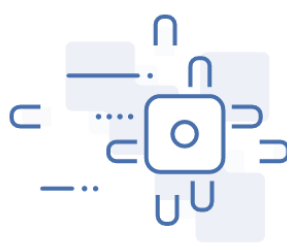
Cloud Foundry Services

Name ^	Region	CF Org	CF Space	Plan	Service Offering
IoT Messe Software	London	cloud-admin@softing.com	DI	iotf-service-free	iotf-service
IoT-Messe Gateways	London	cloud-admin@softing.com	DI	iotf-service-free	iotf-service
QS-Autotest-Platform	London	cloud-admin@softing.com	DI	iotf-service-free	iotf-service
dataFEED_MQTT_Connection	London	cloud-admin@softing.com	DI	iotf-service-free	iotf-service

dataFEED MQTT Connection dashboard page is shown

Dashboard / dataFEED_MQTT_Connection

Location: London Org: cloud-admin@softing.com Space: DI



Let's get started with IBM Watson IoT Platform

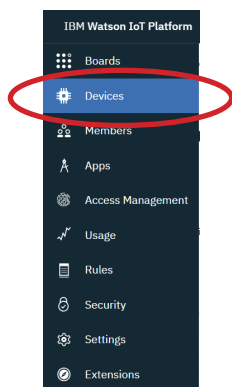
Securely connect, control, and manage devices. Quickly build IoT applications that analyze data from the physical world.

Launch Devices

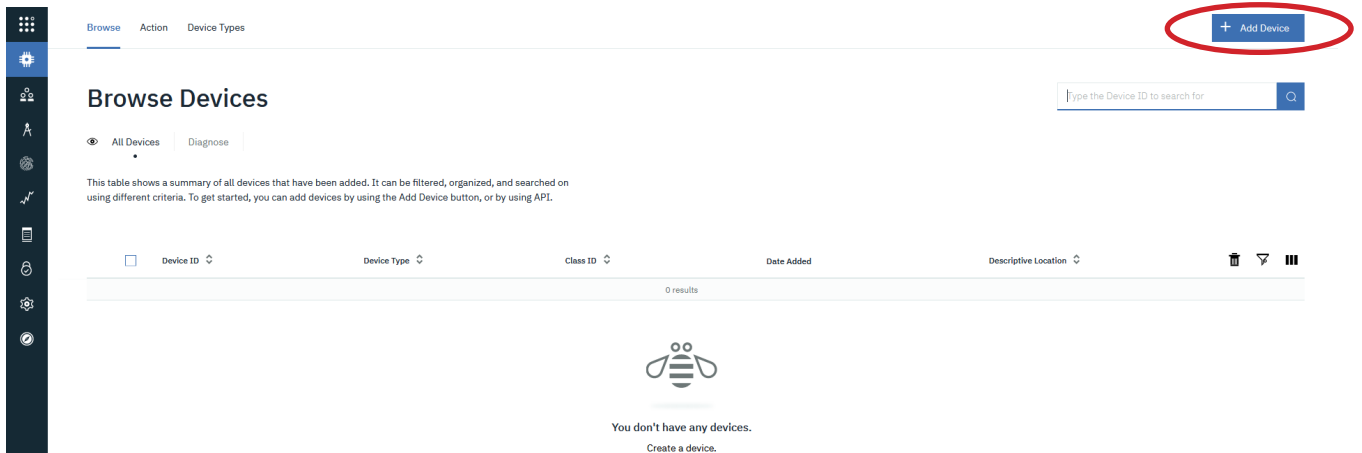
Ready for the next level?

IBM Watson IoT Platform Journey

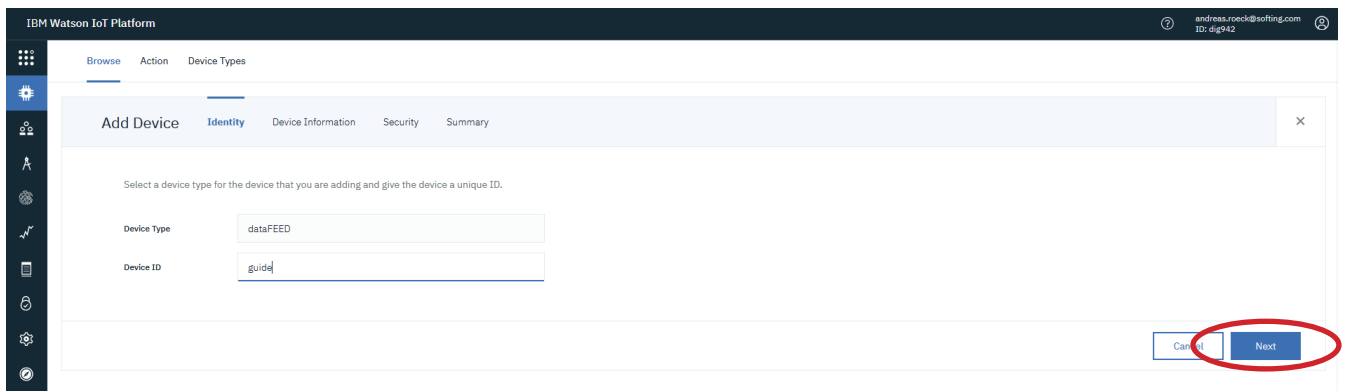
- Press **Launch** button
- Select **Devices** in menu bar on left side



Browse Devices page is shown



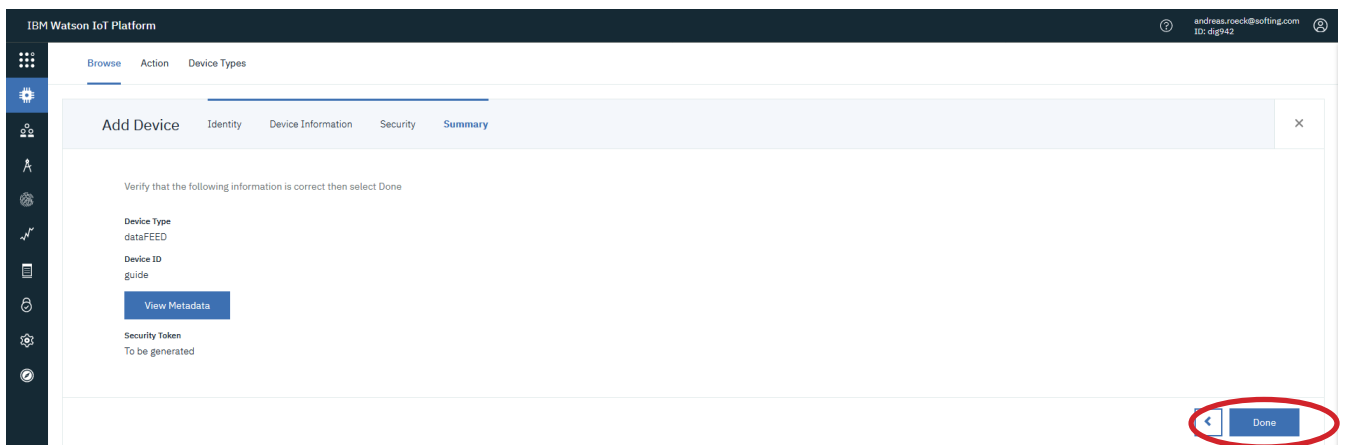
- Press **+ Add Device** button
Add Device page is shown



- Enter **Device Type** and **Device ID**

NOTES:

- There is no restriction to **Device Type** and **Device ID**
- **Device ID** has to be unique
- For **IBM Cloud** Client ID is built by "**d:**" + <**Organization ID**> + "**:**" + <**Device Type**> + "**:**" + <**Device ID**>
- Client ID is limited to 23 characters
- Click **Next** button
- Add additional optional device information at following pages
- Click **Next** button until verification is shown



- Verify entries
- Click **Done** button

Device Credentials page is shown after completion of **IBM Cloud** configuration

DEVICE DRILLDOWN

- Device Credentials
- Connection Information
- Recent Events
- State
- Device Information
- Metadata
- Extension Configuration
- Diagnostics
- Connection Logs
- Device Actions

Device guide

Device Credentials

You registered your device to the organization. Add these credentials to the device to connect it to the platform. After the device is connected, you can navigate to view connection and event details.

Organization ID	dig942
Device Type	dataFEED
Device ID	guide
Authentication Method	use-token-auth
Authentication Token	mb77E1v1b-4MvD&4kY&

⚠ Authentication tokens are non-recoverable. If you misplace this token, you will need to re-register the device to generate a new authentication token.

[Find out how to add these credentials to your device](#)

NOTE:

Authentication Token is created automatically.

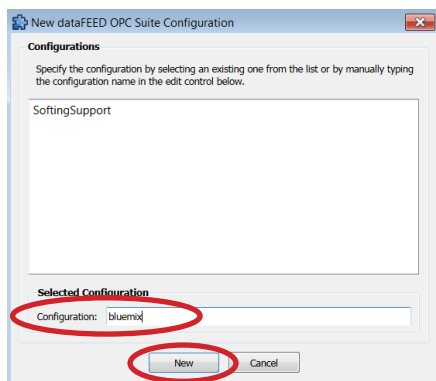
It is only displayed once at this moment.

Thus, it is highly recommended to copy shown device details for later use during **dataFEED OPC Suite** configuration.

dataFEED OPC Suite Configuration Steps

4. Create new dataFEED OPC Suite configuration

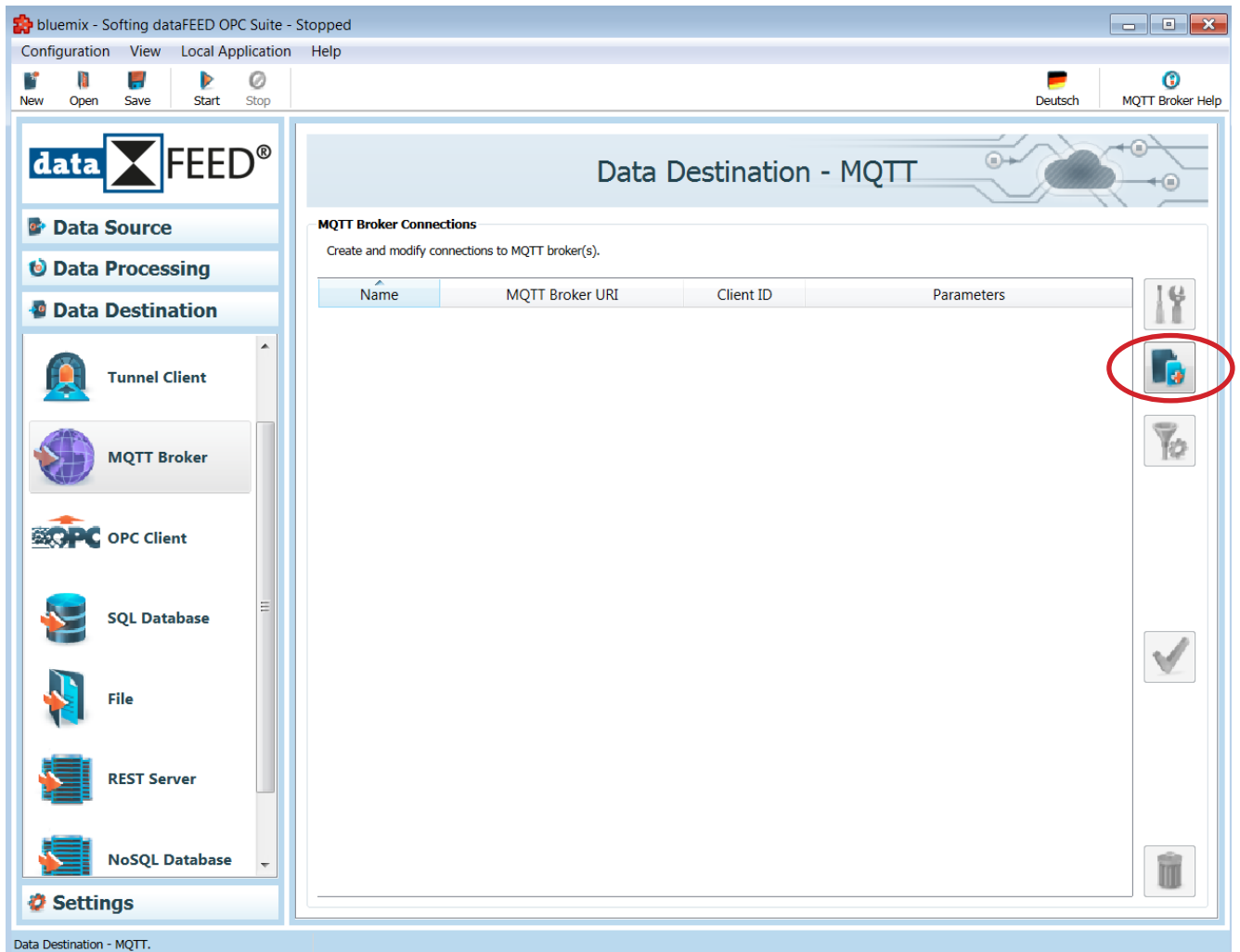
- Start **dataFEED OPC Suite Configurator**, e.g. by clicking on **dataFEED OPC Suite Configurator** icon in Desktop
- Navigate to **Configuration/New** page



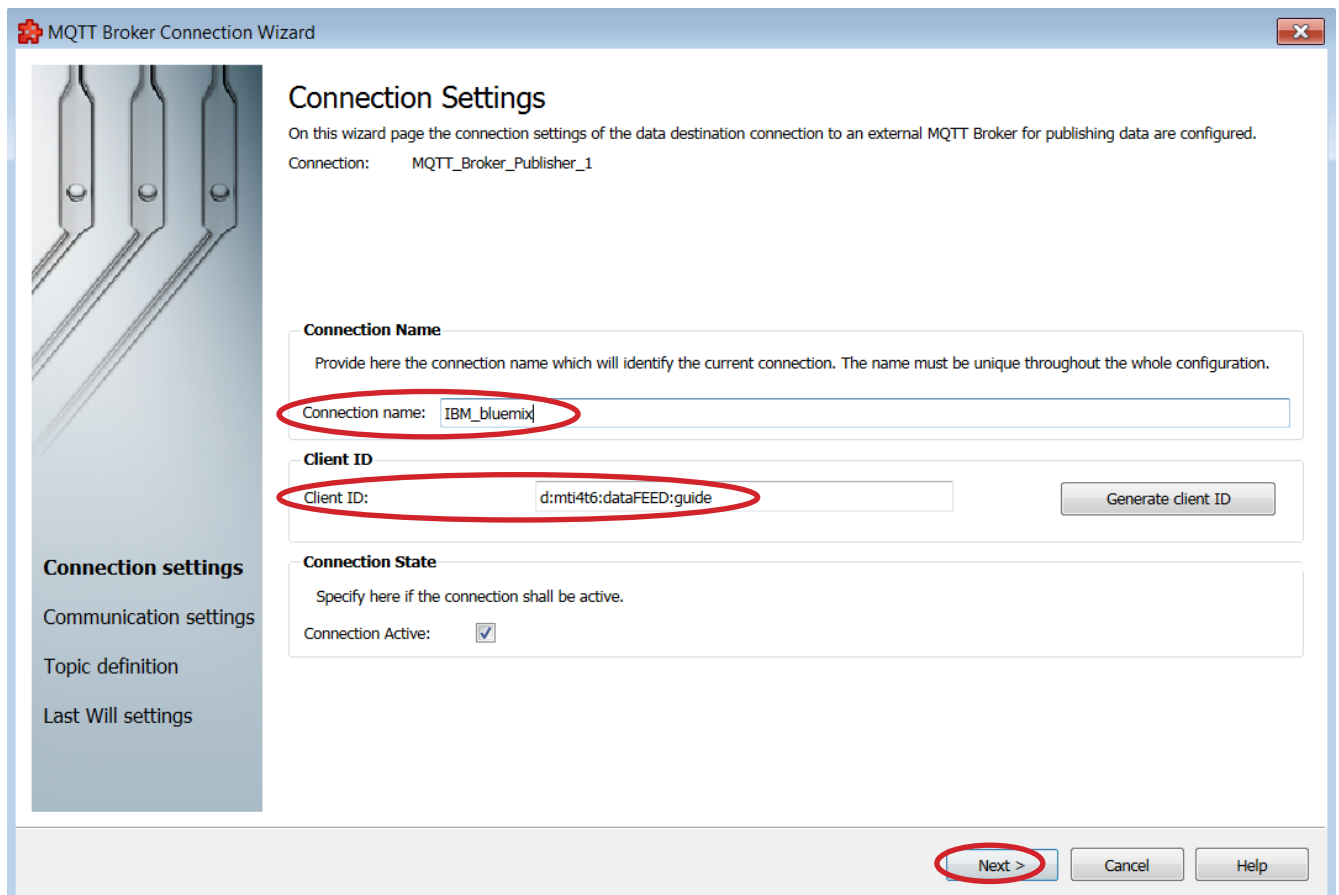
- Enter **Configuration** name
- Click **New** button

5. Define MQTT Broker Connection

- Navigate to **Data Connection/MQTT Broker** page



- Click **Add New Connection** button



MQTT Broker Connection Wizard

Connection Settings

On this wizard page the connection settings of the data destination connection to an external MQTT Broker for publishing data are configured.

Connection: MQTT_Broker_Publisher_1

Connection Name
Provide here the connection name which will identify the current connection. The name must be unique throughout the whole configuration.

Connection name:

Client ID

Client ID:

Connection State
Specify here if the connection shall be active.

Connection Active: ☒

Connection settings
Communication settings
Topic definition
Last Will settings

- Define MQTT Broker **Connection Name**

NOTE:

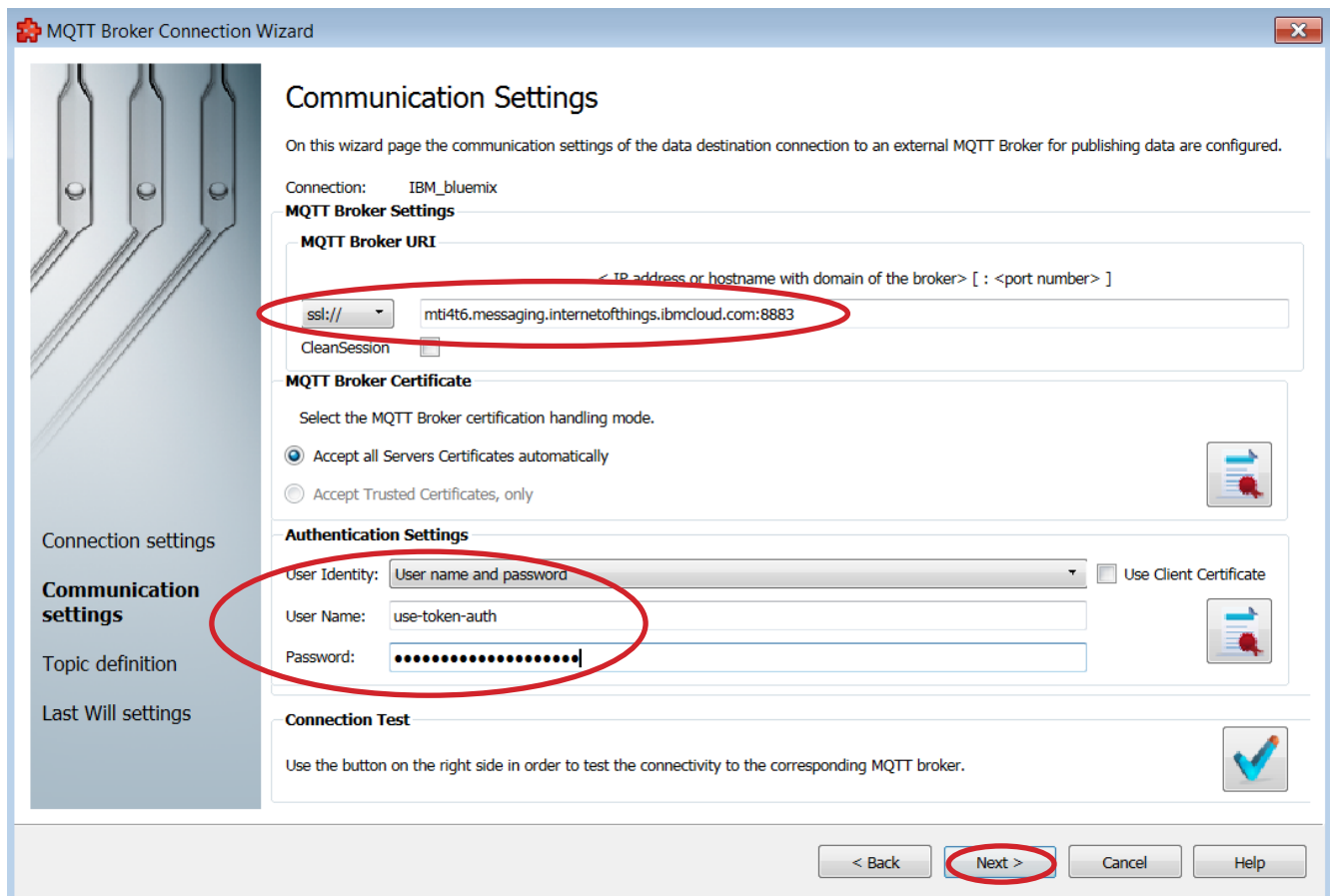
- There is no restriction to Connection Name

- Enter **Client ID**

NOTES:

- For Client ID use information shown at final page of **IBM Cloud** configuration (see section „Device Credentials page is shown after completion of IBM Cloud configuration“)
- For **IBM Cloud** Client ID is built by “d:”+<**Organization ID**>+”:”+<**Device Type**>+”:”+<**Device ID**>

- Click **Next >** button



MQTT Broker Connection Wizard

Communication Settings

On this wizard page the communication settings of the data destination connection to an external MQTT Broker for publishing data are configured.

Connection: IBM_bluemix

MQTT Broker Settings

MQTT Broker URI

IP address or hostname with domain of the broker [: <port number>]

ssl:// mti4t6.messaging.internetofthings.ibmcloud.com:8883

CleanSession ☐

MQTT Broker Certificate

Select the MQTT Broker certification handling mode.

☒ Accept all Servers Certificates automatically

☐ Accept Trusted Certificates, only

Authentication Settings

User Identity: User name and password ☐ Use Client Certificate

User Name: use-token-auth

Password:

Connection Test

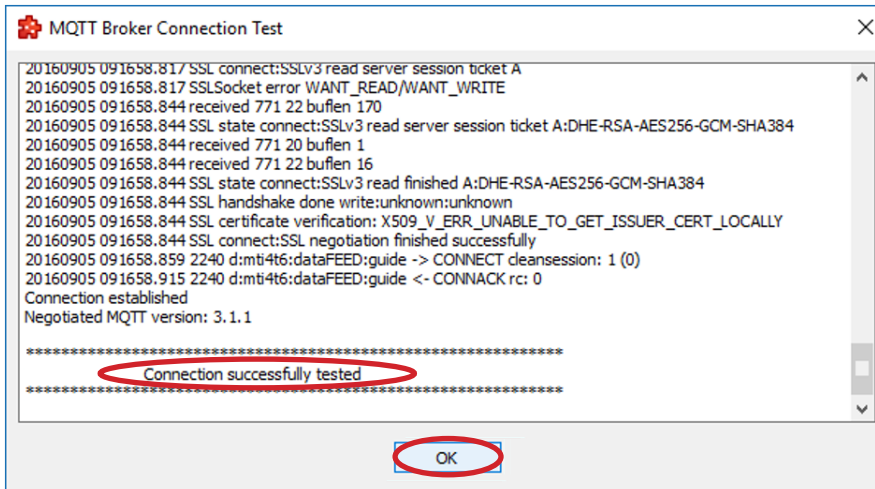
Use the button on the right side in order to test the connectivity to the corresponding MQTT broker.

< Back **Next >** Cancel Help

- Enter **MQTT Broker URI** of **IBM Cloud**

NOTES:

- For TCP MQTT Broker URI, choose option **tcp://**
and enter IP address **<Organization ID>+”messaging.internetofthings.ibmcloud.com:1883”**
 - For SSL/TLS MQTT Broker URI, choose option **ssl://**
and enter IP address **<Organization ID>+”messaging.internetofthings.ibmcloud.com:8883”**
 - Define **Authentication Settings**
- NOTES:**
- Select **User name and password** as **User Identity**
 - Enter “use-token-auth” as **User Name**
 - Enter authentication token shown at final page of **IBM Cloud** configuration as **Password**
(see section „Device Credentials page is shown after completion of IBM Cloud configuration“)
 - Click **Connection Test** button



- Click **OK** button
- Click **Next >** button, if connection has been tested successfully

6. Define MQTT Topic

NOTES:

Within the scope of this manual the hierarchical MQTT topic

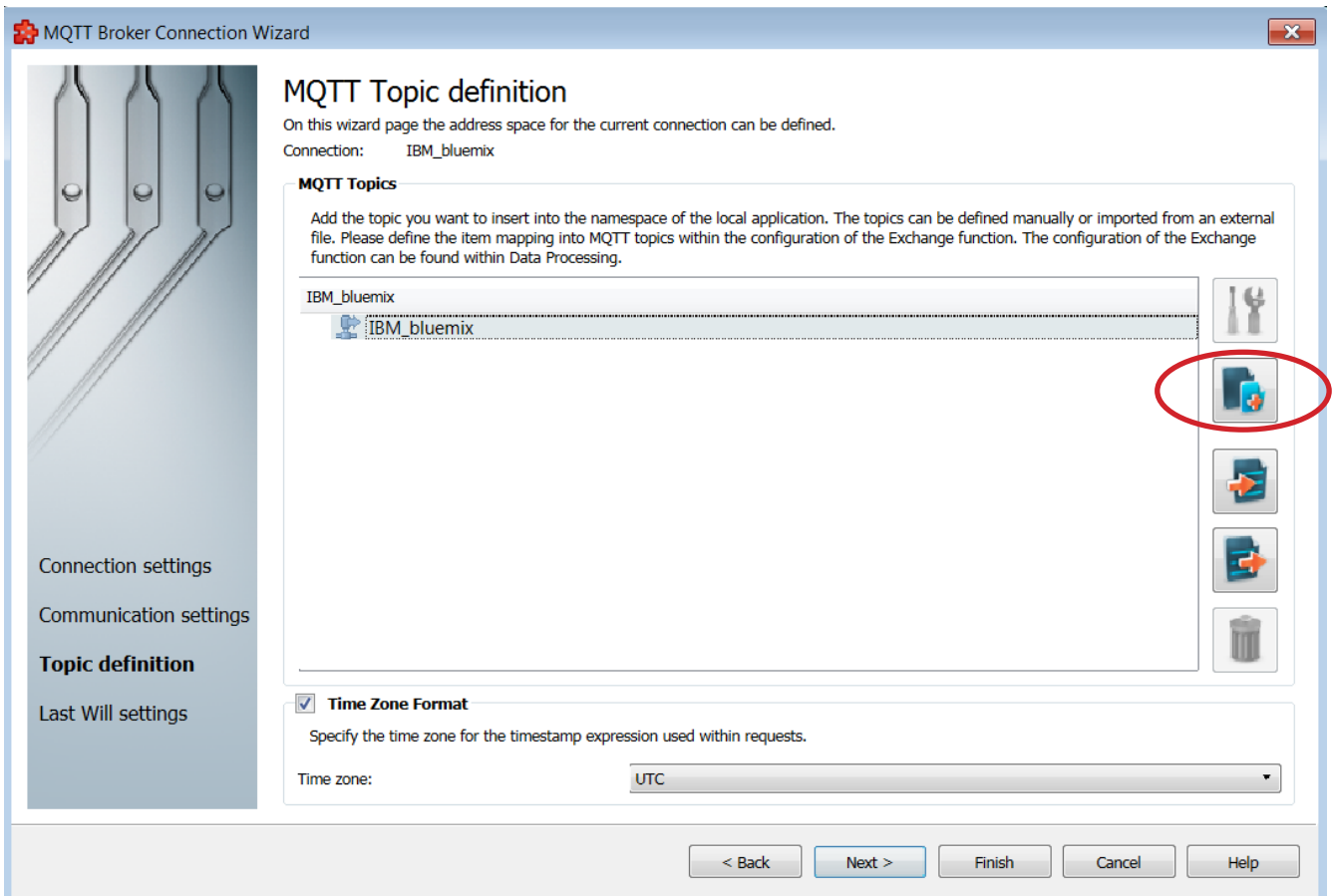
"**iot-2/evt/**" + **<Event ID>** + **/fmt/**" + **<Format>** is used by **dataFEED OPC Suite** for publishing values.

Each level of the hierarchical MQTT topic has to be defined separately.

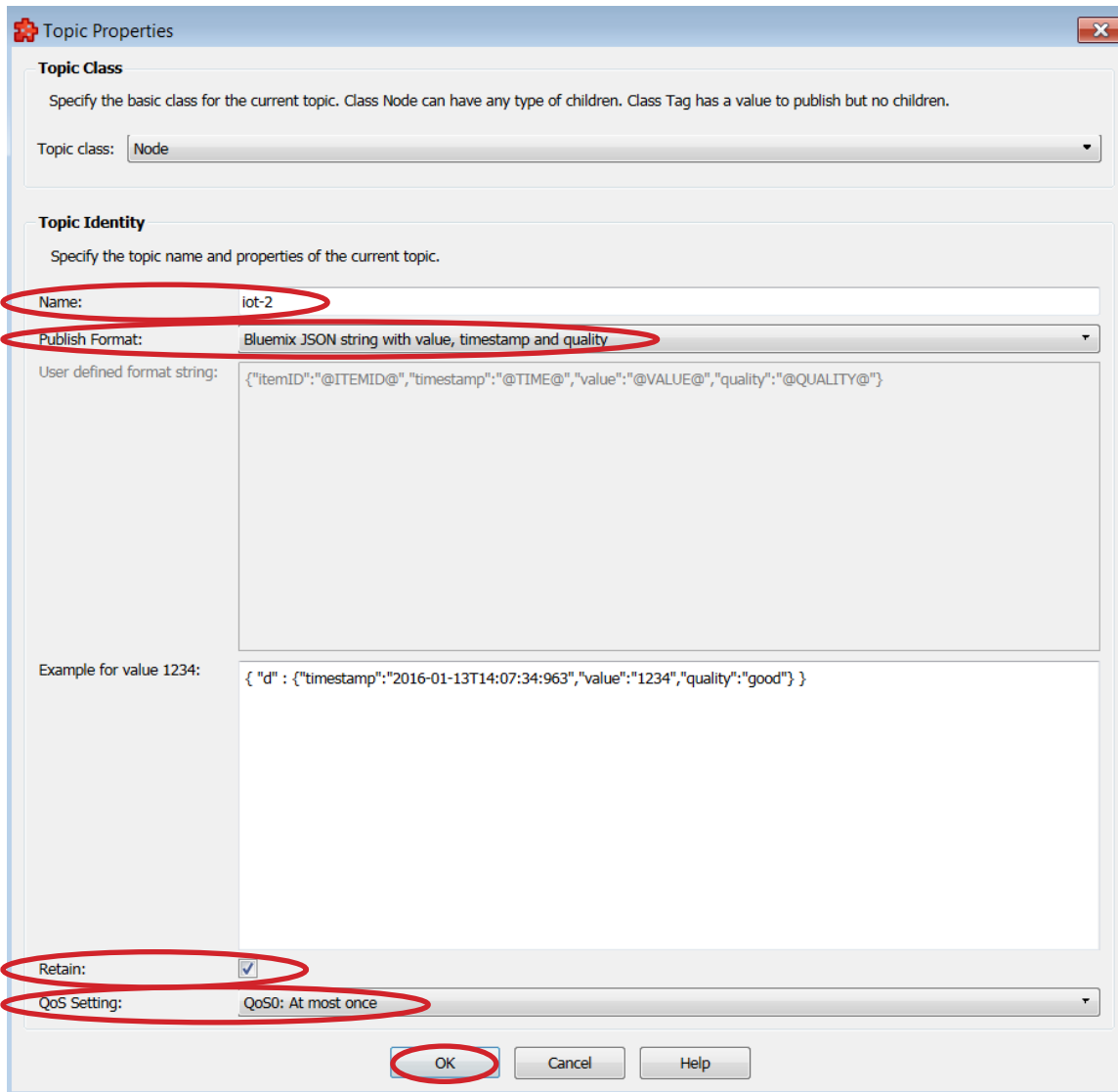
There is no restriction to **<Event ID>**

<Format> has to be set to "json"

- Select **Topic definition** page



- Click **Add Item** button



Topic Properties

Topic Class
Specify the basic class for the current topic. Class Node can have any type of children. Class Tag has a value to publish but no children.
Topic class: Node

Topic Identity
Specify the topic name and properties of the current topic.

Name: iot-2

Publish Format: Bluemix JSON string with value, timestamp and quality

User defined format string:

```
{\"itemID\":\"@ITEMID@\", \"timestamp\":\"@TIME@\", \"value\":\"@VALUE@\", \"quality\":\"@QUALITY@\"}
```

Example for value 1234:

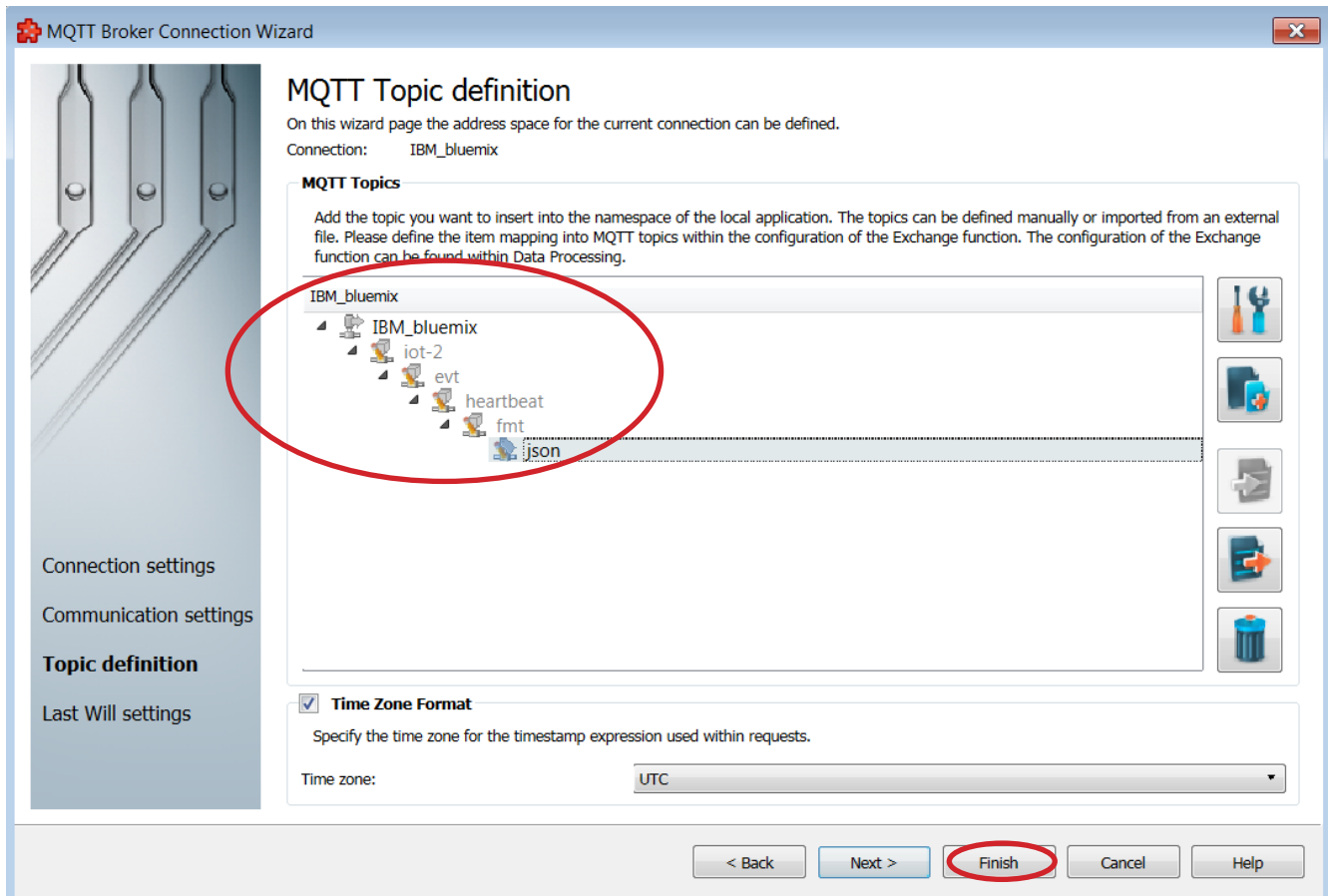
```
{ \"d\" : { \"timestamp\":\"2016-01-13T14:07:34:963\", \"value\":\"1234\", \"quality\":\"good\"} }
```

Retain: ☒

QoS Setting: QoS0: At most once

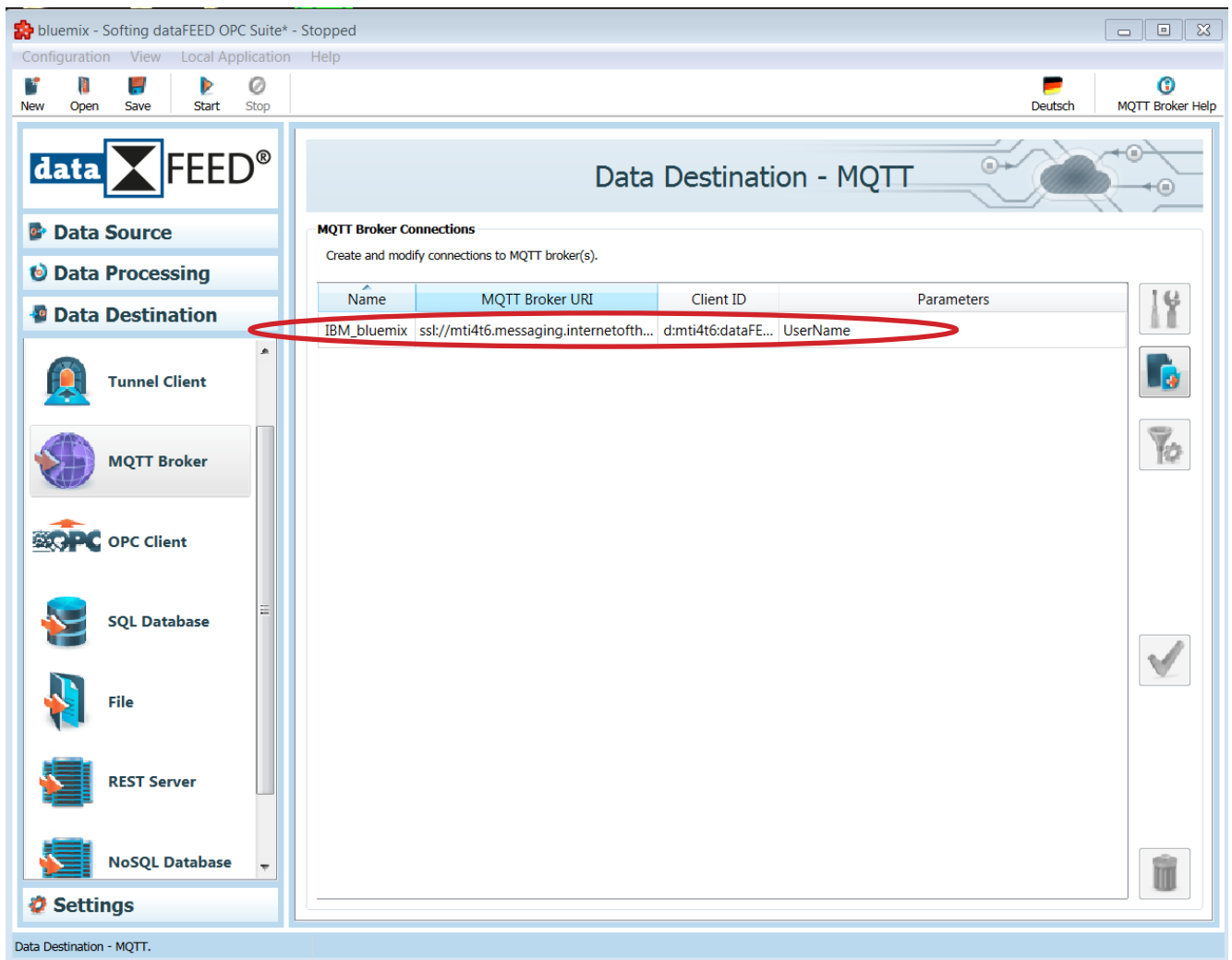
OK Cancel Help

- Enter “iot-2” as top level **Name** of hierarchical MQTT topic
 - Select **Bluemix JSON string with value, timestamp and quality** as **Publish Format**
 - Define **Retain** setting as required
 - Select **QoS Setting** as required
 - Click **OK** button
 - Click **Add Item** button and repeat step above for definition of each additional level of hierarchical MQTT topic:
 - “evt”
 - **<Event ID>**
- NOTE:**
Within the scope of this manual “heartbeat” is used as **<Event ID>**
- “fmt”
 - Define “json” as **<Format>**



- Click **Finish** button

- Updated **MQTT Broker Connections** page is shown

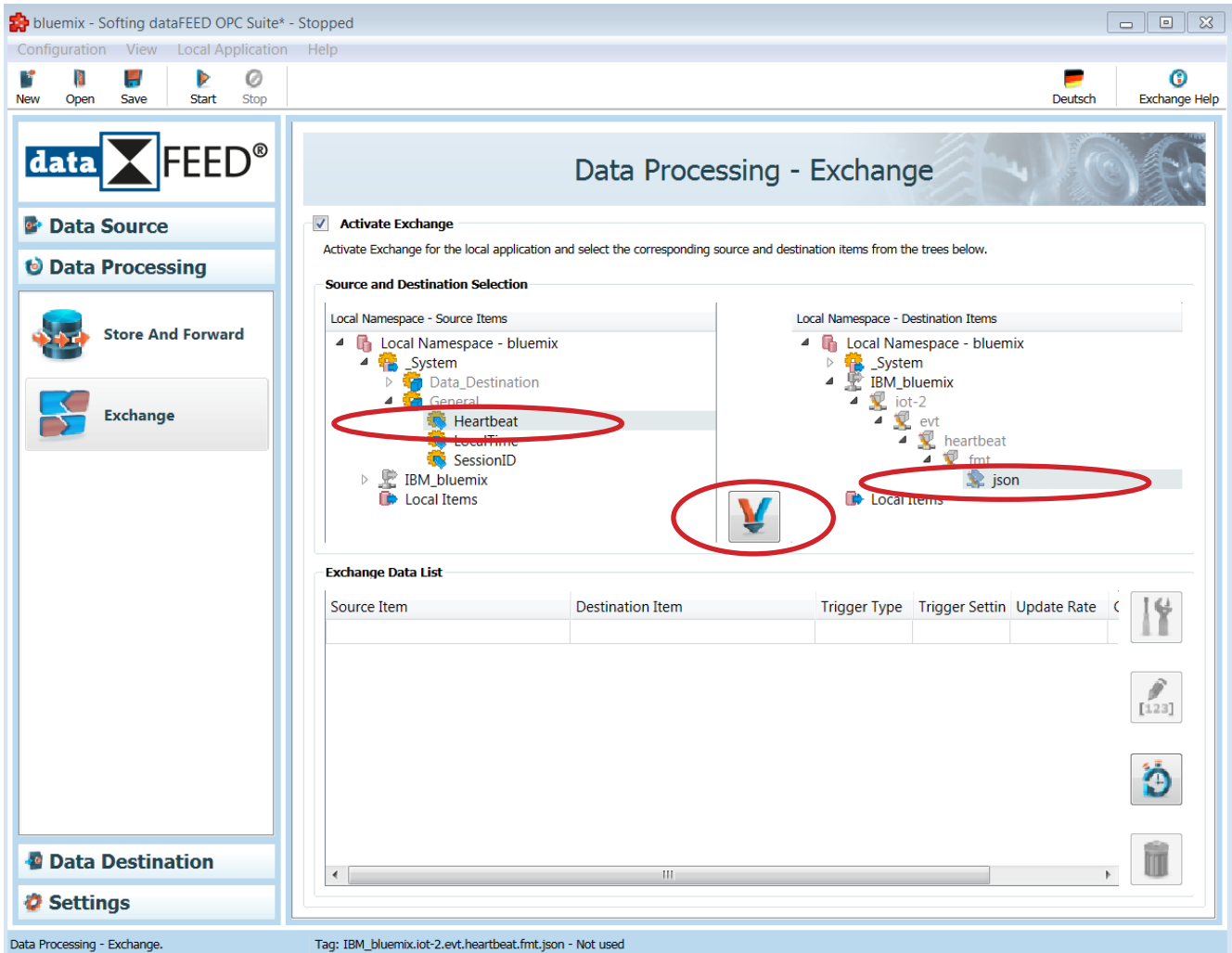


7. Define Data Exchange Between *dataFEED OPC Suite* and *IBM Cloud*

NOTE:

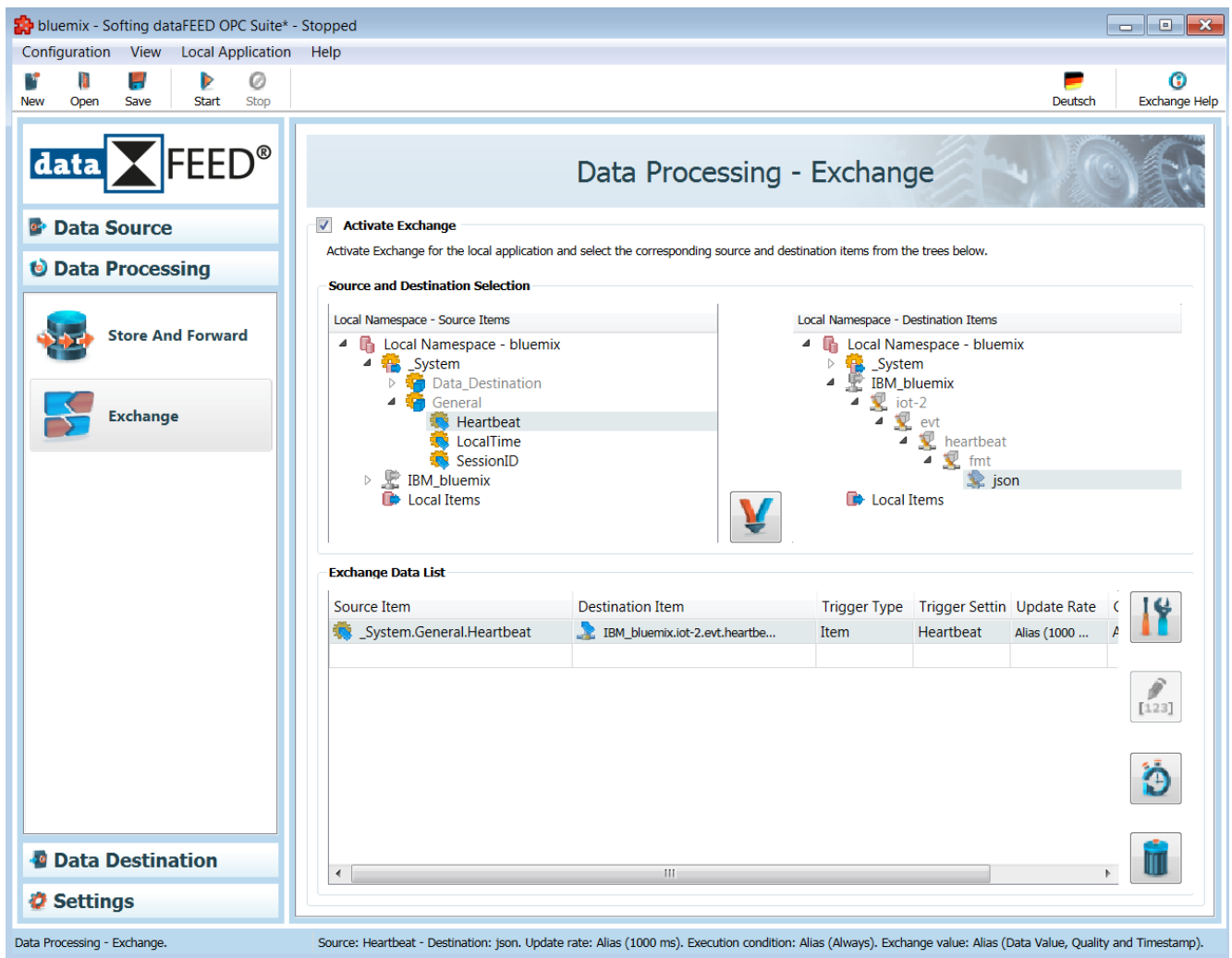
For an easy demonstration of the data exchange a *dataFEED OPC Suite* system data item with a constantly changing value is used as data source.

- Navigate to **Data Processing/Exchange** page

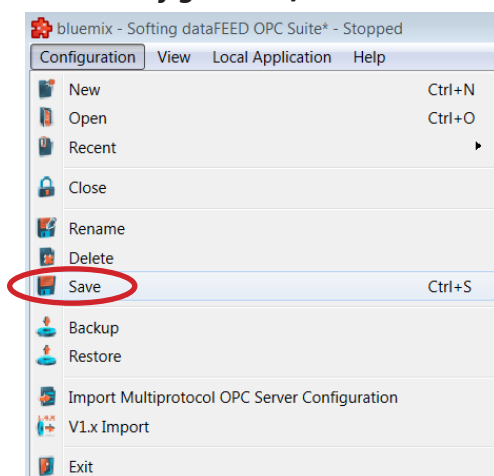


- Select **System.General.Heartbeat** item as data source
- Select **json** level of hierarchical **IBM Cloud** MQTT topic as data destination
- Click **Connect** button to create exchange action by connecting data source with data destination

- Generated connection is displayed in **Exchange Data List**



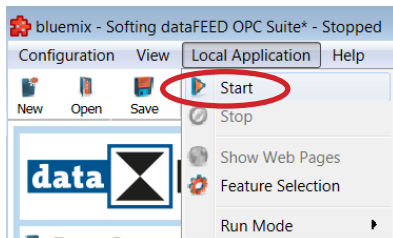
- This step completes **dataFEED OPC Suite** configuration within scope of this manual.
- Select **Configuration/Save** menu item to save configuration



Data Exchange Verification

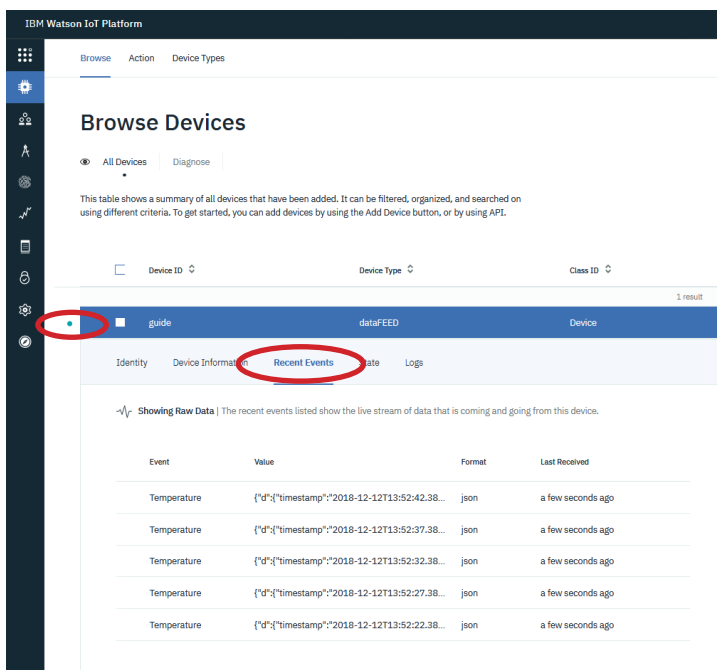
8. Activate *dataFEED OPC Suite* Run Mode

- In *dataFEED OPC Suite* select **Local Application/Start** menu item



9. Monitor Data in *IBM Cloud*

- Restart *IBM Cloud* dashboard and select **Devices** in menu bar on left side



Green dot near **guide** Device ID indicates active data source

- Select **Recent Events** for seeing live stream of data coming from dataFEED OPC Suite

NOTE:

For data visualization select **Boards** in menu bar on left side.

Afterwards connect data items with cards created for an individual board.

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