

1 Getting start with Node-RED

1.1 Things to know

To install node-RED into a XAP device, you need

- an **empty USB Stick**
- the **Node-RED_package.zip** available on productselection.net

1.2 Procedures

1.2.1 Install Node-RED on XAP device

Follow this procedure to install Node-RED on XAP device.

*Note: **Autorun scripts from external storage** option in **XAP machine_config -> System settings -> Services** must be enabled.*

Step	Action
1	Extract the content of the folder “Node-RED_installer” into the root folder of a USB stick.
2	Plug the USB stick into the XAP device: it buzzes one time to indicate the process is started. <i>Note: If XAP device does not emit any sound this means the USB is not working or the content is not present.</i>
3	The installation procedure usually takes up to three minutes. Once the procedure successfully finishes, the XAP device buzzes three times .
4	Remove the USB sick to automatically reboot the XAP device. <i>Note: Please wait two minutes to get the device up and running</i>
5	After installation, in order to configure node-RED you need to open web browser and digit the following url: <u><a href="http://<XAP IP address>:1880">http://<XAP IP address>:1880</u>

User interface

At the first time, the **Node-RED interface** appears as shown in the picture below:

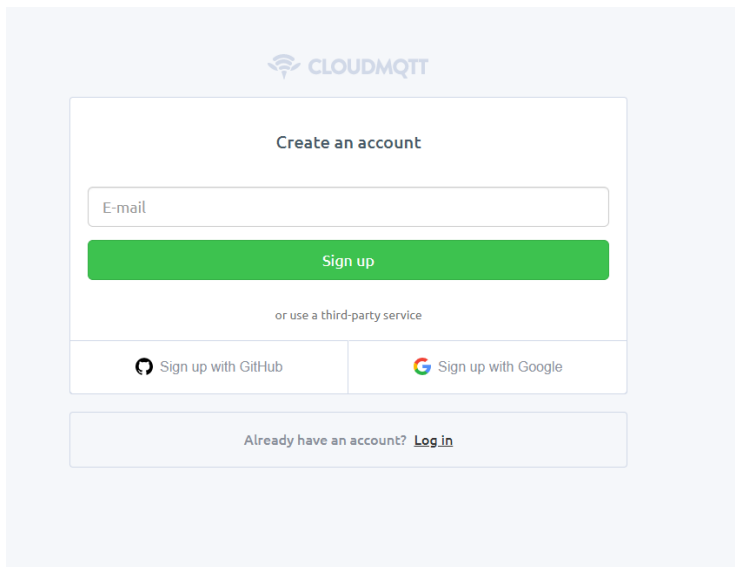


1.3 Procedures

To do a communication test with Node-RED and tags that are running on XAP device, you can use a free MQTT solution. Follow the procedures below.

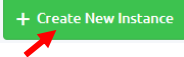
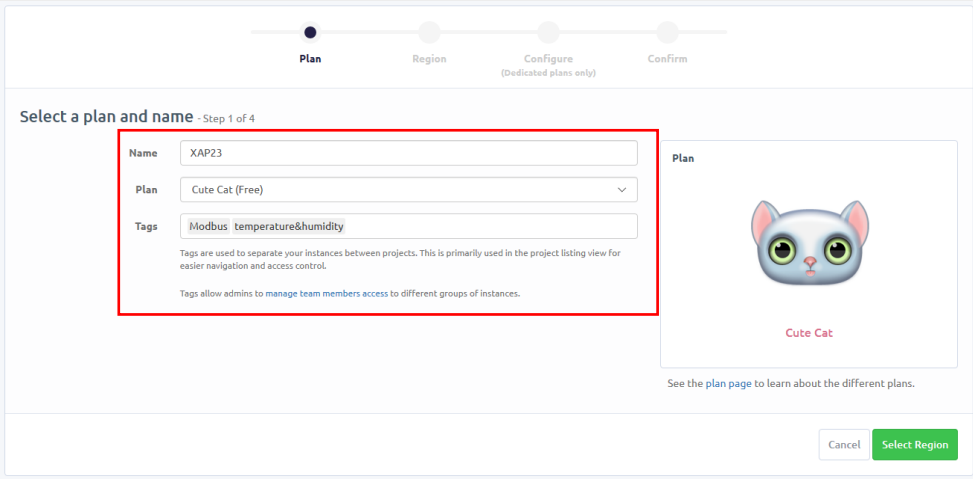
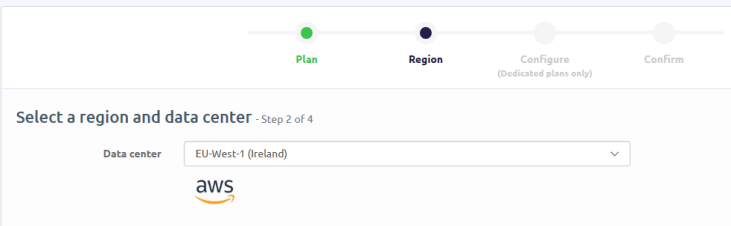
1.3.1 Create a CloudMQTT account

Access to <https://customer.cloudmqtt.com/signup/> and provide your information to create a new Free account.



Follow the indication on screen to finish the registration procedure.

1.3.2 Create a new Instance

Step	Action
1	Access to CloudMQTT account.
2	Click to  button in the top right corner.
3	<p>a) Enter an identification name in Name field.</p> <p>b) Select Cute Cat (Free) value form brop-down menu.</p> <p><i>Note: see https://www.cloudmqtt.com/plans.html for details about available plans</i></p> <p>c) Enter option tags value in Tags field.</p>  <p>Click Select Region button to continue.</p>
4	<p>Select the preferred Data center form the drop-down menu.</p>  <p>Click on Review button to continue.</p>
5	In the next page, check that all the information provided are valid then click on Create instance to finish the procedure.

1.3.3 Import the Node-RED example project

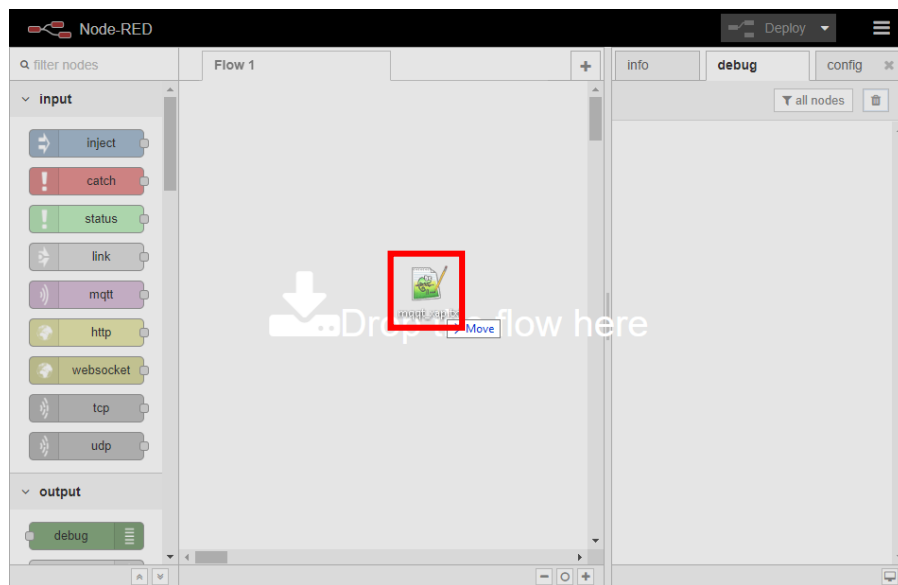
The file *Generic_MQTT_example.txt* is a Node-RED flow available in the “Node-RED package.zip” folder. Follow this procedure to import and set the example within your references:

- ❗ In the Wizard Studio project, the **Security** option (**ProjectView > Security**) must be disabled.
- i You must change all the tags reference and the MQTT server settings in the example file.

Step	Action
1	Open the Node-RED interface in a web browser.

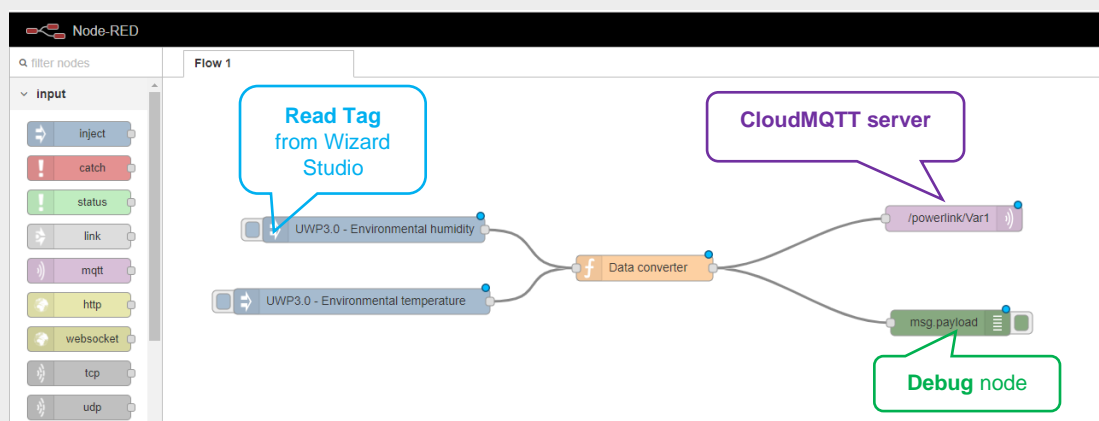
Drag&Drop the *Generic_MQTT_example.txt* file onto Flow area.

2



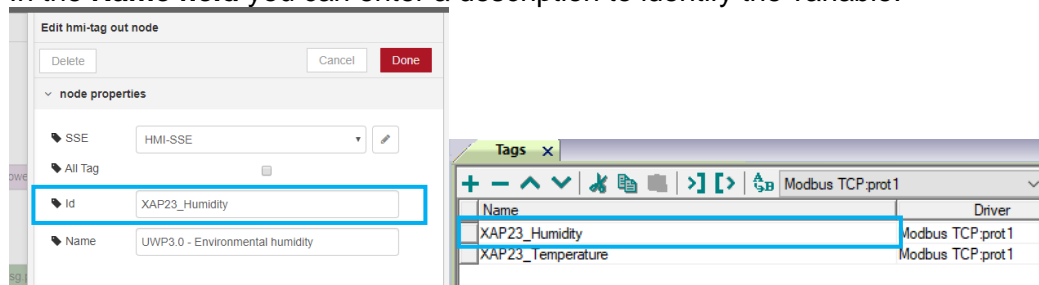
The Node-RED flow related to the imported file is shown:

3



Double click on the **Read Tag node** to enter the settings page:
Set in the **Id** field the same Tag name that is shown in Wizard Studio in **Tags** tab.
In the **Name** field you can enter a description to identify the variable.

4



The 'Edit hmi-tag out node' dialog shows the 'node properties' section with the following fields:

- SSE: HMI-SSE
- All Tag: ☐
- Id: XAP23_Humidity
- Name: UWP3.0 - Environmental humidity

The 'Tags' table shows the following data:

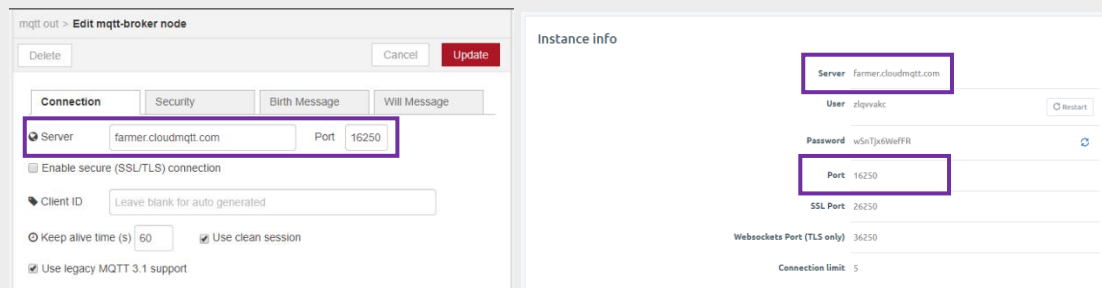
Name	Driver
XAP23_Humidity	Modbus TCP:prot1
XAP23_Temperature	Modbus TCP:prot1

Click on **Done** button to store the changes.

Double click on the **CloudMQTT server node** to enter the settings page.
This node must be set with the CloudMQTT server information. To get these information access to the CloudMQTT and access to the **Instance** settings page:

In the **Server** field enter the value present in the Server field.
In the **Port** field enter the value present in the Port field.

5



The 'Edit mqtt-broker node' dialog shows the 'Connection' tab with the following fields:

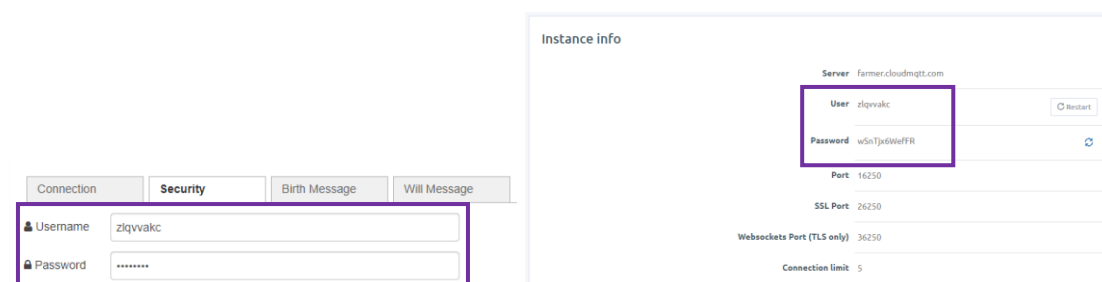
- Server: farmer.cloudmqtt.com
- Port: 16250
- Enable secure (SSL/TLS) connection: ☐
- Client ID: Leave blank for auto generated
- Keep alive time (s): 60
- Use clean session: ☒
- Use legacy MQTT 3.1 support: ☒

The 'Instance info' page shows the following information:

- Server: farmer.cloudmqtt.com
- User: zlgvvakc
- Password: w5nTjx6WefFR
- Port: 16250
- SSL Port: 26250
- Websockets Port (TLS only): 36250
- Connection limit: 5

Click the **Connection** tab to enter:
in the **Server** field the value present in the Server field.
in the **Port** field the value present in the Port field.

6



The 'Edit mqtt-broker node' dialog shows the 'Security' tab with the following fields:

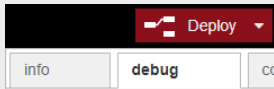
- Username: zlgvvakc
- Password: *****

The 'Instance info' page shows the following information:

- Server: farmer.cloudmqtt.com
- User: zlgvvakc
- Password: w5nTjx6WefFR
- Port: 16250
- SSL Port: 26250
- Websockets Port (TLS only): 36250
- Connection limit: 5

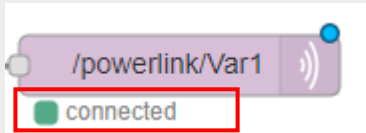
Click on **Update/Done** button to store the changes.

Click to **Deploy** button to compile the project:



7

The status indicator is shown below the CloudMQTT server node



8

Click to **Debug tag** to see the updated value that are sent to MQTT broker (CloudMQTT) in real-time.

Example

In the example shown below the project is running on Node-RED. The **UWP3.0 – Humidity** and **UWP3.0 – Temperature** tags represent two variables read from Wizard Studio via Modbus TCP protocol: their value is sent to CloudMQTT free portal every time their values changes.

