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# How to Run Softing's edgeConnector Products on Windows

# How to Run Softing's *edgeConnector* Products on Windows

## Preliminary Remarks

This configuration manual describes how to deploy and use Softing's the various ***edgeConnector*** *Docker* container applications in a Windows environment.

**NOTE:**
Additional ***edgeConnector*** information can be found at the according product web pages

- ***edgeConnector Siemens***: https://industrial.softing.com/products/docker/edgeconnector-siemens.html
- ***edgeConnector 840D***: https://industrial.softing.com/products/docker/edgeconnector-840d.html
- ***edgeConnector Modbus***: https://industrial.softing.com/products/docker/edgeconnector-modbus.html

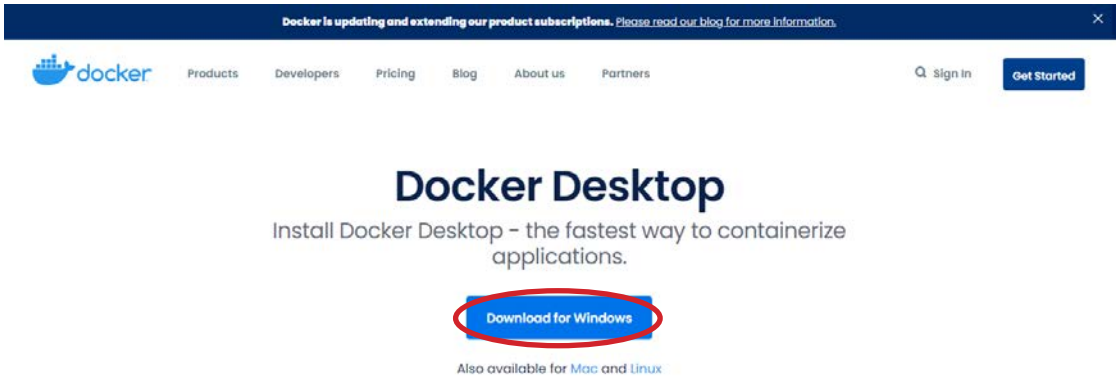
**NOTE:**
Special attention must be paid to the ports used for OPC UA communication between the ***edgeConnector*** *Docker* container application and individual OPC UA clients. Here the following steps are suitable:

1. In advance, define the individual ports to be used for OPC UA communication for the various ***edgeConnector*** *Docker* container applications. This information is required for sections 2. and 3.
2. Map these ports when starting the ***edgeConnector*** *Docker* container application (see section 2.).
3. Make sure the identical ports are defined for the OPC UA endpoints when configuring the ***edgeConnector*** *Docker* container application (see section 3.).

**NOTE:**
Within the scope of this configuration manual the image of a specific ***edgeConnector*** *Docker* container application as chosen by the user is shown by the string *<edgeConnector>*.

## 1. Install and Start *Docker* Desktop

- In Internet browser, open https://www.docker.com/products/docker-desktop page



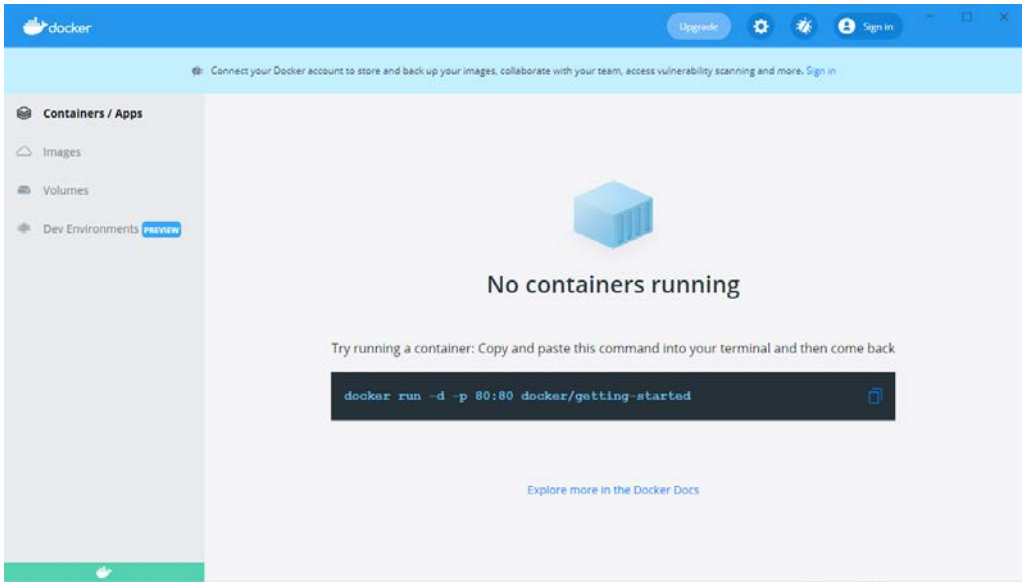

- Press ***Download for Windows*** button
- Execute downloaded ***Docker Desktop Installer.exe*** file, if installation doesn't start automatically

  **NOTE:**
  By default Docker Desktop requires the activation of the Windows Hypervisor *Hyper-V* (see next page). As an alternative it is also possible to run Docker Desktop in the Windows Subsystem for Linux *WSL-2* (available since Windows 10 2004). This can be installed by entering the command

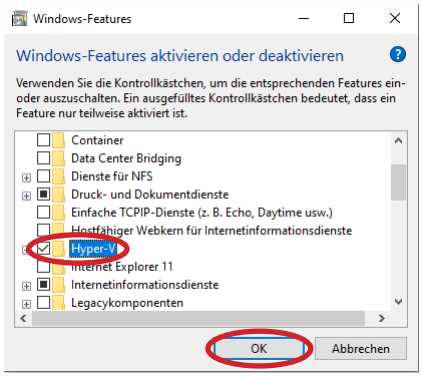
  *wsl --install*

  in *Windows Command-Line Interpreter* or *Windows PowerShell*.
  Here the ***Install required Windows components for WSL 2*** option has to be activated during Docker Desktop installation.

- Press ***Close*** button once installation has been completed successfully
- Open *Docker Desktop* application from Windows start menu




- Open *Windows Control Panel/Programs/Programs and Features*
- Click *Turn Windows features on and off* link



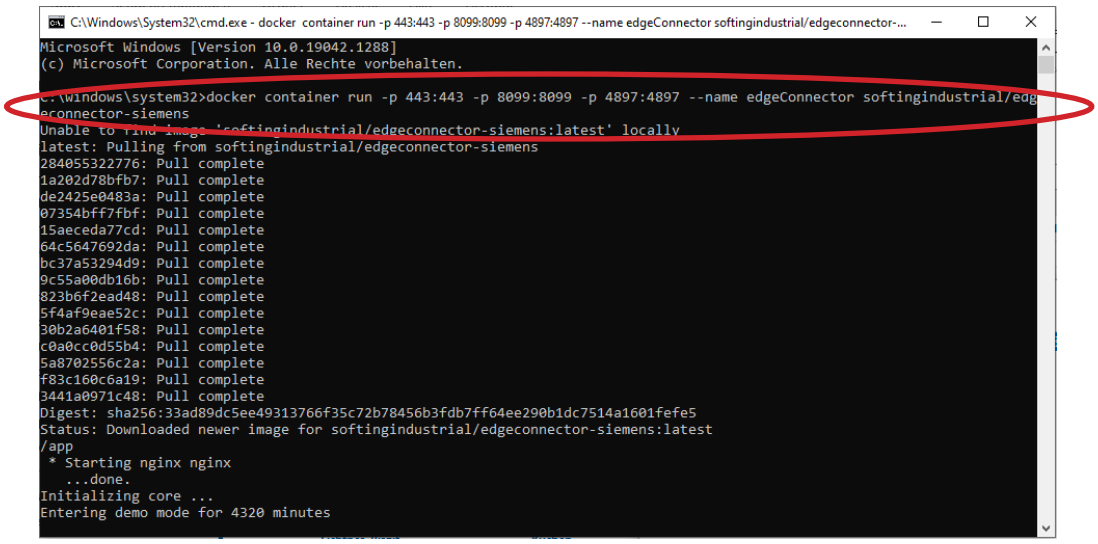

- Activate ***Hyper-V*** checkbox, if not activated already
- Press ***OK*** button

## 2. Deploy and Run *edgeConnector* Applications

**NOTE:**
Besides in other repositories, ***edgeConnector*** *Docker* container applications are available for download at Docker Hub. They can be found there using the following information:

- ***edgeConnector Siemens***:
  Image name: *softingindustrial/edgeconnector-siemens*
  URL: https://hub.docker.com/r/softingindustrial/edgeconnector-siemens
- ***edgeConnector 840D***:
  Image name: *softingindustrial/edgeconnector-840d*
  URL: https://hub.docker.com/r/softingindustrial/edgeconnector-840d
- ***edgeConnector Modbus***:
  Image name: *softingindustrial/edgeconnector-modbus*
  URL: https://hub.docker.com/r/softingindustrial/edgeconnector-modbus

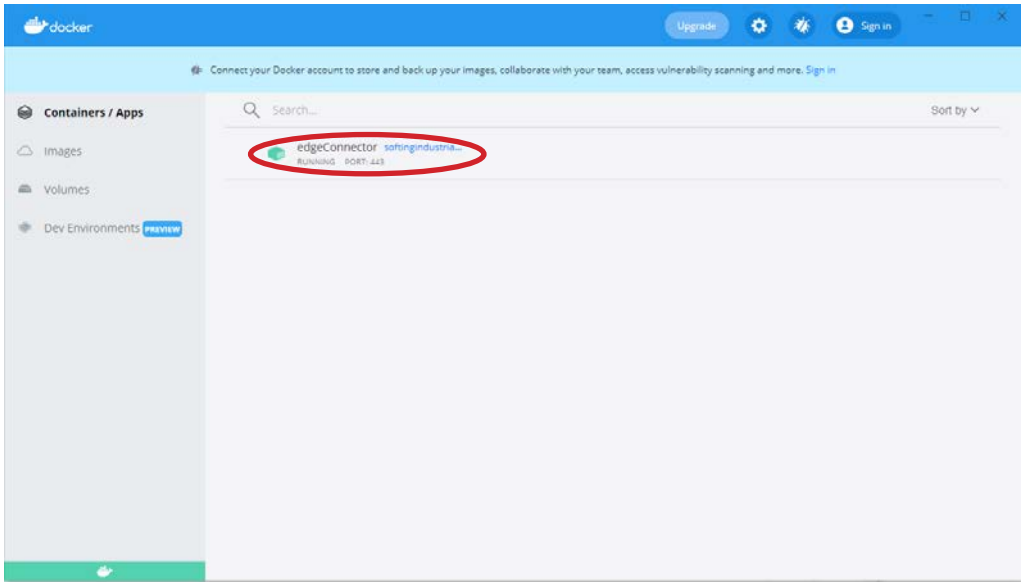
- Open *Windows Command-Line Interpreter* or *Windows PowerShell*
- Enter
  *docker container run -p 443:443 -p 8099:8099 -p 4897:4897 --name edgeConnector <edgeConnector image>*
  command



**NOTES:**

- The given command is the default command for starting the ***edgeConnector*** *Docker* container application.
  If the latest image of this *Docker* container application is not available locally, it is downloaded ("pulled") from Docker Hub.
- The switch *-p <External Host Port>:<Internal Docker Port>* describes the mapping of an internal port in the virtual Docker network to an external port in the local host network.
  The mapping of the following internal ports of the Docker network is required:
  - Port *443* is required for *https* communication (secure local web services).
  - Port *8099* defines the local web service port.
  - Port *4897* is used for OPC UA communication.

  Some indications for an individual customization of the starting command by adapting the command parameter *-p* can be found in later notes.
- The usage of the switch *-- name <Docker application name>* is optional.
  It defines the container name to be shown in Docker Desktop and allows for an easy identification of the *<edgeConnector> Docker* container application.

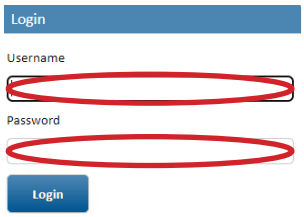


## 3. Configure *edgeConnector Docker* Container Application

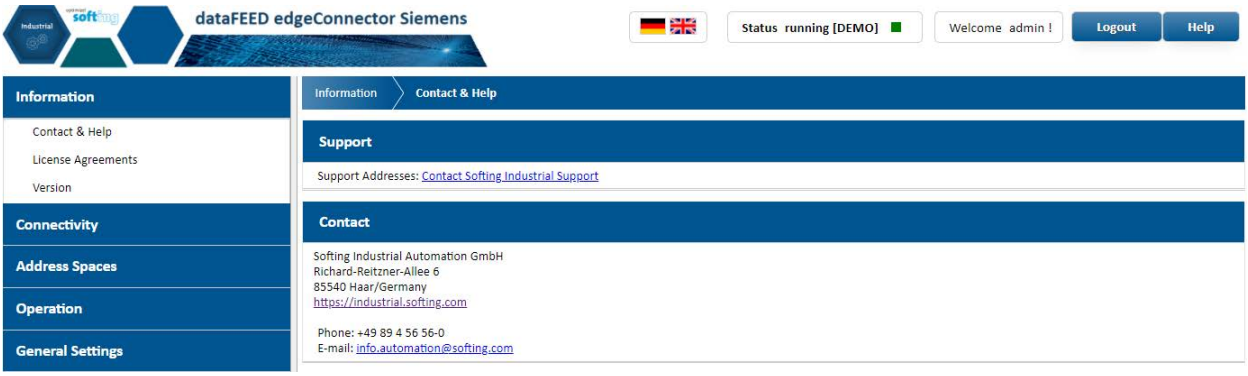
- In Internet browser, open *http://localhost:8099/* page

  **NOTE:**
  The number *8099* in the URL reflects the local web service port in the host network as defined in the *docker container run* command (see section 2.).
  When using a different local web service port in the host network the URL needs to be adapted.

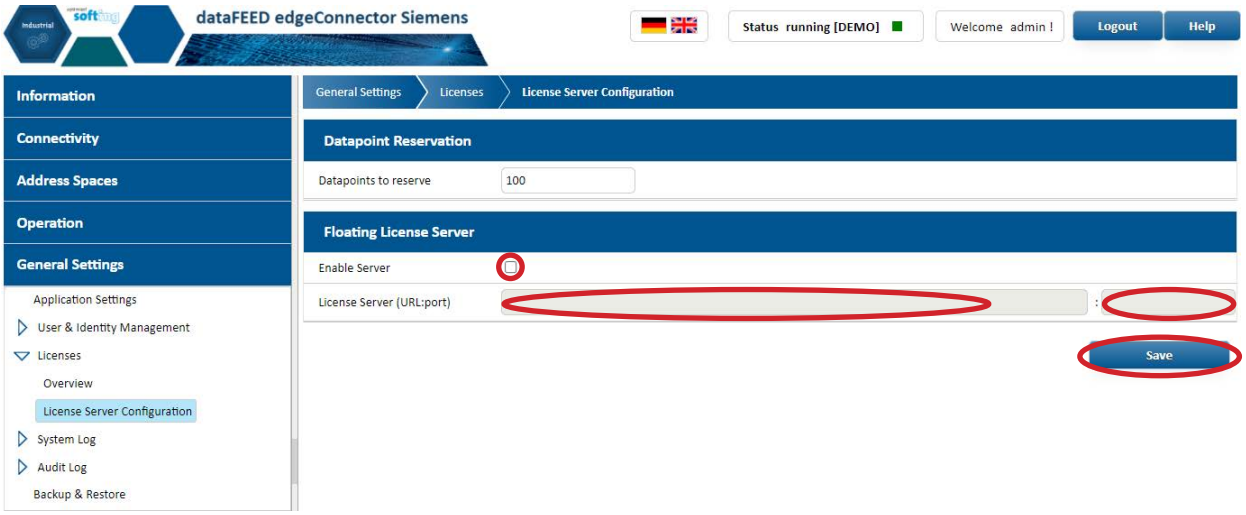
  The login screen of the ***edgeConnector*** *Docker* container application is shown



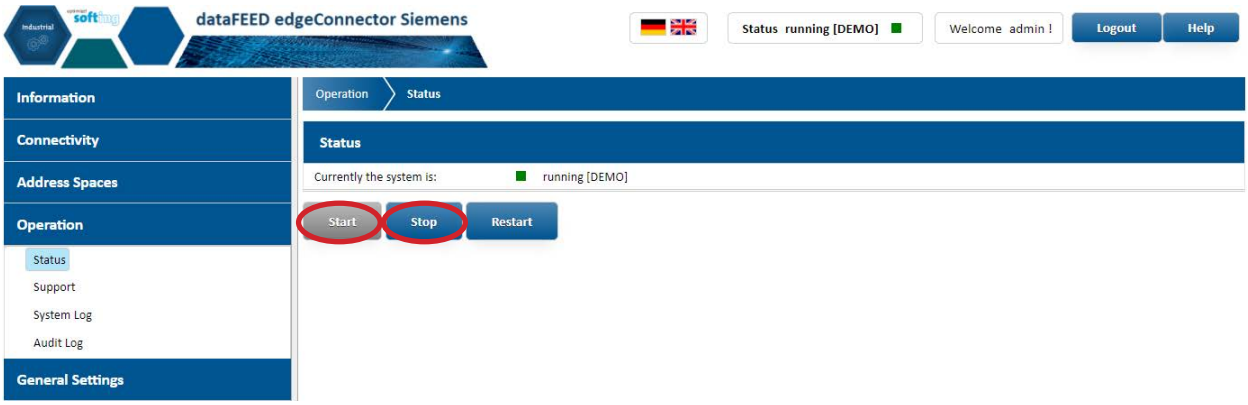

- For gaining administrator access rights enter *admin* in ***Username*** field and *admin* in ***Password*** field
  The user interface of the time-limited ***edgeConnector*** *Docker* container application demo mode is available for configuration purposes.



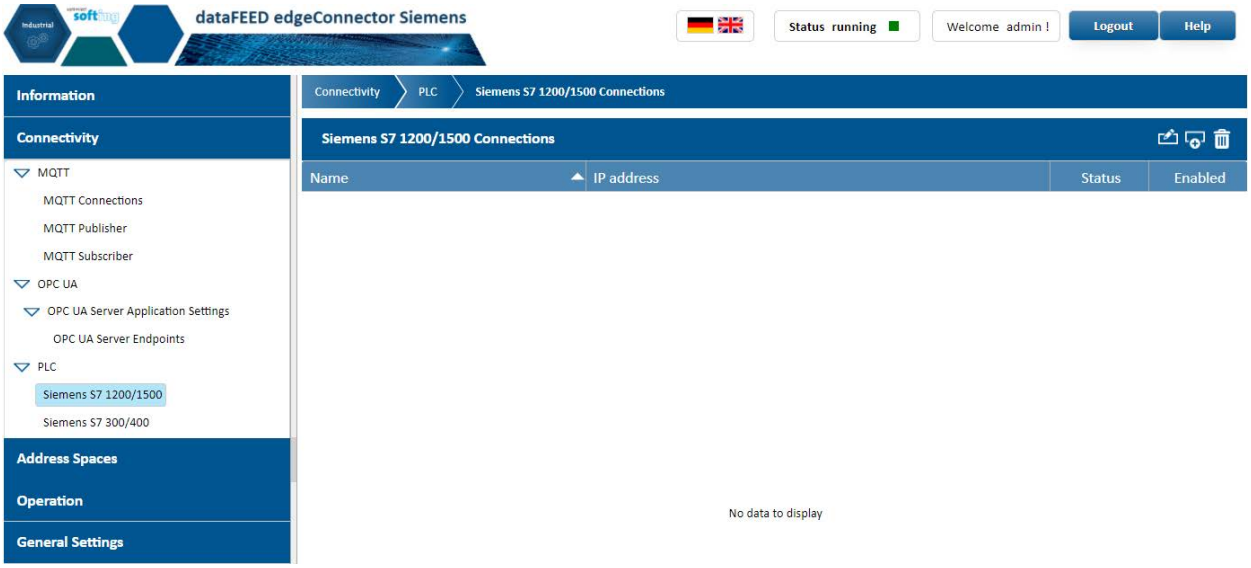

- Navigate to ***General Settings/Licenses/License Server Configuration***




- Activate ***Enable Server*** Checkbox
- Enter URL of floating license server and port number *6200* in ***License Server*** fields
- Press ***Save*** button
- Navigate to ***Operation/Status***

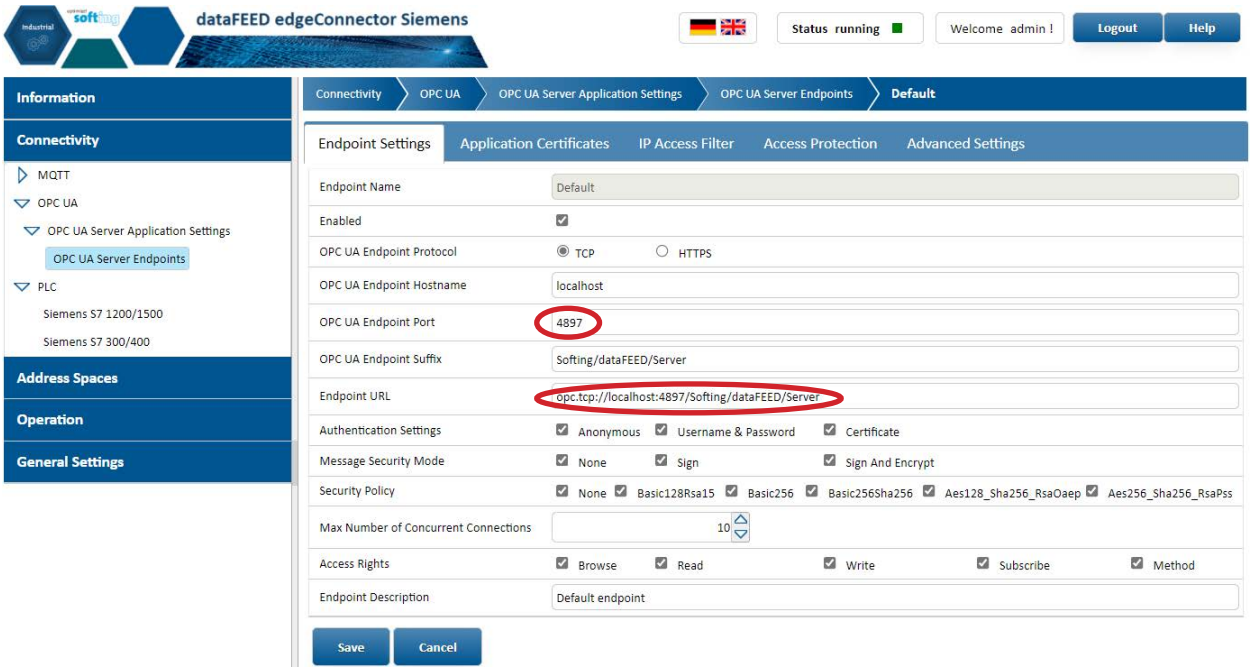



- Press ***Stop*** button
- Press ***Start*** button
  The license as available in the floating license server is applied to the ***edgeConnector*** *Docker* container application. As a result the string *[DEMO]* is not shown in the ***Status*** field any longer.




The ***edgeConnector*** *Docker* container application is available for configuration by navigating to the appropriate menu items in the ***Connectivity*** and ***Address Spaces*** sections.

- Navigate to ***Connectivity/OPC UA Server Application Settings/OPC UA Server Endpoints***




- Enter port number in ***OPC UA Endpoint Port*** field

  **NOTES:**

  - The default port number in the ***OPC UA Endpoint Port*** field as set by the ***edgeConnector*** *Docker* container application is *4897*. This port number is intended to be used for communication with a first OPC UA Server endpoint.
    If further OPC UA Server endpoints are configured by the ***edgeConnector*** *Docker* container application different port numbers have to be used. Thus, the ***edgeConnector*** *Docker* container application adapts the default setting of the ***OPC UA Endpoint Port*** field for further OPC UA Server endpoints.
  - All individual port numbers defined in the ***OPC UA Endpoint Port*** fields for the various OPC UA Server endpoints configured by the ***edgeConnector*** *Docker* container application have to match the ports defined for the OPC UA communication of the internal Docker network using the *-p* switch in the *docker container run* command (see section 2.).
    **Example:**
    If the ports *4897* and *4898* should be used as OPC UA endpoint ports by the ***edgeConnector*** *Docker* container application, the according *docker container run* command has to include the switch *-p <external OPC UA communication port 1>:4897* and *-p <external OPC UA communication port 2>:4898*.

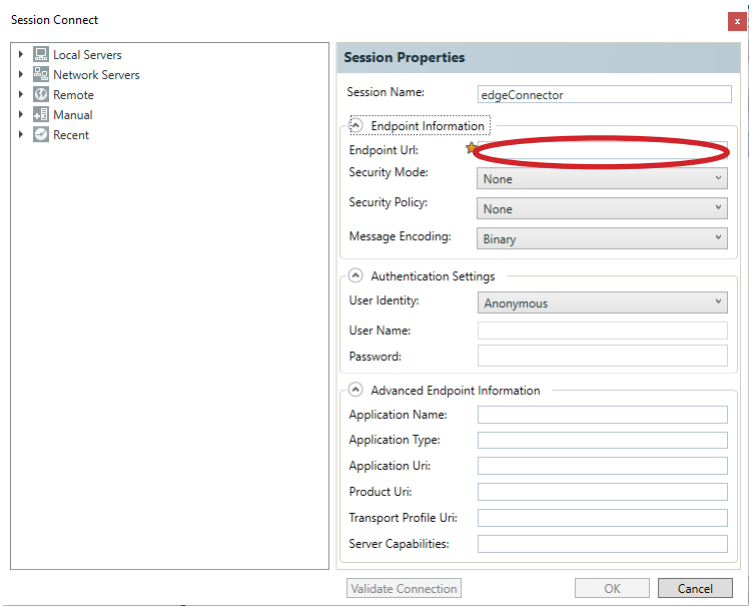
- Copy ***Endpoint URL*** field for use in OPC UA Client application

  **NOTE:**
  The ***Endpoint URL*** field itself cannot be edited. Rather, it is composed of the entries in the previous fields and, in particular, contains the port number defined in the ***OPC UA Endpoint Port*** field.

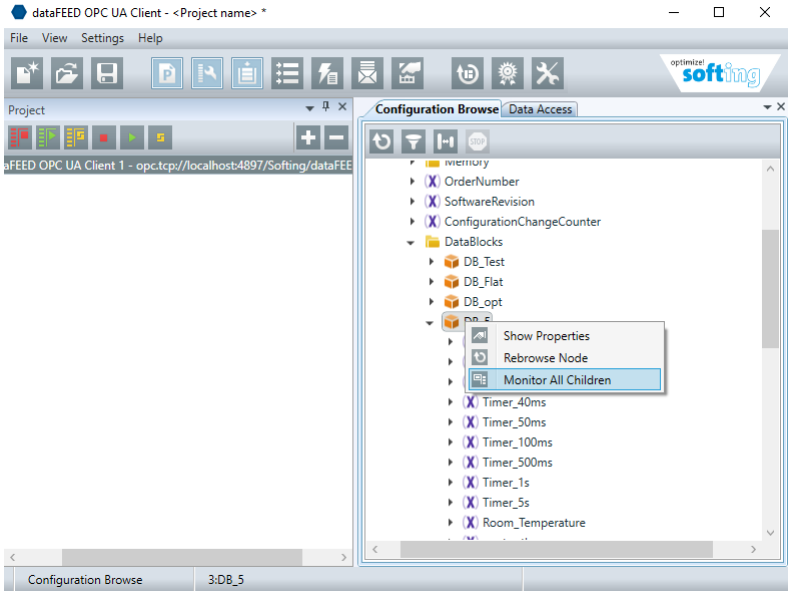
## 4. Access *edgeConnector Docker* Container Application Data Using OPC UA

**NOTE:**
The free-of-charge Softing ***OPC UA Demo Client*** is used in following as an example for an OPC UA Client application.

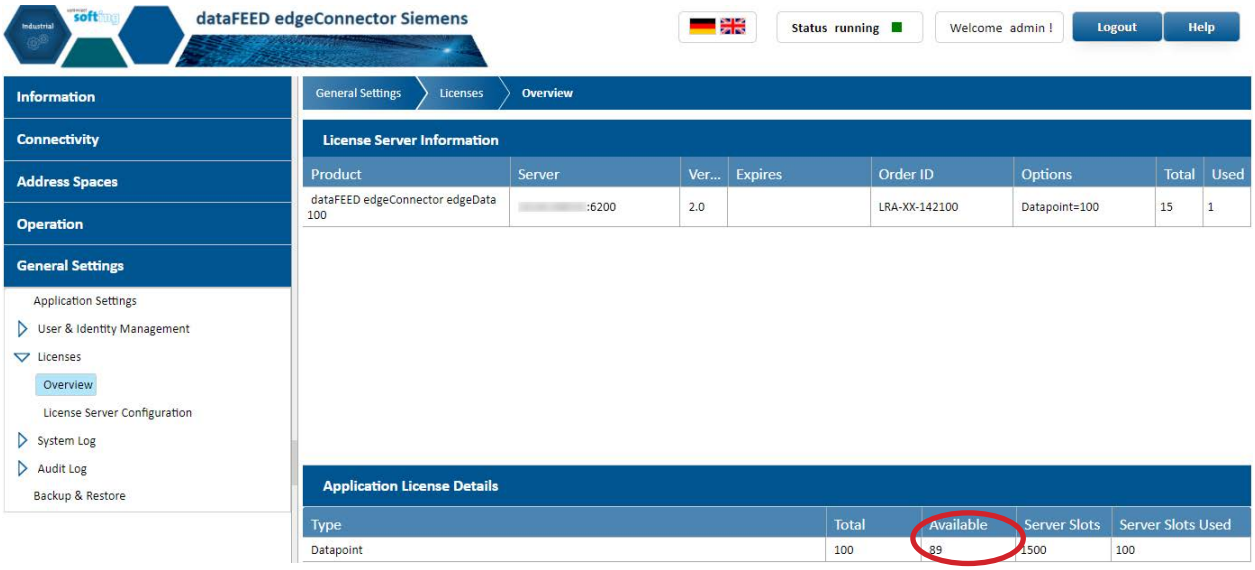
- Open OPC UA Client




- Enter OPC UA Server endpoint URL as copied from ***edgeConnector*** *Docker* container application in ***Endpoint Url*** field




- Select individual data items for OPC UA data exchange
- In ***edgeConnector*** *Docker* container application navigate to ***General Settings/Licenses/Overview***




The number of data items remaining in the current ***edgeConnector*** *Docker* container application license is shown.

## 5. Running Multiple *edgeConnector Docker* Container Applications in Parallel

It is possible to run multiple ***edgeConnector*** *Docker* container applications in parallel. Here, several *docker container run* commands have to be executed in *Windows Command-Line Interpreter* or *Windows PowerShell*.

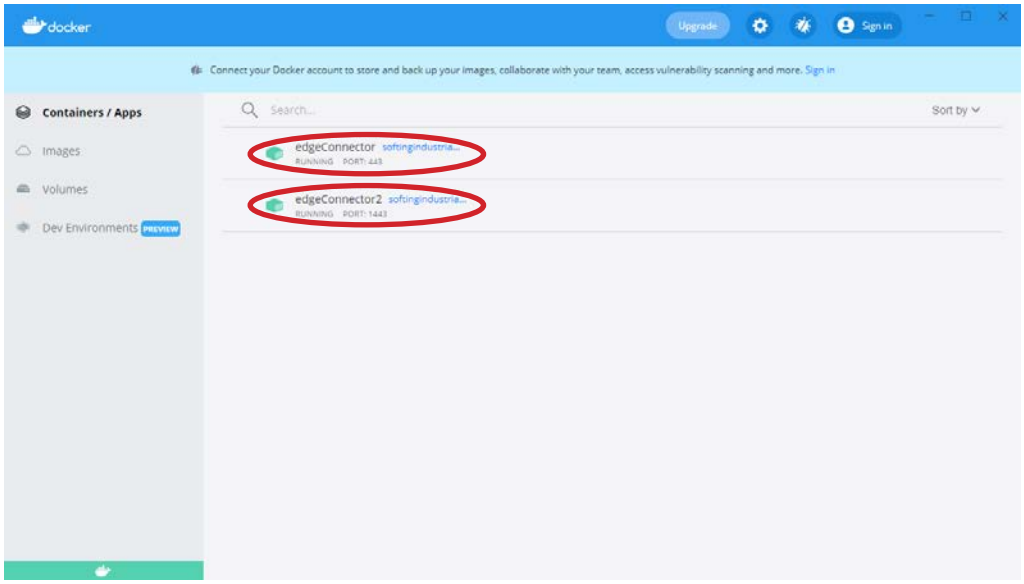
**Example:**
Enter the *Windows Command-Line Interpreter* respectively *Windows PowerShell* commands

*docker container run -p 443:443 -p 8099:8099 -p 4897:4897 --name edgeConnector <edgeConnector image>*

and

*docker container run -p 1443:443 -p 8100:8099 -p 4898:4898 --name edgeConnector2 <edgeConnector image>*

to start two ***edgeConnector*** *Docker* container applications in parallel.




**NOTES:**

- When running multiple ***edgeConnector*** *Docker* container applications in parallel the port *443* as used for *https* communication in the virtual Docker network has to be mapped to different external ports in the local host network.
- When running multiple ***edgeConnector*** *Docker* container applications in parallel the port *8099* as used for web service communication in the virtual Docker network has to be mapped to different external ports in the local host network.
- It is essential that the individual OPC UA communcation ports defined in the various *docker container run* commands match the ports of the invidual OPC UA Server endpoints as configured by the ***edgeConnector*** *Docker* container applications.

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Softing Industrial Automation GmbH
Richard-Reitzner-Allee 6
85540 Haar / Germany
Phone: +49 89 456 56 -340
Fax: +49 89 456 56 -488
info.automation@softing.com
https://industrial.softing.com