

# **Azure IoT** User Manual

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#### **Overview**

This manual explains how to set up a device on Azure IoT Hub and utilize MQTT features in EBPro. It's important to note that while the IoT Hub functions as an MQTT message broker, it may not fully support all behaviors specified in the MQTT v3.1.1 standard. For more detailed information, please visit the Microsoft Azure website at:

https://learn.microsoft.com/en-us/azure/iot/iot-mqtt-connect-to-iot-hub

Additionally, the CMT X series offers a straightforward way to connect with devices on the IoT Hub using the MQTT protocol through simple configuration in EBPro. This manual provides a step-by-step walkthrough of setting up IoT Hub devices and configuring EBPro.

### **Setting up Devices on IoT Hub**

The IoT Hub is located within Microsoft Azure, and all configurations are performed through the web portal. To get started, you need to register as a user on the Azure website by following these steps:

- 1. Visit the Microsoft Azure website at https://portal.azure.com.
- 2. Register for a new account.





3. After logging in, search for "IoT Hub".

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	Azure se	All Services (12) Marketplace (6) Documentation (99+) Azure Active Directory (3) Resources (0)		Î		
	1	Resource Groups (0)				
	Create	Services	See all	More		
	resourc	🕅 IoT Hub 🕞 Event Hubs		More	services	
		🚷 Azure IoT Hub Device Provisioning Services 🤤 Notification Hub Namespaces				

4. Once in the IoT Hub interface, click on **+Create** to add a new IoT Hub.

Microsoft Azure	• Upgrade D Search	esources, services, and docs (G+/)		96			
Home >							
IoT Hub & … Default Directory							
🕂 Create 🔕 Manage vi	ew $\vee$ 🕐 Refresh $\downarrow$ Exp	ort to CSV 😚 Open query 🕴 🖉 Assign t	ags.				
Filter for any field	Subscription equals all	Resource group equals all $\times$ Location	n equals all $ imes$ $$ $$ $$ $$ $$ Add filter				
Showing 0 to 0 of 0 records.				No	groupin	g	

5. Configure the Subscription, Resource group, IoT hub name, Region,

and **Tier** according to your preferences. Leave the remaining settings as default and click **Review + create**.

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Home > IoT Hub >						
IoT hub … Microsoft						
Basics Networking Manag	gement Add-ons Tags Review + create					
Create an IoT hub to help you conr	nect, monitor, and manage billions of your IoT assets. Learn more 🖆					
Project details						
Choose the subscription you'll use organize and manage resources.	to manage deployments and costs. Use resource groups like folders to help you					
Subscription * ①	Free Trial					
Resource group * ①	(New) Weintek					
	Create new					
Instance details						
IoT hub name * 🕕	WeinteklOT 🗸					
Region * ①	Japan West 🗸 🗸					
Tier *	Free V					
	Free trial explores the app with live data. Trials cannot scale or be upgraded later.					
	Compare tiers					
Daily message limit * ①	8,000 (NT\$0/month)					
Review + create < Prev	vious Next: Networking >					

6. Click on the IoT Hub created in step 5 to access it.



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Home >					
IoT Hub 🖉 …					
Default Directory					
+ Create 🐯 Manage view ∨ 🔾 Refresh 🛓 E	xport to CSV 😚 Open query 🛛 📎 Assign tags				
Filter for any field Subscription equals all	Resource group equals all $ imes$ Location equals all	$\times$ + Add filter			
Showing 1 to 1 of 1 records.				No grouping	9 V
□ Name ↑↓	Туре ↑↓	Resource group ↑↓	Location $\uparrow \downarrow$		Subscription
C X WeinteklOT	IoT Hub	Weintek	Japan West		Free Trial

7. Within the IoT Hub, click on **+Add Device** to add a new device.

■ Microsoft Azure	Search resources, services, and docs (G+/)				Σ		<b>P</b> 👳		
Home > IoT Hub > WeinteklOT IoT Hub « Default Directory + Create @ Manage view ~ ··· Filter for any field.	WeintekIOT   Device Int Hub P Search  Coverview	ICS ☆ ☆ …           View, create, delete, and update devi           + Add Device ≡≡ Edit columns	ces in your IoT Hub. <u>Learn more</u>	Delete					
Name 🗘	Activity log Access control (IAM) Tags Diagnose and solve problems	enter device ID     Device ID	Types: All + Add filter	Status		Last	status upda	ate	Aut
	Events     Device management	There are no devices to display.							

 Configure the Device ID, select Auto generate keys, set the authentication type to Symmetric key, and enable Connect this device to an IoT hub. Then, click Save to add the device.

E Microsoft Azure O Upgrade D Search resources, services, and docs (G+/)	Q	<i>Ç</i> (	0	ঙ্গ
Home > IoT Hub > WeintekIOT   Devices >				
Create a device				
Find Certified for Azure IoT devices in the Device Catalog				
Device ID * ()				
Device1				
IoT Edge Device				
Authentication type O (Symmetric key X509 self-Signed X509 CA Signed)				
Auto-generate keys ①				
Connect this device to an IoT hub () (truble Disable )				
Parent device ①				
No parent device				
per a baieur gearre				
Save				

9. Click on the device created in step 8 to access its settings.



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Home > IoT Hub > WeinteklOT IoT Hub « Default Directory + Create @ Manage view ~ ···	WeintekIOT   Devia	CCES 🖍 🛧 … View, create, delete, and update devic	es in your loT Hub. <u>Learn mor</u>	e				
Filter for any field Name ↑↓  ✓ WeintektOT ····	Coverview     Activity log     Access control (IAM)     Tags	+ Add Device II Edit columns	C Refresh Assign ta Types: All + Add filter	gs 🗊 Delete		et etatus undate		C Fin
	<ul> <li>Ø Diagnose and solve problems</li> <li>Events</li> <li>Device management</li> </ul>	Device1	loT Device	Enabled		st status update		Shared
	Devices							

10. Copy the primary connection string. This will be used in the MQTT settings in EBPro, so please ensure that you remember it.

😑 Microsoft Azure 💿 Up	grade $P$ Search resources, services, and docs (G+/)		0	0	
Home > IoT Hub > WeinteklOT   De Device1 ☆ … WeinteklOT Gave Message to Device >	vices > < Direct method + Add Module Identity				
Device ID ①	Device1				
Primary key 🛈	••••••••••••••••••••••••••••••••••••••				
Secondary key ①	····· 🕲 💿				
Primary connection string ①	••••••				
Secondary connection string ①	•••••••				
Tags (edit)	No tags				
Enable connection to IoT Hub 🛈	Enable      Disable				
Parent device ①	No parent device				
Module Identities Configurations					
Module ID	Connection State Connection State Last Updated Last Activity Time (UTC)				
There are no module identities for this d	evice.				

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#### **EBPro Settings**

How to configure devices from the Azure IoT Hub in EBPro.

1. Click on **IIoT/Energy** > **MQTT** to open the MQTT settings page.



 General settings: Choose Azure IoT Hub as the cloud service, use the primary connection string obtained in step 10 of Chapter 2 for the connection string, and leave the remaining settings as default.

General Address TL	.S/SSL
Comment :	
Cloud service :	Azure IoT Hub 🔻
Protocol :	MQTT v3.1.1 💌
Connection String :	HostName=WeinteklOT.azure-devices.net;DeviceId=Device1;Sharec
Host name :	WeintekIOT.azure-devices.net
Device ID :	Device1
SharedAccessKey :	
Port :	8883
Keep alive time :	10 second(s)
Timestamp :	UTC Time 🔻
	* If timestamp in MQTT is incorrect, please check your time zone setting in Time Sync /DSTI page of (System Parameters) dialog

3. Address settings: Configure the relevant parameters for the address.



	ess TLS/SSL	
Status addres	s	
Device :	Local HMI	~ G G
Address :	LW • 100	16-bit Unsigned
<b>— —</b> "		<u>Usage</u>
Buffer usaged Control ad	ge address	Usage
□ Buffer usag ☑ Control ad Device :	ge address Idress Local HMI	

 TLS/SSL settings: Import the CA certificate. To use the CA certificate, download and import DigiCert Global Root G2. For more information about the certificate, visit: <u>https://techcommunity.microsoft.com/t5/internet-of-things-blog/azure-iot-tls-criticalchanges-are-almost-here-and-why-you/ba-p/2393169</u>

vew wiqi i server		
General Address TLS/	SL	
🖉 Enable		
Version : TLS 1.	2 *	
Server verification		
Server verification           Use certificate or	HMI first (if existed). Otherwis	e, use imported files below.
Server verification	HMI first (if existed). Otherwis rted <u>more</u> .	e, use imported files below. 

- After completing the server configuration, the IoT Hub is not a fully functional MQTT broker and may not support all the behaviors specified in the MQTT v3.1.1 standard. Therefore, follow the instructions below for publishing and subscribing to topics.
- After the device is connected, the HMI will use "devices/{device-id}/messages/events/" or "devices/{device-id}/messages/events/{property-bag}" as the topic name to send messages to the IoT Hub.

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General Address S	Security	
Nickname :	topic 1	
Topic :	devices/Device1/nessages/events/topic1	Generate
	%0 : HMI name	
	%1 : Client ID for server	
	%(DYNAMIC) : Dynamic string	
	%% : Character "%"	
Sending mode :	Address (Auto.)	
Sending mode : Value-trigger-ba	Address (Auto.)	
Sending mode : Value-trigger-ba Time-based Min. time between r	Address (Auto.)  ased messages : 0  ms	
Sending mode : Value-trigger-ba Time-based Min. time between n Compression type :	Address (Auto.)  ased messages : 0  ms None	
Sending mode : Value-trigger-ba Time-based Min. time between n Compression type : OOS :	Address (Auto.)	
Sending mode : Value-trigger-ba Time-based Min. time between r Compression type : QoS :	Address (Auto.)	
Sending mode : Value-trigger-ba Time-based Min. time between r Compression type : QoS :	Address (Auto.) ased messages : 0 ms None Retain message	
Sending mode : Value-trigger-ba Time-based Min. time between Compression type : QoS : Content format :	Address (Auto.)  ased messages : 0  message None  Sone  JSON (Simple)	

7. To receive messages from the IoT Hub, use "devices/{device-

id}/messages/devicebound/#" as the topic filter to subscribe to the topic.

**Note:** Since "#" is a reserved character in EBPro, you need to use dynamic string and set the "#" as the string content during runtime.

Subscriber			
ss Security			
me : topic 1			
pic : devices/Dev	vice1/messages/dev	vicebound/%(DYNA	MIC Generat
%(DYNAMIC) %%	: Dynamic string : Character "%"		
9			
Local HMI		~	<b>G</b>
LW	• 0		20 word(s)
vpe: None			
nat : JSON (Simpl	e) 🔻		
	Subscriber ss Security me : topic 1 pic : devices/Dev %(DYNAMIC) %% g Local HMI LW rpe : None • hoS : 1 • nat : JSON (Simple	Subscriber ss Security me : topic 1 pic : devices/Device1/messages/dev %(DYNAMIC) : Dynamic string %% : Character "%" g Local HMI LW	Subscriber  ss Security  me : topic 1  pic : devices/Device1/messages/devicebound/%(DYNA %(DYNAMIC) : Dynamic string %% : Character "%"  g  Local HMI v tw v 0  rpe : None v hoS : 1 v  nat : JSON (Simple) v

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