🛖 / QuickStart / Everynet-to-Azure

Quickstart - Everynet to Azure IoT Hub

Quickly integrate Everynet connected devices to Azure IoT Hub

Everynet to Azure IoT Hub

This guide will walk you though integrating a LORA device connected to the Everynet LNS to Azure IoT Hub using solution templates. This guide involves importing multiple solution templates depending on which LORA device type you are looking to integrate.



Before starting this guide, be sure to read the deep dive here: LORA-to-AzureloT

Pre-requisites

- 1. Account on Tartabit IoT Bridge.
- 2. Access to a Microsoft Azure subscription.
- 3. LORAWAN device communicating to an Everynet LNS.
- 4. Information to create a decoder for your sensor.

Details of this guide

- ► In this guide you will:
 - Create a new Azure IoT Hub.
 - ▶ Retrieve the credentials needed to connect to your Azure IoT Hub.
 - Import the basic solution template, this will create the Azure IoT service connector, and the basic triggers for processing LORA data.
 - Connect an Everynet LNS to the IoT Bridge
 - Connect a LORAWAN device
 - Verify that the device is properly reporting into the Azure IoT Hub.

1. Create an IoT Hub in Azure

If you already have an IoT Hub, you can skip this step.

For a detailed walkthrough from Microsoft, check out the following link: <u>https://docs.microsoft.com/en-us/azure/iot-hub/iot-hub-create-through-portal</u>



- A: Select an existing resource group or create one.
- B: Provide a unique name for your IoT Hub.
- C: You can skip the other tabs and create a new Hub.

2. Retrieve your IoT Hub connection string

- 1. Navigate to your new Azure IoT Hub.
- 2. Click Shared Access Policies.



3. Select **iothubowner** (this is required because the IoT Bridge will automatically provision devices in the IoT Hub as they are needed).

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Overview Activity log		
Activity log		
neurity log	IoT Hub uses permissions to grant access to each IoT hub endpoint. Permissions limit the access to an IoT hub based on functionality.	
R Access control (IAM)		
Tags	Q Search to filter items	
Diagnose and solve problems	Policy	Permissions
Events	iothubowner	registry write, service connect, device connect
ettings	service	service connect
Shared access policies	device	device connect
Identity	registryRead	registry read
Pricing and scale	registryReadWrite	registry write

4. Copy the Connection string - primary key value and save it for later.



3. Configure the Everynet Server

Import the solution template

1. Import the Everynet quickstart solution template by clicking the Import button.

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\$	Admin 🗸	Everynet quickstart Simple configuration of the Everynet LORA service, no decoders will be imported. Pre-requisities - Everynet server with correctly configured application profile	Browan object locator decoder Decoder for Browan Object Locator devices. Pre-requisites • LORA to Microsoft Azure IoT template	Laird sensor decoder Decoder for Laird LORA sensors. Pre-requisites • LORA to Microsoft Azure IoT template	RAK7200 sensor decoder Decoder for RAK7200 LDBA sensions. Pre-regulate • LORA to Microsoft Azure IoT template
		10101101 01111001 0110011	10101101 01111001 0100011 ← ↓	LoRa →	IMPORT
		RAK7201 sensor decoder Decoder for INAX201 LORA sensors. Pre-regulates • LORA to Microsoft Azure for template	Tektelic agriculture decoder Decoder for Takabic agriculture sensor devices. Pre-regulates • LORA to Microsoft Azure loT template	LORA to Azure IoT Hub Basic transeask for LORA to Azure IoT Hub. Prerequilaties I-DT Hub and service account connection string JURA Network Server template imported	
		Solution templa	tes Documenatation API Docs	Help Recent errors	

2. Make note of the webhook secret, you will need it when configuring the Everynet HTTP Connection.

Configure Everynet LNS

- 1. Login to your Everynet server.
- 2. Navigate to Filters on the main menu.

	12 / 12		Devices	Filters	Connections	Users	Keys	6
✓ Filter ID	C +	Create filter 🗸 Save	0					
61d5c7024cb435a755a34c56	(1 SUBS)	Description Tartabit	ON OFF					
		Filter by						
61d31e084cb435a7558928e6 DLU OEM	(2 SUBS)	Device tags						
61c1daeaf38f44112db49448	(7 SUBS)	Device EUIs New	_					
Paul Reddick Demo		Application EUIs						
61aa90e9e21473de78ec0fa5	(1 SUBS)	Gateways New						
My Devices		Message types						
61aa8b70701bd7ac372cc441	2 SUBS	join_request uplink downlink downl	ink_request error	warning in	fo location stat	tus_response		
The Things Network Filter		Options						
61aa8698e21473de78ebc552 HiveMQTT	(1 SUBS)	Duplicates Radio data LoRa data Inc	lude tags					
		Live stream 🔘 🔳 🔢						
61a53e07701bd7ac3706b	(1 SUBS) bf27	Clean 25 50 100 NO LIMIT 12:22:38.917 a80b 0025ca0a0000c152 17ef6de4	f9c60ecea3adc6bd 💊 6					
		→ 12:22:38.530 m80b 0025cm0m0000c152 17ef6de4	f9c60ecea3adc6bd					

- 3. Configure a new filter for the devices you want to send to the IoT Bridge. Supported message types are join_request, uplink, downlink, and location.
- 4. Save your filter and store the ID assigned to the new filter.

5. Navigate to Connections on the main menu.

Search 20/20		Devices	Filters	Connections	Users	Keys	\$
✓ Connection ID	Create connection 🗸 Save						
(HTTP 09:26:34 61dd939a71eab9f437628b73	59d4e5d92e1d900050a894a MQTT U2 V2						
MQTT Wed 16:32 61d60e8471eab9f4375c10e1	Parameters						
(нттр) 61d5c74b205385edd986f02d	Filter 592c68ed53d67067b3041f5a						
(нттр) 08-01-2022 61d31e89205385edd983f04c	Application URL http://example.com Description (optional)						
(HTTP) 23-12-2021 61c48838205385edd974ba50	Authorization header (optional) Basic YWxhZGRpbjpvcGVuc2VzYW1						
MQT 22-12-2021 61c3733471eab9f43748d344							
(нтр) 22-12-2021 61c34632205385edd97387d2							
(HTTP) 21-12-2021 61c1dbb9205385edd971d84a							

6. Create a new connection, select the type as HTTP , set the filter to the ID you stored from step 4, and set the application URL to <u>https://bridge-us.tartabit.com/webhook/</u> 🖸 <webhook from above>

After configuring the LORA Network Server, continue to the next step.

4. Import the basic solution template

Follow the steps below to import the solution template:

1. Click **Solution Templates** at the bottom of any page.

									QUICKSTART	÷	
Dashboard	Trigger status			Service status			Endpoint status				
Endpoints V Services V											
Triggers 🗸	Last 24 hours	Last 7 days	Last 30 days	Last 24 hours	Last 7 days	Last 30 days	Last 24 hours	Last 7 days	Last 30 days		
Log viewer		\checkmark	\checkmark		\checkmark	\checkmark		\checkmark	\checkmark		
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2. Find the LORA to Microsoft Azure IoT Hub template and click Import.

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 ➡ Endpoints ∨ ▲ Services ∨ ▲ Triggers ∨ 	<i>⇒</i> €			10101101 01111001 10100011
民 Log viewer 火 Advanced ~ ⑧ Admin ~	Chirpstack quickstart Simple configuration of the Chirpstack LOBA service, no decoders will be imported. Pre-regulates • Chirpstack server with correctly configured application profile	Helium quickstart Simple configuration of the Helium LORA service, no decoders will be imported. Pre-requisites • Helium server with correctly configured application profile	Loriot quickstart Simple configuration of the Loriot LORA service, no decoders will be imported. Prerequisites • Loriot server with correctly configured application profile	Laird sensor decoder Decoder for Laird LORA sensors. Pre-regulate • LORA to Microsoft Azure IoT template
	101001101 01111001 01111001 0100001 ↔	10101101 0111001 0111001101 0111000111 ↔	MPORT LoRa ⇒	меол
	RAK7200 sensor decoder Decoder for RAK7200 LORA sensors. Pre-requisites • LORA to Microsoft Azure for template	RAK7201 sensor decoder Decoder for RAK7201 LORA sensors. Pre-requisites • LORA to Microsoft Azure IoT template	LORA to Microsoft Azure IoT Basic framework for LORA to Azure IoT Hub. Prerequities IoT Hub and service account connection string LORA Network Server template imported	
	IMPORT	MPORT	Help Recent errors	

- 3. Follow the instructions below to import the template:
- ▶ Enter the Azure IoT Hub connection string that you previously saved in Step #1.
- Select the option to Start Triggers this will automatically start all of the new triggers upon import.
- Click import when finished.

5. Configure decoders for your LORA sensors

There are several ways to configure decoders for your LORA sensors, you can select from the following:

Use a pre-configured decoder solution template

There are several templates already available for common devices, and new ones are being added as needed. Check out the solution templates and filter on LORA and Device and import these templates.

- The pre-configured decoders are written to work with the LORA to Azure IoT Hub template, after importing them you do not need to modify the triggers.
- You MUST modify the Decode Sensor Data trigger to add logic to route to the decoder. You can see a sample commented out that shows how to route based on ports.

Write a custom decoder trigger

The trigger scripts use a javascript runtime, you can decode the payload in the script. Check out the Decode Sample Data trigger for an example of where to start. Here are the key considerations when creating a custom decoder:

- Your goal is to decode the binary data (that comes in as a base64 encoded string) and output a javascript object that can be further processed.
- You can generally copy/paste decoders written for TTN into the triggers, this can accelerate development by re-using pre-existing scripts.

Each decoder must be given a unique filter and added to the Decode Sensor Data trigger https://docs.tartabit.com/en/QuickStart/Everynet-to-Azure Each decoder trigger must be given a unique filter based on the key for the generic event. This is to ensure that you can route events from the LORA Message Router trigger to the correct decoder. Additionally, you must add logic to the LORA Message Router trigger to route traffic to your decoder. The most common way to manage multiple different sensor types is to ensure they are publishing on separate data ports.

Edit trigger		
Trigger name Decode sample data	<pre>var bin0ata = convert.b64T08In(event.data.data.data) temperature = bin0ata[5] + bin0ata[4]/100; humidity = bin0ata[2]/100; humidity = bin0ata[2]/100; humidity = bin0ata[2]/100;</pre>	ľ
Description	<pre>deltery = Dimotele[0]-rop exec.now("data", {endpointKey: event.endpoint.key, ts: event.ts, temperature: temperature, humidity: humidity, battery: battery])</pre>	Ŀ
Event type Generic Event X *		L
Filter by service X Q		Ŀ
Custon fites (keyx=sample-uplink) +		
	CANCEL S	AVE

6. Start sending data

You now should be able to start sending data from your devices and see that data work its way through the system. As your devices transmit, you will see activity registered in the IoT Bridge.

7. Check your device in Azure IoT Hub

With the device connected, you should now see it connected in the IoT Hub, and data being updated in the device twin.

- 1. Navigate to your Azure IoT Hub
- 2. Click IoT Devices

Microsoft Azure		\mathcal{P} _ Search resources, services, and docs (G+/)		
Home >				
artabit-demo 🖈				
P Search (Ctrl+/)	$ ightarrow$ Move \lor 📋 Delete	🖔 Refresh		
🕺 Overview	*			
Activity log	Azure IoT Hub and the Azur	e Device Provisioning Service are updating their TLS certificates starting Octobe	er 5, 2020 with a new Microsoft Certificate Authority (CA) chained under the e	xisting Baltimore root. If your devic
Access control (IAM)	continue to contect cean	in the		
🗳 Tags	∧ Essentials			
Diagnose and solve problems	Resource group (change) : c	lemo	Hostname : ta	rtabit-demo.azure-devices.net
🗲 Events	Status : /	Active	Pricing and scale tier : F	1 - Free
Settings	Current location : E	ast US 2	Number of IoT Hub units : 1	
Shared access policies	Subscription (change) : [Development		
Identity	Subscription ID : 4	c497868-a5tb-4tee-9t8d-tb1bddcet30c		
Pricing and scale	Tags (change) : 0	lick here to add tags		
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Ruitt in and aciets		devices?	IoT solution?	Check out IoT Hub
Sultrin enupoints Fellever		IoT Hub Device Provisioning Service enables zero- touch, just-in-time provisioning to the right IoT	Azure Security for IoT (ASC for IoT) is a unified security management service. It provides end-to-	billions of Internet
Panover		hub without requiring human intervention.	end threat analysis and protection across hybrid cloud workloads and your Azure IoT solution.	
Properties				
Locks				
Explorers		We'd love your feedback!	Need to simulate IoT Devices?	Need to validat
Query explorer		Your valuable feedback will help us to better understand your requirements in order to improve	IoT Device Simulation accelerates solution development using simulated devices to help build	models?
IoT devices		loT Hub.	and test your project throughout the development	devices' implemen

3. You should see your newly created device, click on it.

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	🕂 New 💍 Refresh	Delete			
🕺 Overview					
Activity log	View, create, delete, an	I update devices in your IoT Hub.			
Access control (IAM)	Field		Operator	Value	
🗳 Tags	+ × device	Id		∨ ′qwerty-x1gen8′	
Diagnose and solve problems	+ Add a new clause				
🗲 Events	Query devices				> Switch to query editor
Settings					
Shared access policies					
Identity	DEVICE ID	STATUS	LAST STATUS UPDATE (U	rc) AUTHENTICATION TYPE	CLOUD TO DEVICE MESSAGE COUNT
O Pricing and scale	qwerty-x1gen8	Enabled		Sas	0
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🔎 Certificates					
Built-in endpoints					
🐴 Failover					
🛜 Properties					
🔒 Locks					
Explorers					
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IoT devices					

4. Click on Device Twin

≡	Microsoft Azure	✓ Search resources, services, and docs (G+/)
Home	> tartabit-demo >	
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🔒 Sa	ave 🖂 Message to Device 🗡 Dir	ect Method 🕂 Add Module Identity 📃 Device Twin 🔍 Manage keys 🗸 💍 Refresh
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Prima	ry Key 🌘	
Secor	ndary Key 🌘	
Prima	ry Connection String 🌒	
Secor	ndary Connection String 🌘	
Enabl	e connection to IoT Hub 🌘	Enable Disable
Paren	t device 🕕	No parent device
Mo	dule Identities Configurations	
мо	DULE ID CO	NRECTION STATE CONNECTION STATE LAST UPDATED (U LAST ACTIVITY TIME (UTC)
There	are no module identities for this device.	

5. You will see the sensor in your twin.





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Hubs > tartabit-demo > Devices > qwerty-x1gen8 > Telemetry				
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Consumer group O SDefault Telemetry				
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Module identity 4:20:01 PM, October 22, 2020:				Î
IoT Plug and Play compone				
"device": { "0": {				. 8
"batteryLevel": 0, "batteryStatus": "normal",				
"currentTime": "2020-10-22T19:50:212", "deviceType": "Cellular Module", "errorCode": (
"O": "no error"				
"firmwareVersion": "20.06.11.0203", "hardwareVersion": "Rev 0",				
"manufacturer": "Tellt", "memoryFree": 12719284, "memoryTell": 1286882				
"modelNumber": "Not Set", "serialNumber": "Not Set",				
"softwareVersion": "1.0.2", "supportedBindingandModes": "UQ",				
"timezone": "EDT", "uTCOffset": "-04:00"				
), ' "firmwareUpdate": (-

You are done!

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