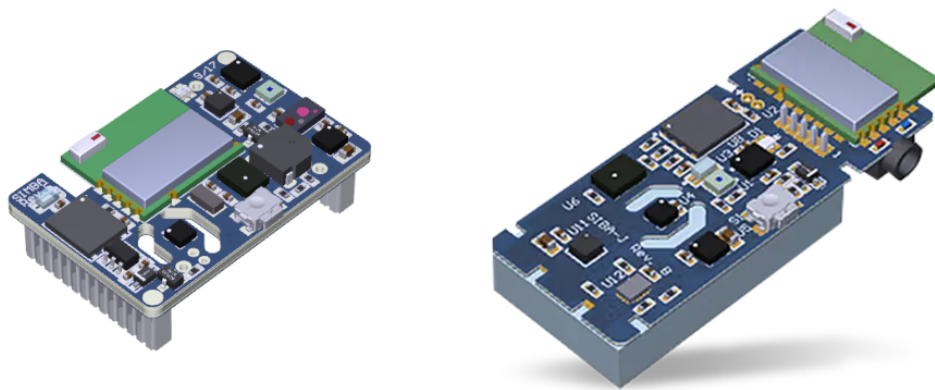


SensiBLE 1.0 & 2.1

Connect to Thingsboard



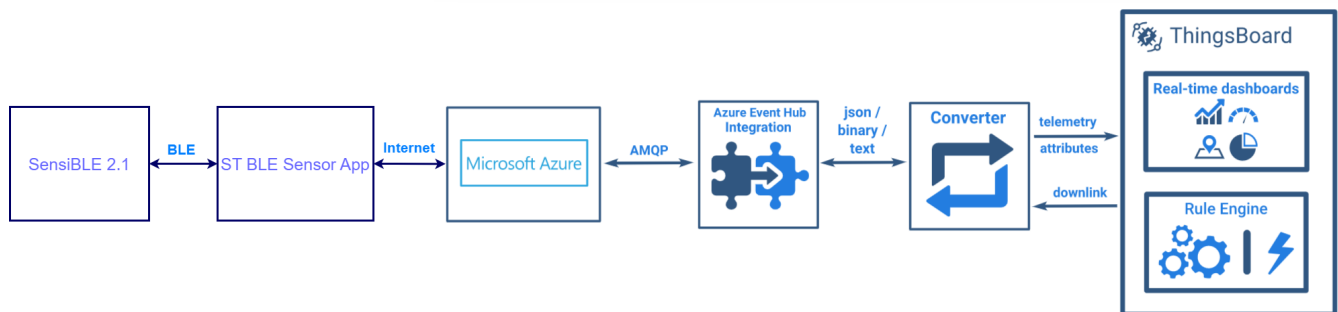
1. Overview	3
2. Setup Azure IoT	4
2.1 Create IoT Hub	4
2.2 Create Device	8
2.3 Connect the SensiBLE Device	10
3. Setup ThingsBoard Cloud	16
3.1 Import Data Converter	16
3.2. Create Integration	18
3.3 Device	22
3.4 Dashboard	23
3.4.1 Overview	23
3.4.2 Import Dashboard	23

1. Overview

To connect and transfer data with SensiBLE 1.0 or SensiBLE 2.1 to the ThingsBoard, need:

- Install the **ST BLE Sensor App** on your phone, link: [Android](#), [IOS](#)
- Register in Microsoft Azure, link: [Azure Free](#)
- Register in ThingsBoard, link: [ThingsBoard](#)

Note: In ThingsBoard need to use **Professional Edition**, his edition is paid, and it costs \$10/month, but upon registration a trial (free) period of 30 days is given.

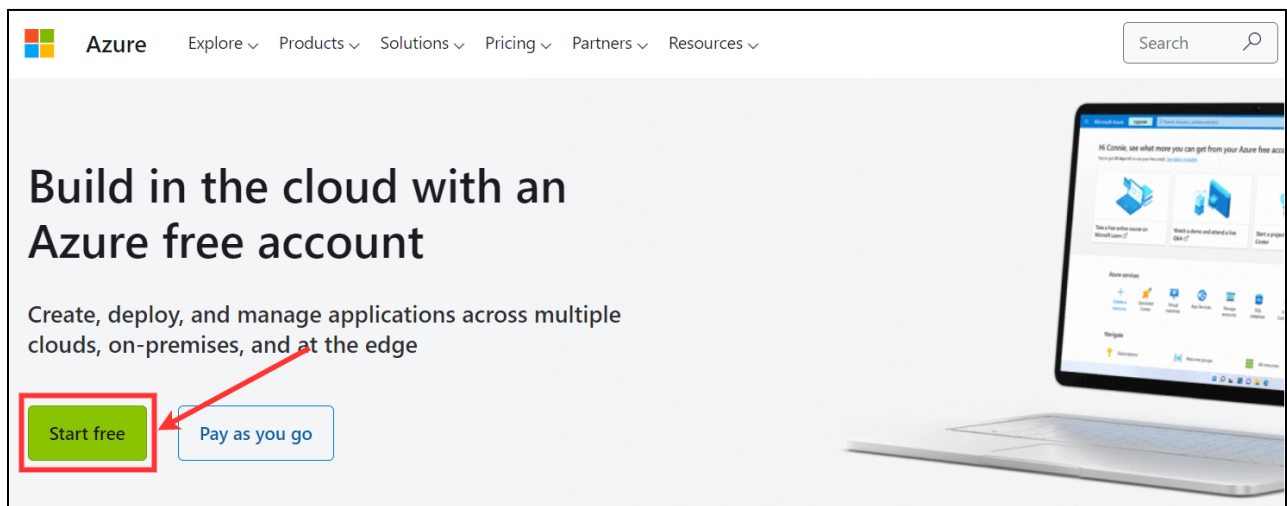


2. Setup Azure IoT

2.1 Create IoT Hub

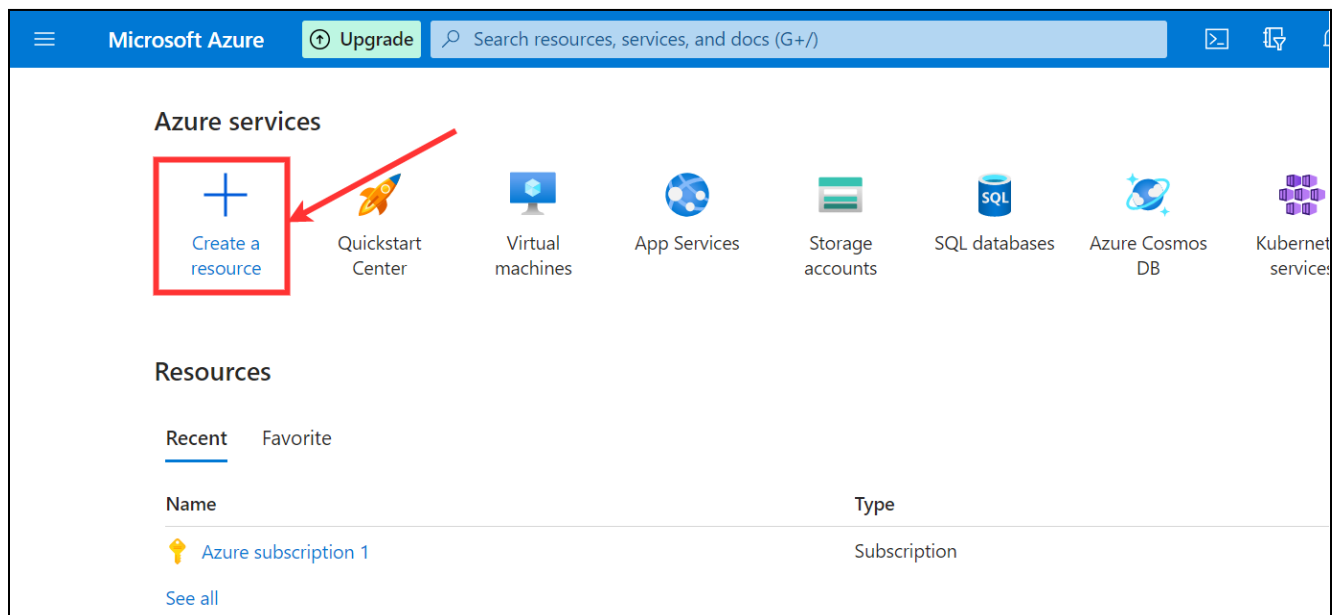
1. Go to site [Azure Free](#) and click **Start Free** to register on the Azure.

Figure 1. Azure Start free



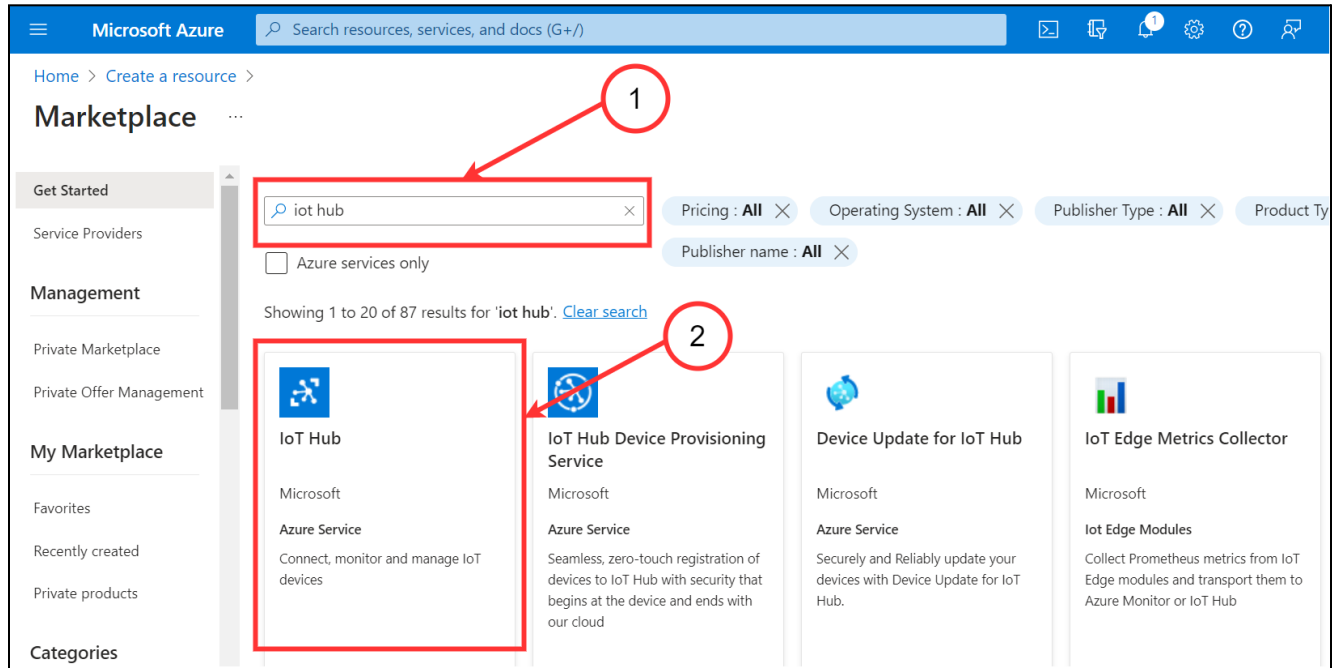
2. After registering on the site, we need to create a IoT Hub, for this click to **Create a resource**.

Figure 2. Create a resource



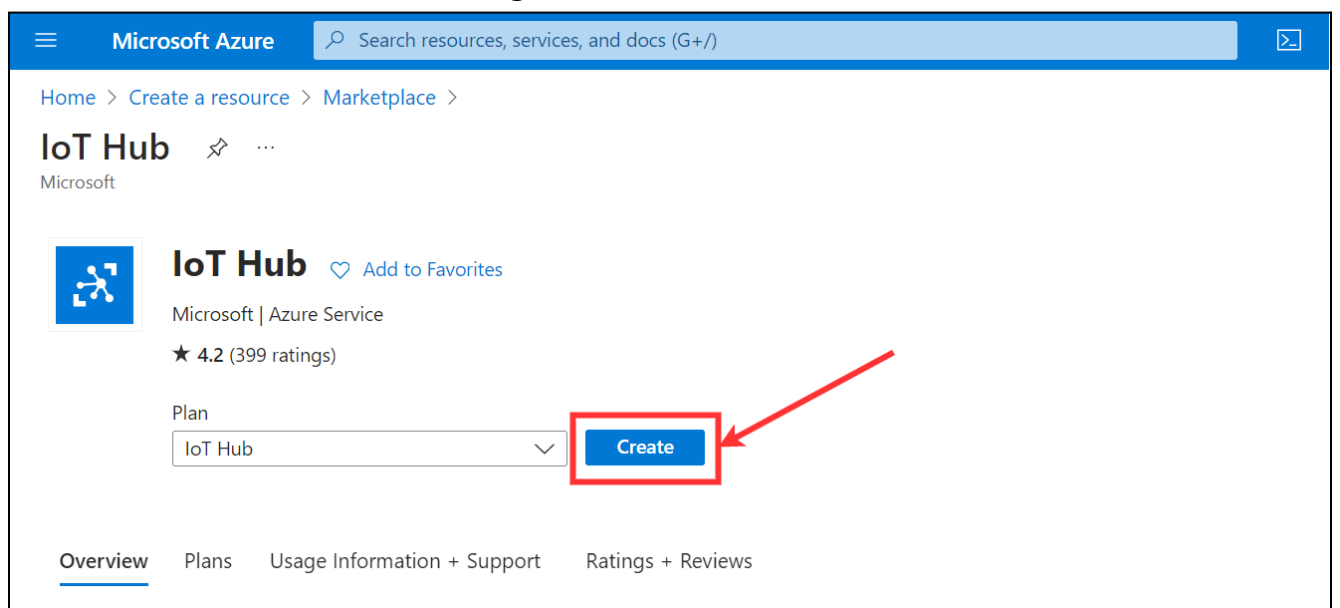
3. In the search bar, enter the name of the iot hub (step 1) and in the search results select IoT Hub (step 2).

Figure 3. Select IoT Hub



4. Click to Create IoT Hub.

Figure 4. Create IoT Hub



5. Click to **Create new** Resource group (step 1), enter Name **Azure-group** (step 2) and click **OK** (step 3).

Figure 5. Create a Resource group

The screenshot shows the Microsoft Azure portal interface for creating a new IoT hub. The 'Project details' section is active, showing a form for creating a new resource group. A modal dialog box is open, titled 'Create new', which contains the following elements:

- Step 1:** A dropdown menu for 'Subscription' with 'Azure subscription 1' selected.
- Step 2:** A text input field for 'Name' with 'Azure-group' entered and a green checkmark indicating it is valid.
- Step 3:** A blue 'OK' button.

Red arrows and numbers 1, 2, and 3 highlight these steps. The background form includes fields for 'IoT hub name', 'Region', and 'Tier', and buttons for 'Review + create', '< Previous', and 'Next: Networking >'.

6. Enter **SensiBLE IoT hub name** (step 1), choose **Free Tier** (step 2) and click to **Review + create** (step 3).

Note: In the **Free Tier**, 8000 messages per day from the SensiBLE 2.1 are available, each measuring of one sensor is one message. If you need more messages per day, then select the required number of messages by changing the **Tier**.

Figure 6. Review IoT hub

The screenshot shows the 'Review + create' step of the IoT Hub creation process in the Microsoft Azure portal. The configuration details are as follows:

Field	Value
Subscription *	Azure subscription 1
Resource group *	(New) Azure-group
IoT hub name *	SensiBLE
Region *	East US
Tier *	Free
Daily message limit *	8,000 (\$0/month)

At the bottom, the 'Review + create' button is highlighted with a red box and an arrow labeled '3'. Navigation buttons '< Previous' and 'Next: Networking >' are also visible.

7. Click to **Create** IoT hub.

Figure 7. Create IoT

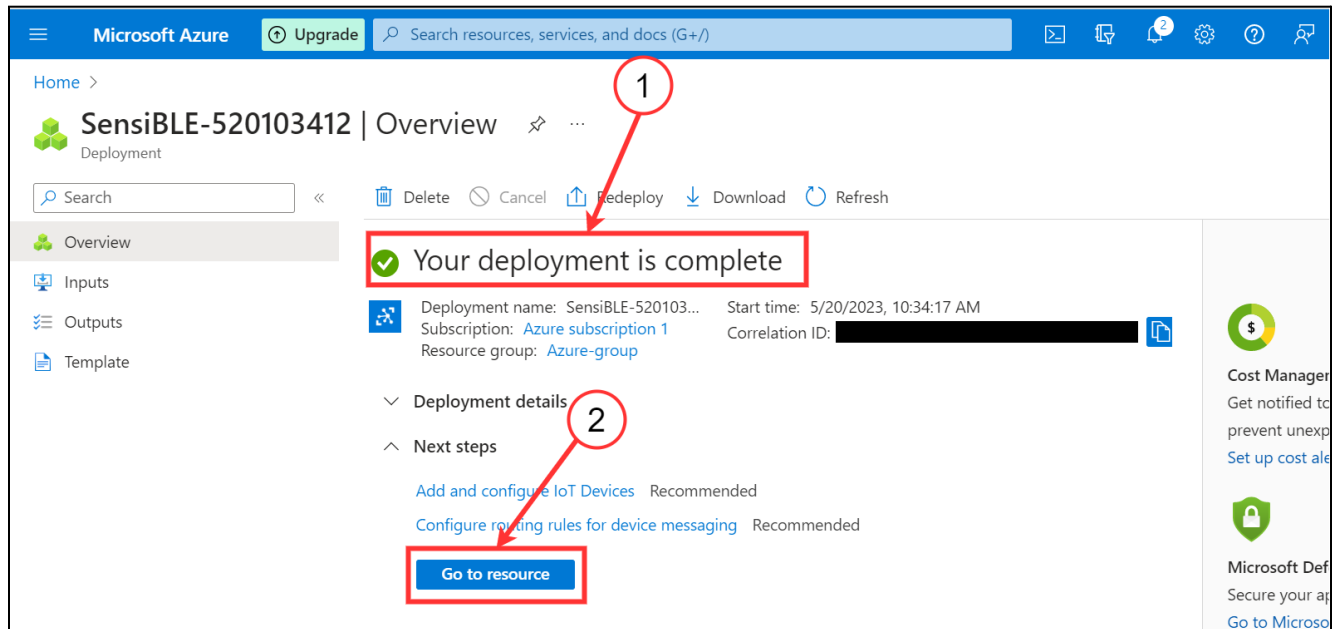
The screenshot shows the 'Create' step of the IoT Hub creation process. It displays a summary of the configuration and pricing details:

Category	Details
IoT hub	\$0 USD per month Change basics
Add-ons total	Change add-ons
Basics	
Subscription	Azure subscription 1
Resource group	Azure-group
IoT hub name	SensiBLE
Region	East US
Disaster recovery enabled	Yes

At the bottom, the 'Create' button is highlighted with a red box and an arrow. Navigation buttons '< Previous: Tags' and 'Next >' are also visible, along with a link to 'Automation options'.

8. We wait until the hub is complete when the deployment status changes to **complete** (step 1), then our hub has successfully been created. After clicking to **Go to the resource** (step 2).

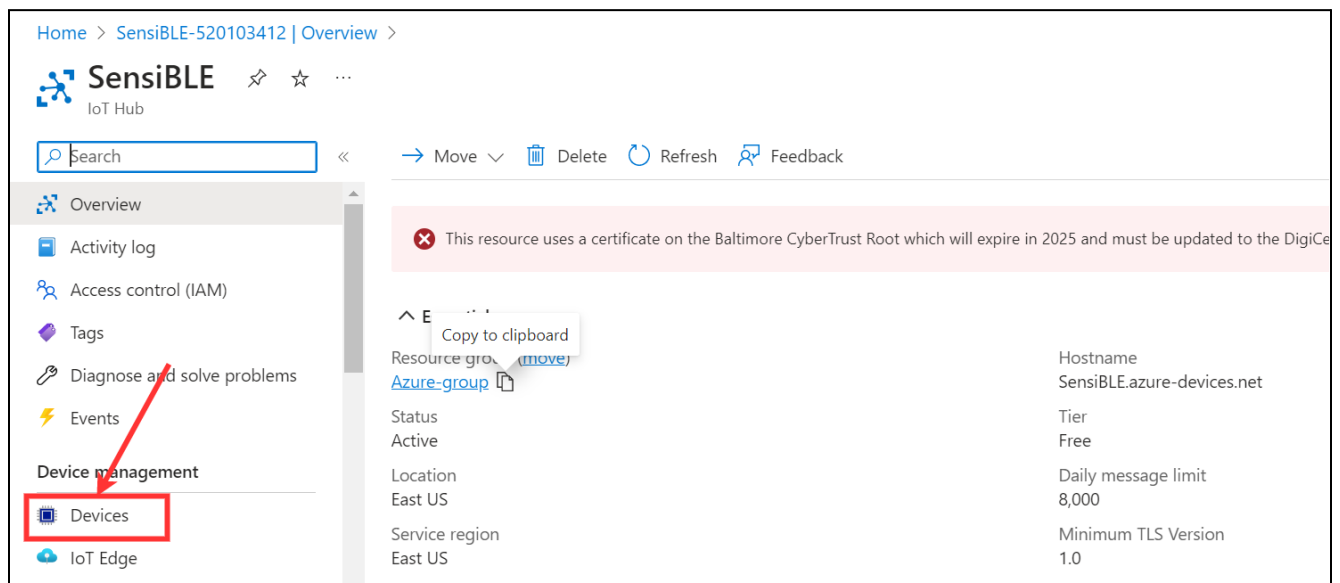
Figure 8. IoT Hub complete



2.2 Create Device

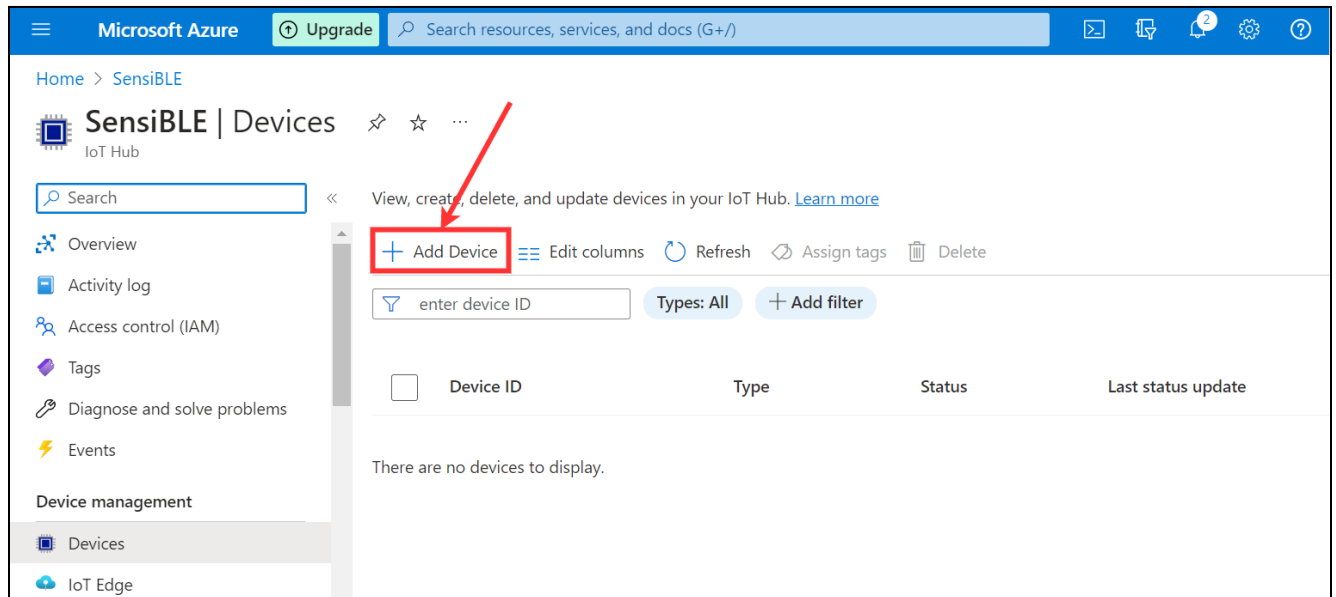
1. Go to Devices.

Figure 9. Go to Devices



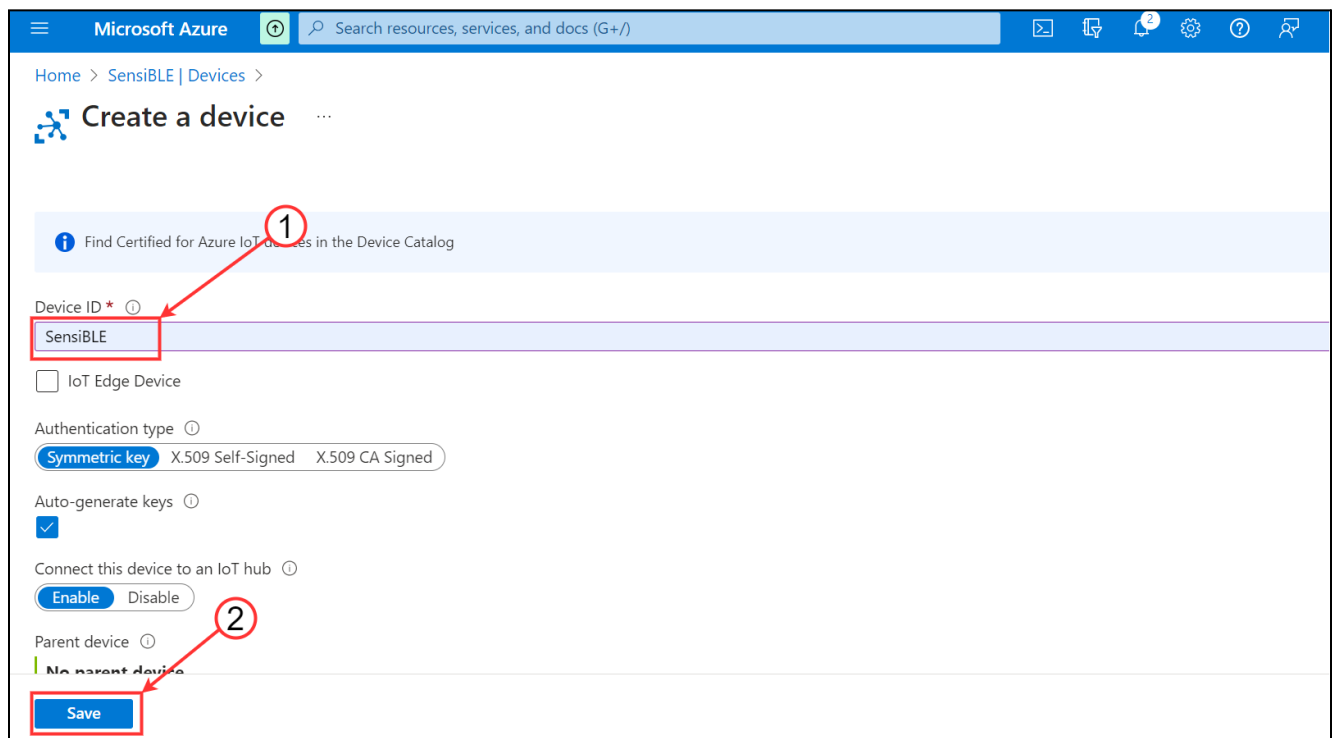
2. Click to **Add Device**.

Figure 10. Add Device



3. In the **Device ID** field, enter the name **SensiBLE** (step 1) and then click on **Save** (step 2).

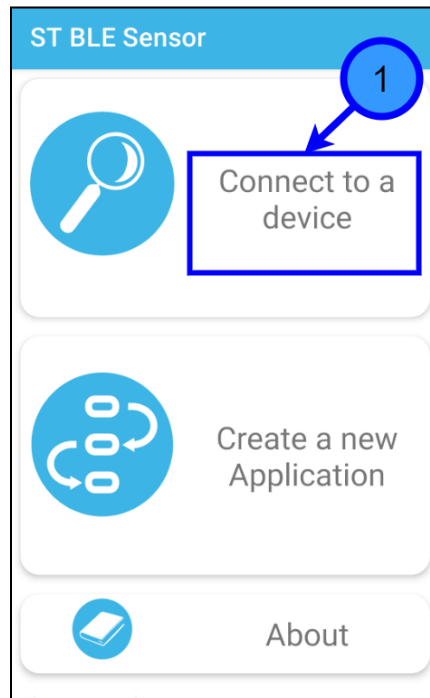
Figure 11. Save a device



2.3 Connect the SensiBLE Device

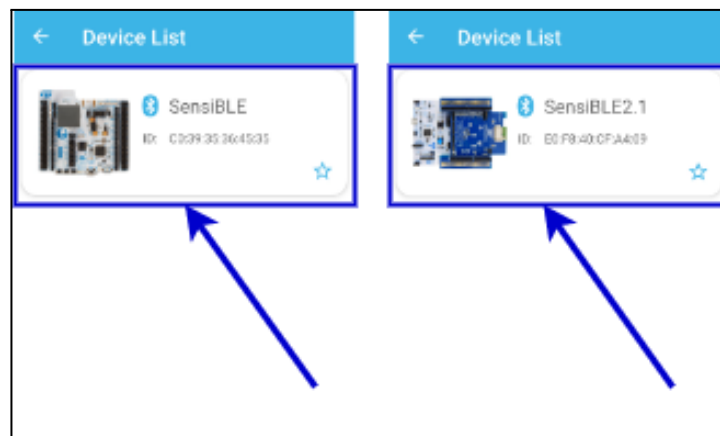
1. Install the **ST BLE Sensor App** on your phone, link: [Android](#), [IOS](#).
2. After open **ST BLE Sensor App**, click **Connect to a device** (step 1).

Figure 12. ST BLE Sensor



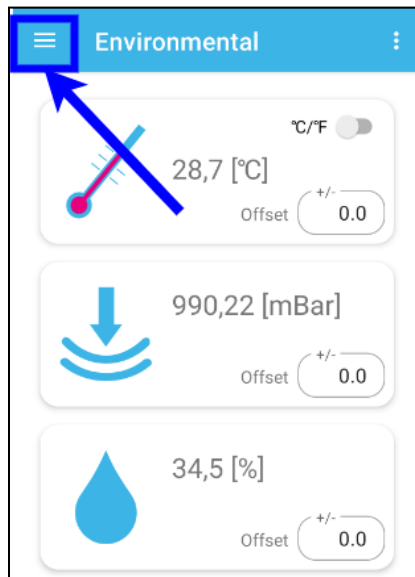
3. Turn on **SensiBLE 1.0** or **SensiBLE 2.1** and then select the found **SensiBLE** or **SensiBLE 2.1**.

Figure 13. Choose SensiBLE 1.0 or SensiBLE 2.1



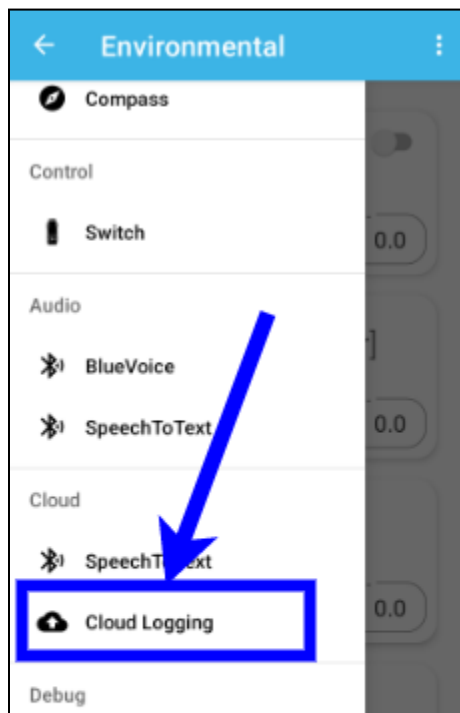
4. After connecting to **SensiBLE** click to **Menu**.

Figure 14. Open Menu



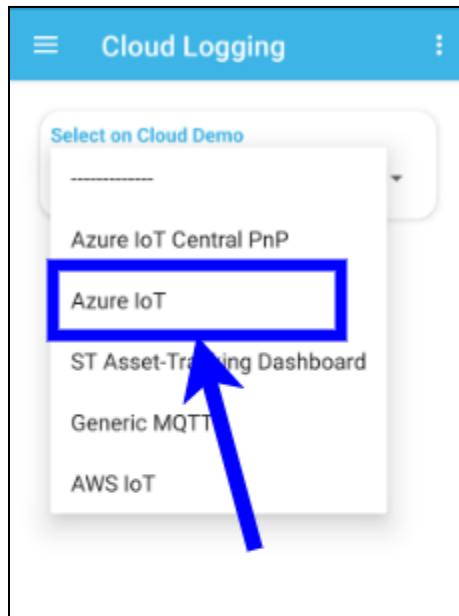
5. Choose **Cloud Logging**.

Figure 15. Choose Cloud Logging



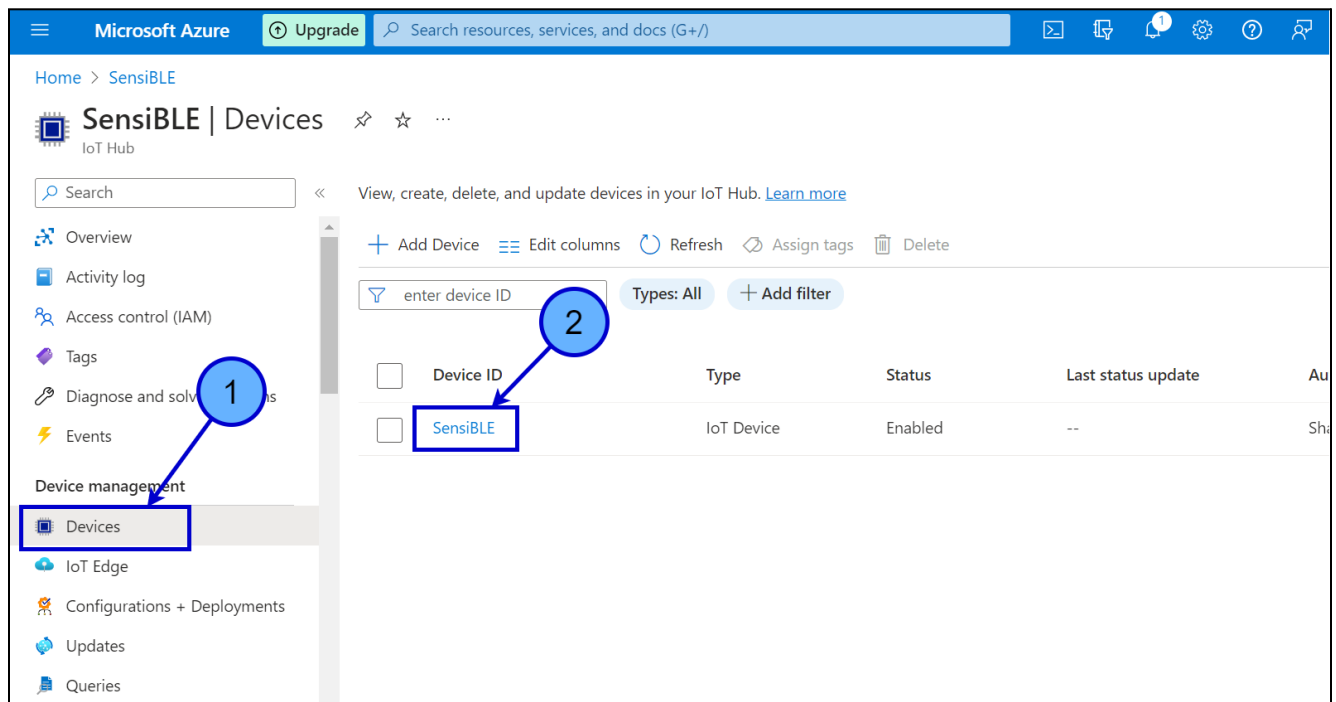
6. Select **Azure IoT** Cloud.

Figure 16. Select Azure IoT



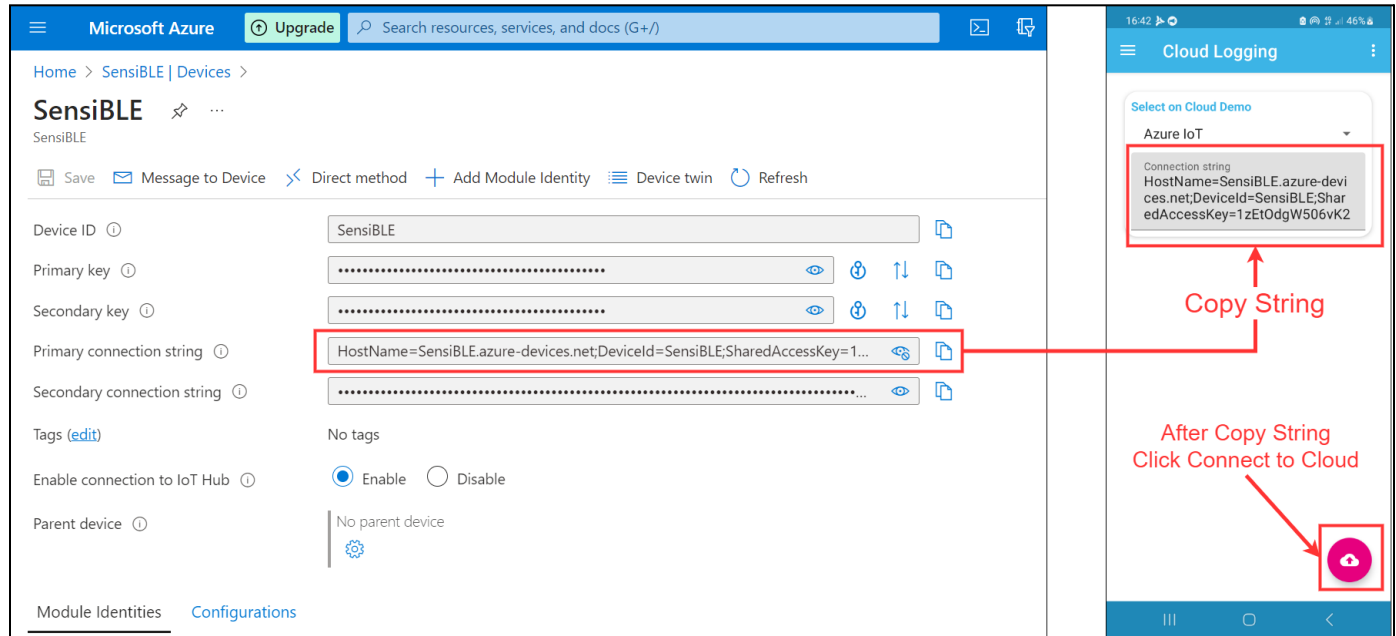
7. For get **Connection String** go to **Devices** (step 1), next go to **SensiBLE** (step2) in Azure IoT Hub.

Figure 17. Select Devices



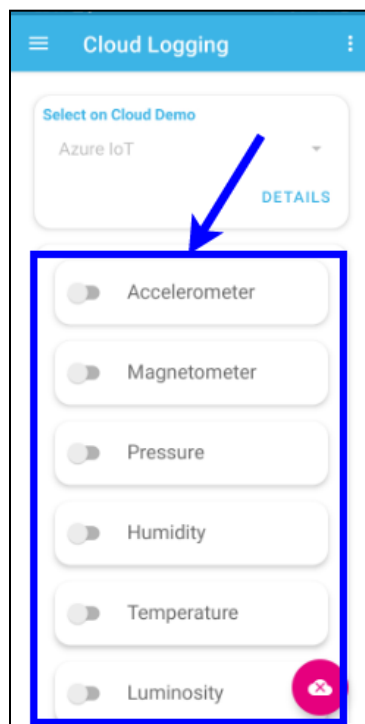
8. Copy the **Primary connection string** to **ST BLE Sensor App** in **Connection String** and after click **Connect to Cloud**.

Figure 18. Copy Connection string



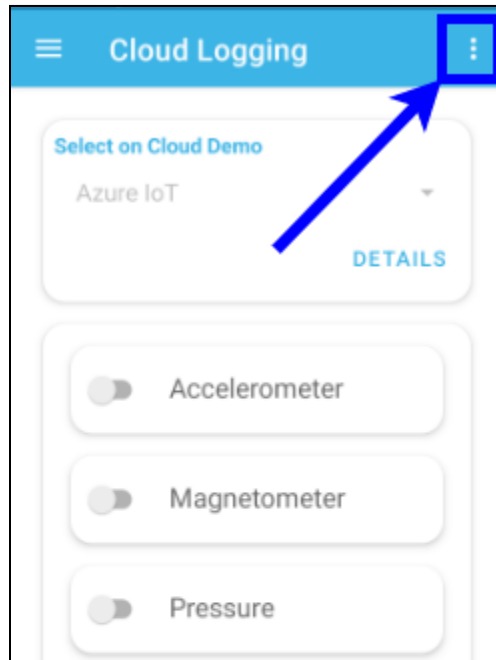
9. After successfully connecting to the Cloud, a list will appear where can choose what data to send to the Cloud.

Figure 19. Data list



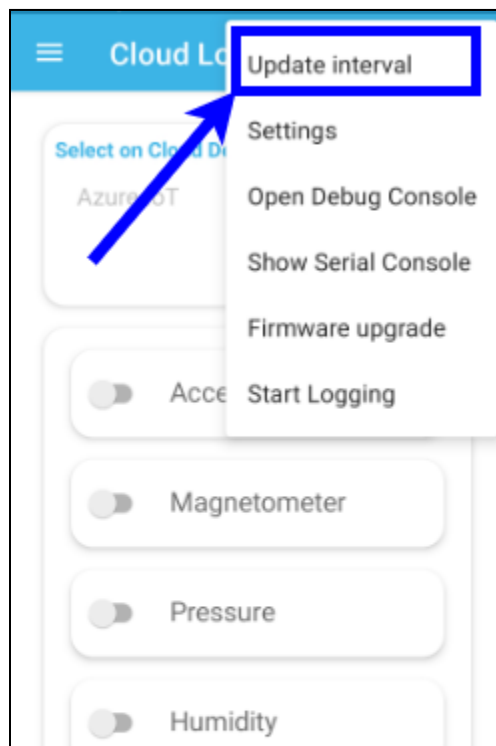
10. For changes **Update interval** click to **Parameter**.

Figure 20. Open Parameters



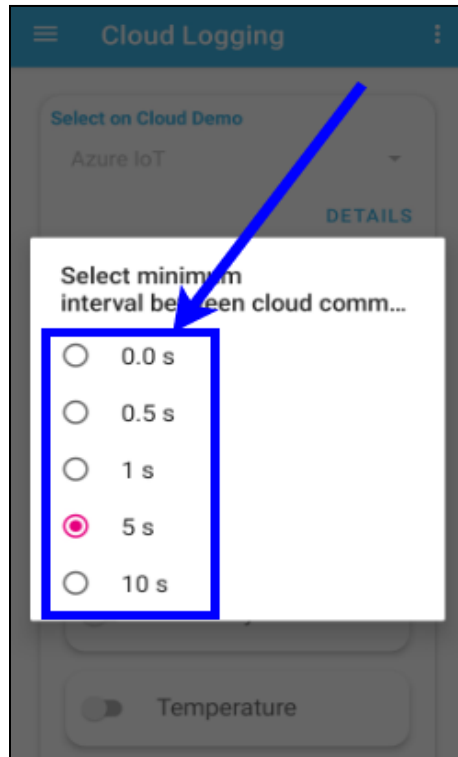
11. Choose **Update interval**.

Figure 21. Choose Update interval



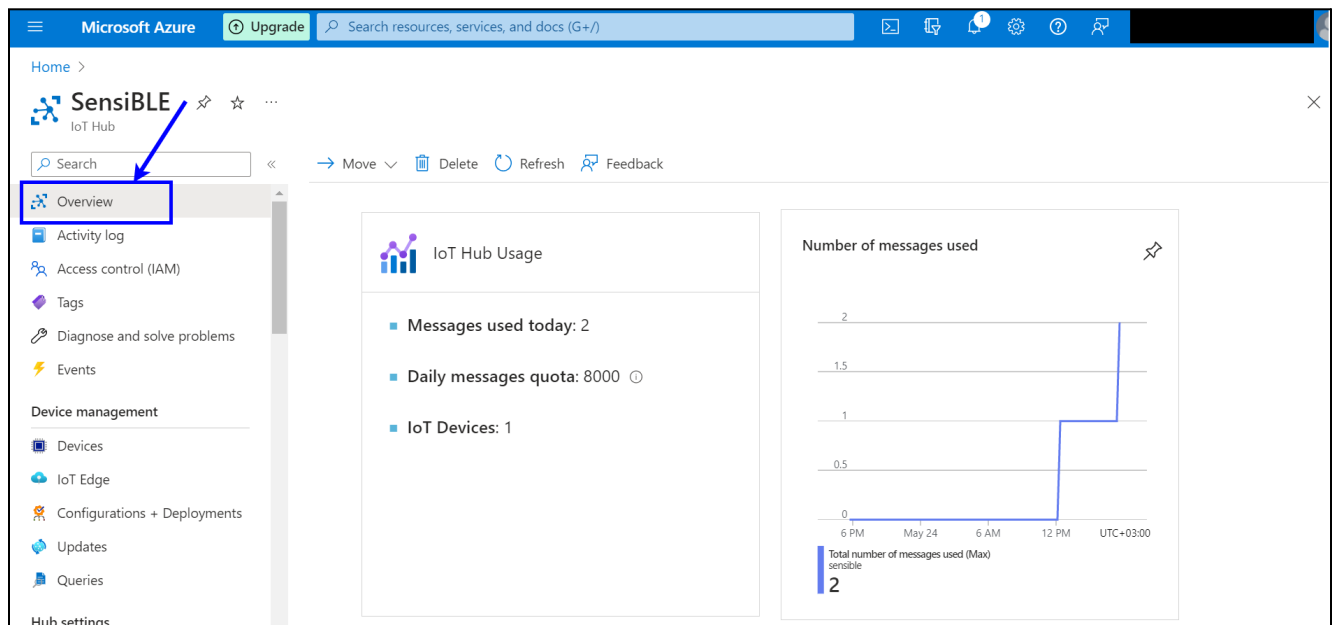
12. Select the desired interval.

Figure 22.Select the interval



13. In the Overview tab can see information about Connected Devices, used Messages...

Figure 23. Overview

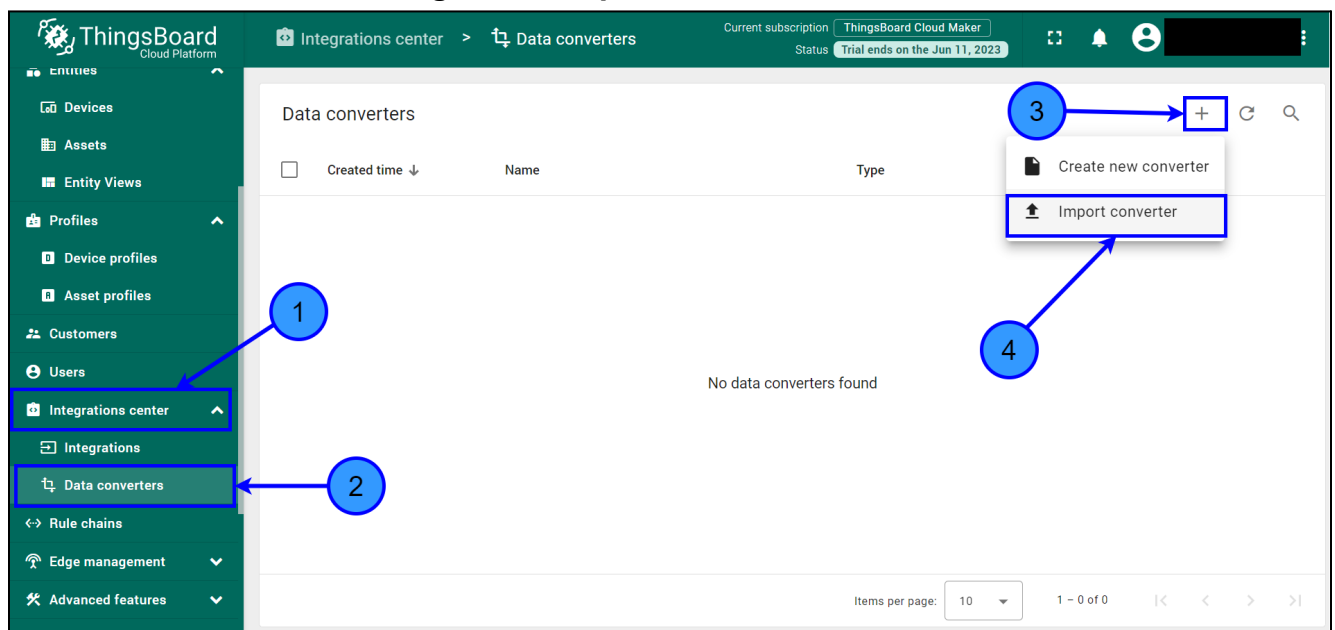


3. Setup ThingsBoard Cloud

3.1 Import Data Converter

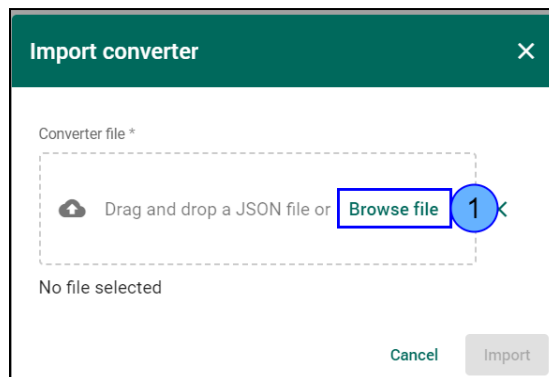
1. Go to [ThingsBoard.cloud](https://thingsboard.cloud) suit and register in the cloud.
2. After registering and entering the clouds Download DataConverter SensiBLE 1.0: [sensible_1_0_converter_V0.2.json](#).
DataConverter SensiBLE 2.1: [sensible_2_1_converter_V0.2.json](#).
3. Add a Data Converter in ThingsBoard for this, go to **Integrations center** (step 1), **Data converters** (step 2), click **+** (step 3), and choose **Import converter** (step 4).

Figure 24. Import a Data Converter



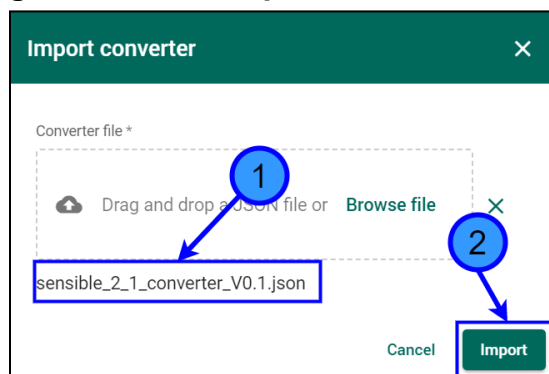
4. In the window, Import Convert drag the downloaded Data Converter or click on the **Browse file** (step 1) and select the:
SensiBLE 1.0: **sensible_1_0_converter_V0.2.json**.
SensiBLE 2.1: **sensible_2_1_converter_V0.2.json**.

Figure 25. Choose a Data Converter



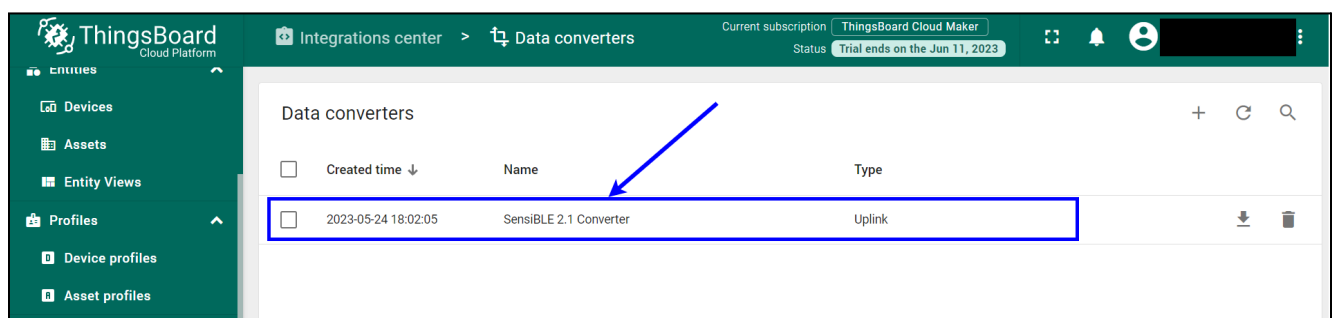
5. The selected Data converter will appear (step 1) and then click on **Import** (step 2).

Figure 26. Click Import a Data Converter



6. After Importing, a Data Converter with the name **SensiBLE 1.0 or SensiBLE 2.1 Converter** will appear in the window Data converters.

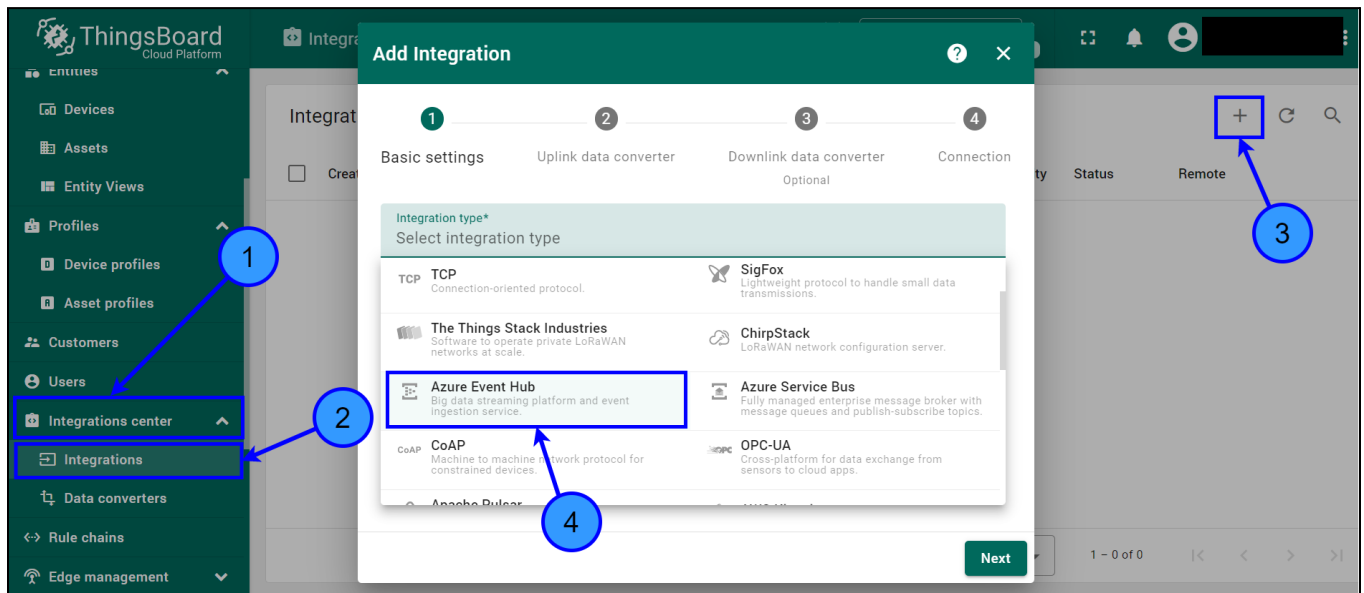
Figure 27. SensiBLE 2.1 Data Converter



3.2. Create Integration

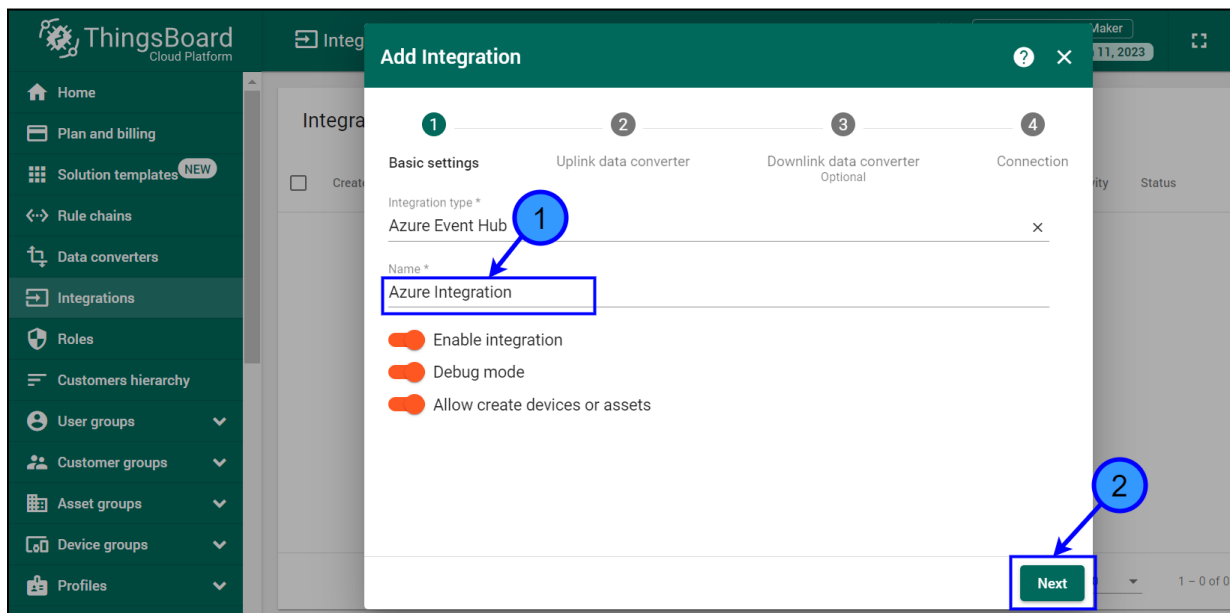
1. After importing Data Converter move on to the creation of Integration. Go to **Integration center** (step 1), **Integrations** (step 2), click on **+** (step 3), and in Integration type choose **Azure Event Hub** (step 4).

Figure 28. Add Integration



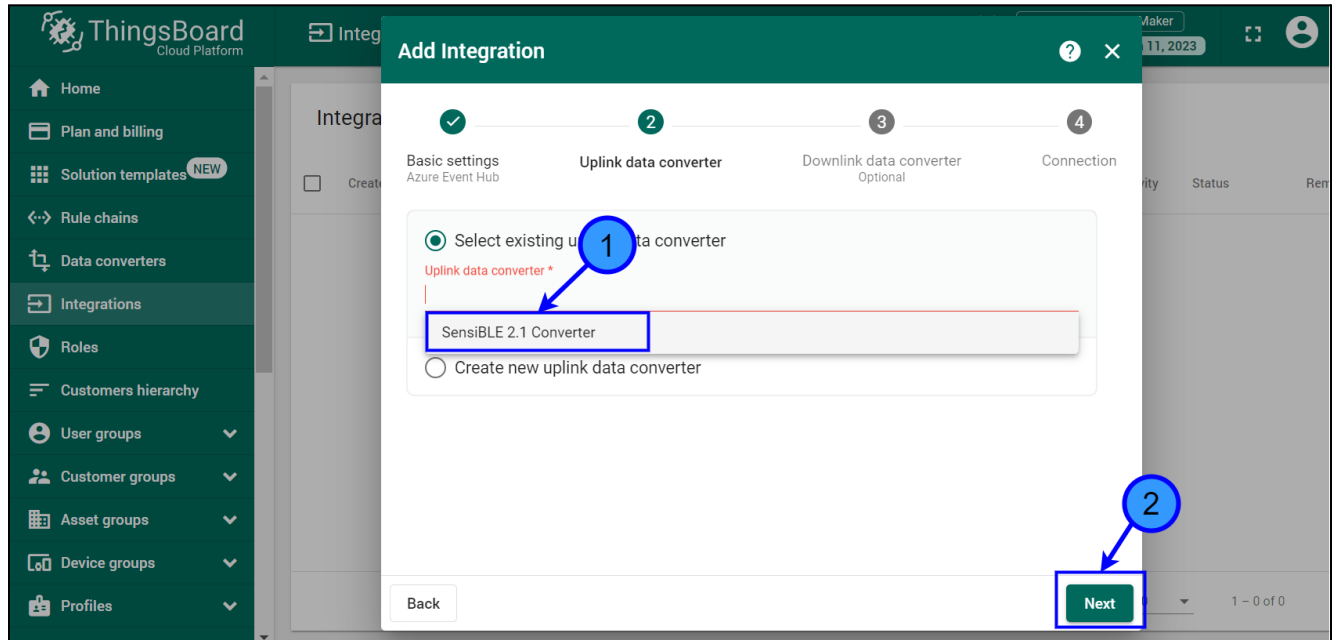
2. In line, Name enters the name **Azure Integration** (step 1) and click **Next** (step 2).

Figure 29. Basic settings Integration



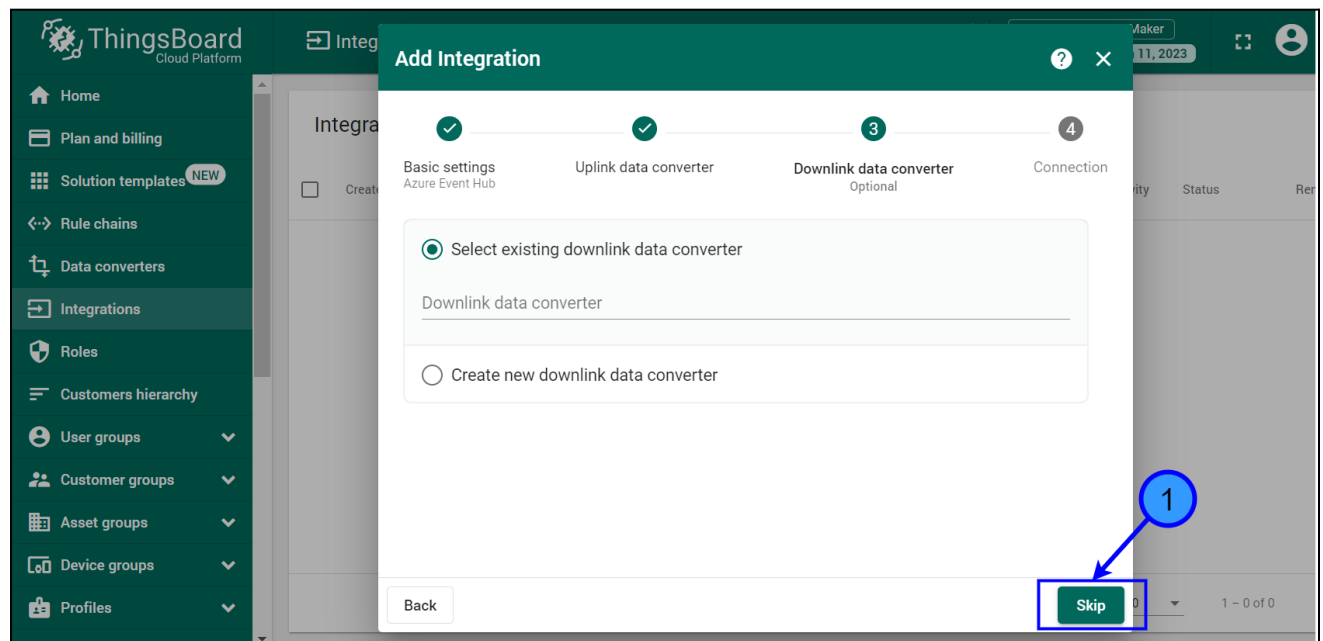
3. In Uplink Data Converter choose **SensiBLE 1.0 Converter** or **SensiBLE 2.1 Converter** (step 1) and click **Next** (step 2).

Figure 30. Choose Converter



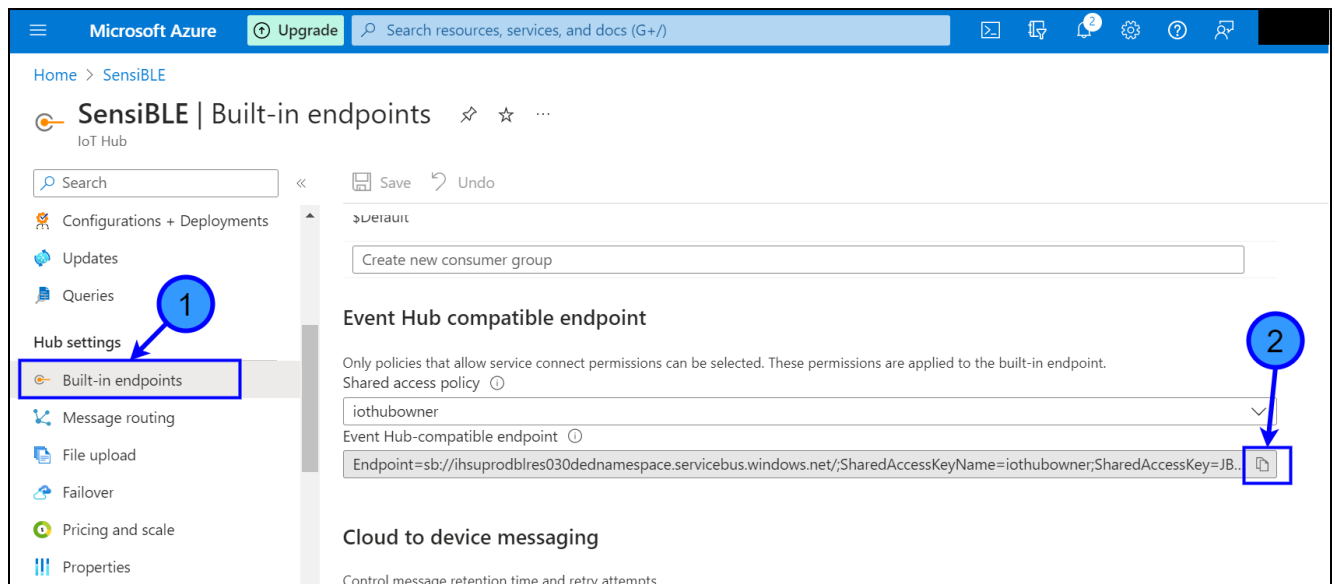
4. Choose **Select existing downlink data converter** and click to **Skip**.

Figure 31. Select the existing downlink data converter



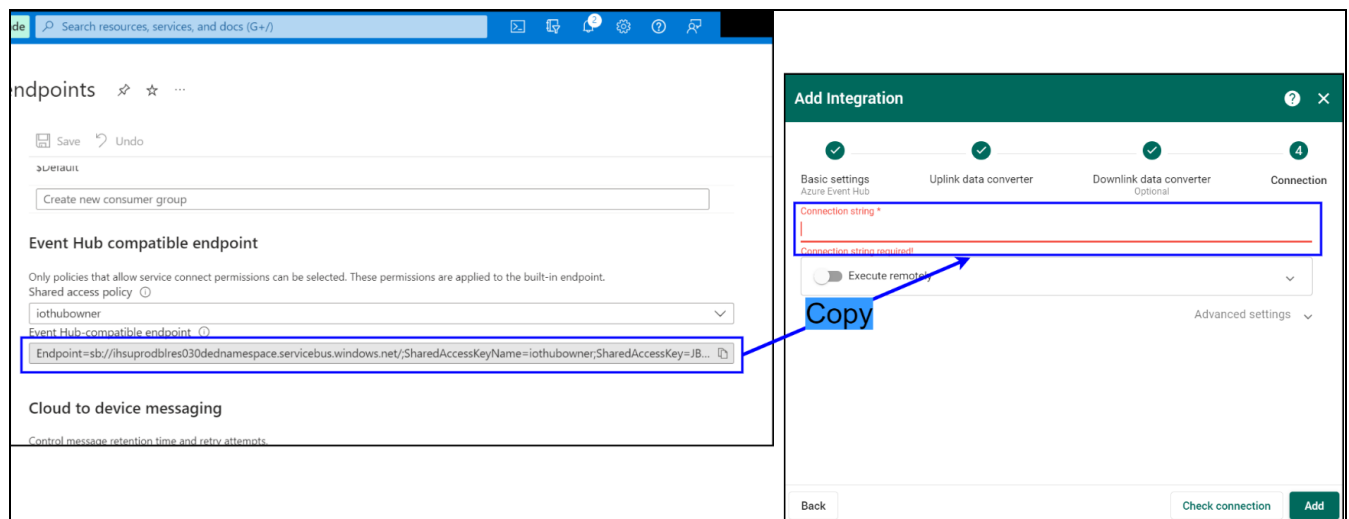
5. In order to get the **Connection String** in the Azure cloud, select **Built-in endpoints** (step 1) and click to **Copy** (step 2) **Event Hub-compatible endpoint**.

Figure 32. Copy Event Hub-compatible endpoint



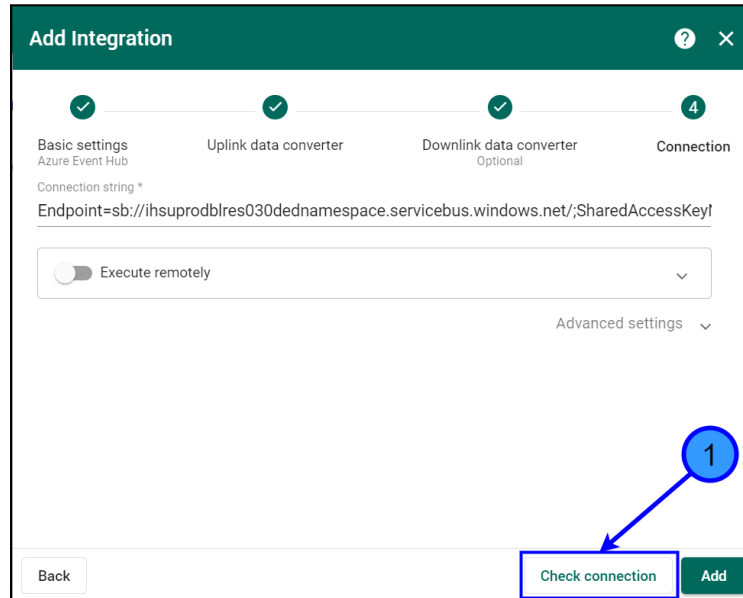
6. Paste the copied **endpoint** into the **Connection string**.

Figure 33. Paste endpoint



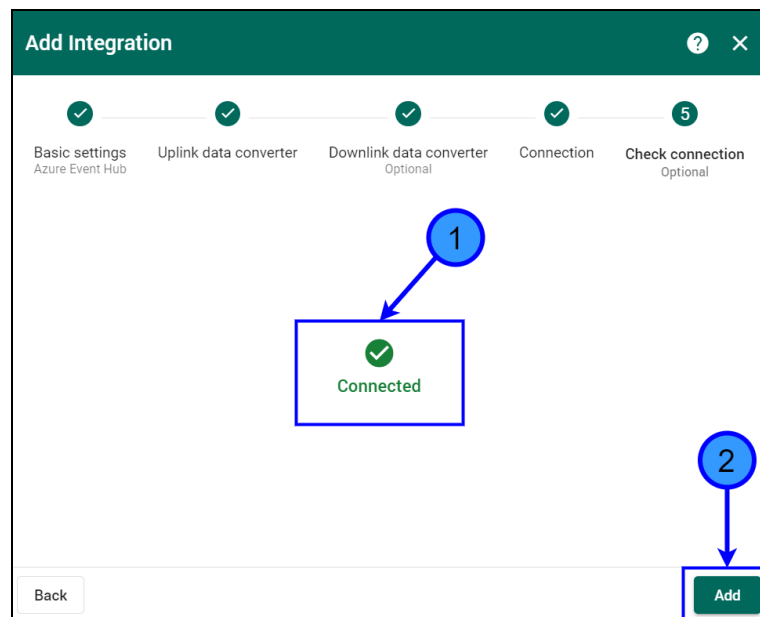
7. Click to **Check connection** (step 1).

Figure 34. Select Application



8. If the connection was successful, the status will appear **Connected** (step 1) and then click on **Add** (step 2). After this action, ThingsBoard start get data from Azure IoT Hub.

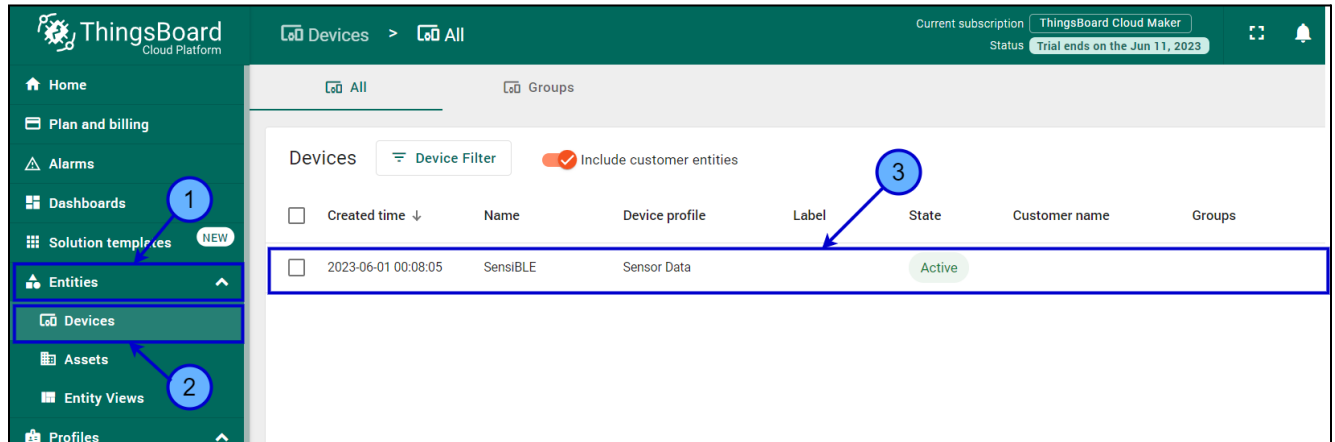
Figure 35. Add Integration



3.3 Device

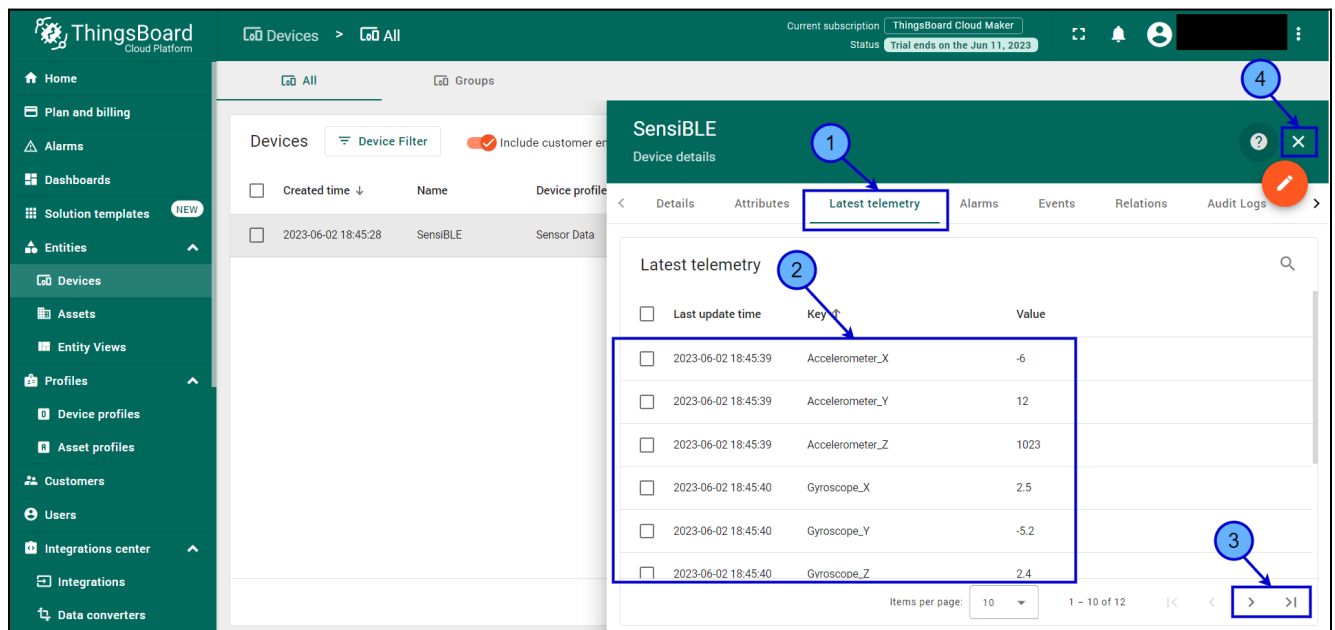
1. To view, the active SensiBLE device go to **Entities** (step 1), **Devices** (step 2), and in the window, **All: Devices** will contain a device that is connected to the Azure IoT Hub server and transmits data to it. To view the received data from the Device, click on **SensiBLE** (step 3).

Figure 36. Active Devices



2. Choose the **Latest telemetry** (step 1) and here you can see the data of the sensors that the device measured (step 2), to view the next sensors you need to click on the \geq (step 3). To close the Device details click on the **X** (step 4).

Figure 37. Latest telemetry



3.4 Dashboard

3.4.1 Overview

1. For more information about Dashboard visit: [Getting Started Dashboard](#).

3.4.2 Import Dashboard

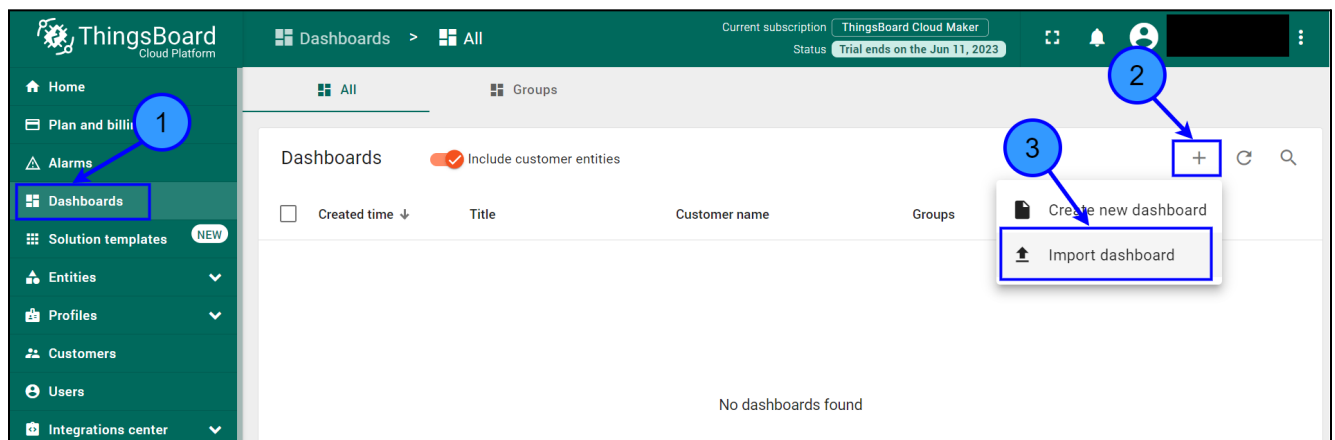
1. Download the Dashboard for:

SensiBLE 1.0: [sensible_1_0_Dashboard_V0.2.json](#)

SensiBLE 2.1: [sensible_2_1_Dashboard_V0.2.json](#)

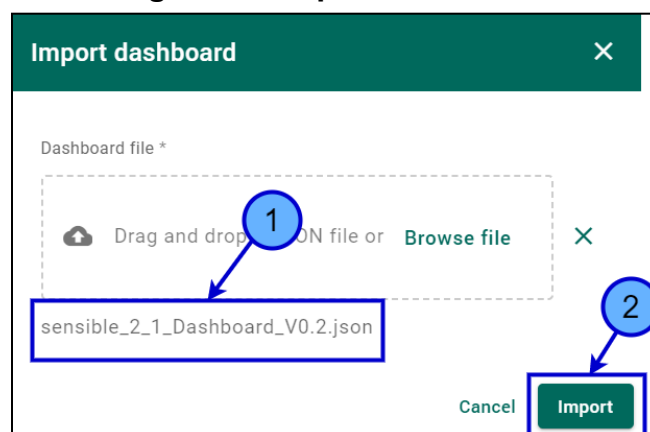
2. Go to **Dashboard** (step 1), **+** (step 2), and click **Import dashboard** (step 3).

Figure 38. Choose Import Dashboard



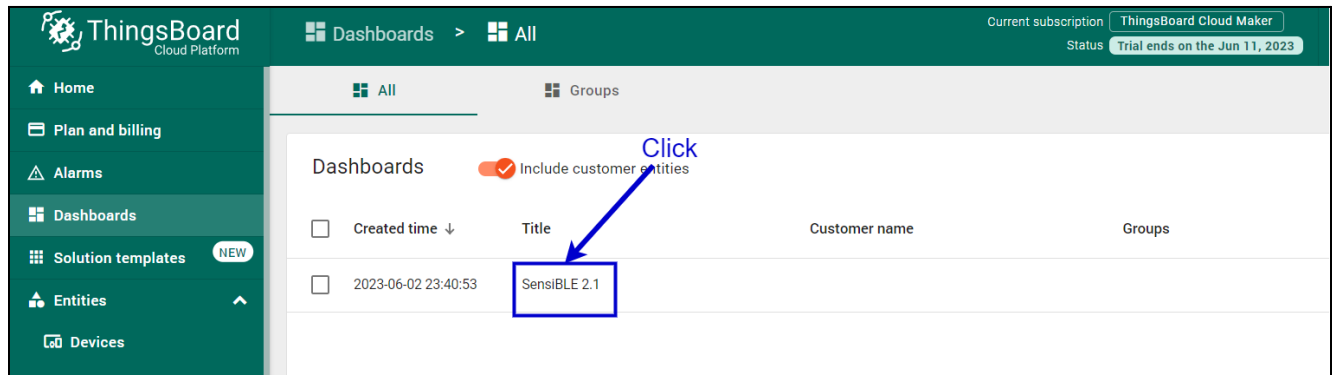
3. Drag and drop the download Dashboard. Import **Dashboard** should be displayed (step 1), after clicking **Import** (step 2).

Figure 39. Import Dashboard



4. Go to **SensiBLE 1.0** or **SensiBLE 2.1** Dashboard.

Figure 40. Go to Dashboard



5. In **SensiBLE 2.1** Dashboard the following widgets are located:

- **Temperature**, units: °C
- **Humidity**, units: %
- **Pressure**, units: hPa
- **Battery voltage**, units: V
- **Light**, units: lux
- **Compass**, units: degrees
- **Accelerometer**, units: mg
- **Magnetometer**, units: mGa

Figure 41. SensiBLE 2.1 Dashboard

