

How to Connect dataFEED OPC Suite to Siemens MindSphere

data FEED®

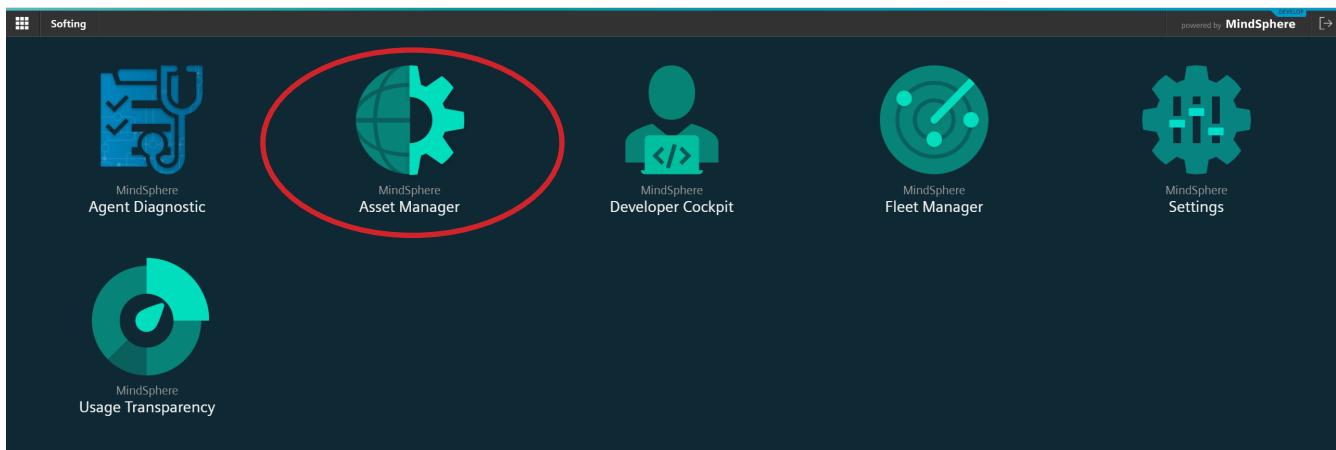
How to Connect *dataFEED OPC Suite* to *Siemens MindSphere*

Initial *Siemens MindSphere* Configuration Steps

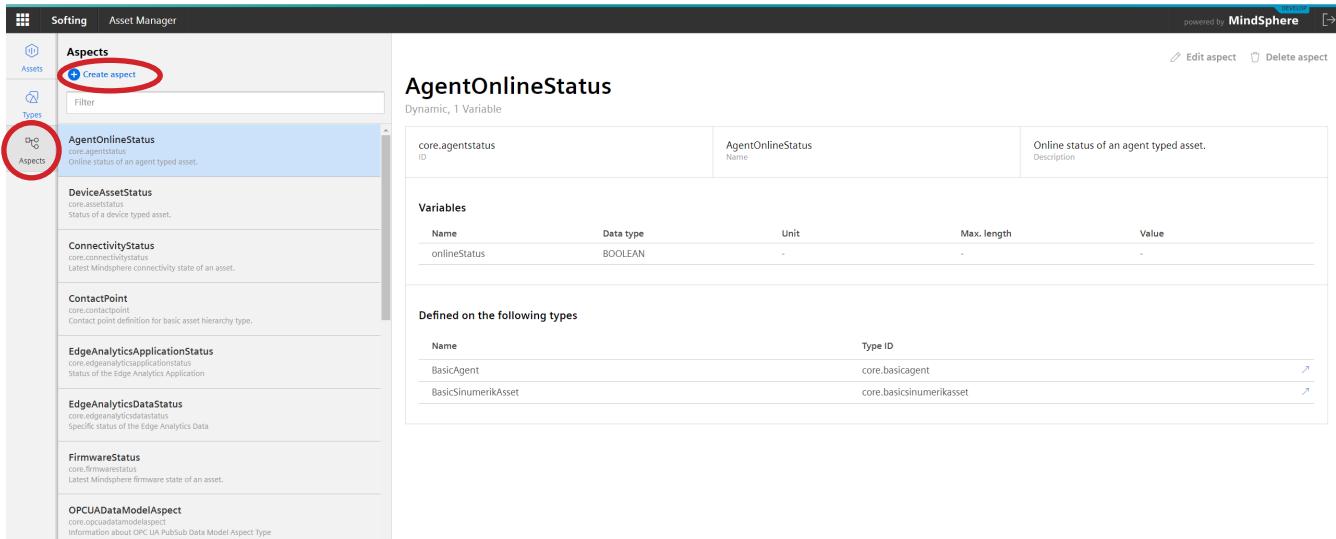
1. Login at *Siemens MindSphere*

- Open <https://tinyurl.com/y882czbx> for *Siemens MindSphere* login

2. Create Aspect



- Click *Asset Manager*



AgentOnlineStatus		
Dynamic, 1 Variable		
core.agentstatus ID	AgentOnlineStatus Name	Online status of an agent typed asset. Description
Variables		
Name	Data type	Unit
onlineStatus	BOOLEAN	-
Defined on the following types		
Name	Type ID	
BasicAgent	core.basicagent	
BasicSiemensAsset	core.basicsiemensasset	

- Click *Aspects* view
- Click *Create aspect* link for creating a new Aspect

Configuration Manual



Create aspect

Aspect information

Type ID: softing1.dataFEED_OPC_Suite_Demo_Aspect
Type ID cannot be changed after creation.

Name: **dataFEED_OPC_Suite_Demo_Aspect**

Description:

Choose category:

- The category of an aspect cannot be changed afterwards.
- Dynamic**: The aspect is used for time-series data
- Static**: The aspect is used for static data

Variables

- Variable names must be unique inside an aspect.
- Once a variable is added to the aspect it cannot be renamed or removed.
- The data type BIG_STRING is only available for a dynamic aspect.

Name	Data type	Unit	Max. length
Temperature	INT	Celsius	

Save **Cancel**

- Enter freely selectable Aspect name in **Name** field
- Add all individual variables including their including their data types and units in the **Add variable** section
In case of string variables also their maximum string lengths have to be defined
- Press **Save** button

3. Create Asset

Select type

BasicArea (core.basicarea)	BasicSite (core.basicsite)	EdgeAnalyticsApplication (core.edgeanalyticsapplication)
IndustrialEdge (core.industrialedge)	MindConnect X509 (core.mcx509)	MindConnectFB1500 (core.mcfb1500)
MindConnectIntegration (core.mciintegration)	MindConnectIoT2040 (core.mciot2040)	MindConnectLib (core.mclib) highlighted
MindConnectNano (core.mcnano)	OPCUADataModel (core.opcua datamodel)	OPCUADatatype (core.opcua datatype)
OPCUAHierarchydatatype (core.opcuahierarchydatatype)	1515 softing1.1515	Connection1 softing1.Connection1
Connection1_Type softing1.Connection1_Type	Connection2_Type softing1.Connection2_Type	dataFEED_MSPH_Demo_Type softing1.dataFEED_MSPH_Demo_Type
DF Asset Type softing1.DFAssetType	Gabi_BasicType softing1.Gabi_BasicType	GES_Type softing1.GES_Type
kijTestType softing1.kijTestType	My Connection Type softing1.MyConnectionType	My_Type softing1.My_Type
NbgMindConnectTest softing1.NbgMindConnectTest	RKA_Type softing1.RKA_Type	WindmillType softing1.WindmillType
zustestAssetType softing1.zusterAssetType		

- Click **Assets** view
- Click **Create asset** link for creating a new Asset
- Select **ModConnectLib** asset type

Add asset

General

Type ID: core.mclib
Selected type of asset cannot be changed

Name: * **dataFEED_OP_C_Suite_Demo_Asset**

Description:
Description
255 characters left

Location

Variables

Aspects

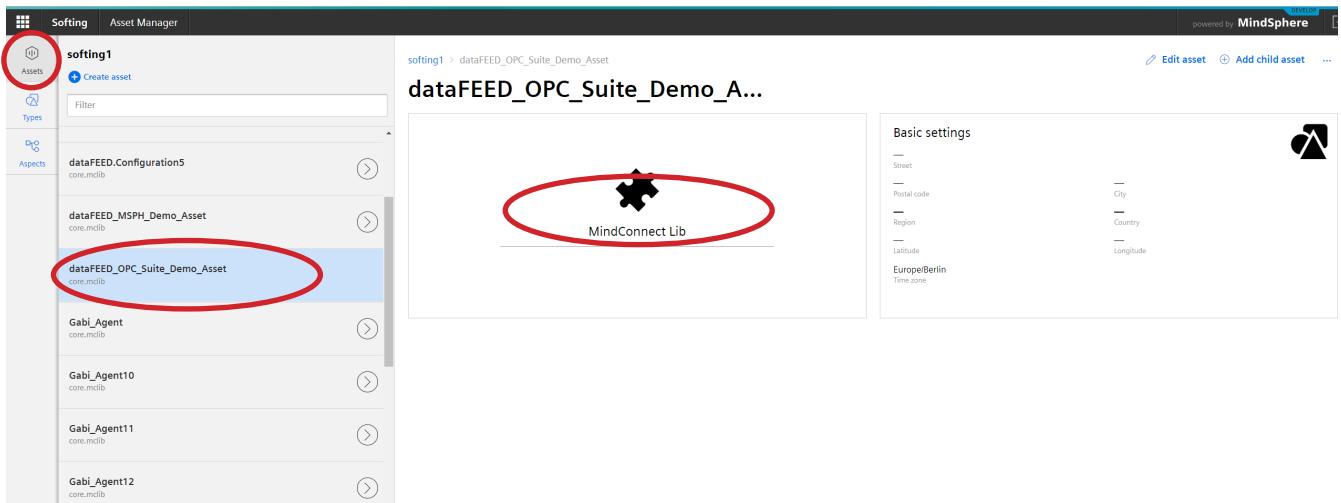
Name	Aspect	Category
> connectivityStatus	core.connectivitystatus	Static
> status	core.agentstatus	Dynamic

* Required input field

Save **Cancel**

- Enter freely selectable Asset name in **Name** field
- Press **Save** button

4. Configure Asset



The screenshot shows the Asset Manager interface. On the left, the 'Assets' view is selected, displaying a list of assets including 'softing1', 'dataFEED_Configuration5', 'dataFEED_MSPH_Demo_Asset', and 'dataFEED_OP_C_Suite_Demo_Asset'. The 'dataFEED_OP_C_Suite_Demo_Asset' item is highlighted with a red oval. On the right, the detailed configuration page for this asset is shown. The title is 'dataFEED_OP_C_Suite_Demo_A...'. In the center, there is a link labeled 'MindConnect Lib' with a red oval around it. To the right, there is a sidebar titled 'Basic settings' with fields for Street, Postal code, Region, Latitude, City, Country, and Longitude.

- Click **Assets** view
- Select previously created Asset
- Click **ModConnect Lib** link

Configuration Manual



 **Softing** Asset Manager powered by **MindSphere** 

[MindConnect Lib](#) [dataFEED](#) [OPC Suite](#) [Demo](#) [Asset](#) [MindConnectLib](#) [Close](#) 

Configure MindConnect Lib

 MindConnect Lib creates secure connectivity from an onsite device to MindSphere. Firewall-friendly communication via a MindSphere API and unique onboarding security tokens authenticate MindConnect Lib during onboarding to ensure data is safely transmitted.

Please select a security profile that fits your needs to continue:

RSA_3072
A public/private key pair (3072bit) for enhanced security which requires more computing power on the devices.

SHARED_SECRET
A shared key (128bit) for lightweight devices.

Save 

Define security settings

- Select *security profile*
 - Press **Save** button

The screenshot shows the Asset Manager interface with the following details:

- Header:** Softing Asset Manager, powered by MindSphere.
- Breadcrumbs:** MindConnect Lib > dataFEED OPC Suite Demo Asset > MindConnectLib.
- Device Status Bar:** RSA_3072 Security profile, Onboarding... (status), Offline (since: 5/10/19, 10:35 AM), Online status.
- Main Content:** A red box highlights the "Generate onboarding key" button.

NOTE:

The top right section of the screen shows the *Boarding status* and *Online status* information: At this stage the actual *Boarding status* is shown by a green blinking light and the text *Onboarding...* indicating that the ***dataFEED OPC Suite*** connection is in the configuration phase and not yet completed. Once the ***dataFEED OPC Suite*** connection has been established the *Boarding status* light is shown permanently green

- Press **Generate onboarding key** button
(Part of generated key needs to be copied in **dataFEED OPC Suite** configuration in a later step)

[Back to configuration](#)

Edit boarding configuration

Boarding configuration

In order to use MindConnect Lib, you have to insert the generated onboarding key into your system.

```
{
  "content": {
    "baseUrl": "https://southgate.eu1.mindsphere.io",
    "key": "eyJuvuQmZKkxQWm5SectionpxJsmfSzYl6IUTMjU2In0eyJpc3MIoJtQ0kICJzdWlOlxMmZlY7dNmE5NDg0MWMTYmRjMWViNmQyZE3NzK3MCsimF1ZC16IkHQU01LCJpYXQiOjE1NTc0Nzcg",
    "client": "clientName:1",
    "tenant": "softimg"
  },
  "client": "117fea7ea6a94841c5bdc1eb6d2f177970",
  "tenant": "softimg"
}
```

Generate onboarding key

Copy to clipboard

- Copy marked texts of lines *baseUrl*, *igt* and *tengnt* without quotation marks

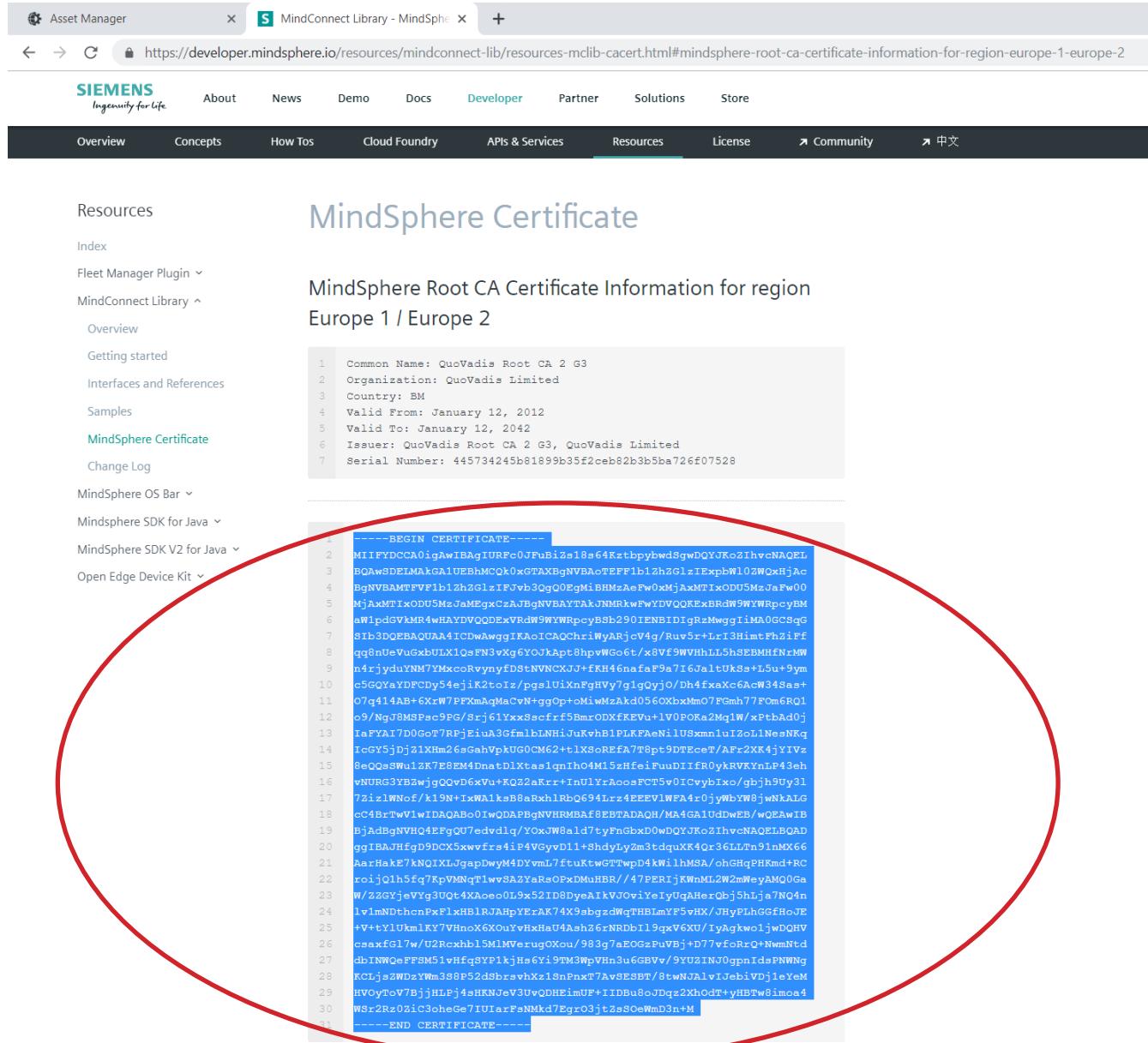
NOTE:

NOTE: The **Siemens MindSphere** onboarding key is available only at this stage of the **Siemens MindSphere** configuration. As part of this information is needed in **dataFEED OPC Suite** configuration, **Siemens MindSphere** configuration is interrupted here and continued at a later step.

5. Create Siemens MindSphere Certificate File

A certificate file is required for the initial connection of ***dataFEED OPC Suite*** to ***Siemens MindSphere***.

- Open <https://developer.mindsphere.io/resources/mindconnect-lib/resources-mclib-cacert.html>



The screenshot shows a web browser window with the URL <https://developer.mindsphere.io/resources/mindconnect-lib/resources-mclib-cacert.html#mindsphere-root-ca-certificate-information-for-region-europe-1-europe-2>. The page title is "MindSphere Certificate". On the left, there's a sidebar with "Resources" and various links like "Index", "Fleet Manager Plugin", "MindConnect Library", "Getting started", etc. The main content area displays "MindSphere Root CA Certificate Information for region Europe 1 / Europe 2". Below this, a code block shows the certificate text, which is circled in red.

```

1 Common Name: QuoVadis Root CA 2 G3
2 Organization: QuoVadis Limited
3 Country: BM
4 Valid From: January 12, 2012
5 Valid To: January 12, 2042
6 Issuer: QuoVadis Root CA 2 G3, QuoVadis Limited
7 Serial Number: 445734245b81899b35f2ceb82b3b5ba726f07528
-----BEGIN CERTIFICATE-----
MIIFYDCCAOigAwIBAgIURFc0JFubB1z1s64Kxtbpbwds8gwDQYJKoZIhvcaNQEL
BQAwsDElMAkGA1UEBhMCQk0xGTAXBgNVBAoTEFF1b1ZhZG1zIEpxBwI0ZWQxHjAc
BgNVBAMTFVFlb1zhG1zIFJvb3Qg0EgMiBHMzAeFw0xMjAxMjIyODU5MzJaFw00
MjAxMTIxODU5MzJaMGxCsAzbGnVNBAYTAKJNMNRkwFwYDVQQKExBRdW9WYWhPcyBM
aW1pdGVkMR4wHAYDVQQDEVRdWSWYWpcyB9b290IEhBIDigRzWgg1IMAOGCSqg
S1b3DQEBAQUAA4ICBwAwggIKAoICAQChrIWyRAjcv4g/Ruv5r+LrI3HimtPh2lFf
qq8n0eVuGxbULX1QsFN3vXg6Y0jApt8hpvWGo6t/x8Vf9WVWhLL5hSEBMHfNrMW
n4rjyduYNM7YXcoRvnyyED8tNVNCXJJ+ERH46nafaF9a716vaitUKs5+Ls9ym
cSGQyaYDFCDy54ej1K2toiz/pqslU1xnPgHVy7q1gqyj0/DhfxfaxC6AcW348as+
07q414AB+6XrW7PFKmAqMaCvN+ggOp+oMiwmzAk0d0560XbxMm07FGmh77F0m6RQ1
o9/NgJ8M8Pac9PG/Srj61yxx8scfrf5Smr0DXfKEVu+IVOPORa2Mq1W/xPtBd0j
IaFYAi7D0go7RPjPiua3Gfm1bLNHiJuKyhb1P1KFaenI1U8xmn1uLzG1NeRNQ
IcGY5jDjZ1Xm26sGahVpAUGOCM62+tLx5oREFa7T8pt9DTEcet/AFr2XK4jYIVz
8eQoSwu1zK7E8EM4Dnatd1Xta1qnIo4M15zfifeuuDiFfRoYkRVKXynlp43eh
vNURG3YBzjqoQvD6xVu+KQ22aKrr+InUIYrAocFT5v0iCvyblxc/gbh9Uy3l
7z1lWNof/k19N+IxWA1ksB8aRxhlRbQ694Lrz4EEEV1WFA4r0jywByW8jwnkALG
cc4BrTw1vIDAQBo01QDAPBrgVHRM8Af8EBTAfAaH/MA4GA10dWEb/wQEWaIB
BjAdbgNVHQ4Ffg0U7edvd1q/YoxJW8s1d7tyFnGbxb0wDQYJKoZIhvcaNQELB0AD
gg1BAHfgb9DCX5xwvfrs4iP4VGyvD11+ShdyLy2m3tdquXK4Qz36LlTn91nMX66
AarHak7KNQ1X1LgapDwy4DVmL7ftKtwGTwpD4kwilhMSA/o/hGqHkMd+RC
rrijo1h5fq7kpVMNgT1wvSAZYaRsOpxDmUHRB//47PERIjkNnMl2WzmWeyAMQ0Ga
W/Z2GYyveYyq3Qtx4Aaceo0L9x52ID8DyeAIkVJoviYeIyUqAHerObj5hLja7NQ4n
ly1mNdhcnPxFlxHb1RjAhpYErk74X9sbgzdWqTfHBlmYF5vHX/HyPlhGGfHoJE
+V+ytl1Jkm1KV7VhnoX6XOuYvHxhJaU4Ash6rNRDb1l9qxV6XU/IyAgkwljwDQHv
csaxfG17w/U2Rcxhb15M1MvverugOXou/983gtaEOGzPuVbj+D77vf0rC0+NwmNtd
dbINWQeFFSM51vhfg8Y1kjh6Yi9TM3WpVHn3u6GBVv/9YUINJ0gnIdsPNWNg
KCLjz2WDzYwms388P52dshrsvhXz18nPmxF7AvSESBT/8tWnJ1lviJehb1VDj1eYeM
HOVyo7BjHLej4sHKNjeVuvDHEimUF+IIDBu8oJDqz2Xh0dT+yHBTw8imoc4
-----END CERTIFICATE-----

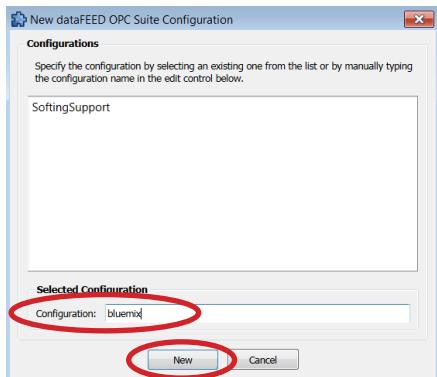
```

- Copy ***Siemens MindSphere*** certificate to clipboard
- Start text editor, paste clipboard and store ***Siemens MindSphere*** certificate in ***PEM*** file
(If text editor doesn't support saving the certificate using the extension ***PEM***, just store the certificate to any file name and rename the file to ***PEM*** file afterwards.)

Initial *dataFEED OPC Suite* Configuration Steps

6. Create New *dataFEED OPC Suite* Configuration

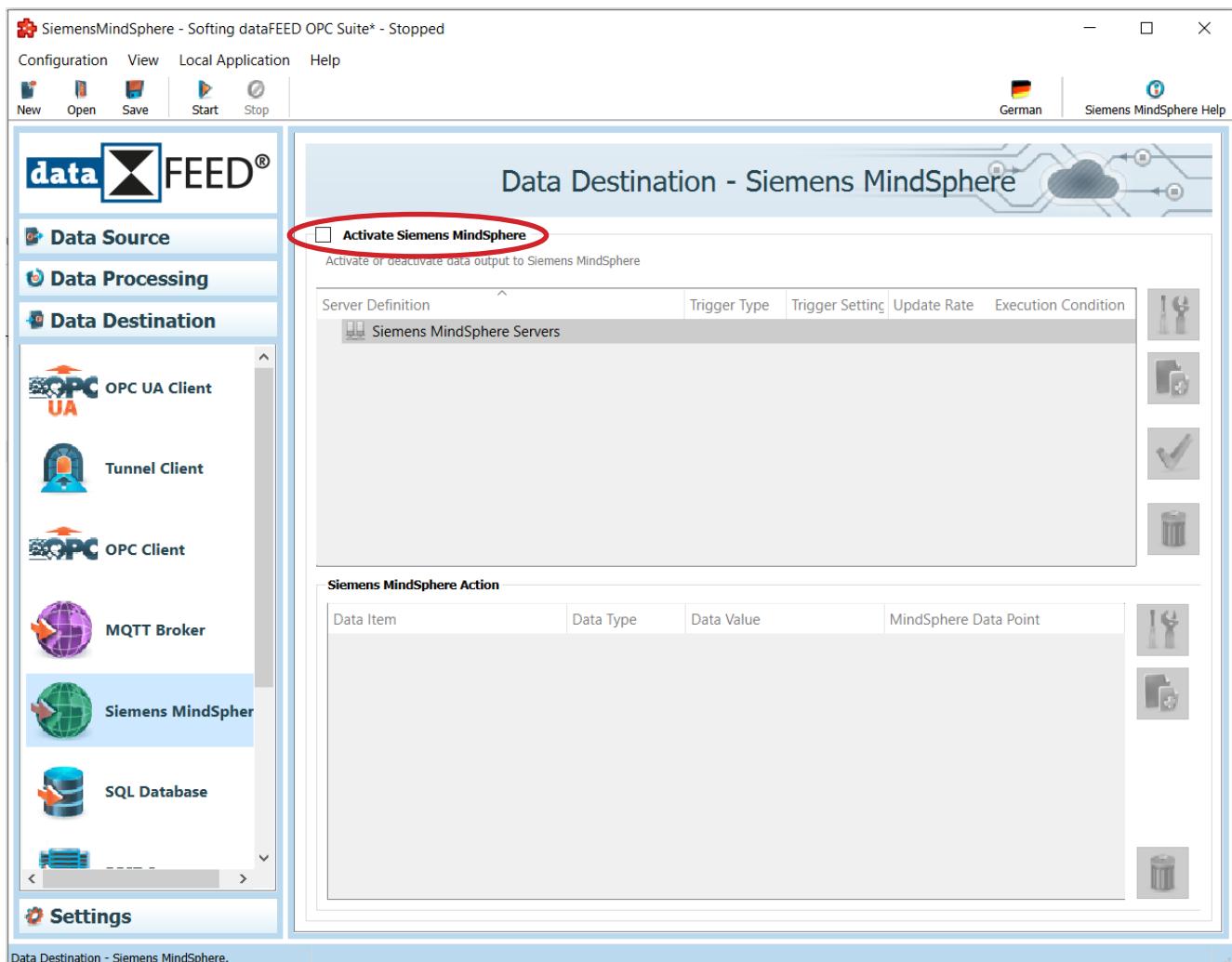
- Start *dataFEED OPC Suite Configurator*
- Navigate to *Configuration/New* page



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

7. Define Siemens MindSphere Connection

- Navigate to *Data Destination/Siemens MindSphere* page



- Select **Activate Siemens MindSphere** checkbox

Siemens MindSphere Server Wizard

X



Connection Settings

On this wizard page the name, state and specific information of the Siemens MindSphere server connection are configured.

Connection: Connection_01

Connection Name

Provide the name of the current connection. The name must be unique throughout the whole configuration.

Connection name:

Connection State

Specify the status of the connection.

Connection active:

Connection Information

Tenant ID:

MindSphere Certificate: ...

Connection Settings

Communication Settings

Extended Settings

Store and Forward

Forward Settings

Click 'Next' to continue...

Next

Cancel

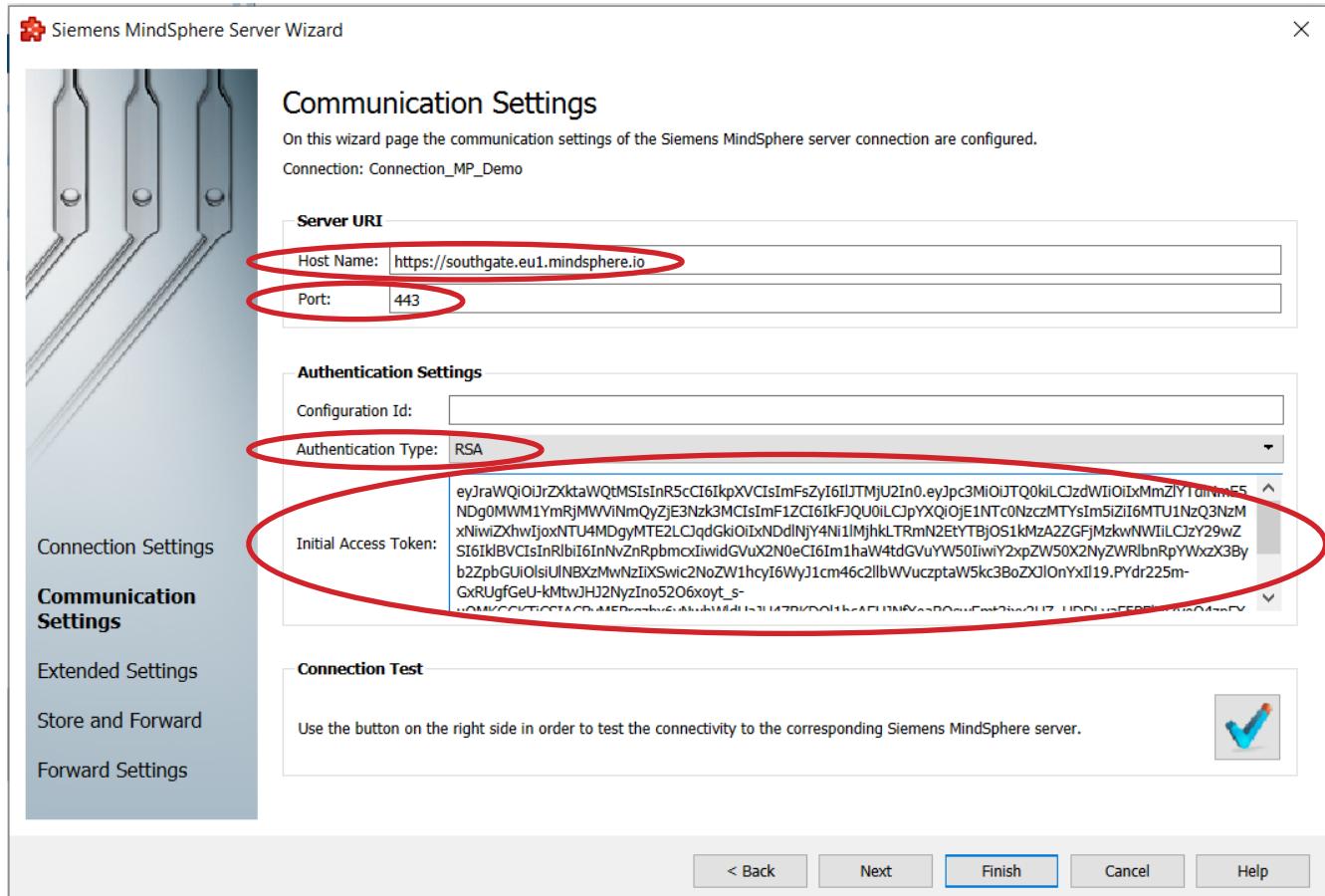
Help

- Enter freely selectable connection name in **Connection name** field
- Enter personal tenant ID in **Tenant ID** field
Tenant ID either is defined in **Siemens MindSphere** contract or can be copied from **Siemens MindSphere** onboarding key (see last step of section 4)

NOTE:

If *Tenant ID* is copied from **Siemens MindSphere** onboarding key this information has to be copied without quotation marks

- Enter file name of **Siemens MindSphere** certificate file in **MindSphere Certificate** field (see section 5)
- Click **Next** button



- Enter *baseUrl* information from **Siemens MindSphere** onboarding key (see last step of section 4) in **Host Name** field
- Do not change pre-defined port number in **Port** field
- Make sure the selected **Authentication Type** maps the security profile defined in **Siemens MindSphere** (see section 4)
- Enter *iat* information from section 4 in **Initial Access Token** field

NOTE:

Information from the generated **Siemens MindSphere** onboarding key has to be copied without quotation marks

NOTE:

For continuation of **dataFEED OPC Suite** configuration some more information from **Siemens MindSphere** configuration is required. Thus, **dataFEED OPC Suite** configuration is interrupted here and continued at a later step.

Continuation of *Siemens MindSphere Configuration*

8. Create *Siemens MindSphere Data Source* (Continuation of Section 4)

[*< Back to configuration*](#)

Edit boarding configuration

Boarding configuration

In order to use MindConnect Lib, you have to insert the generated onboarding key into your system.

```
"content": {  
    "baseUrl": "https://southgate.eu1.mindsphere.io",  
    "lat": "47.389WQjOjUjZKtaWQtM5lsinR5cCl6ikpXVClslmFsZyj6lUTMjU2ln0.eyJpc3MiOiJTQ0kiLCJzdWlOlxMmZlYTdNmE5NDg0MWMyMjNmQyZjE3Nzk3MClsimF1ZC16lkfJQU0iLCjpxQoje1NTc0NzA  
    "clientCredentialProfile": [  
        "RSA_3072"  
    ],  
    "clientId": "12feaf7e6a94841c5bd1eb6d2f177970",  
    "tenant": "softing"  
},
```

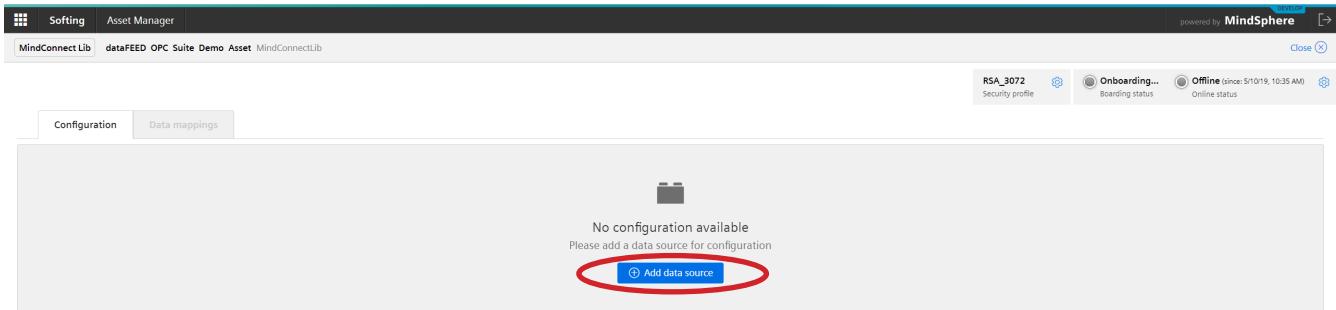
[Generate onboarding key](#) [Copy to clipboard](#)

Offboard MindConnect Lib

In case you don't want to use the onboarded MindConnect Lib you can offboard it.

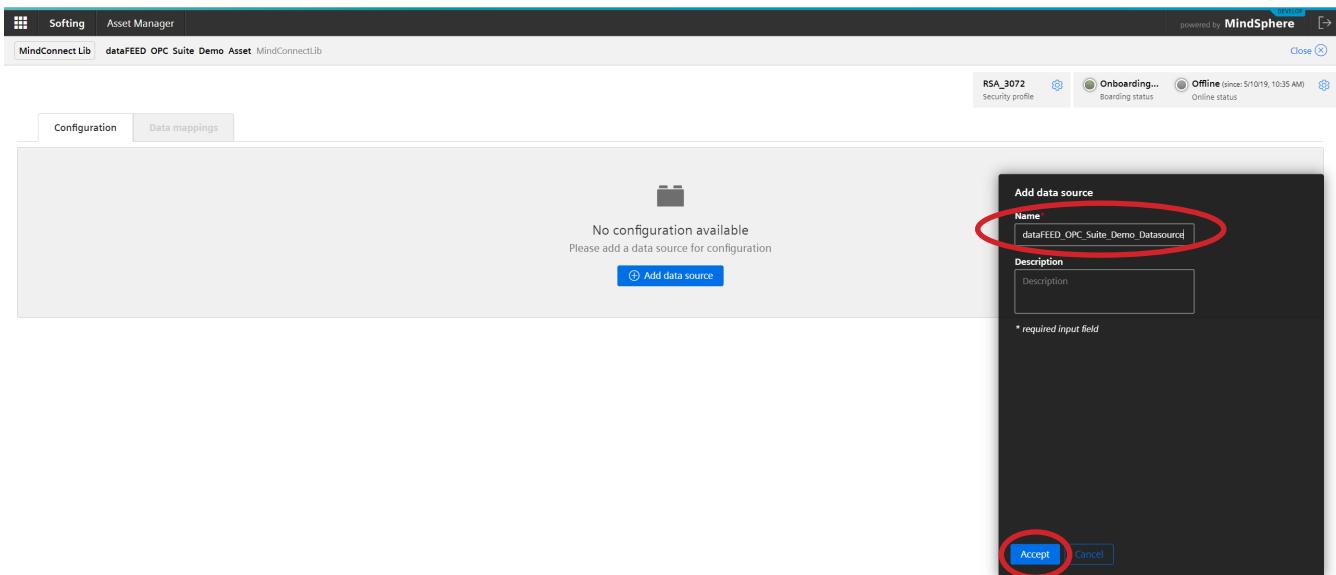
[Offboard](#)

- Select *< Back to configuration* link



The screenshot shows the 'Edit boarding configuration' page. On the right, there are two buttons: 'Generate onboarding key' and 'Copy to clipboard'. Below these buttons is a large text area containing a JSON object representing the onboarding key. At the bottom of the page, there is a section titled 'Offboard MindConnect Lib' with a 'Offboard' button. In the center, there is a large button labeled 'Add data source' which is circled in red.

- Click *Add data source* button



The screenshot shows the 'Add data source' dialog box. It has two input fields: 'Name' and 'Description'. The 'Name' field contains the value 'dataFEED_OPCT_Suite_Demo_Datasource', which is circled in red. The 'Description' field is empty. At the bottom of the dialog box are two buttons: 'Accept' and 'Cancel', with 'Accept' also circled in red.

- Enter freely selectable data source name in **Name** field
- Click **Accept** button

Configuration Manual



- Copy configuration ID to clipboard for further use in **dataFEED OPC Suite** configuration
- Click **Save** button

NOTE:

For continuing the **Siemens MindSphere** configuration the successful establishment of the connection to **dataFEED OPC Suite** is required. Therefore, the **Siemens MindSphere** configuration is interrupted here and continued at a later step.

Continuation of **dataFEED OPC Suite** Configuration

9. Define **Siemens MindSphere** Connection (Continued) (Continuation of Section 7)

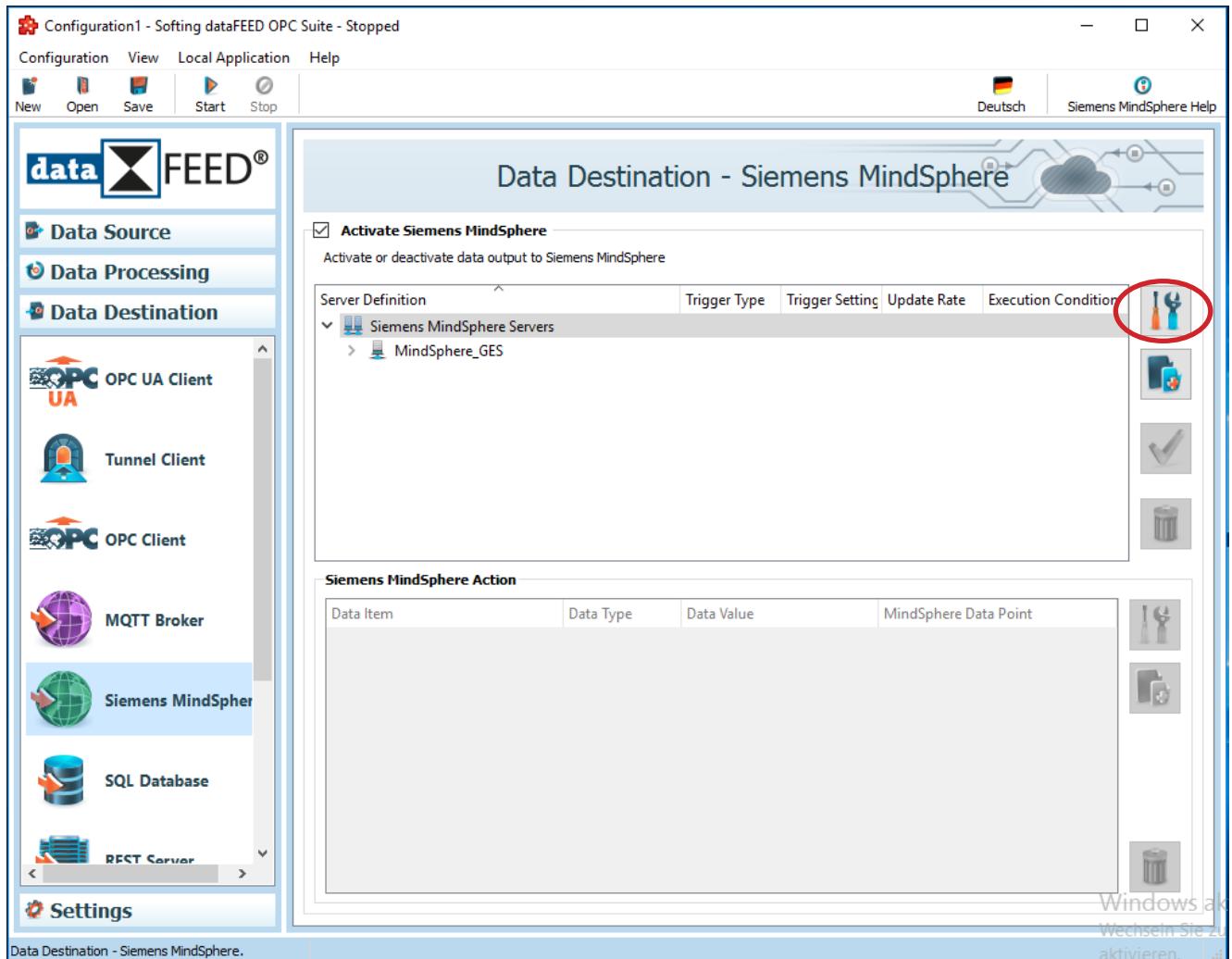
- Enter copied configuration ID in **Configuration Id** field
- Click **Connection Test** button for testing the connection between **dataFEED OPC Suite** and **Siemens MindSphere**

NOTE:

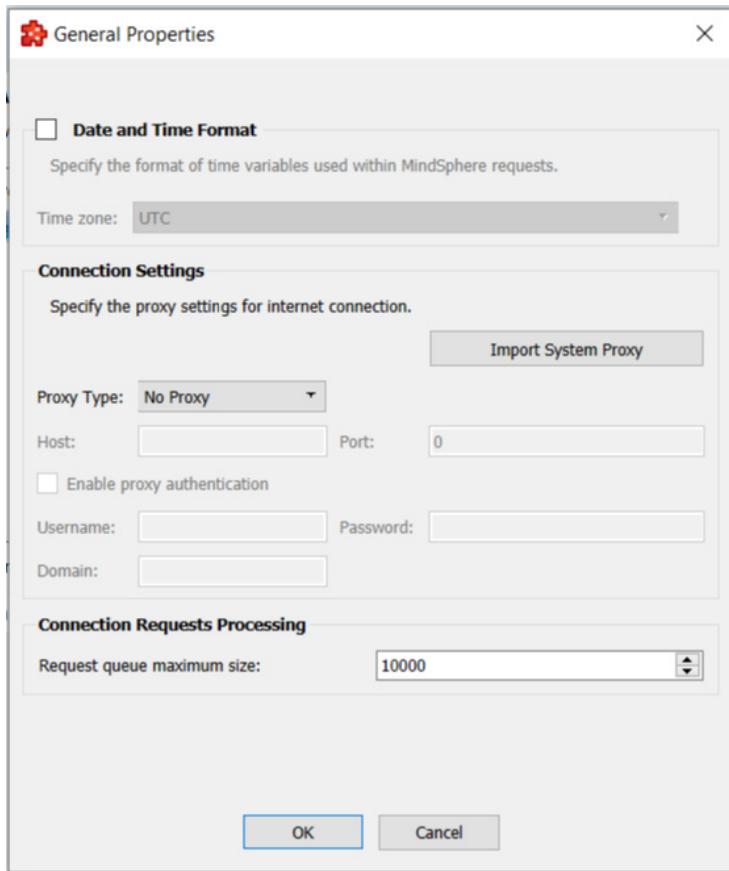
Please continue with section 11, if the connection between **dataFEED OPC Suite** and **Siemens MindSphere** has been established successfully

10. Correct Proxy Settings

- Navigate to *Data Destination/Siemens MindSphere* page



- Click **Properties** button



- Check individual Proxy settings

Continuation of *Siemens MindSphere Configuration*

11. Assign Asset Variables to Aspects (Continuation of Section 8)

Upon successful establishment of connection between **dataFEED OPC Suite** and **Siemens MindSphere** the *Boarding status* light in the top right section of the screen is shown permanently green (see section 4 for further information)

RSA_3072 Security profile  Onboarded Boarding status  Offline since: 5/10/19, 10:35 AM 

NOTE:

In **Siemens MindSphere**, for assigning the previously defined variables to Assets, a Type has to be created first, which then has to be connected to the Aspect and finally to the Asset.

Configuration Manual



- At **Siemens MindSphere** home screen select **Asset Manager**

The screenshot shows the Siemens MindSphere Asset Manager interface. On the left, there's a sidebar with tabs for 'Assets', 'Types' (which is currently selected), and 'Aspects'. The main area displays a list of asset types under 'BasicAsset': BasicAgent, BasicApplication, BasicDevice, BasicHierarchy, and Basic Edge Data Asset. A 'Create type' button is located next to 'BasicAsset'. On the right, there's a detailed view of 'BasicAsset' with sections for 'Variables' and 'Aspects', both of which are currently empty.

- Click **Types** view
- Click **Create type** link for creating a new Type

This screenshot shows the 'Create type' dialog box. It has fields for 'Type information' (Parent type: core.basicasset), 'Type ID' (softing1.dataFEED_OPC_Suite_Demo_Type), 'Name' (dataFEED_OPC_Suite_Demo_Type, which is circled in red), 'Description' (empty), and 'Image' and 'Variables' sections (both empty). At the bottom, there's an 'Aspects' section with a 'Add aspect' button, a dropdown menu showing 'softing1.dataFEED_OPC_Suite_Demo_Aspect' (also circled in red), and a 'Save' button (highlighted with a blue box) and a 'Cancel' button.

- Enter freely selectable Asset name in **Name** field
- Select previously created Aspect from **Aspect** dropdown list
- Press **Save** button

Configuration Manual



The screenshot shows the 'Assets' view in the dataFEED Asset Manager. A red circle highlights the 'dataFEED_OPCT_Suite_Demo_Asset' item in the list. On the right, the 'Basic settings' panel displays basic information such as Street, Postal code, Region, Latitude, and Time zone, with 'EuropBerlin' selected.

- Click **Assets** view
- Select previously created Asset
- Click **Add child asset** link

The screenshot shows the 'Select type' dialog box. A red circle highlights the 'dataFEED_OPCT_Suite_Demo_Type' item in the list of available types.

Type	Description
BasicArea	core.basicarea
BasicSite	core.basisite
EdgeAnalyticsApplication	core.edgeanalyticsapplication
IndustrialEdge	core.industrialedge
MindConnect X509	core.mcx509
MindConnectIoT2040	core.mciot2040
MindConnectLib	core.mclib
OPCUADataModel	core.opcuadatamodel
OPCUADatatype	core.opcuadatatype
1515	softing1.1515
Connection1_Type	softing1.Connection1_type
Connection2_Type	softing1.Connection2_type
DFAsset Type	softing1.DFAssetType
GES_Type	softing1.GES_Type
kljTestType	softing1.kljTestType
My_Connection Type	softing1.My_Connection_Type
Gabi_BasicType	softing1.Gabi_BasicType
RKA_Type	softing1.RKA_Type
WindmillType	softing1.WindmillType
zustestAssetType	softing1.zustestAssetType
WindmillType	softing1.WindmillType

- Select previously created Type

Configuration Manual



The screenshot shows the 'Assets' view on the left with various assets listed. On the right, the 'Add asset' dialog is open. The 'Name' field is highlighted with a red circle and contains the value 'dataFEED_OP_C_Suite_Demo_Childasset'. The 'Save' button at the bottom of the dialog is also highlighted with a red circle.

- Enter freely selectable Asset name in **Name** field
- Press **Save** button

NOTE:

For connecting the created Aspect variables with Assetit is essential to create the individual variables as Asset variables using the identical data type and unit

The screenshot shows the 'Assets' view on the left with various assets listed. The 'dataFEED_OP_C_Suite_Demo_Asset' asset is selected and highlighted with a red circle. In the main pane, the asset details are shown, and a 'MindConnect Lib' link is visible, which is also highlighted with a red circle.

- Click **Assets** view
- Select previously created Asset
- Click **ModConnect Lib** link

Configuration Manual



- Press **Enter edit mode** button

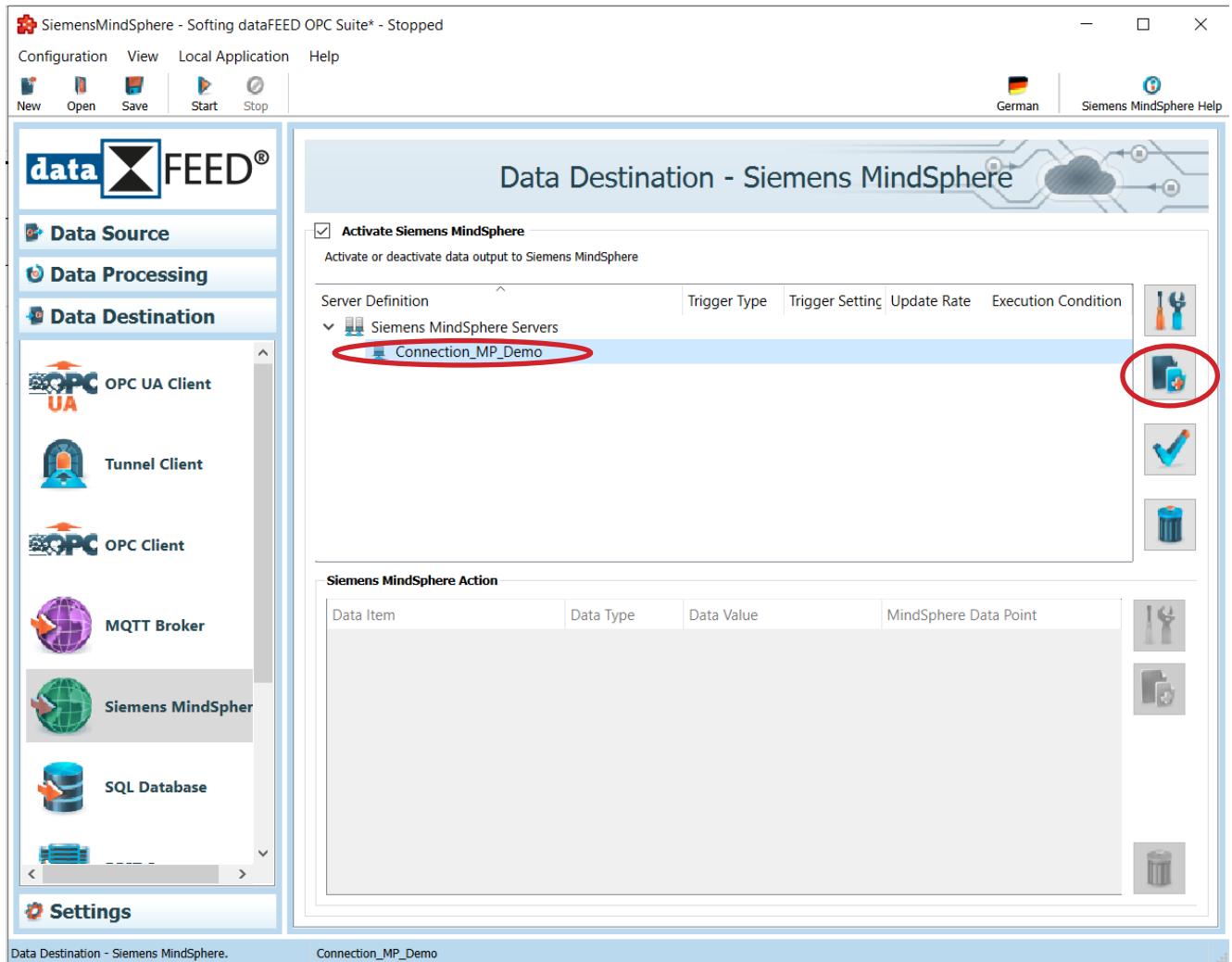
- Click **Add data point** link
- Add all individual Aspect variables as Asset variables
- Press **Save** button

- Select **Data mappings** tab
- Click **Link variable** link
A window is shown at the right side allowing to click the created Child Asset and afterwards to assign the appropriate variable.

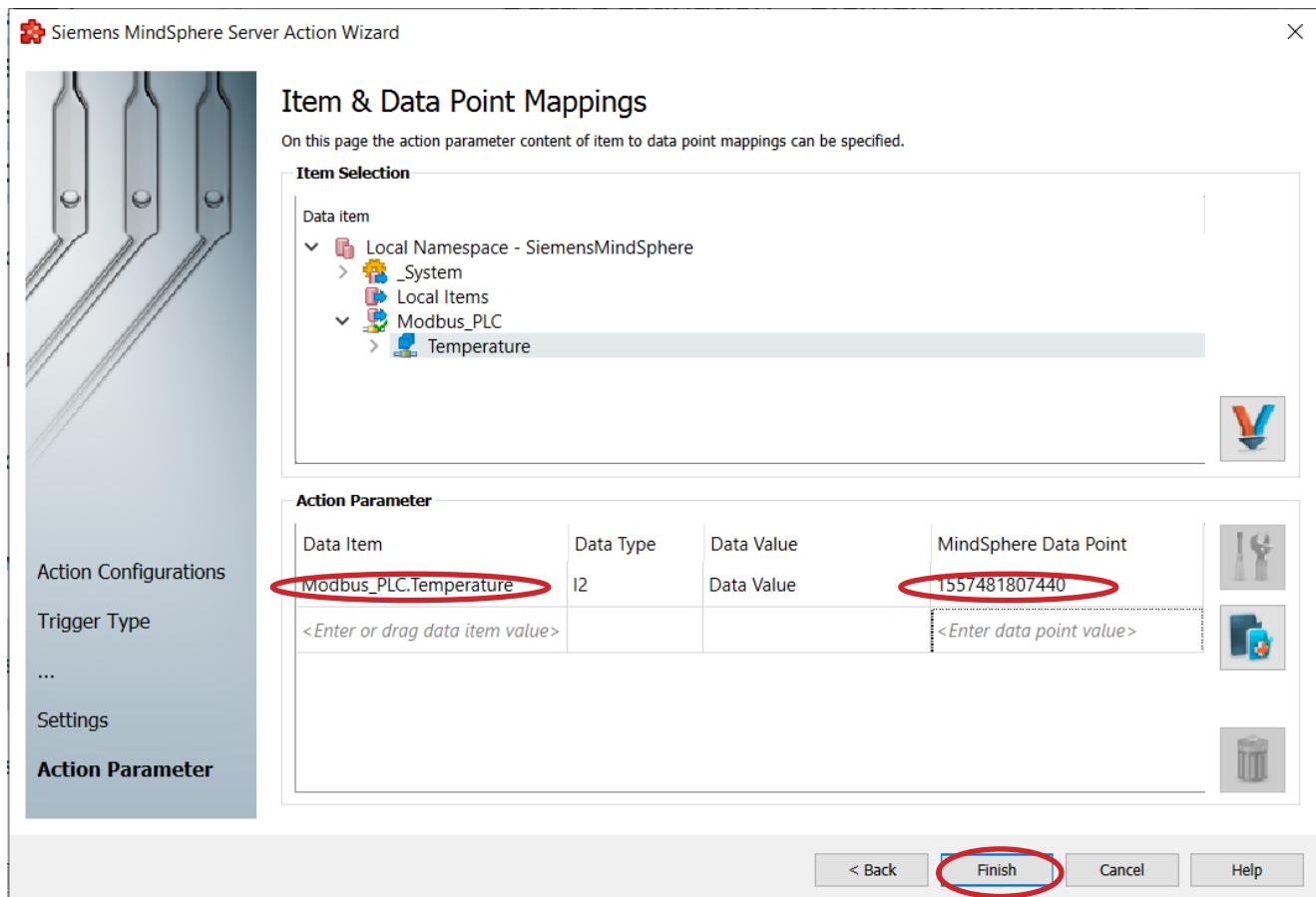
At the end **Siemens MindSphere** shows the assigned variables

Continuation of *dataFEED OPC Suite Configuration*

12. Create and Connect *dataFEED OPC Suite* Variables



- Select connection
 - Click **Add a Siemens MindSphere Server definition** button
A freely selectable connection name plus an associated trigger is defined.
- In a last step the window is shown



- Select individual **dataFEED OPC Suite** data item in **Item Selection** area and drag-and-drop it to **Data Item** field of **Action Parameter** area
- Enter configuration ID from **Siemens MindSphere** configuration in **MindSphere Data Point** field of **Action Parameter** area
- Press **Finish** button

Now the connection between **dataFEED OPC Suite** and **Siemens MindSphere** is configured. For data exchange a re-start of **dataFEED OPC Suite** is required.

Select **Fleet Manager** from **Siemens MindSphere** home screen to define a visualization application.

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