MCS LoRa-2-BMS LTE All-in-One Master Gateway User Guide

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Contents

Introduction

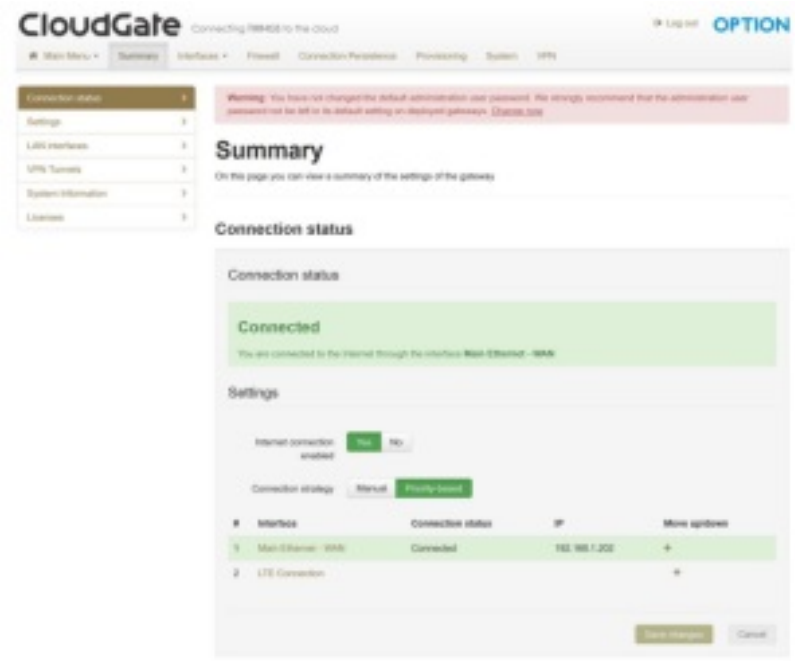
With the MCS LoRa-2-BMS Gateway you have an all-in-one Gateway to connect your building management system with wireless LoRa sensors via BACnet IP. The LoRa-2 BMS Gateway is in fact a combination of various techniques in one gateway

- LoRa Base station with internal LoRaWan server so that you can set up a
  Private LoRa network. So you do not need a public LoRa or external LoRaWan server and therefore you do not have these monthly costs.
- Payload conversion of the LoRa sensors is done by the gateway; no external payload conversion server is therefore needed. This also avoids costs.
- Bacnet IP protocol and other protocols (such as Modbus, MBus, P1) are integrated and used to communicate with your building management system.
- MQTT or other protocols communicate with your application server.
- Optionally, we can provide a Secure VPN so you can remote access the Gateway

Step 1: Connecting LoRa-2-BMS to the internet

This is the first step in setting up your LoRa-2-BMS. Please follow the instructions below carefully

1. Connect the LoRa-2-BMS to your computer via ethernet cable. Make sure to use the LAN ethernet port to connect the LoRa-2-BMS to your computer.
2. Connect the LoRa-2-BMS to the internet using an ethernet cable. Make sure to use the WAN ethernet port on the LoRa-2-BMS.
   In case you want to connect the LoRa-2-BMS to the internet using the Mobile network (i.e. 4G/LTE,…), you can skip this step
3. Power on the LoRa-2-BMS by plugging in the power supply
   Please note! It takes about 3minutes to perform a cold boot!
4. Open your web browser and browse to 192.168.1.1.
5. Log in using “Admin123!” as default username and “admin” as default password.
   It is highly recommended to change the username and password! This can be done in the “System” tab in the “Username & Password” section.
6. Next, click on the “Summary” page to check if the LoRa-2-BMS is connected to the internet. In the example below, the LoRa-2-BMS is connected via the WAN Ethernet connection.



7. In case you are connecting the LoRa-2-BMS to the internet using the Mobile Network, please proceed to the

“Interfaces” tab and click on “LTE Connection”.

8. Enter the APN of your Mobile Network Operator in the designated field, together with the preferred authentication method.

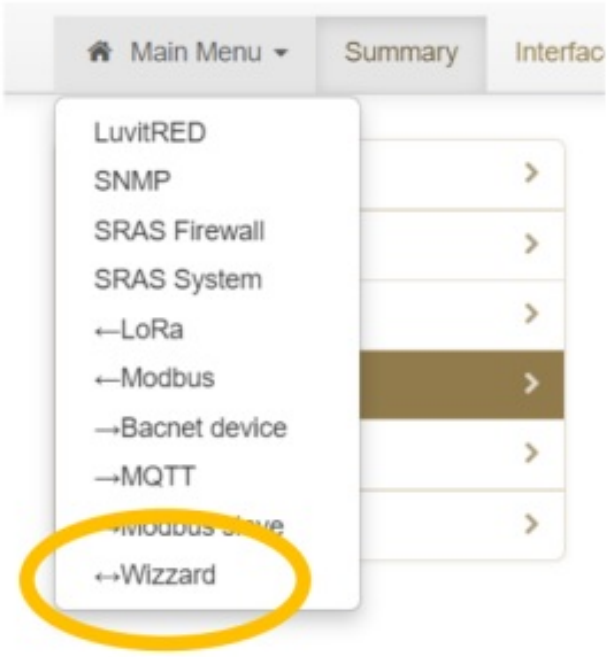
9. Make sure to press the “Save changes” button after completion.
10. Click on the “Summary” page to check if the LoRa-2-BMS is connected to the internet. In the example below, the LoRa-2-BMS is connected via the LTE connection.

Please note! If your computer is connected to the LAN port of the LoRa-2-BMS, it will get internet access through this interface. In case the LoRa-2-BMS is connected over the Mobile Network (4G/LTE) any data your computer generates will go over this Mobile connection!

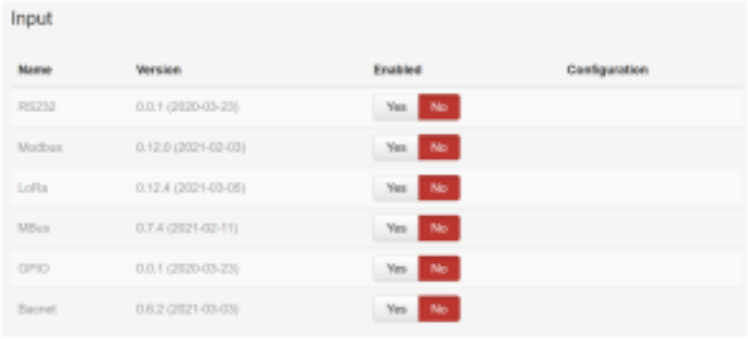
Step 2: Configuring the Sensor Input

This is the second step in setting up your LoRa-2-BMS.

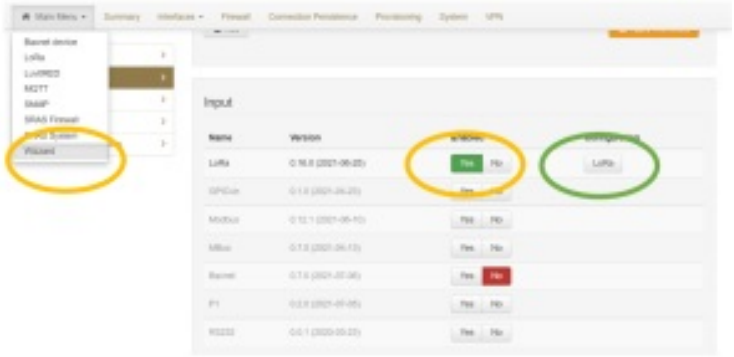
The Wizzard application is configured by MCS, and can be found under ”Main menu”.



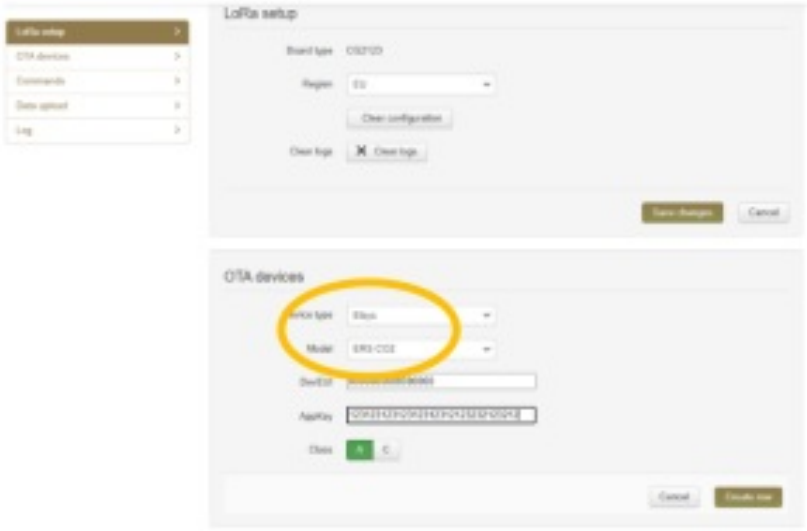
The LoRa-2-BMS Wizzard can be used to connect sensors and devices of different interfaces and/or protocols.
The list below gives an overview of the currently supported Input interfaces and/or protocols:



For the first step we define LoRa as Input in the Wizzard application:

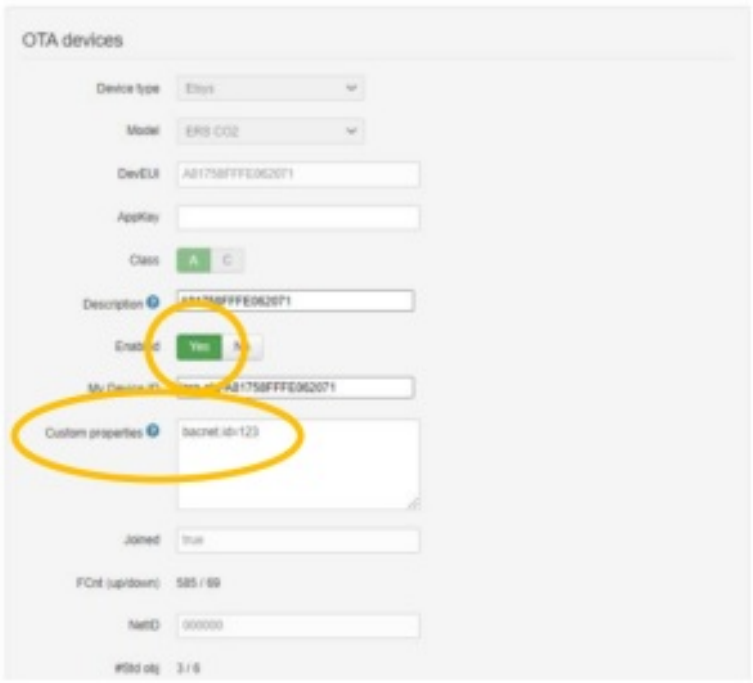


When we click enable “YES” a LoRa configuration button appears.
When adding LoRa Sensors, we can choose from an extensive library of embedded payload decoders.

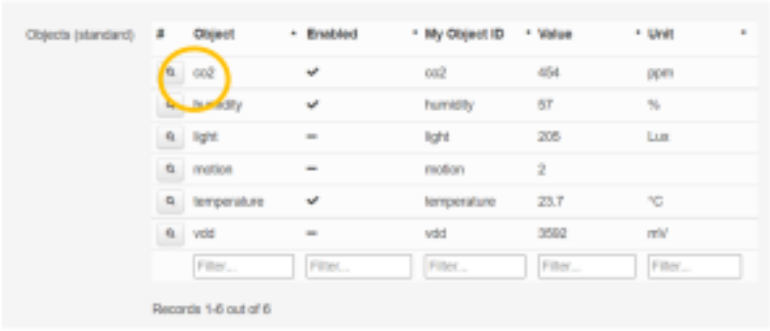


Now the device is registered in our OTA devices list.
After the join we can see the details of the device by clicking on the search icon.

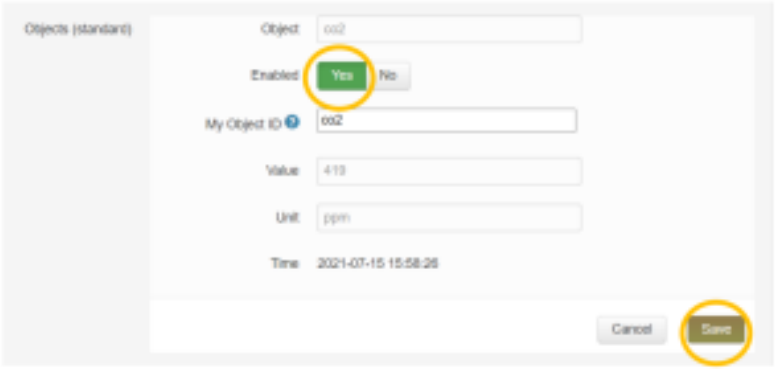
It is important that enabled is set to YES, and that you fill in Custom properties, e.g. with bacnet.id=123



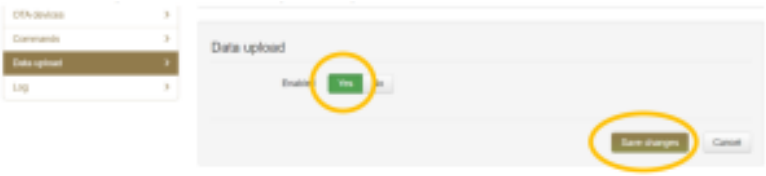
By scrolling down we come across the available objects that come from the payload of the LoRa device.



By clicking on the object (search icon) we can enable the object as output object. After clicking YES you can save the settings.



The last step is to enable the Data upload and press save.



For each input interface/protocol, there is a guide that can be followed. Click on each of the links below to go to the corresponding tutorial

Input RS-232: **https://support.option.com/support/solutions/articles/36000275059**

Input Modbus: **https://support.option.com/support/solutions/articles/36000275073**

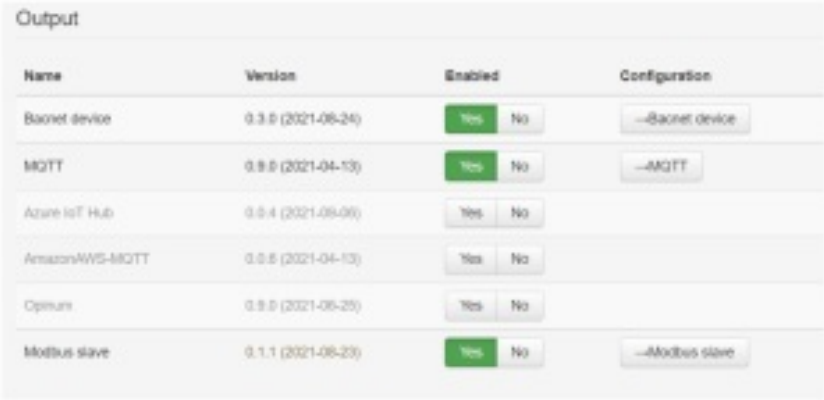
Input LoRa: **https://support.option.com/support/solutions/articles/36000274542**

Input Mbus: **https://support.option.com/support/solutions/articles/36000275065**

Input GPIO: **https://support.option.com/support/solutions/articles/36000275061**

Step 3: Configuring the Cloud Output

The LoRa-2-BMS Wizzard can be used to connect the CloudGate to the major Cloud Platform providers through a range of protocols. The list below gives an overview of the currently supported Output protocols



For each cloud output protocol, there is a guide that can be followed. Click on each of the links below to go to the corresponding tutorial.

Output MQTT: **https://support.option.com/support/solutions/articles/36000274543**

Output Azure: **https://support.option.com/support/solutions/articles/36000274545**

Output AWS: **https://support.option.com/support/solutions/articles/36000286790**

Step 4: Configuring Output to the BMS

BACnet

For the first step we define BACnet as Output in the Wizzard application:

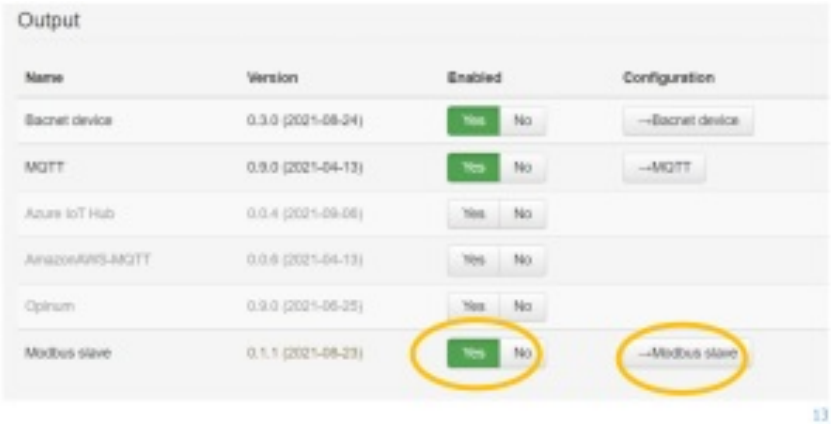
When we click on enable “YES” a BACnet device configuration button appears. Clicking on this button takes you to the BACnet settings page.

Then on this page enable the settings and click save. Don’t forget to set, or discover the Device ID into your BMS environment.

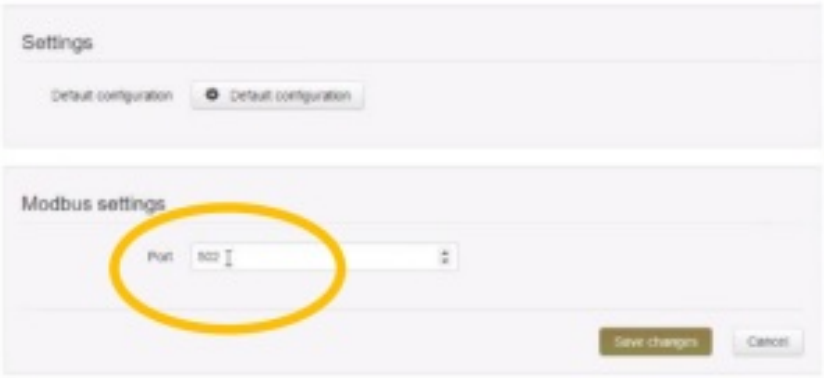
When we scroll down we get to the BACnet objects. Here we see the predefined LoRa objects converted to BACnet objects. The objects are now ready to be called by the BMS

Modbus slave

For the first step we define Modbus as Output in the Wizzard application:



Second step is to set the port on 502 for modbus slave communication.



After doing this last step, we can now see the registers appearing in our objects.

The registers are ‘’03 registers’’ (read holding registers)16 bits.

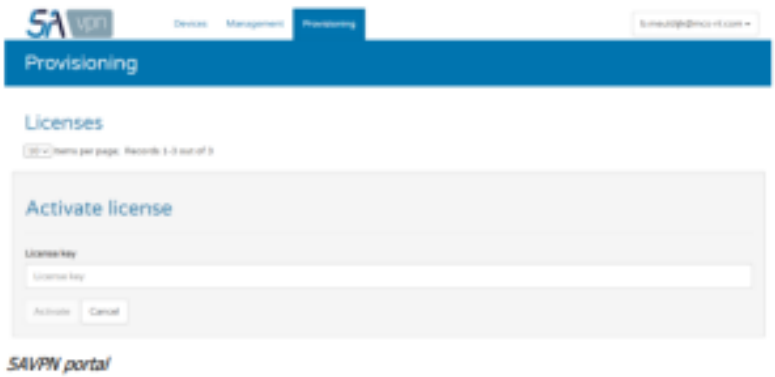
Secure Remote Acces Service (SRAS)

Step 1: Configure your CloudGate Gateway (Optional services)

1. Register your CloudGate Gateway to the 5AVPN server via your MCS Point of Contact or you can sen dan E-mail to verkoop@mcs-nl.com. You get an invitation to create an account on the 5AVPN portal.
2. Ensure your CloudGate Gateway has a recent firmware version installed. (available for download on CloudGate Universe (www.cloudgateuniverse.com/)
3. Ensure your CloudGate Gateway has ‘SRAS – Secure Remote Access Service’ application installed. The SRAS comes manditory (www.cloudgateuniverse.com/)
4. Enter the personal device identifier (obtained via verkoop@mcs-nl.com) on the CloudGate Gateway webGUI

Go to the WebGUI -> plugin -> SRAS system and enter the device identifier.

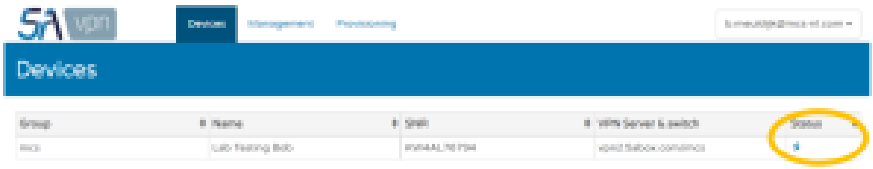
LoRa-2-BMS WebGUI



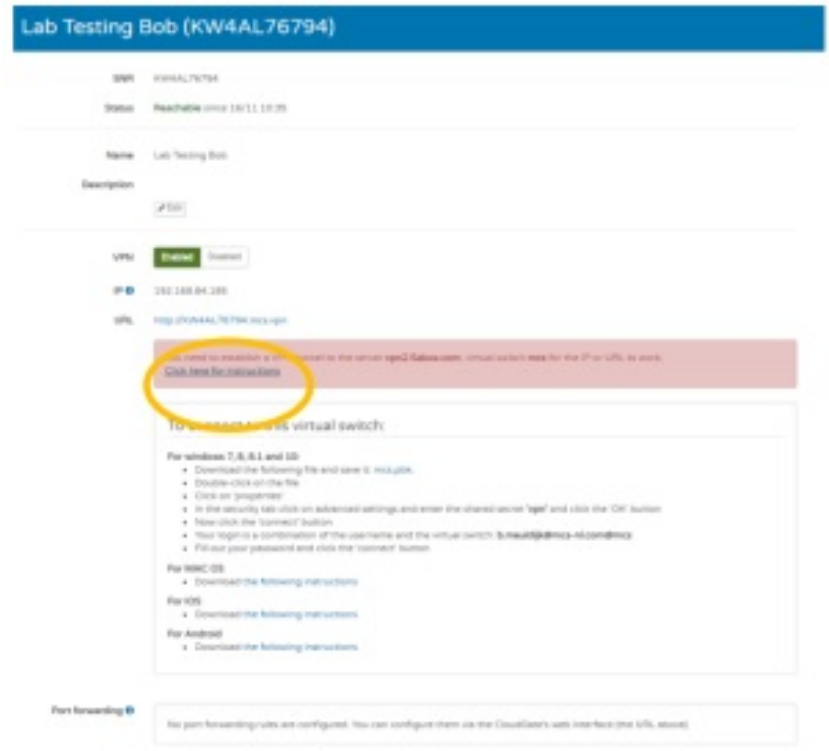
5AVPN portal

Step 2: Installing your client side.

After we have entered the license key in the LoRa-2-BMS gateway, and also in the provisioning tab of the 5AVPN platform, we see that the LoRa-2-BMS gateway is online.

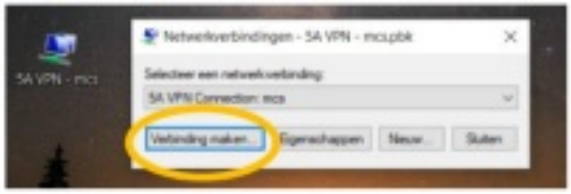


The LoRa-2-BMS gateway is now registered into a virtual switch.
To make a connection to this virtual switch, you can click on the ''click here for instructions'' button on the device page. Here you must download the user client file and follow the instruction.



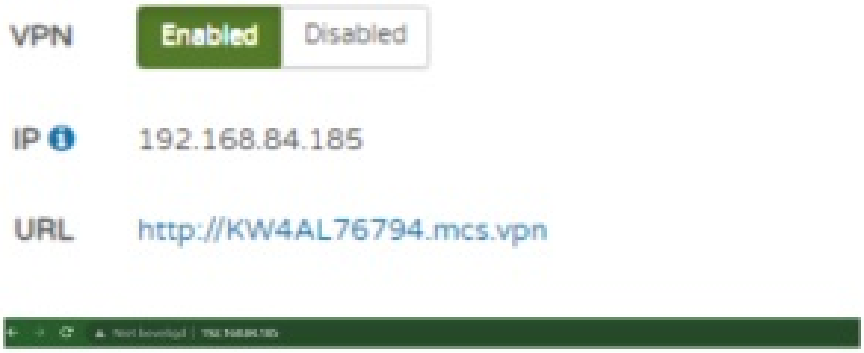
Step 3: Connecting tot he LoRa-2-BMS gateway

After installing the client on your computer we can now make the connection to the virtual switch. By starting the client and login in with your credentials we have built the connection to the virtual switch.



When we go back to the 5AVPN portal we can now see that we are connected to the virtual switch.

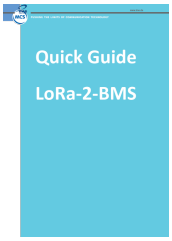
By clicking on the URL, or going to the IP address we come into the login screen of the LoRa-2-BMS gateway and have made our connection.



Do you need further assistance? Please contact **helpdesk@mcs-nl.com** or go to:

https://support.option.com/support/solutions/articles/36000266198-cloudwizzard-getting-startedguide

Documents / Resources

	MCS LoRa-2-BMS LTE All-in-One Master Gateway [pdf] User Guide LoRa-2-BMS LTE All-in-One Master Gateway, LoRa-2-BMS, LTE All-in-One Master Gateway