How to store data on Mindsphere cloud

We will use a Mindconnect Node-RED node to store data on Mindsphere

As documented here

[node-red-contrib-mindconnect (node) - Node-RED (nodered.org)]

First you have to create some data on mindsphere

Assets, aspects and variables

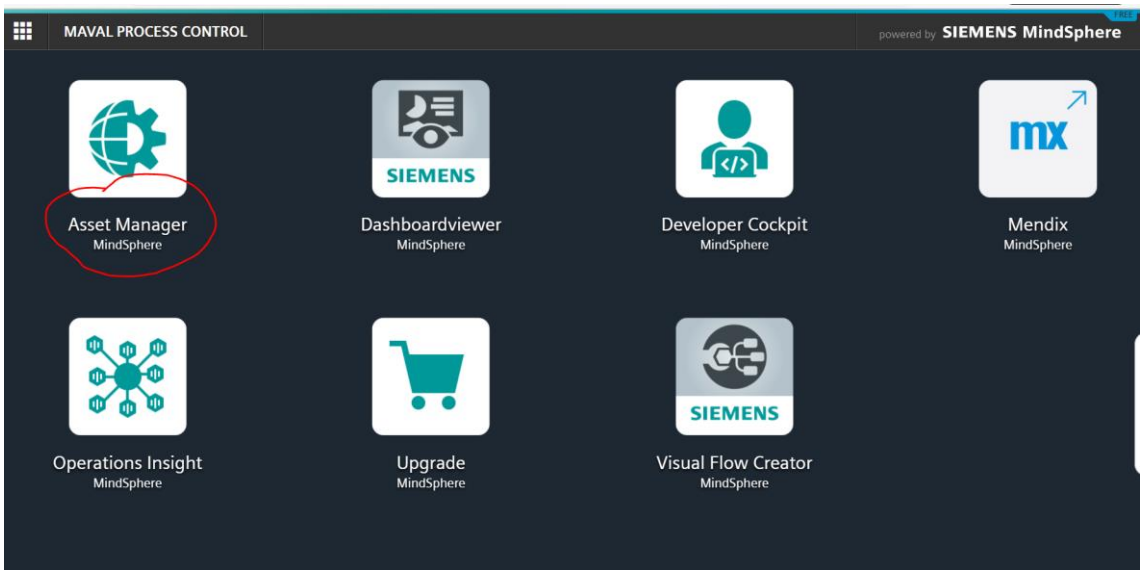
As explained here

[MindSphere – Como conectar um Raspberry PI ao MindSphere - YouTube]

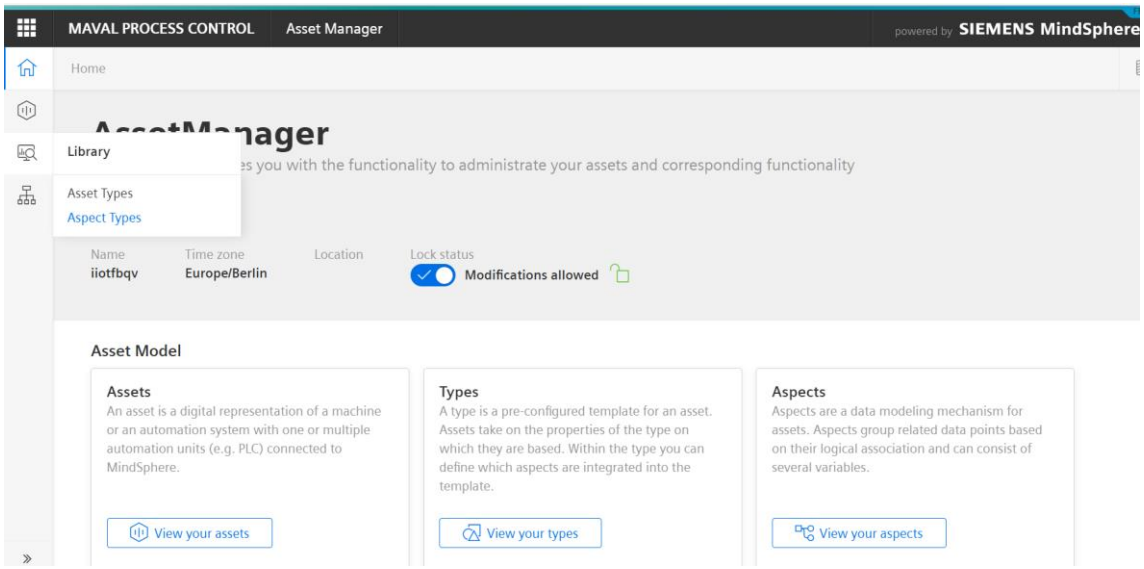
And here you see how to inject to Mindsphere

[MindSphere – Como utilizar o Visual Flow Creator (NODE-Red) no MindSphere - YouTube]

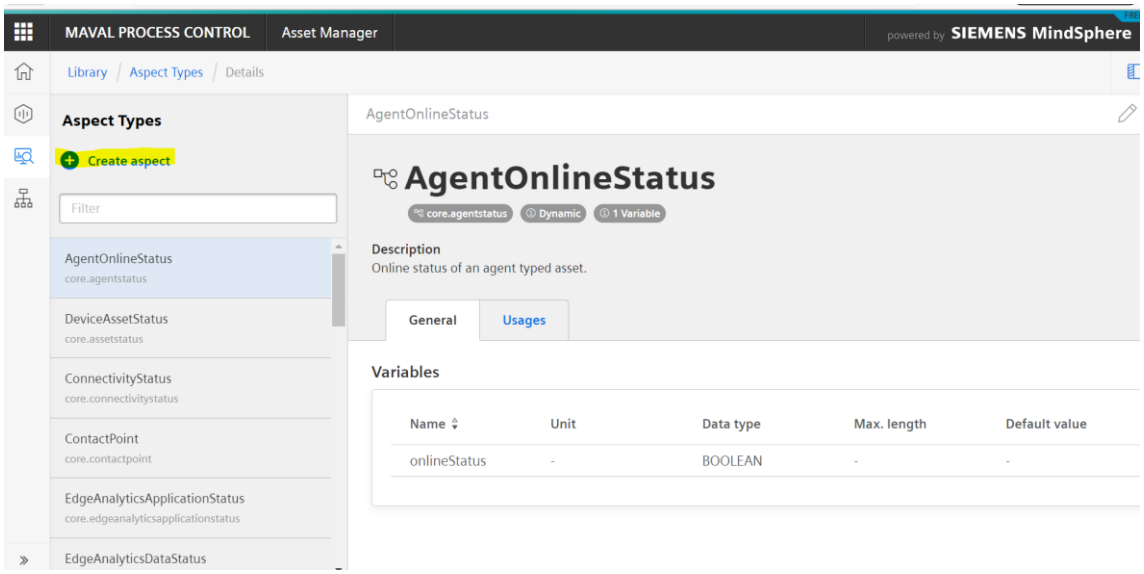
So let's create an Asset from Asset Manager



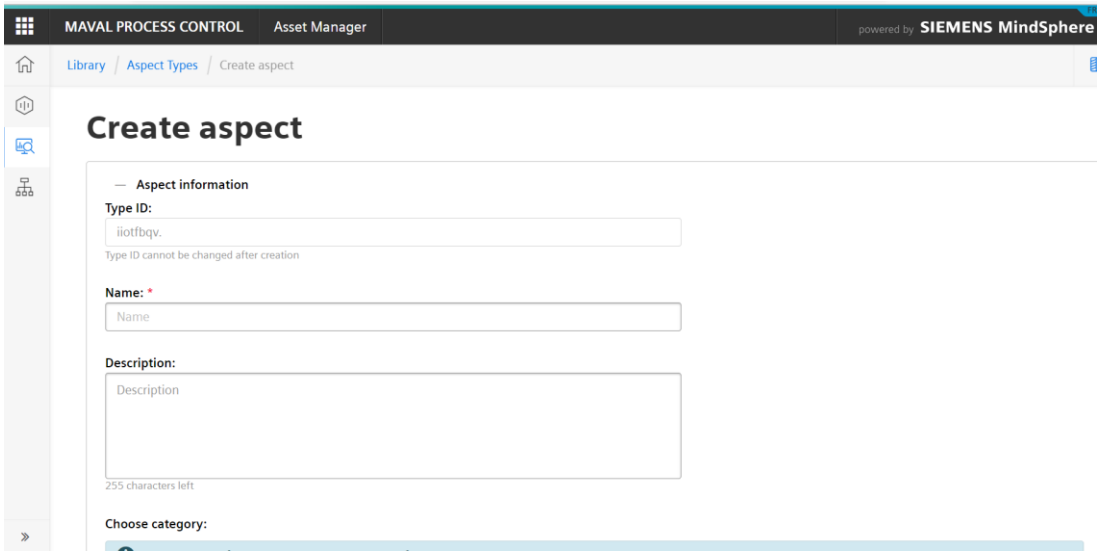
Let's create an Aspect (A set of variables) so the Asset will be a type of Aspect, so you can have several assets (for instance Edge machines) of same type, so you do not have to create a new one each time.

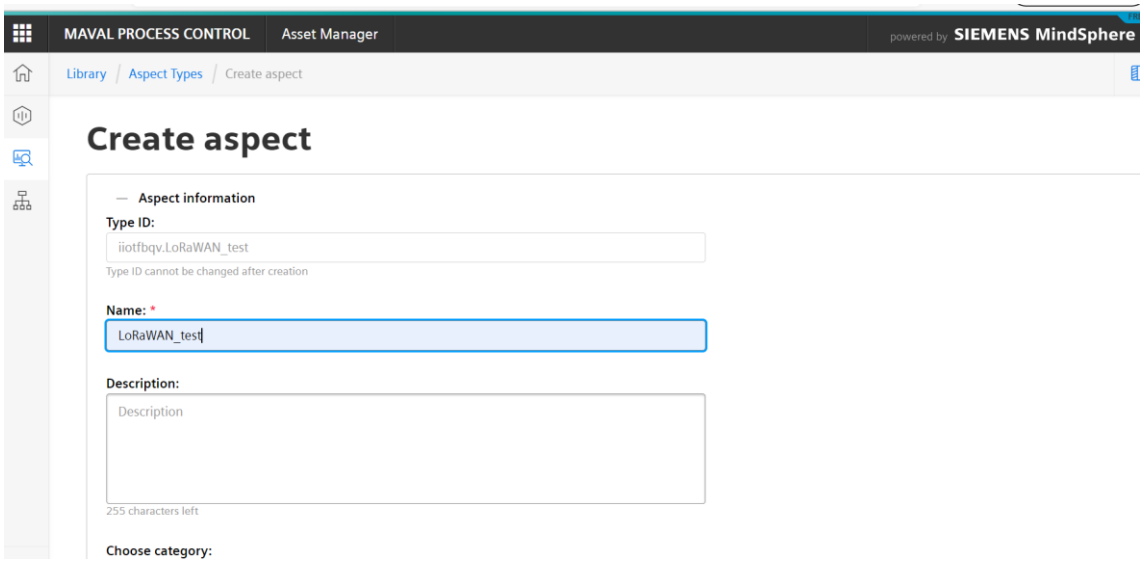


Let’s create an Aspect

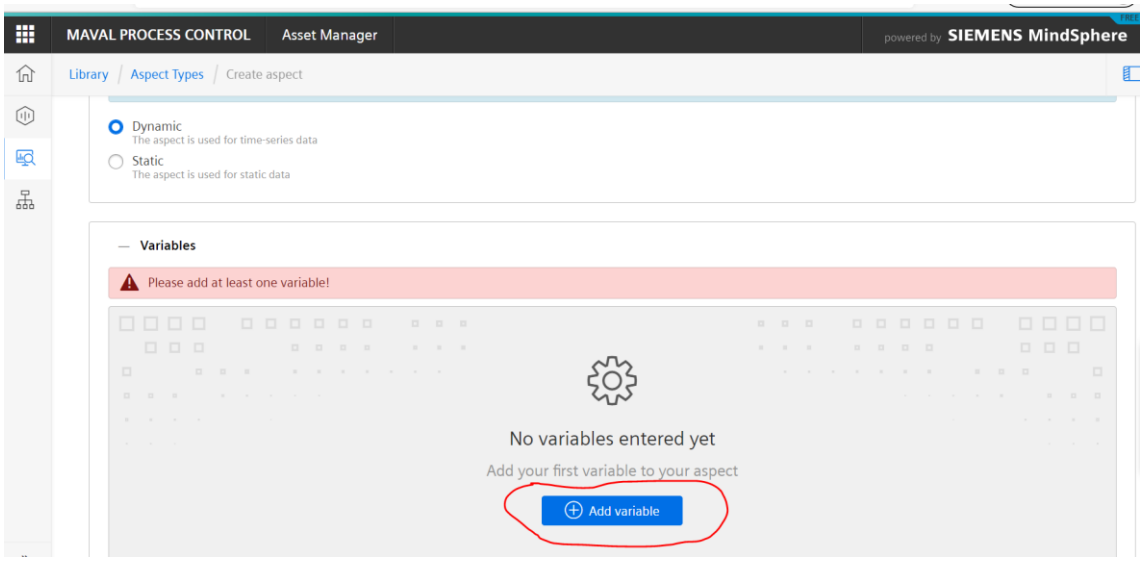


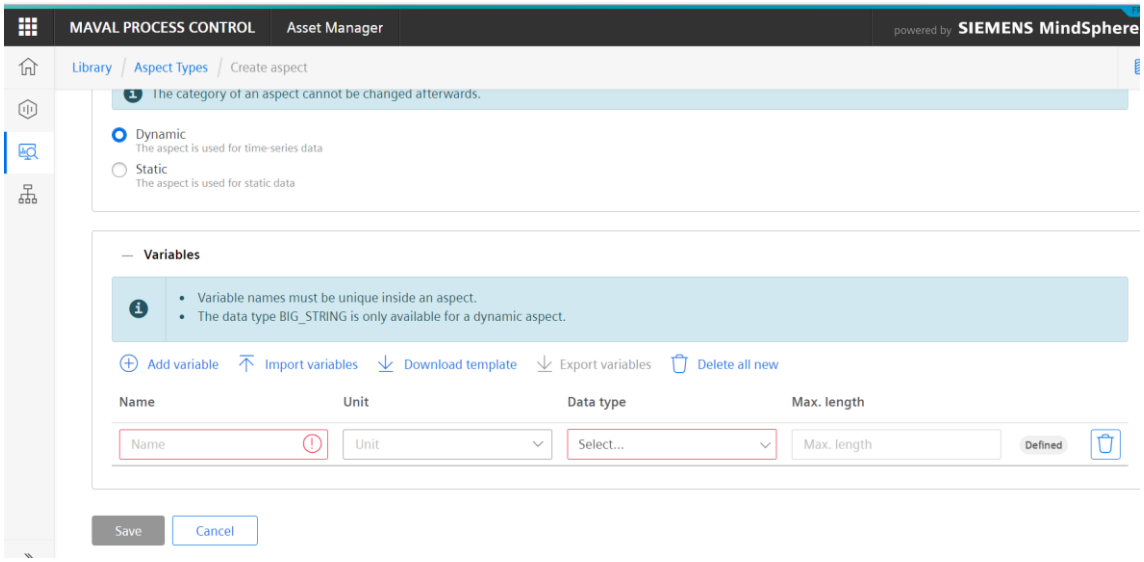
In this case called LoRaWAN_test



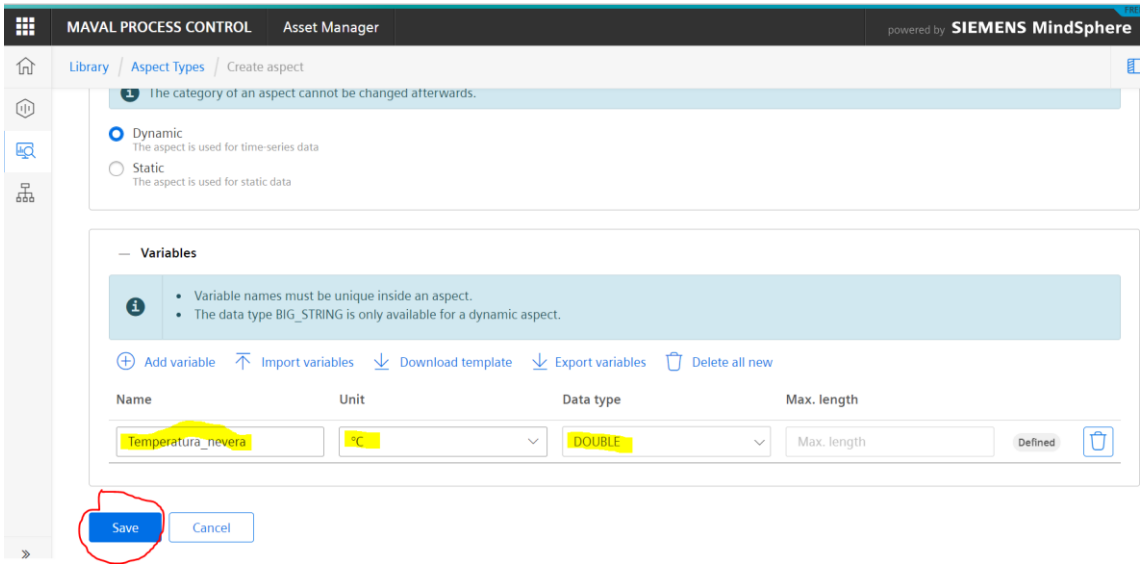


Scroll down and add a variable

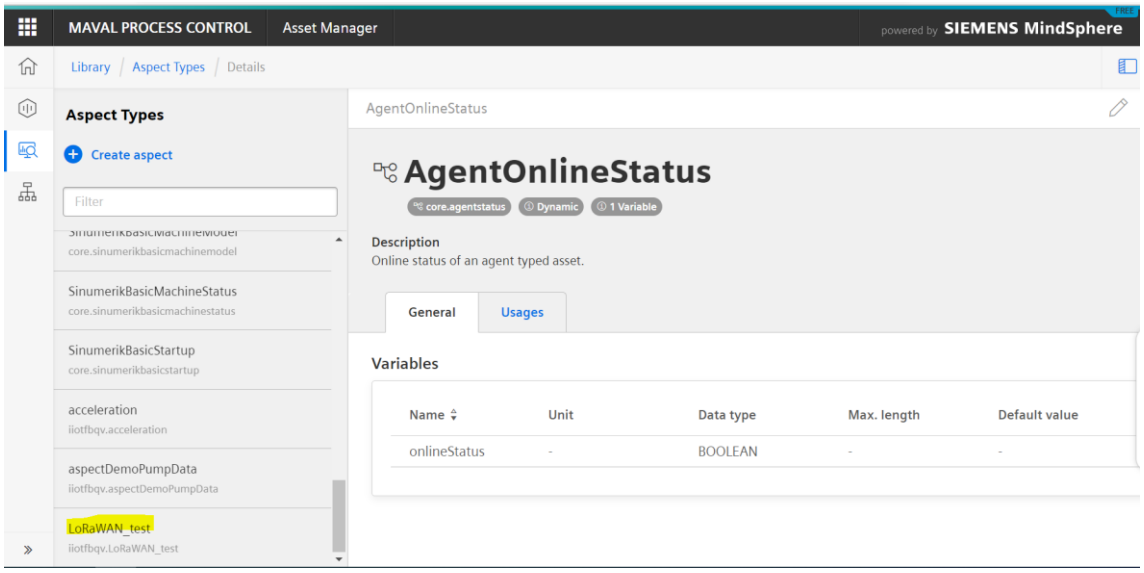




Fill in (add more variables like humidity, pressure, etc) and click save

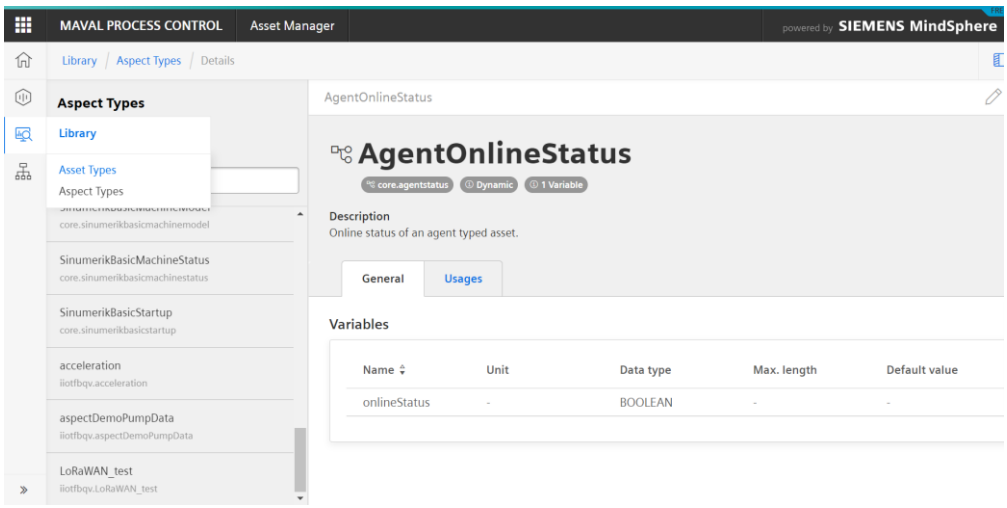


If you scroll down you will see the just created Aspect type: LoRaWAN_test

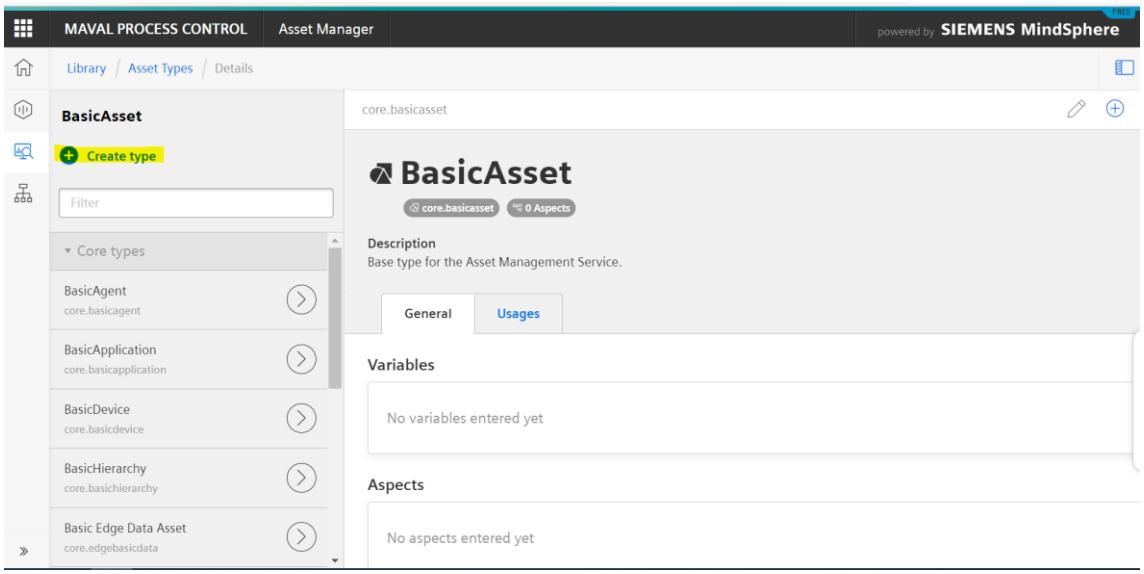


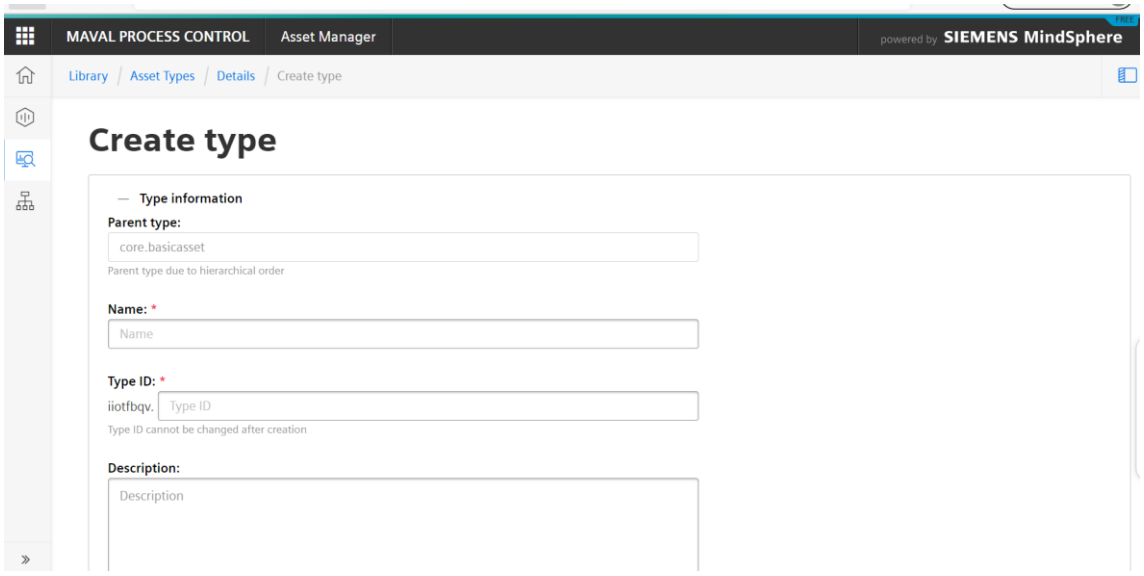
Now you need to create an Asset Type, it will be an instance of predefined Aspect type

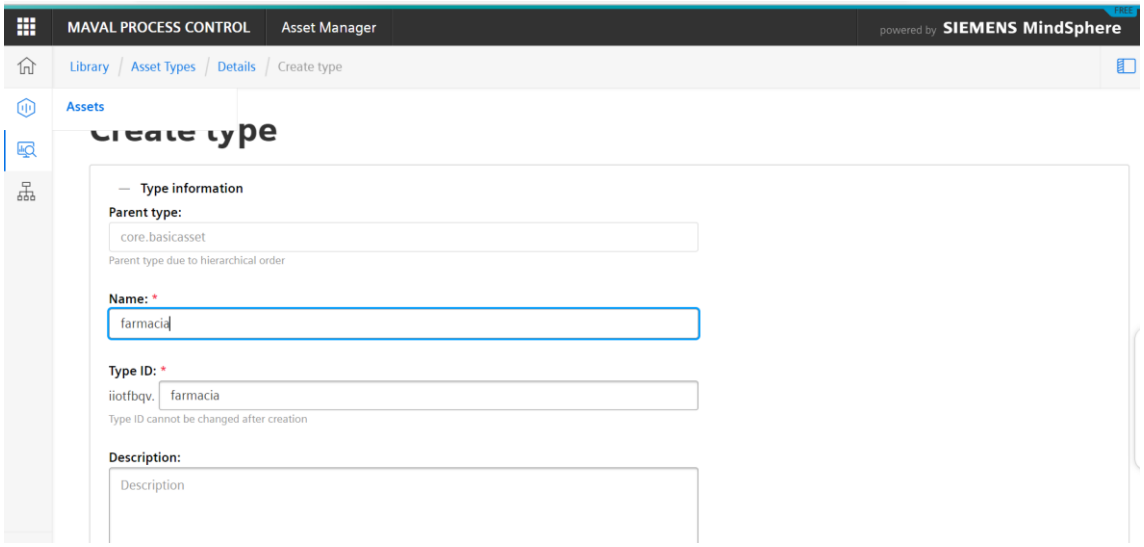
Let’s select Asset Types



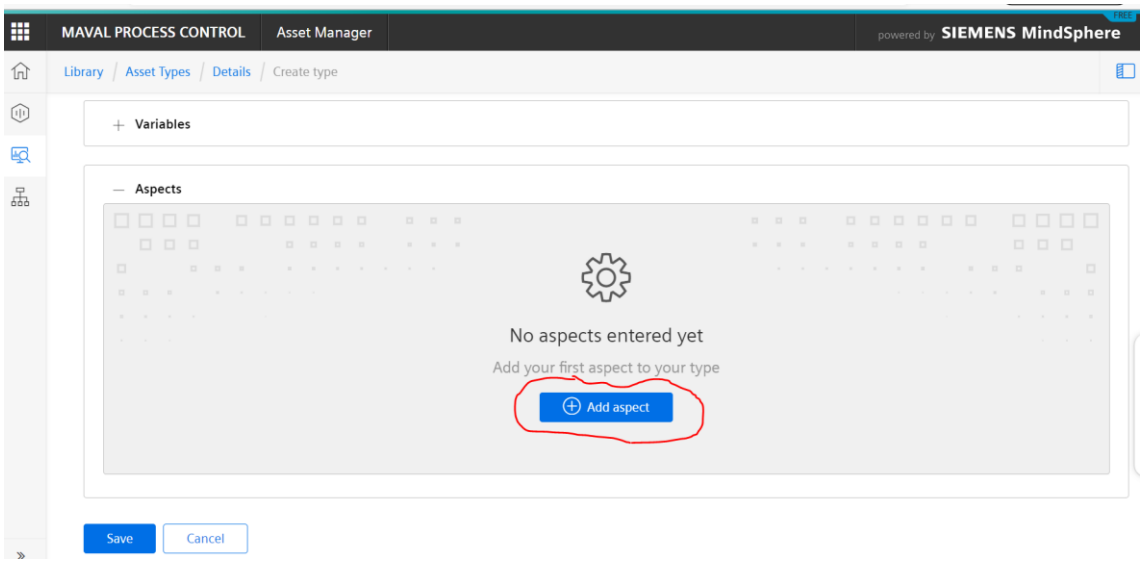
And create Type



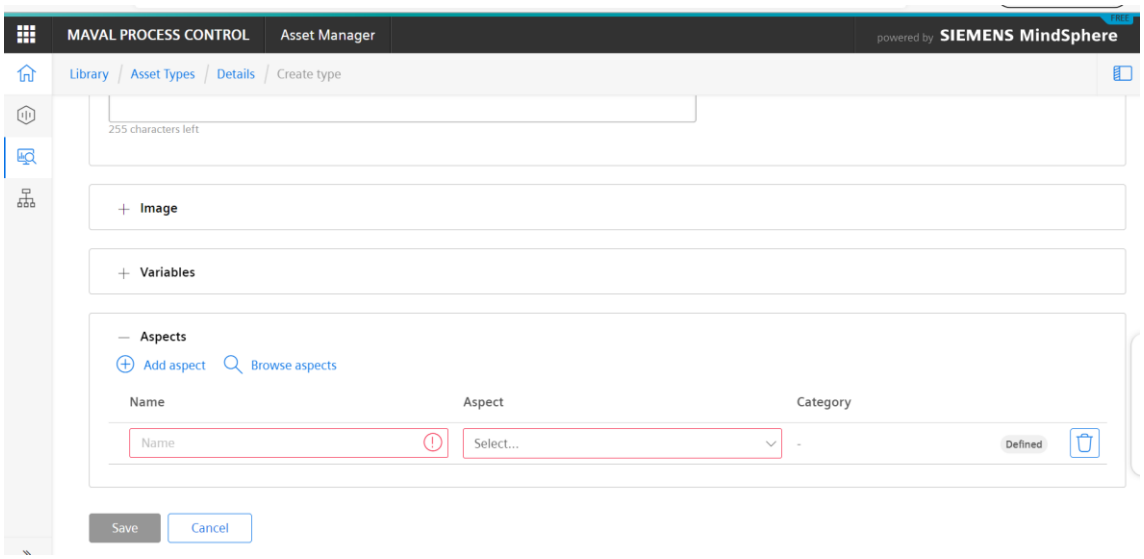




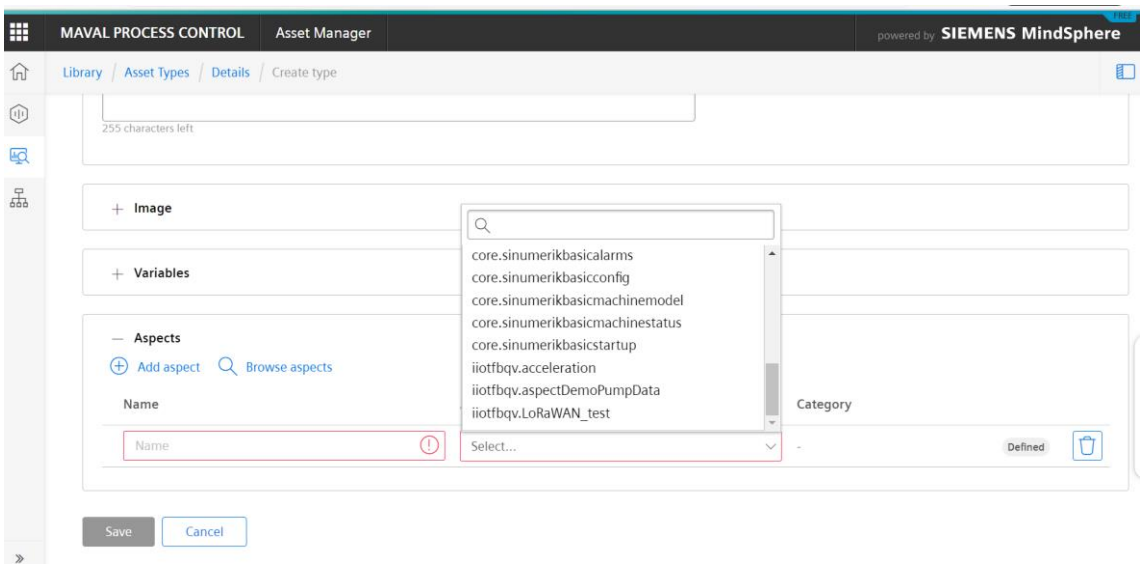
Then you have to scroll down and click on + aspect

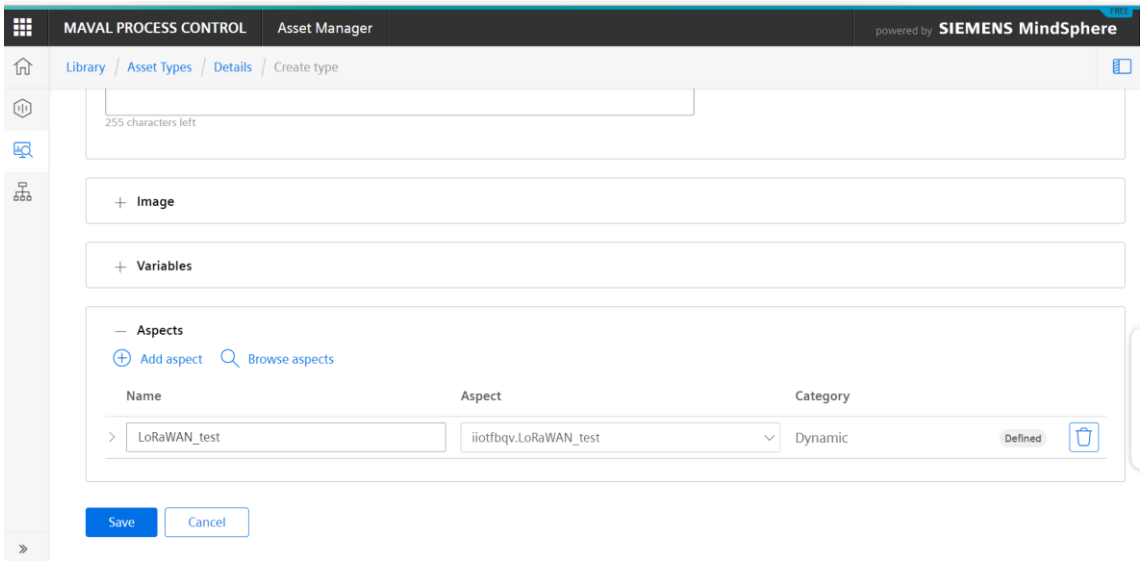


And select one of the created Aspects

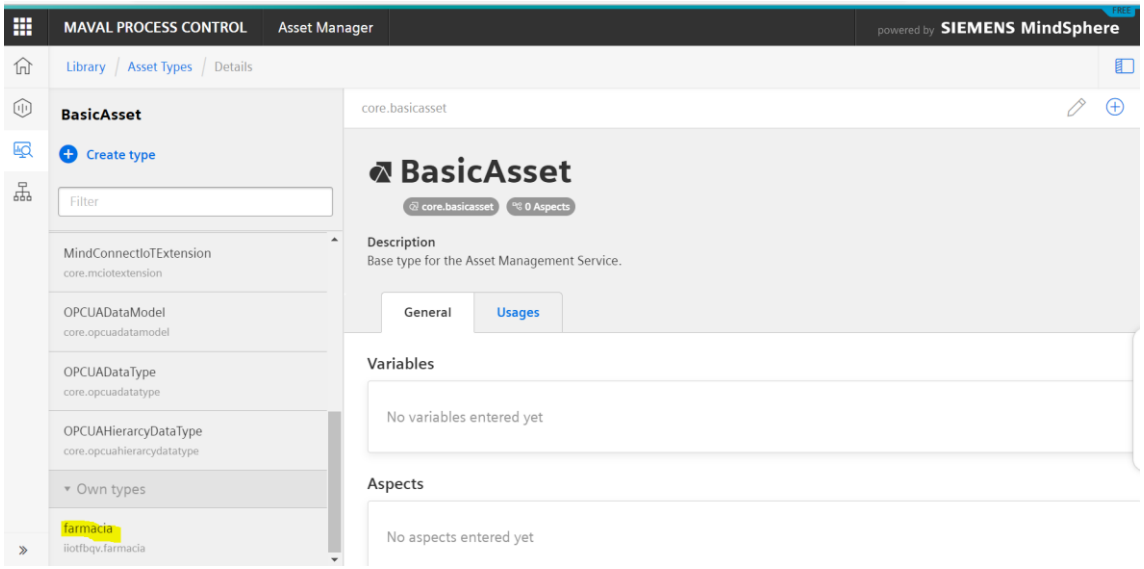


Give a name and select an Aspect

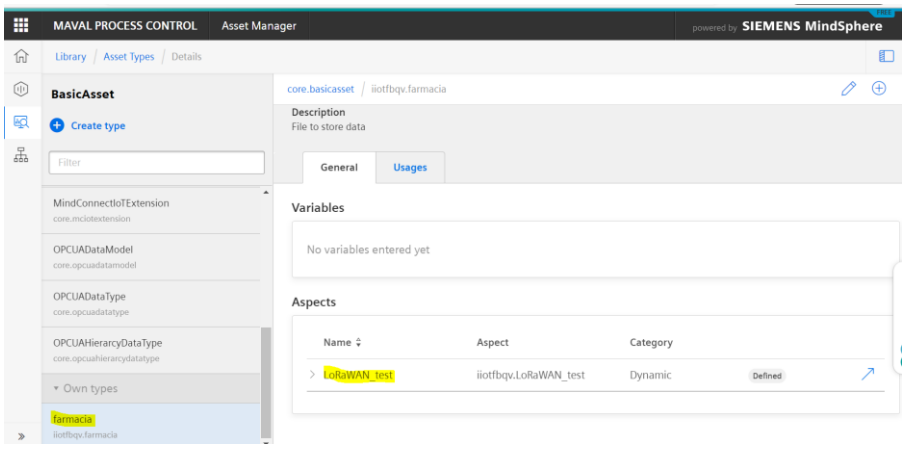




Once created you will see it on the list



If you click on “farmacia” you will see this

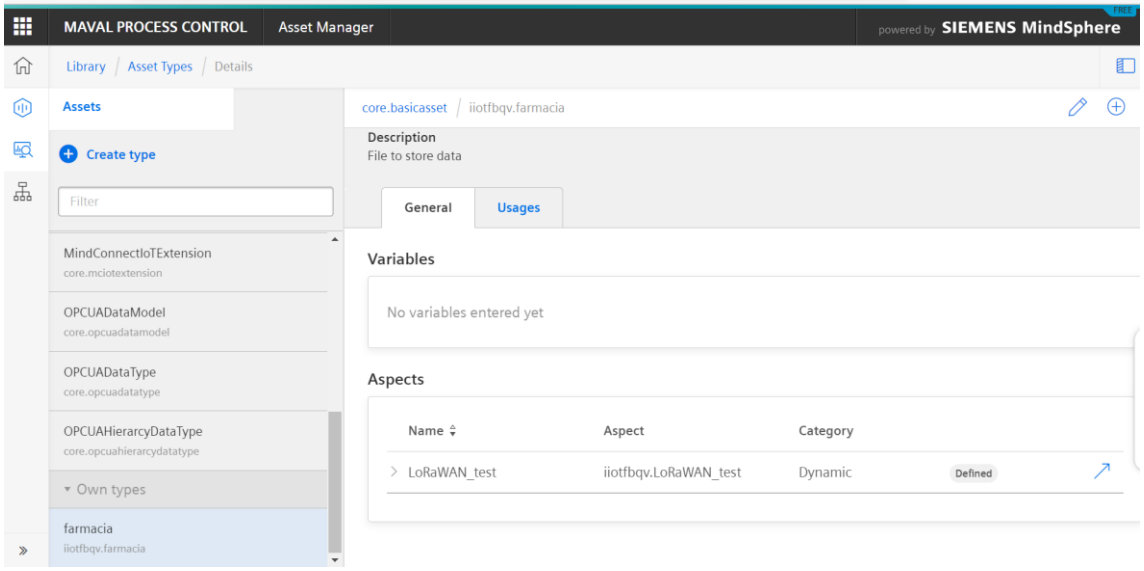


Now we have to make two actions:

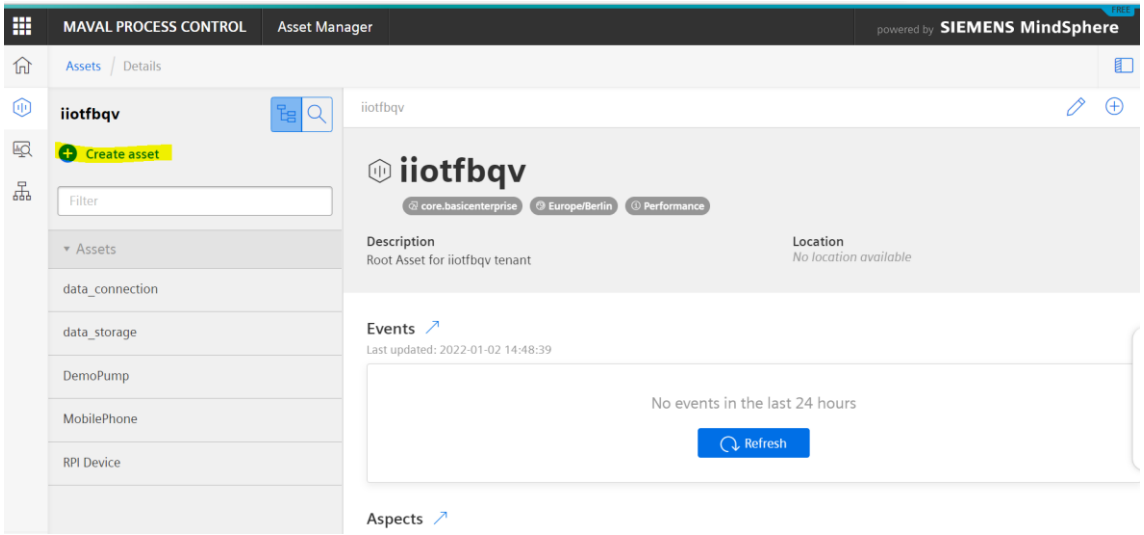
1 Talk to mindsphere (send data to mindsphere but this data will be lost) (we will name it as data_connection)

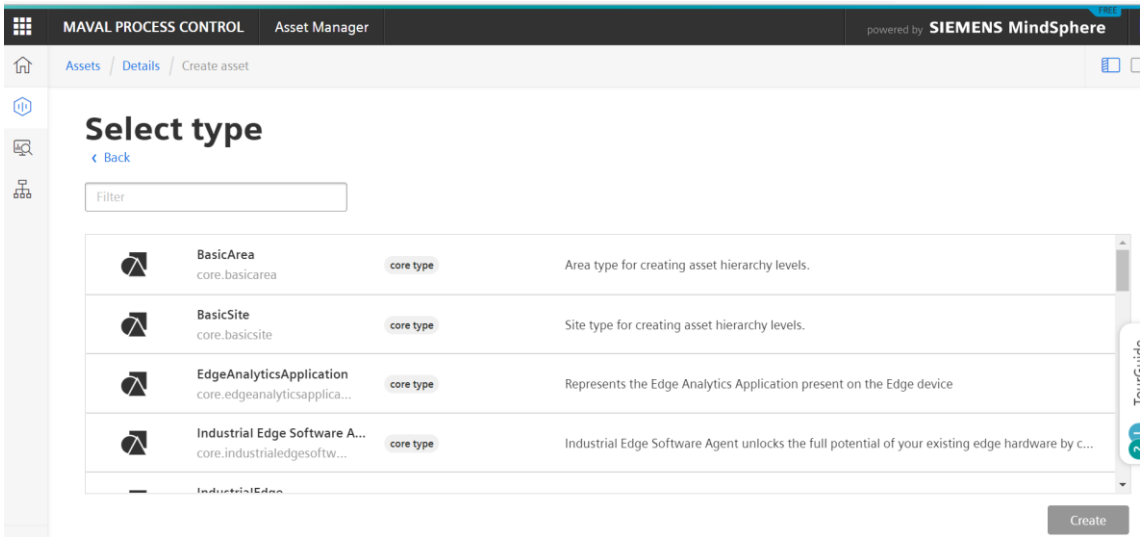
2 Store data to mindsphere (to make this data permanent) (we will name it as data_storage)

So click on Assets

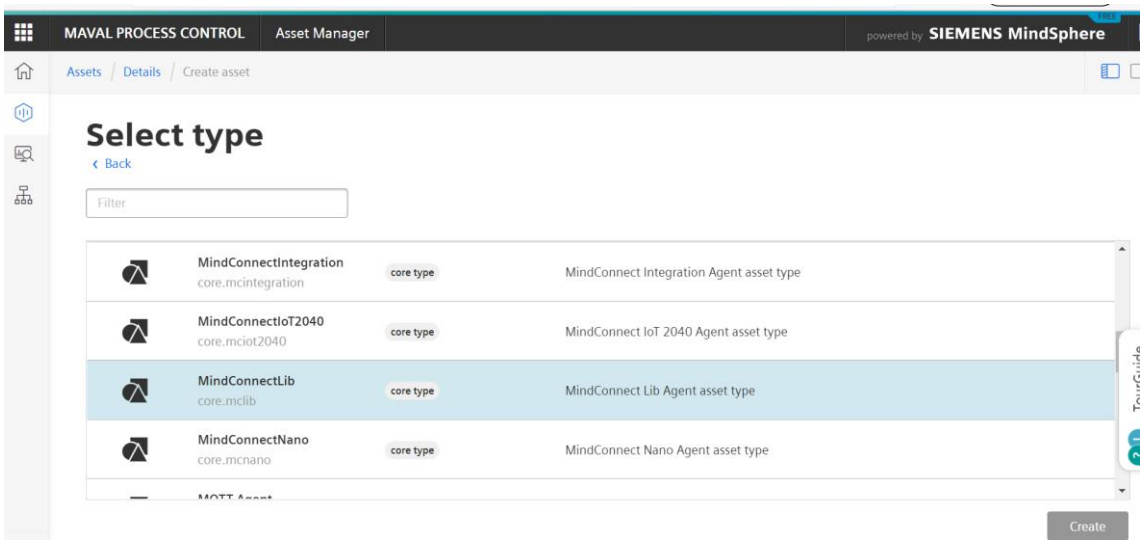


And create Asset

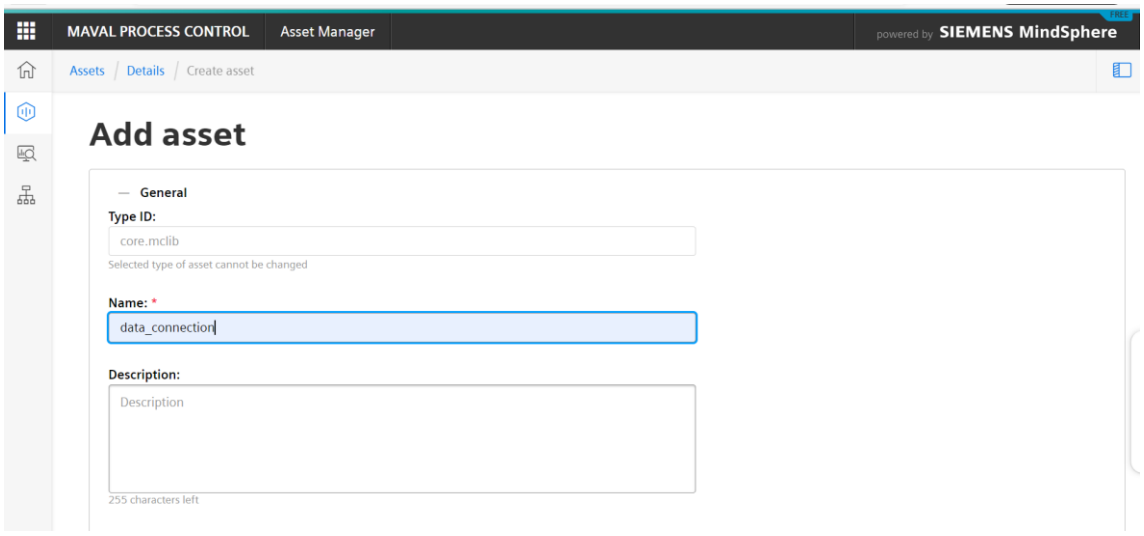




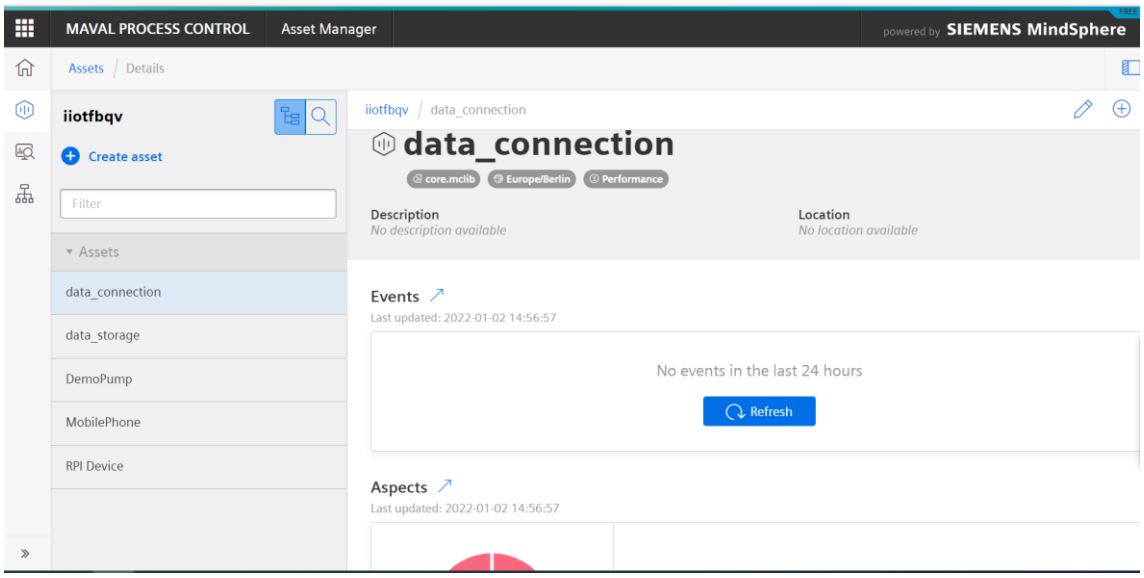
And we select MindconnectLib



And give a name

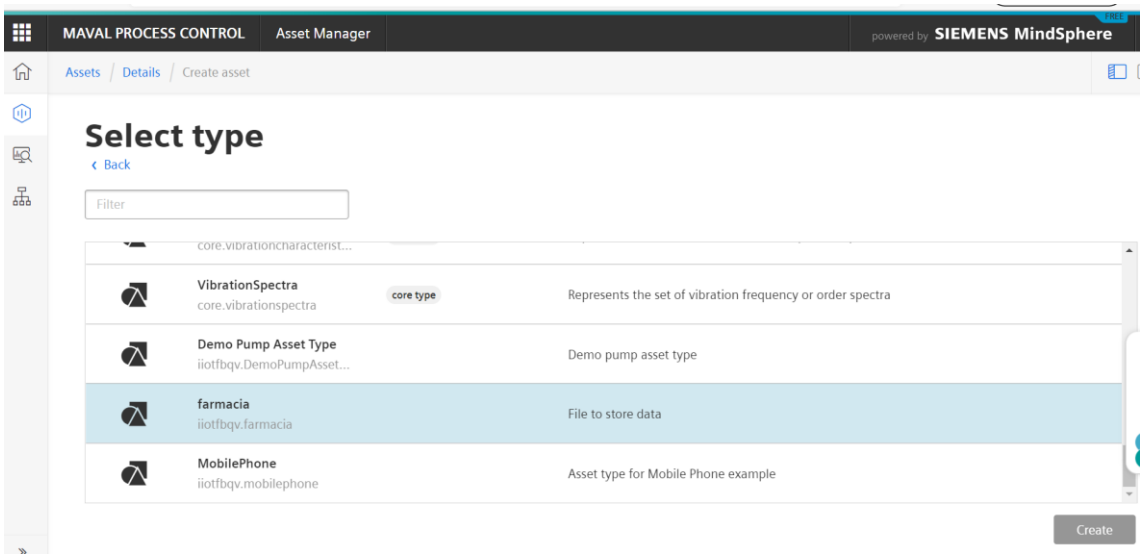


You will see this



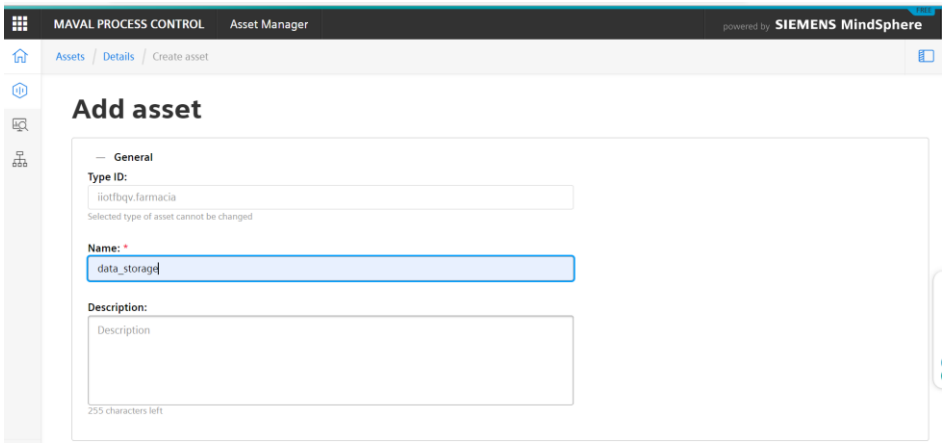
Now we create a storage asset same type than we have created before (farmacia)

We create new asset

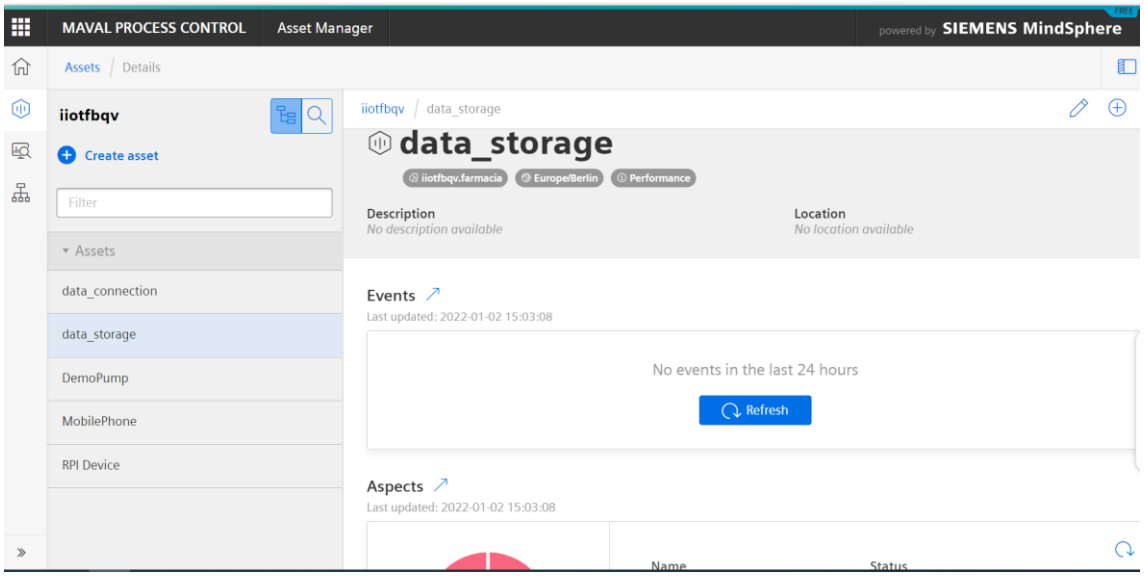


Select previously created asset (farmacia)

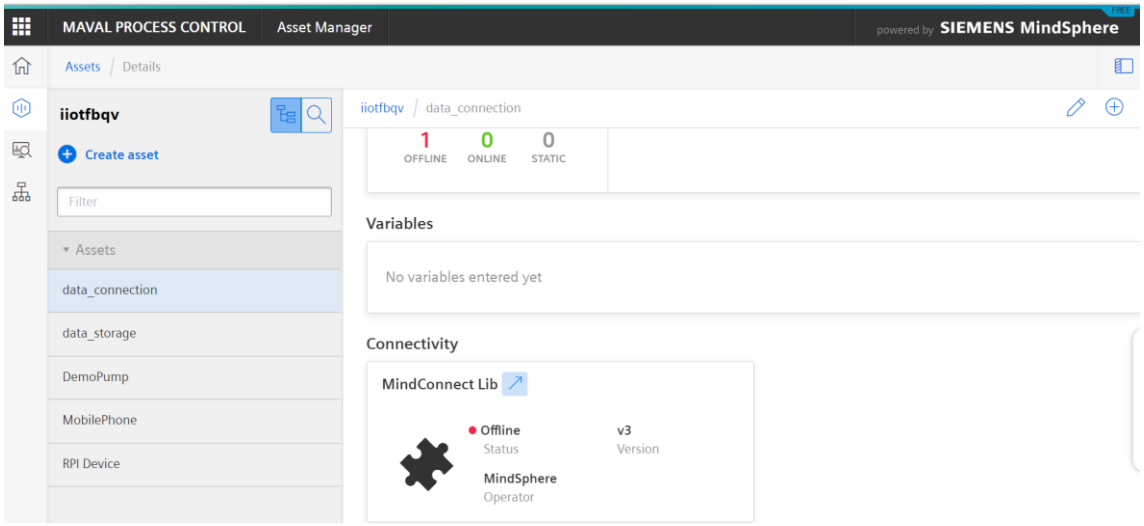
And click on create



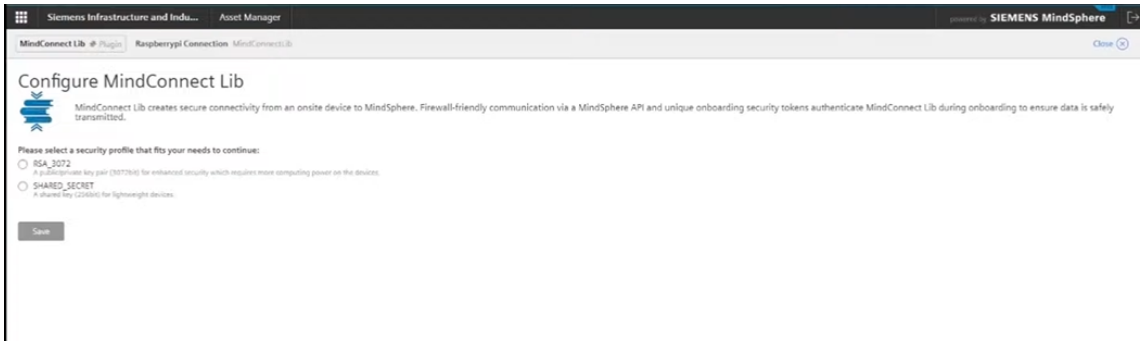
Click on save and you will see this



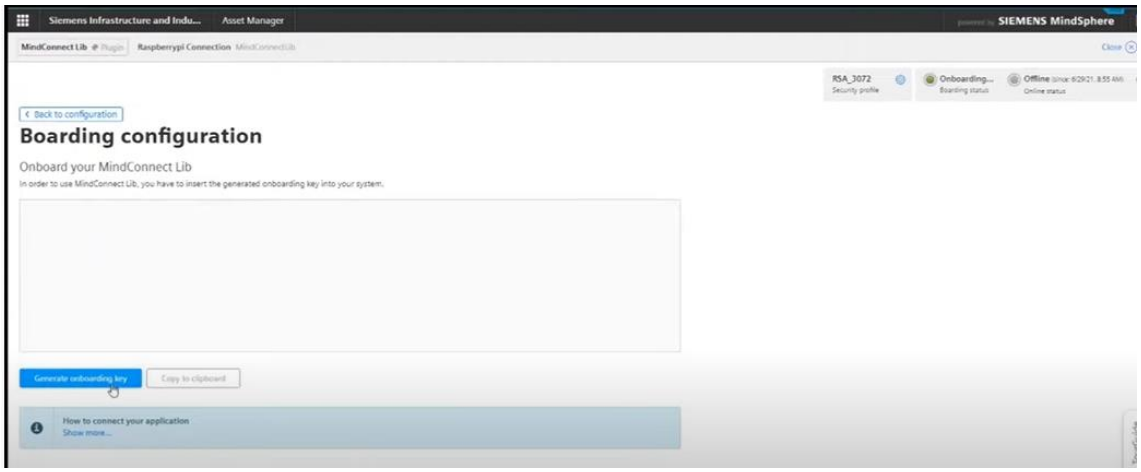
Now we have to go to data_connect asset created and click o the blue arrow close to MindConnect Lib to generate a security Key



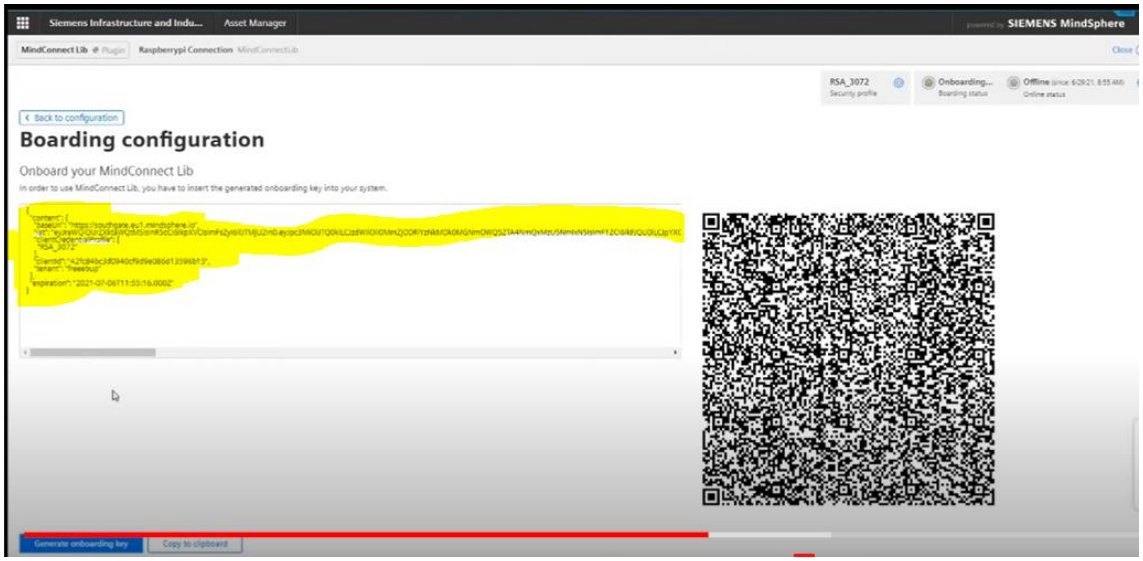
Let's select SHARED SECRET



Ad click on save

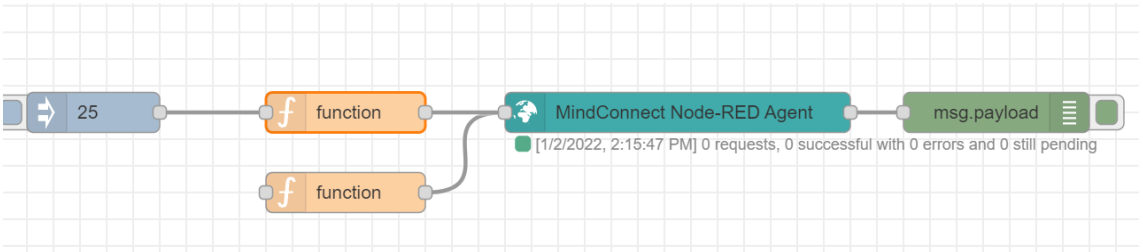


And click on “generate onboarding key”

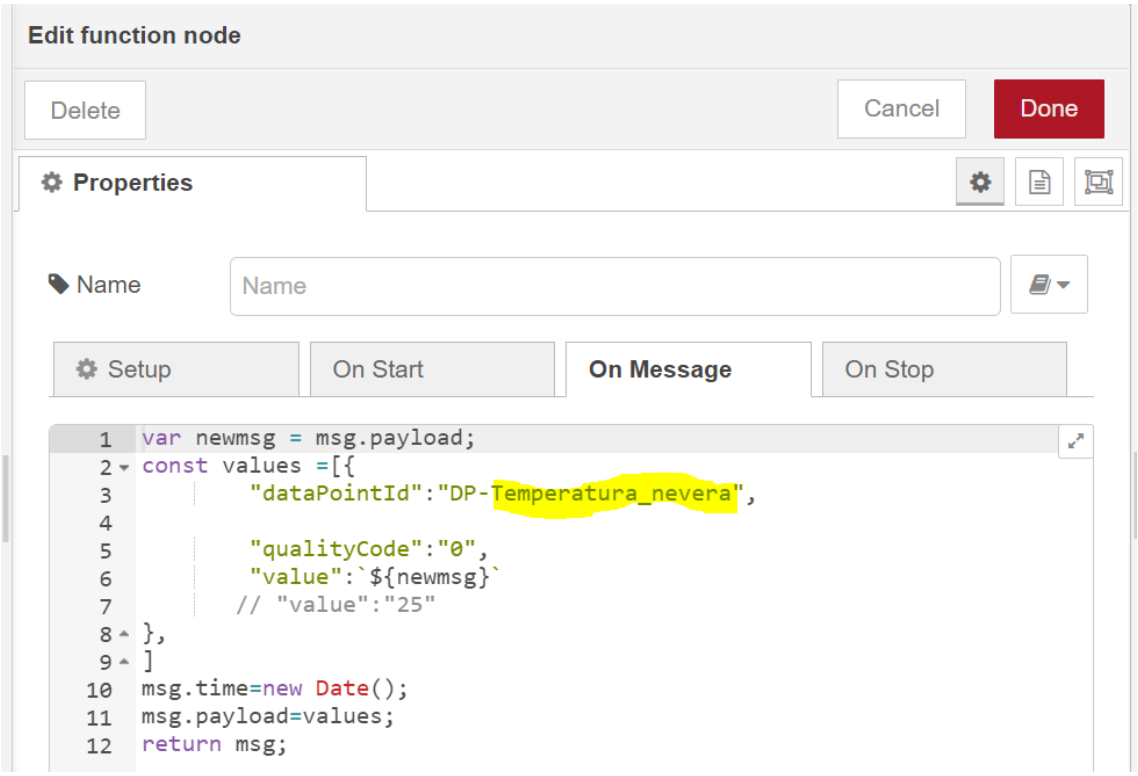


You will see a key JSON text, copy it and save on a plain text file. You will need it later.

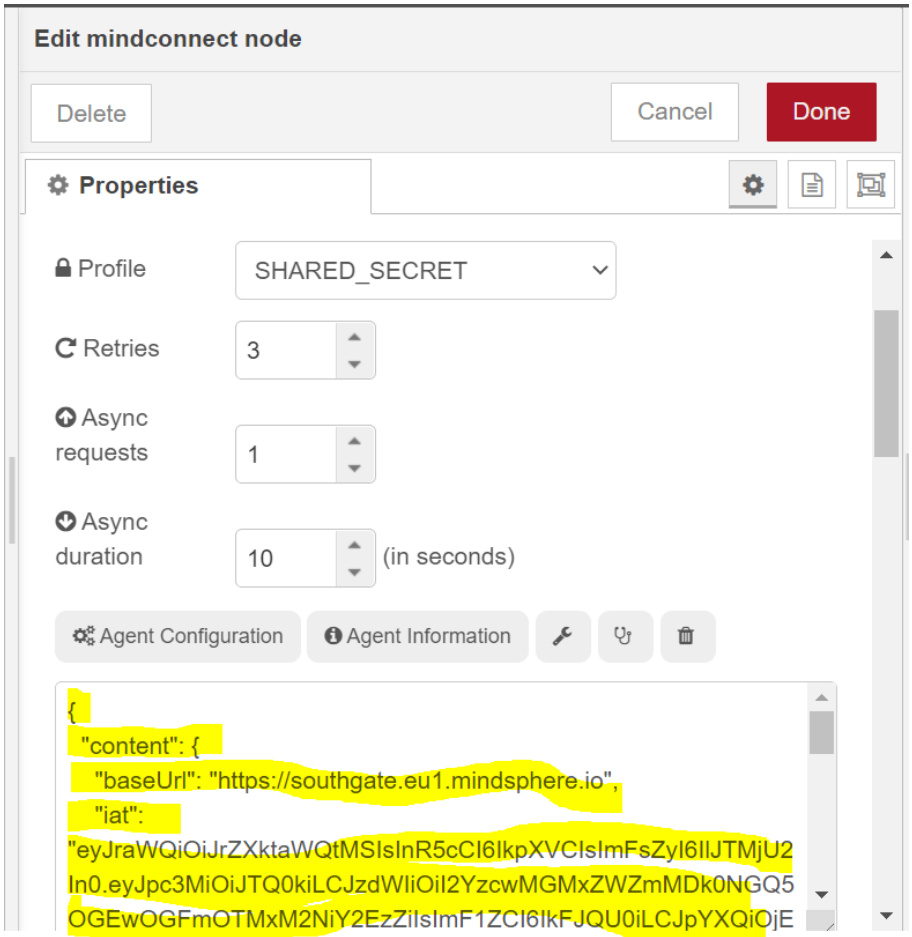
Now we can go to the IBM node RED or any Edge machine we will use



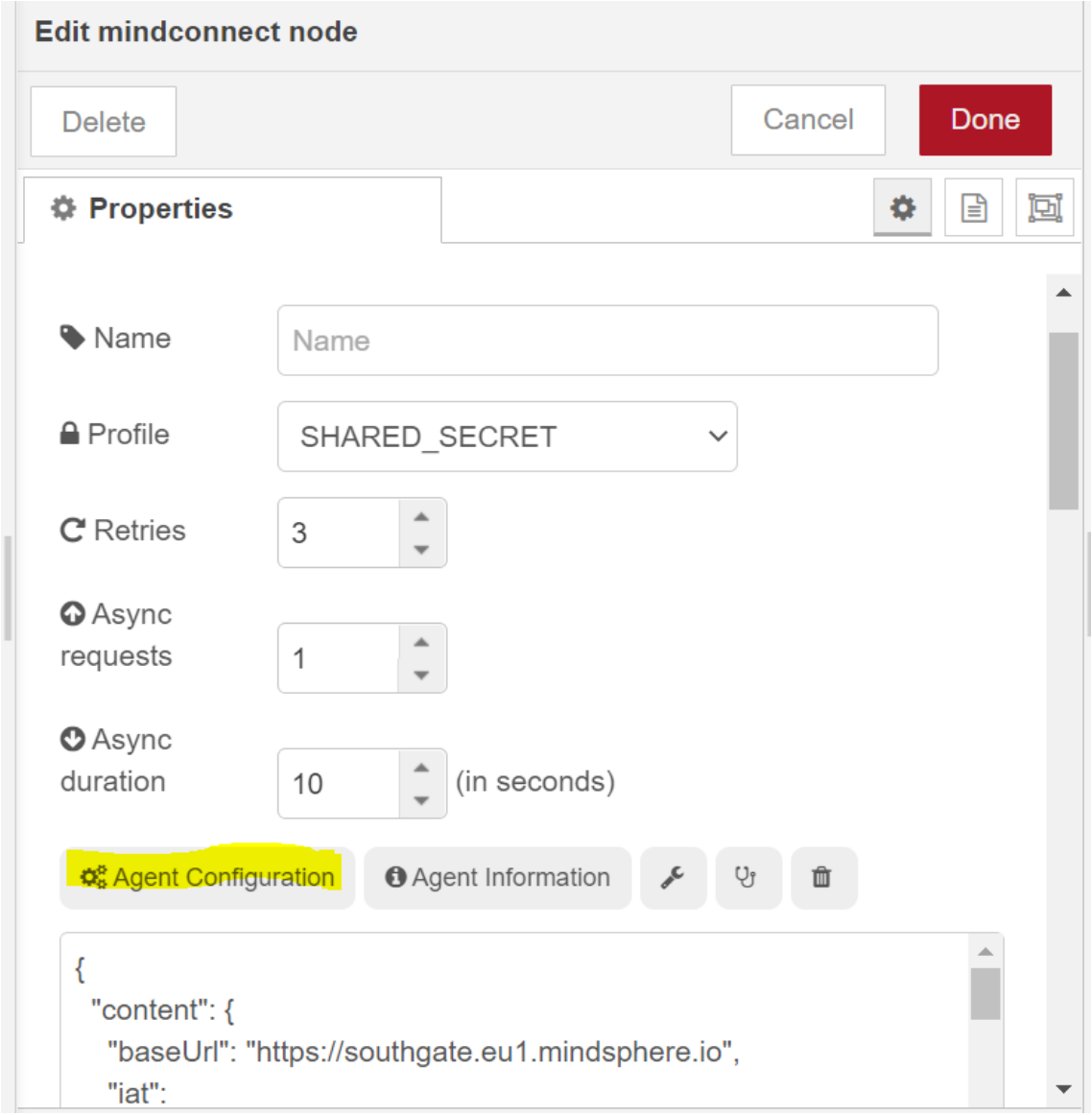
You must use a function like this one, with same name of variable you have created as Datapoint starting with DP-



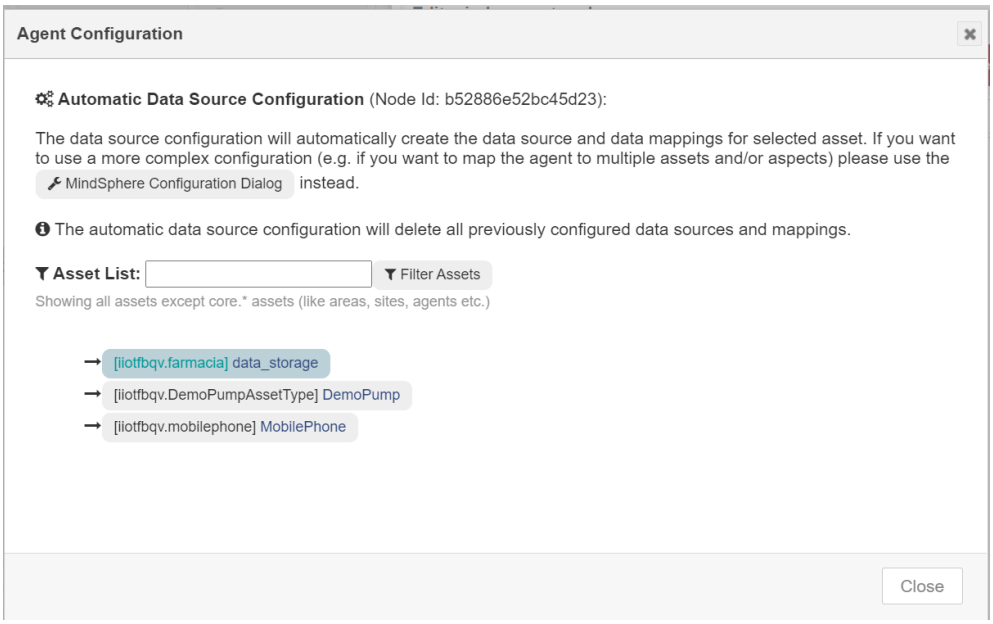
And on the Mindconnect node, just copy the JSON credentials you have saved to a file before



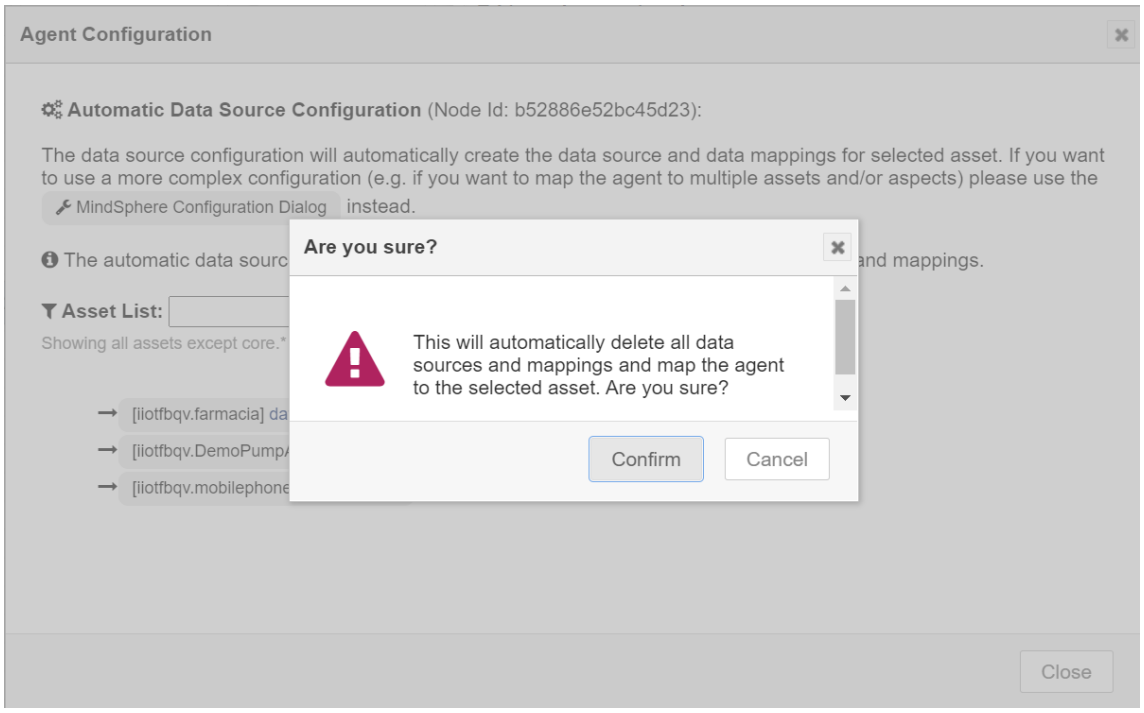
Then you have to activate this connection by clicking on



You will see this

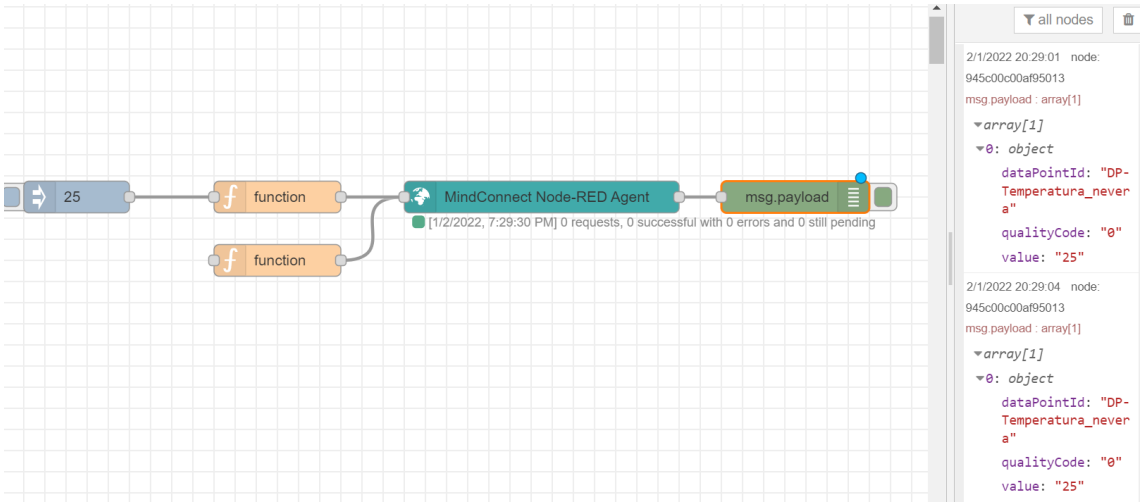


Select our data_storage



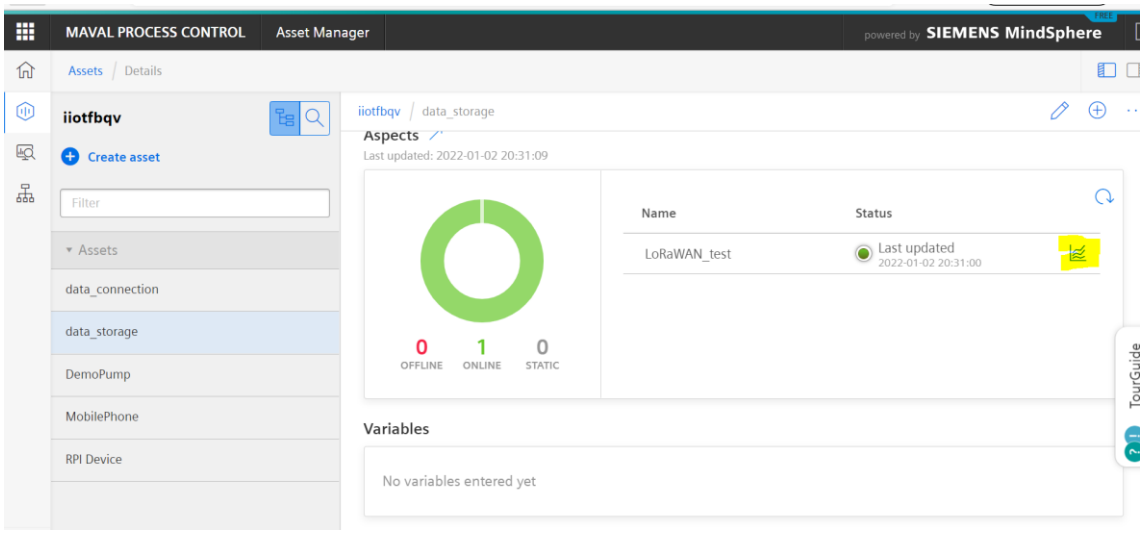
You will see data_connection in green color

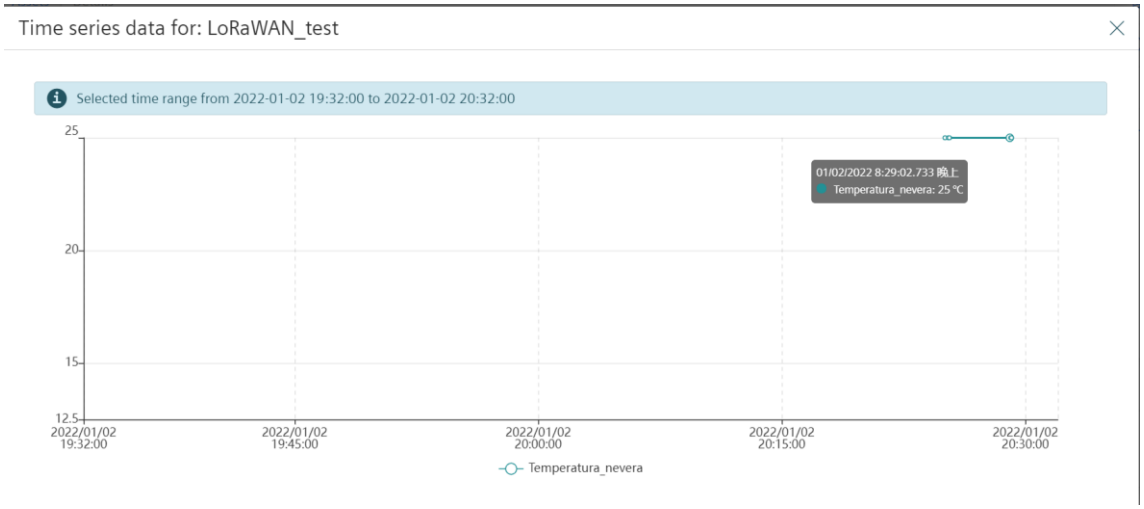
We can test the IBM node-RED Flow



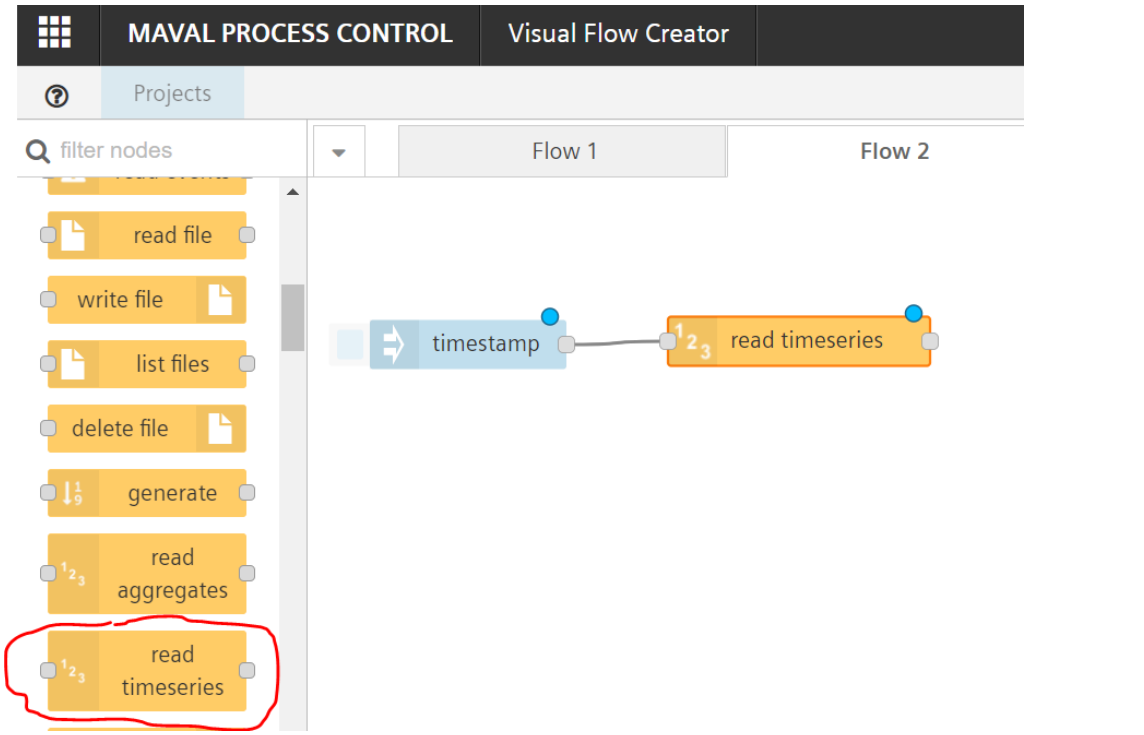
Now we can go to Asset Manager on MIndsphere

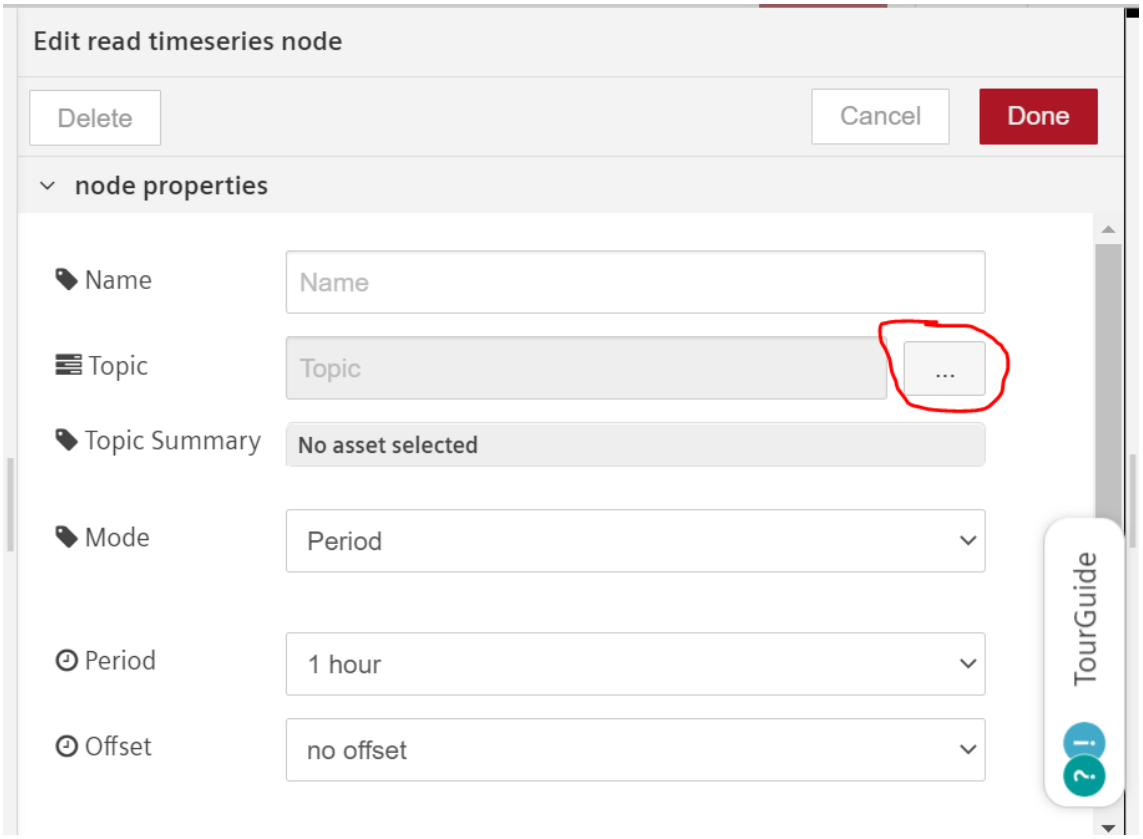
Assets / data_storage and click on the trend graph icon

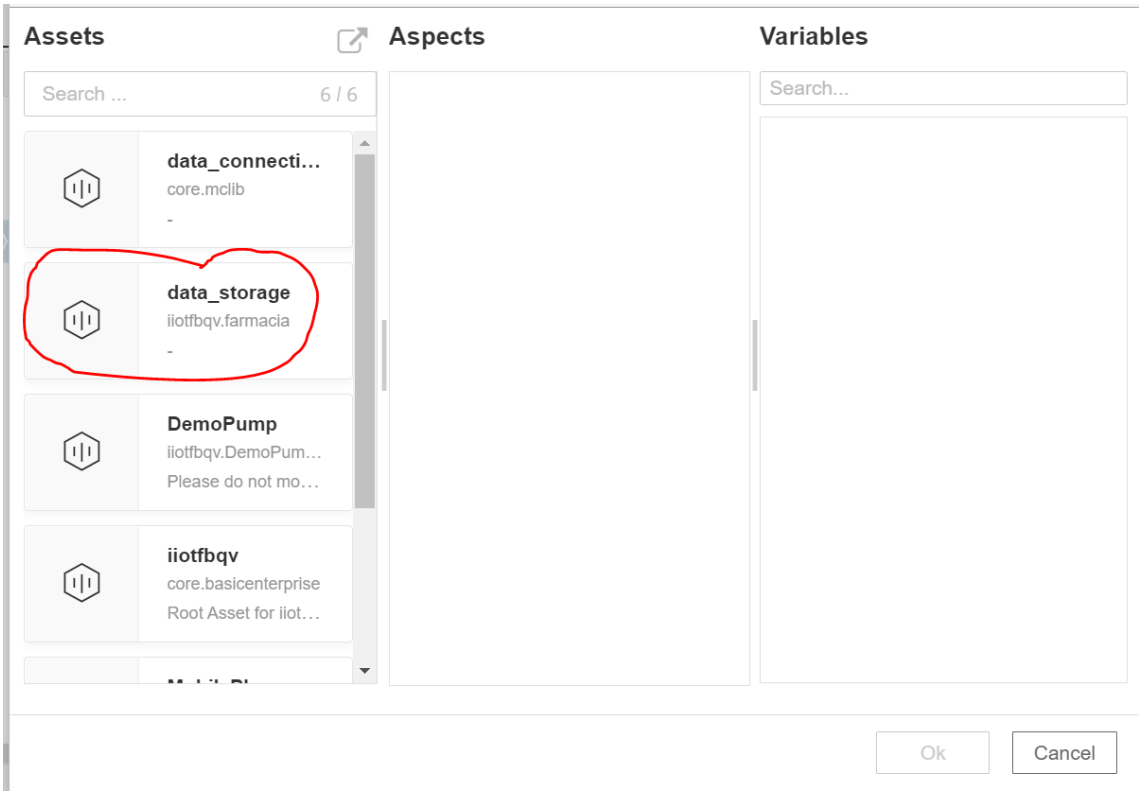


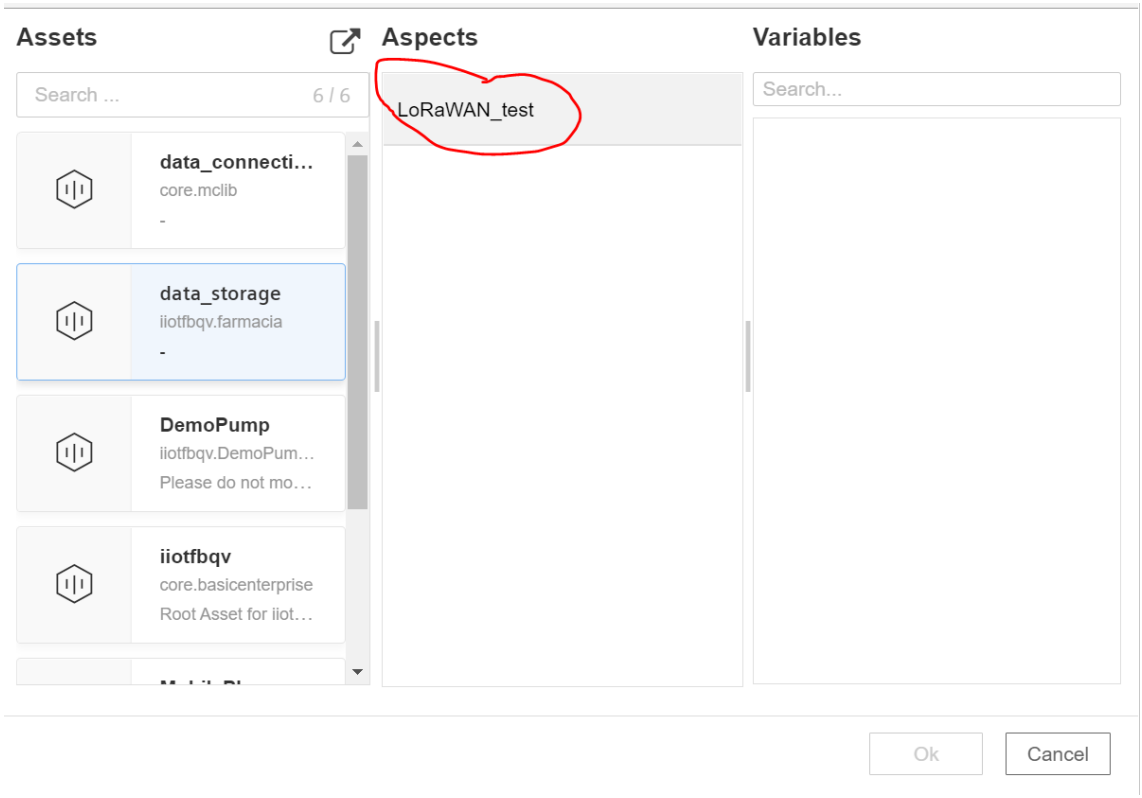


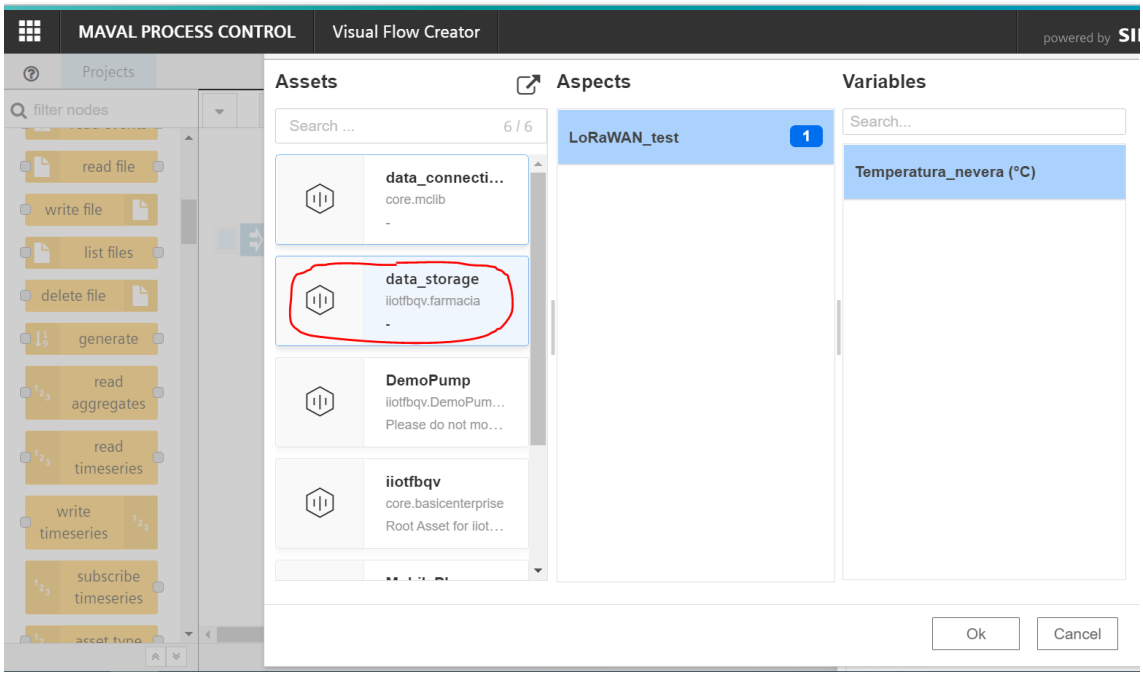
Now we can go to the Visual Flow creator from Mindsphere and see wether there is data:



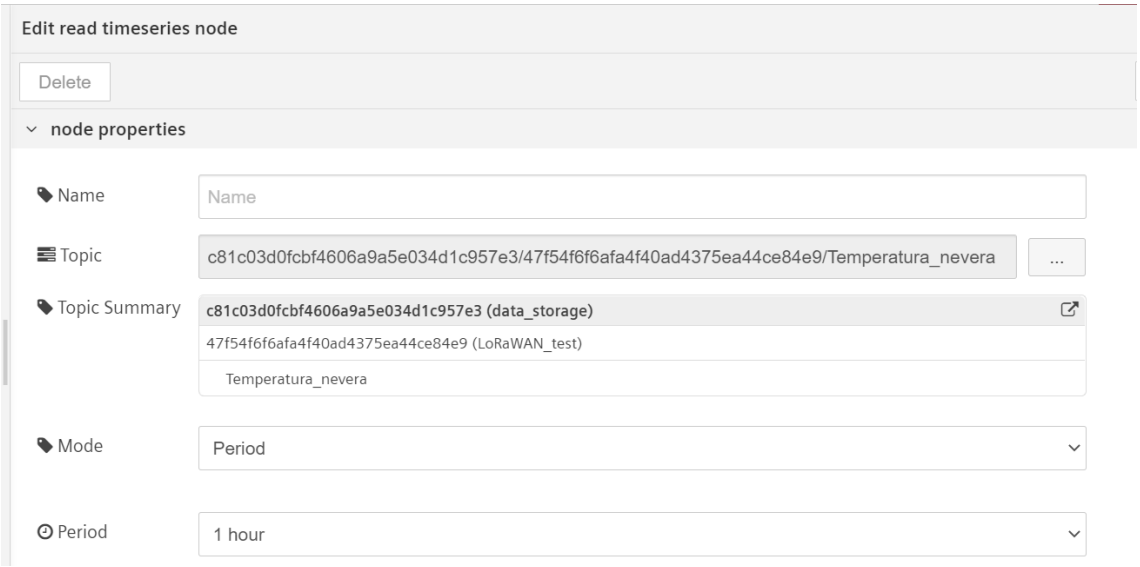

Edit read timeseries node
Delete
Cancel
Done
node properties
Name
Name
Topic
Topic
...
Topic Summary
No asset selected
Mode
Period
Period
1 hour
Offset
no offset
TourGuide

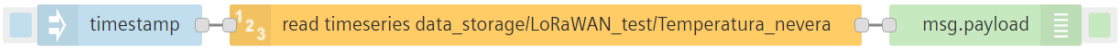

Assets
Aspects
Variables
Search ...
6 / 6
data_connecti...
core.mclib
-
data_storage
iiotfbqv.farmacia
-
DemoPump
iiotfbqv.DemoPum...
Please do not mo...
iiotfbqv
core.basicenterprise
Root Asset for iiot...
Search...
Ok
Cancel





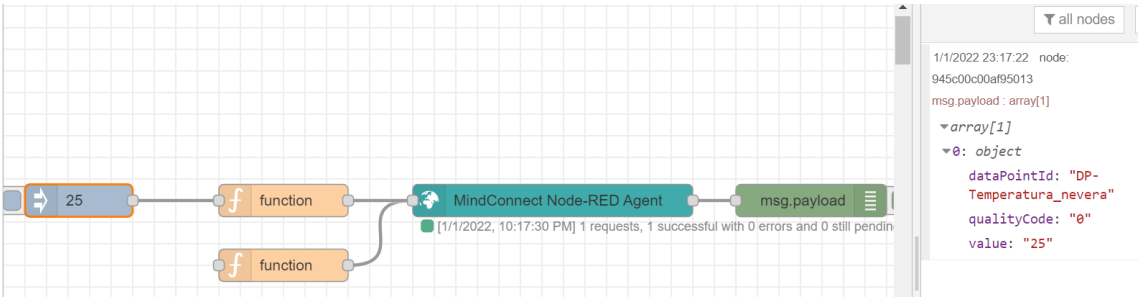
You will get these values



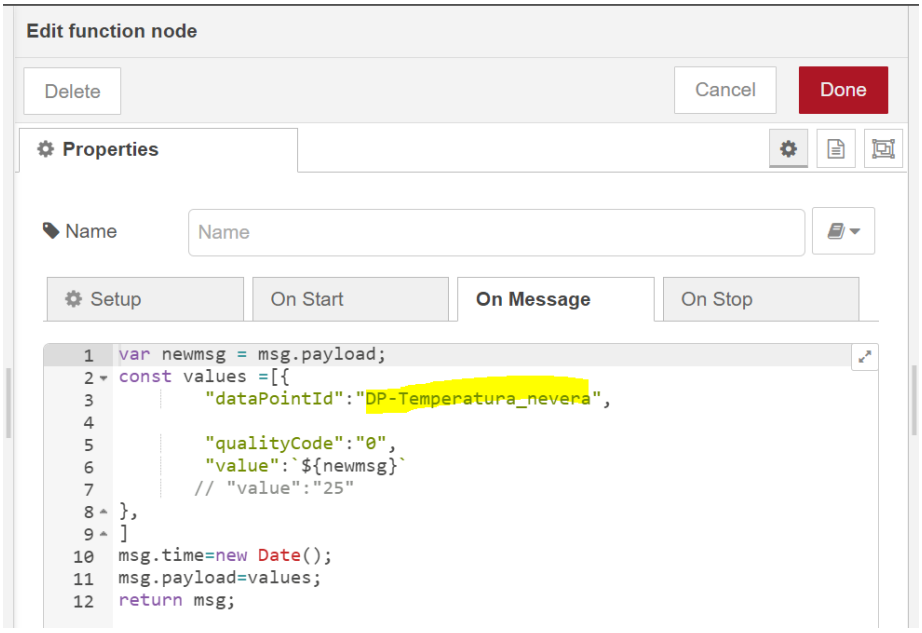


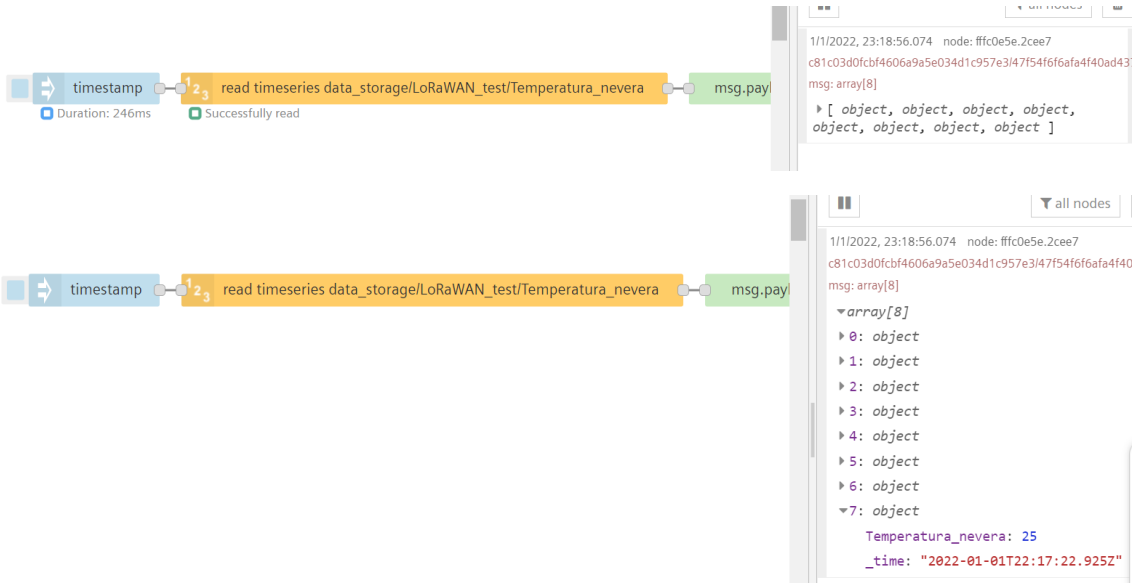
Let's test the flow

First let's inject data from IBM cloud to mindsphere



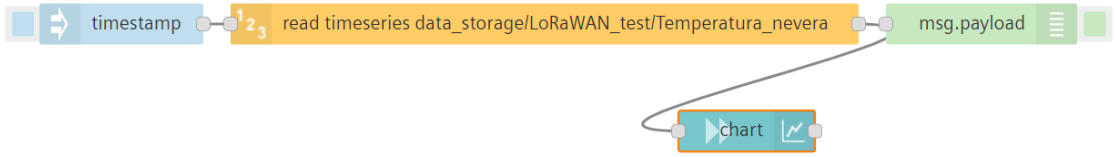
Attention, you have to insert DP- in front of your data name

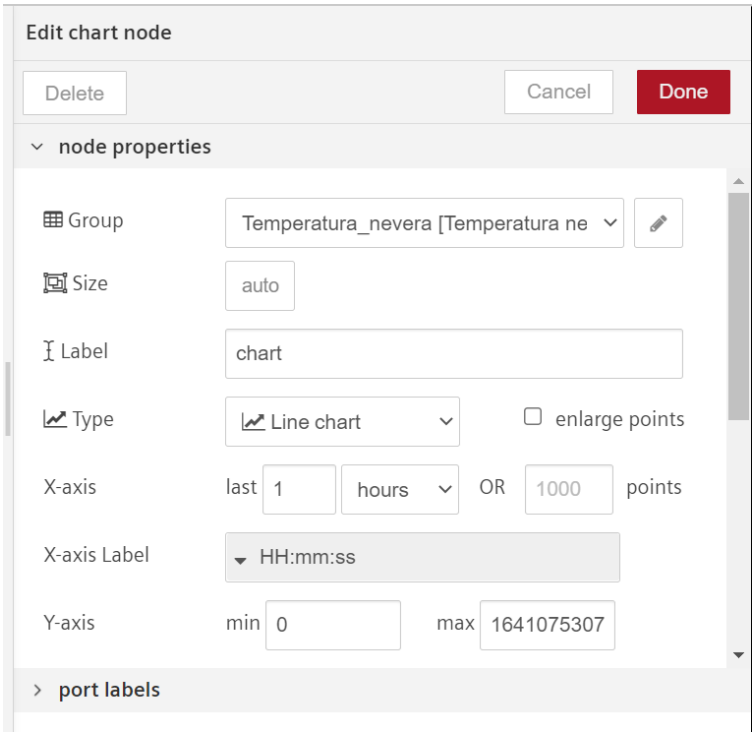




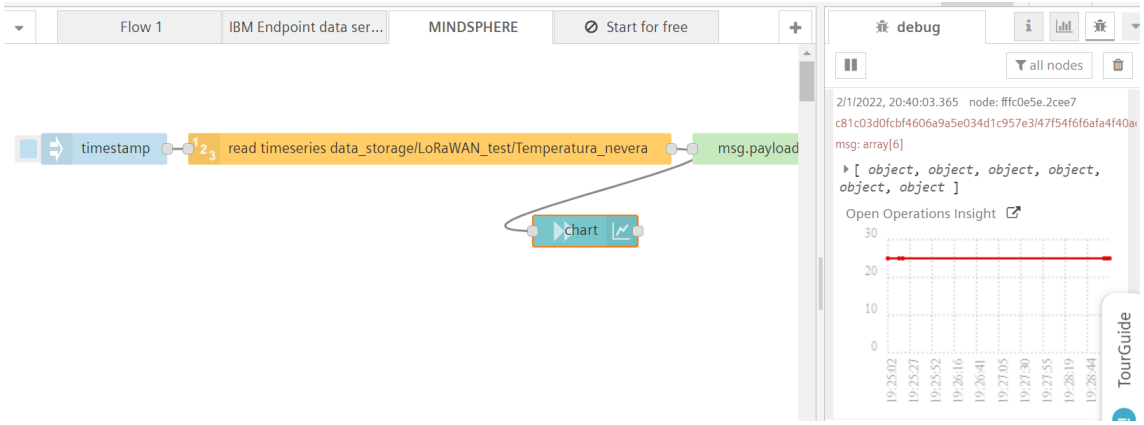
So it works!

Let's add a chart

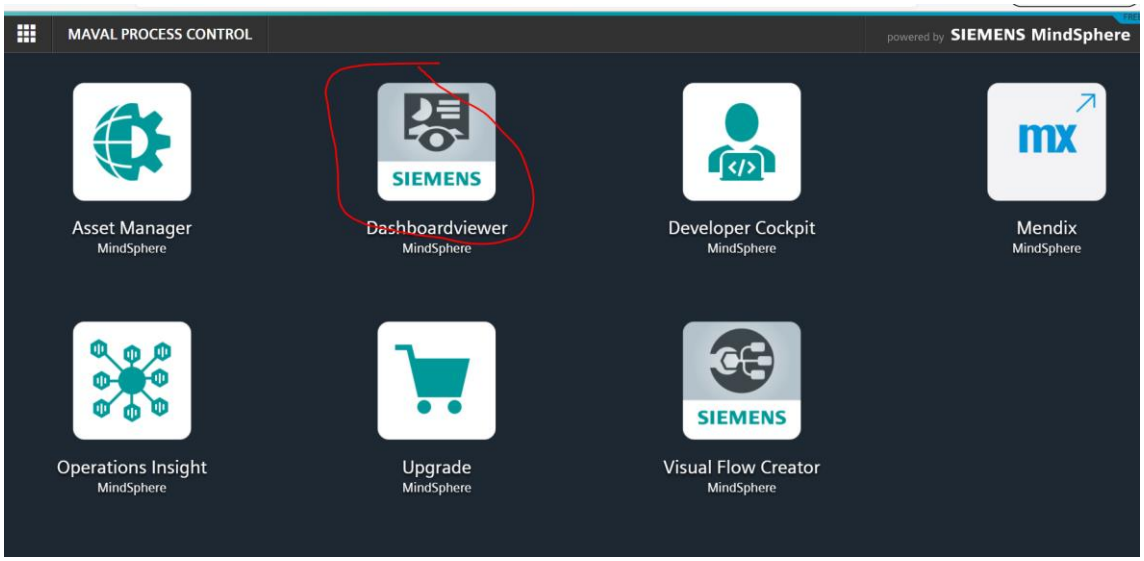


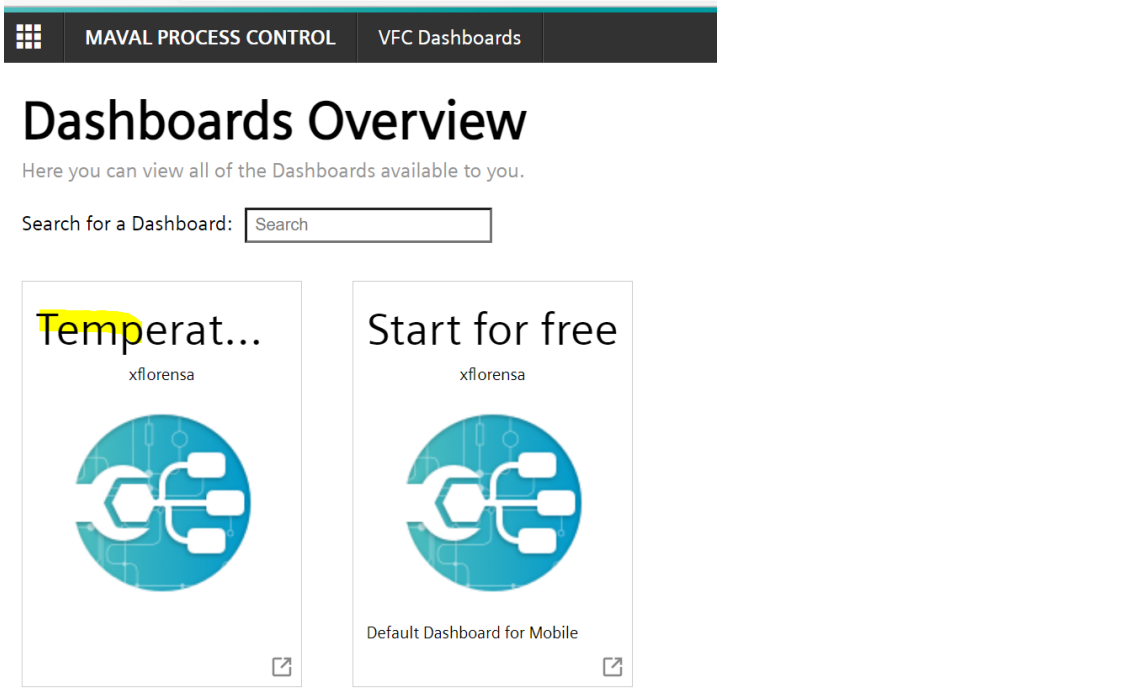


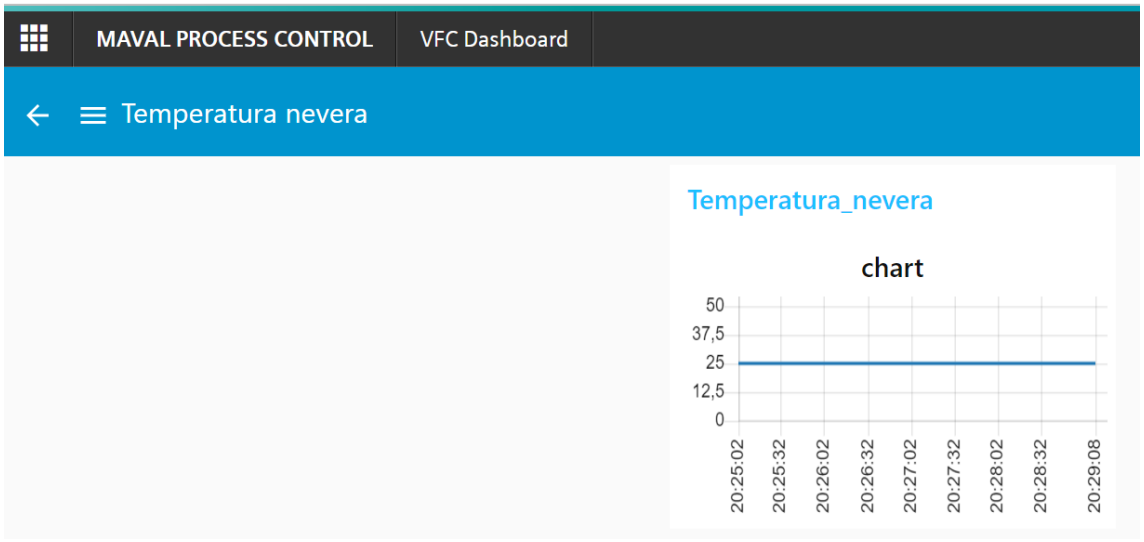
And let’s inject again



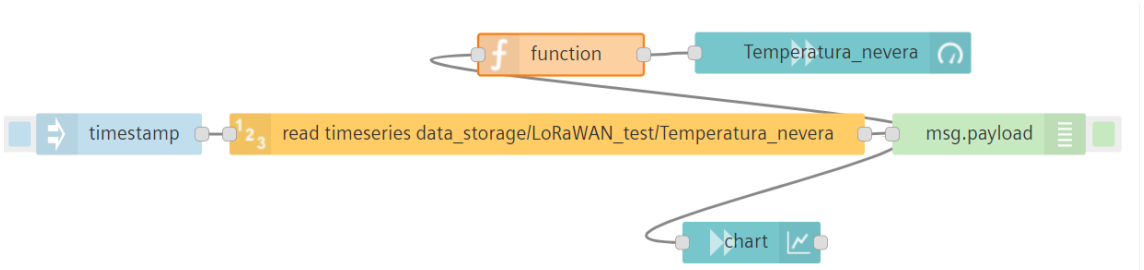
Now let’s see the dashboard

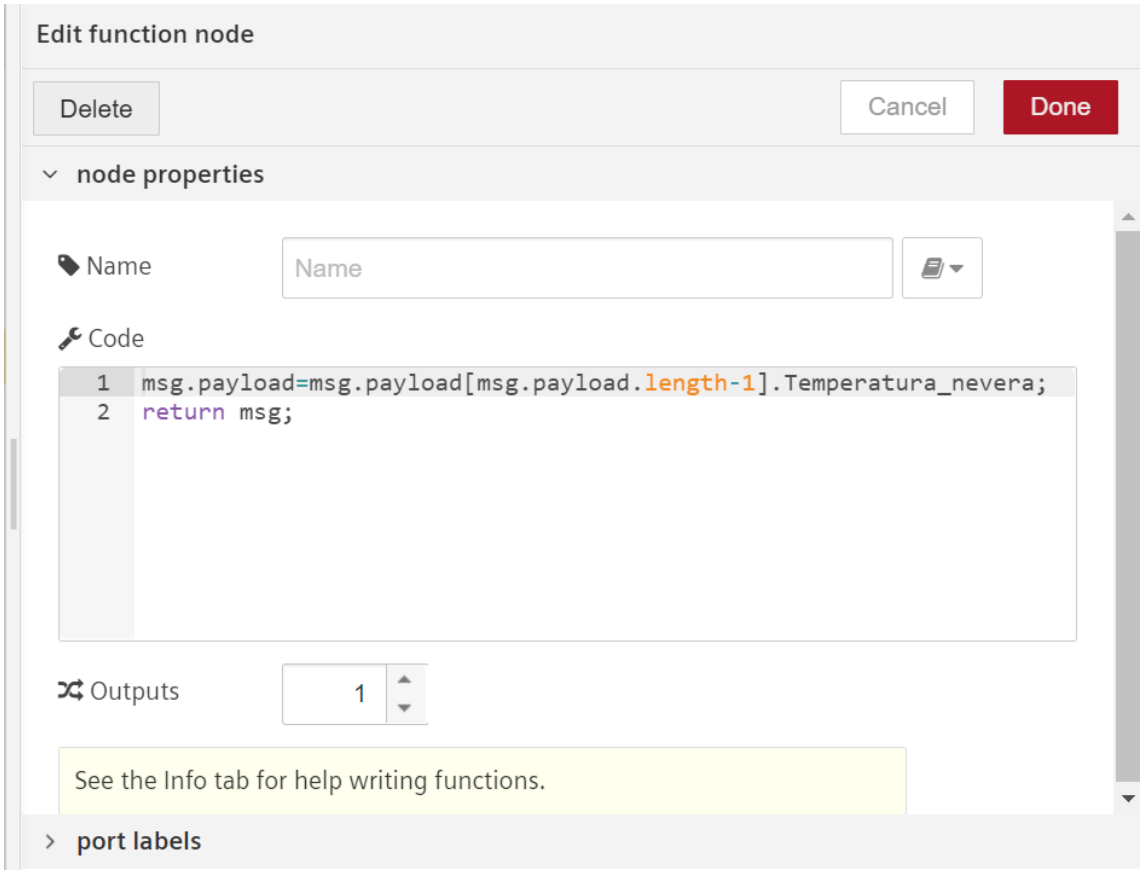


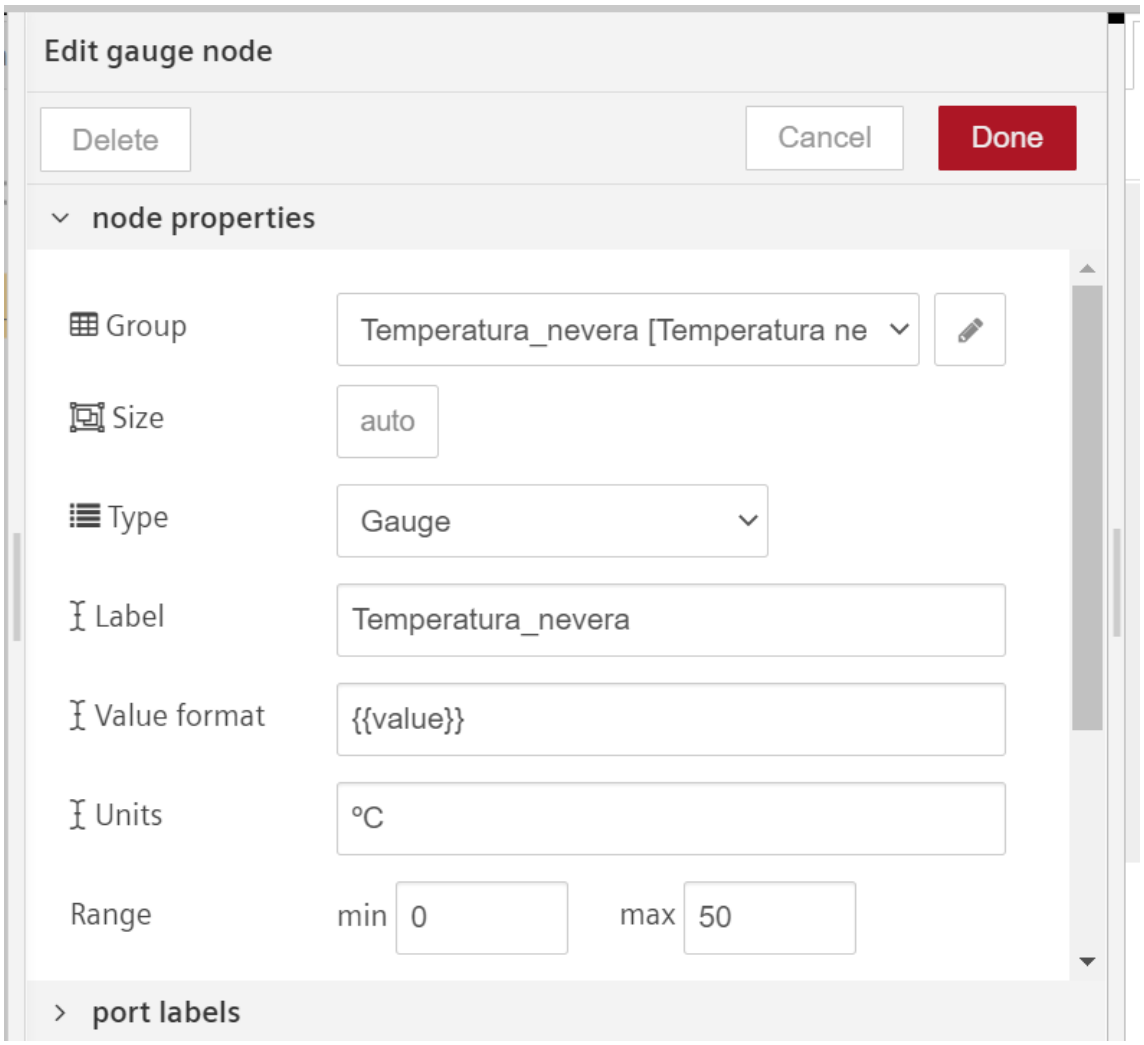




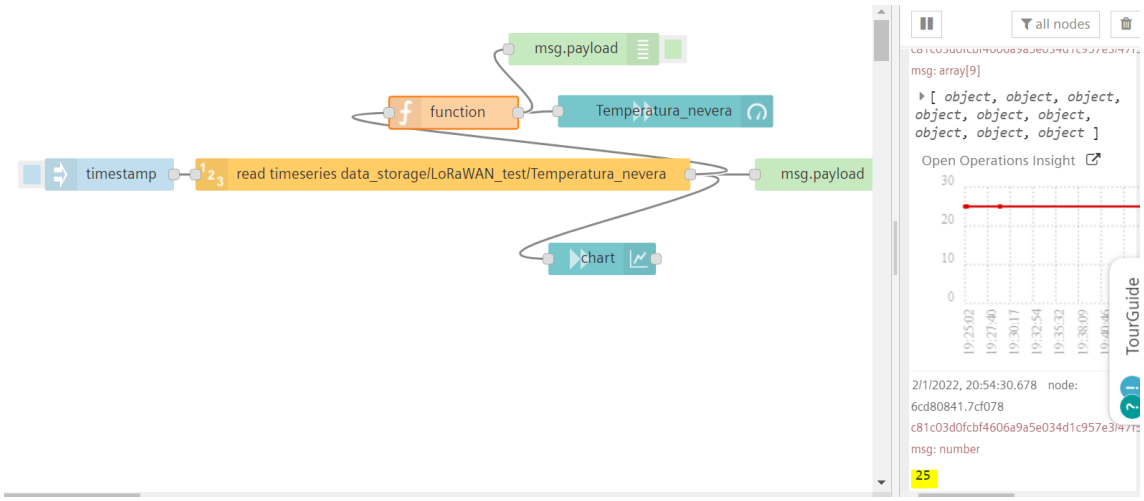
We may add a Gauge to see last value

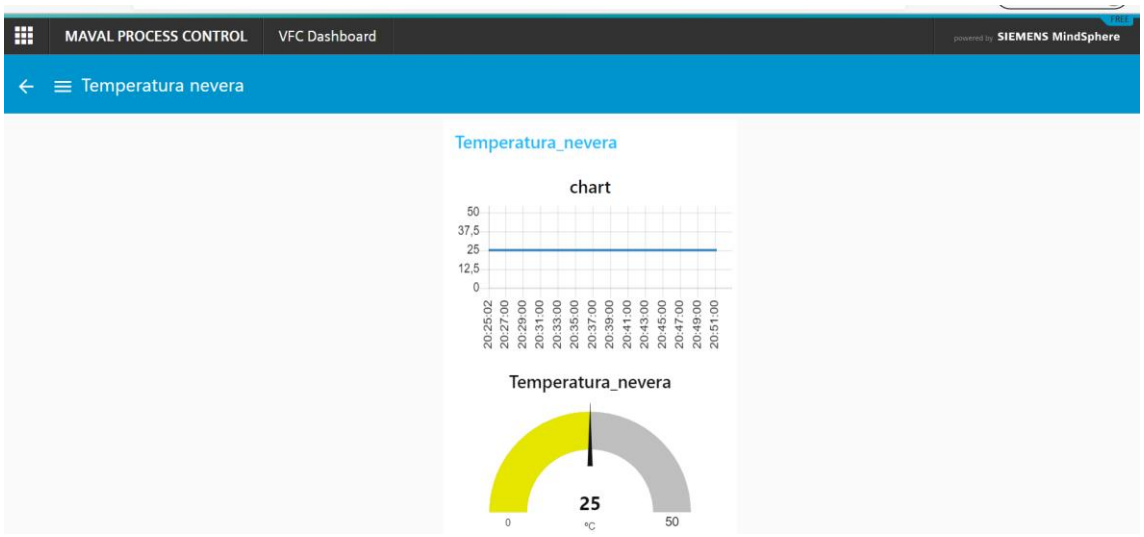






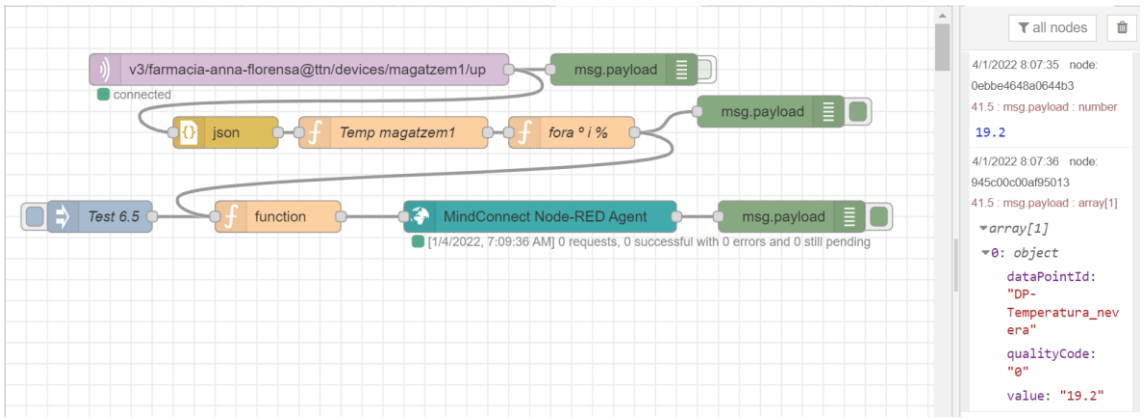
Let’s inject again on both IBM and Mindsphere Node-RED

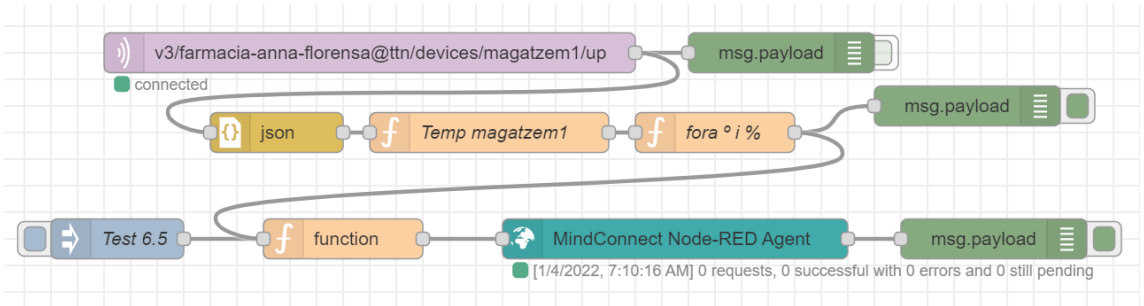




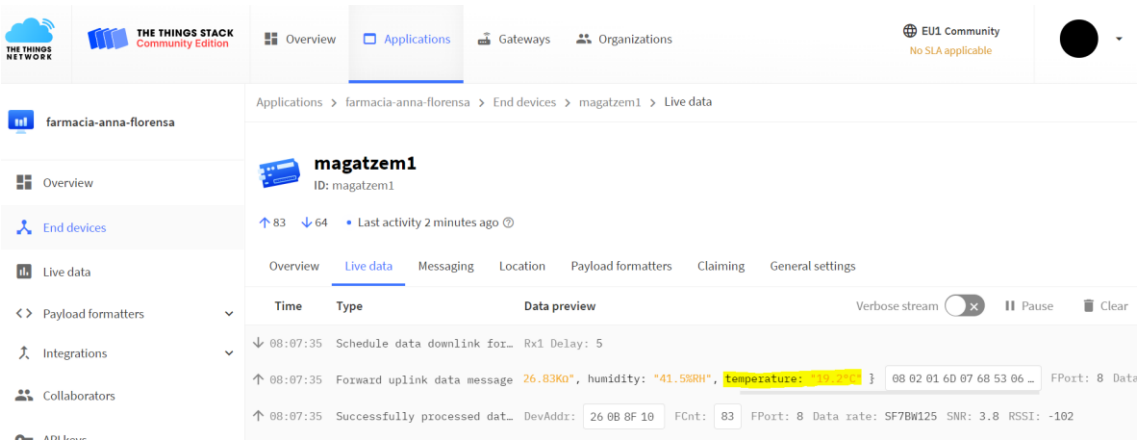
Next step is to inject real LoRaWAN data

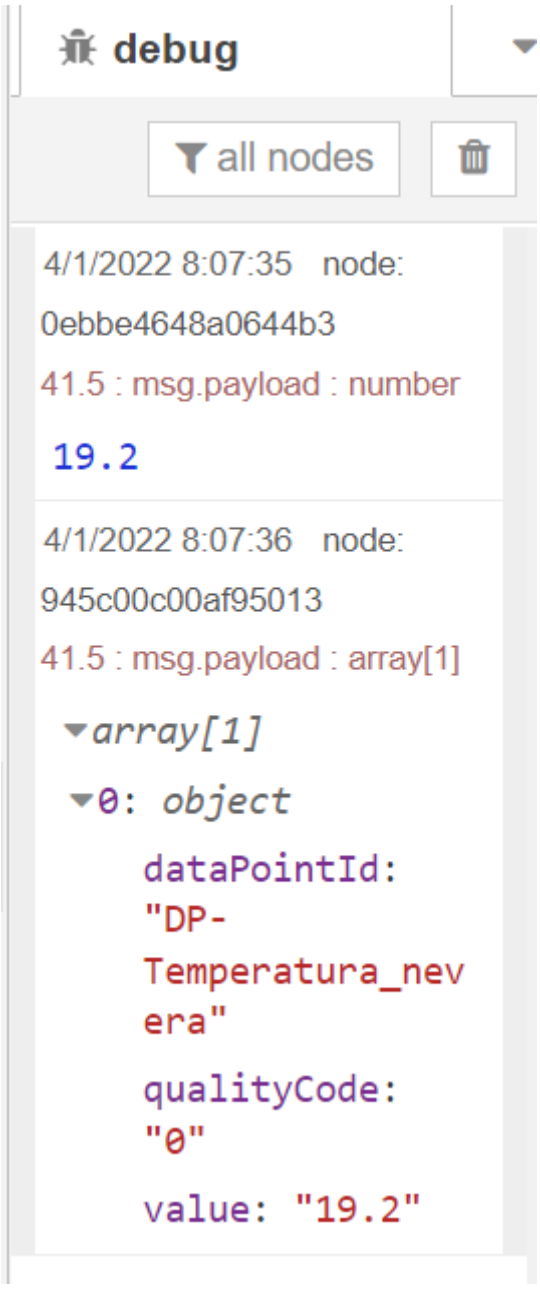
Lert's prepare the MQTTin node on IBM cloud



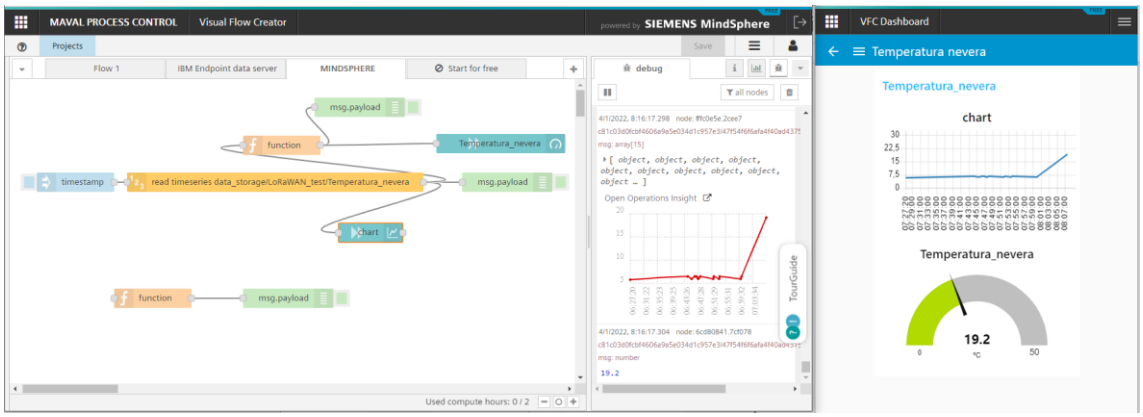


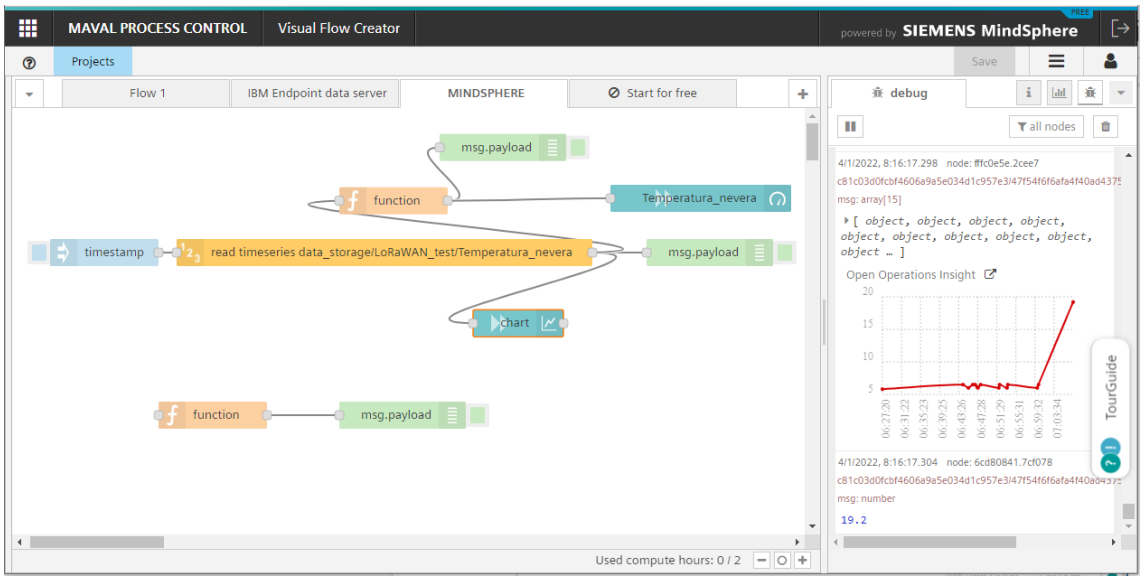
Yes, as soon as the data arrives to TTN console it is sent to Mindsphere

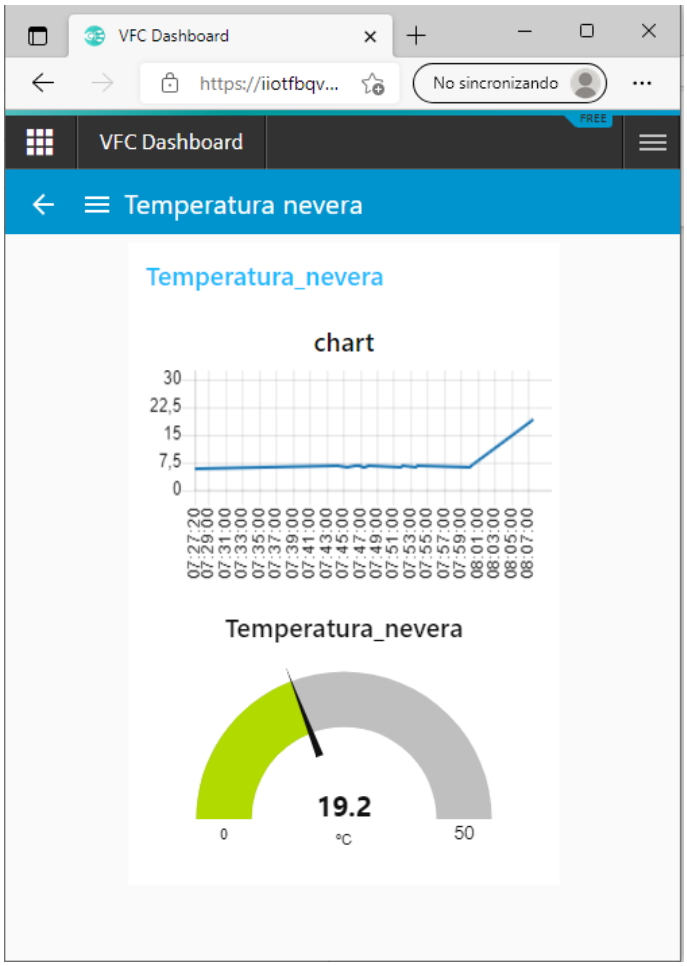

THE THINGS NETWORK
THE THINGS STACK
Community Edition
Overview
Applications
Gateways
Organizations
EU1 Community
No SLA applicable
farmacia-anna-florensa
Applications > farmacia-anna-florensa > End devices > magatzem1 > Live data
Overview
End devices
Live data
Payload formatters
Integrations
Collaborators
magatzem1
ID: magatzem1
83 64 • Last activity 2 minutes ago
Overview
Live data
Messaging
Location
Payload formatters
Claiming
General settings
Time
Type
Data preview
Verbose stream
Pause
Clear
08:07:35 Schedule data downlink for… Rx1 Delay: 5
08:07:35 Forward uplink data message 26.83Kα", humidity: "41.5%RH", temperature: "19.2°C" } 08 02 01 6D 07 68 53 06 … FPort: 8 Data
08:07:35 Successfully processed dat… DevAddr: 26 0B 8F 10 FCnt: 83 FPort: 8 Data rate: SF7BW125 SNR: 3.8 RSSI: -102


debug
all nodes
4/1/2022 8:07:35 node: 0ebbe4648a0644b3
41.5 : msg.payload : number
19.2
4/1/2022 8:07:36 node: 945c00c00af95013
41.5 : msg.payload : array[1]
array[1]
0: object
dataPointId: "DP-Temperatura_nevera"
qualityCode: "0"
value: "19.2"

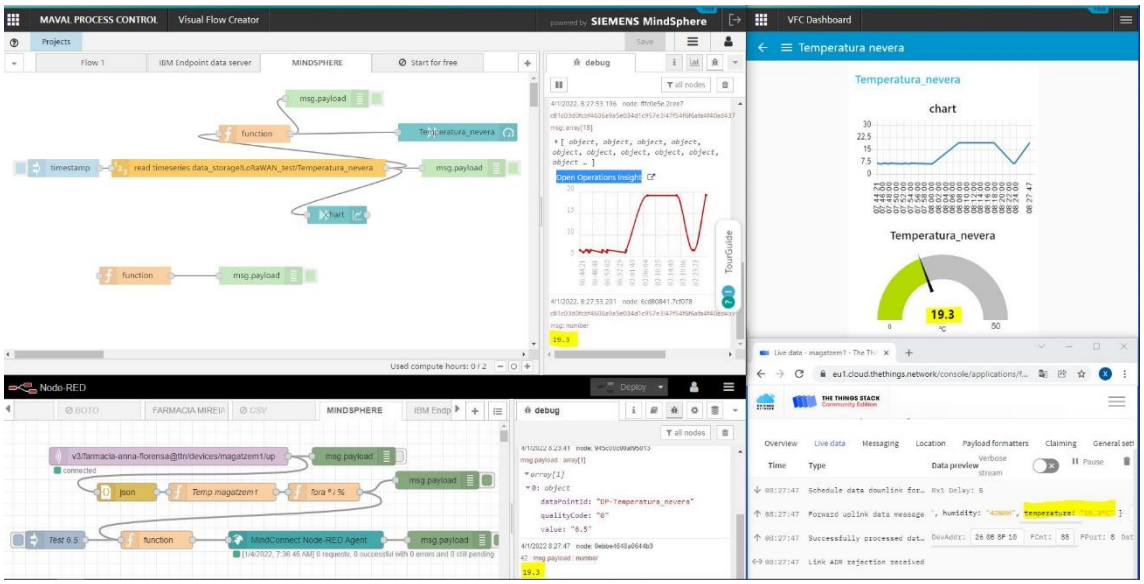
If we take a look on MIndsphere Visual Flow editor, we see the transmitted data







Here is the complete figure



You can find the code here:

https://github.com/xavierflorensa/LoRaWAN-to-SIEMENS-Mindsphere-cloud