

## Advantech AE Technical Share Document

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<b>Category</b>	<input type="checkbox"/> FAQ <input checked="" type="checkbox"/> SOP	<b>Related OS</b>	N/A
<b>Abstract</b>	How to Send WISE-4000 IO Data to Azure IoT Hub via MQTT		
<b>Keyword</b>	WISE, Azure IoT Hub, cloud upload, push notification		
<b>Related Product</b>	WISE-40XX series		

■ **Problem Description:**

This document shows that how to connect with Azure IoT Hub and make sure push data successfully. Utilize Node-Red to **monitor the pushed data**.

■ **Brief Solution - Step by Step:**

Azure could be connected with end device through HTTP and MQTT protocol. WISE utilize HTTP protocol to connect with Azure IoT Hub. WISE does not need an extract gateway to connect with the service.

WISE pushes data to Azure event hub (figure 1 (A)) and upload .csv file to Azure Blob Storage account (figure 1 (B)). SOP video of both functions can be found in the same archive folder of this document. This document shows the details about pushing real-time data (figure 1 (C)).

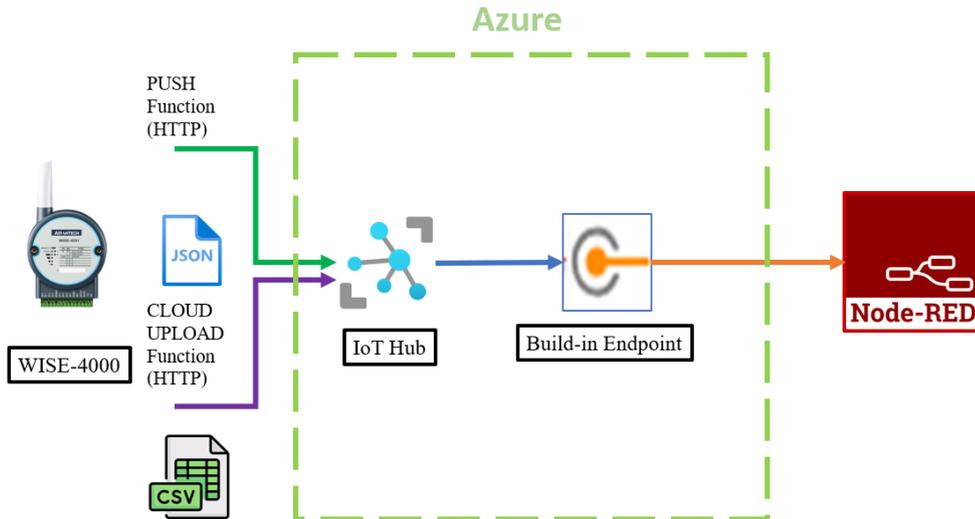
	Upload file	Push data
Data format	csv	JSON
Data type	A batch of historical record.	The last real-time data.
Support resume data after the connection is restored.	Yes.	No. Will discard the data after retry 3 times.
Link	<a href="https://youtu.be/xfI6bSPa8jA">https://youtu.be/xfI6bSPa8jA</a>	<a href="https://youtu.be/scvNMPtwLuc">https://youtu.be/scvNMPtwLuc</a>



(A)



(B)



(C)

Figure 1. (A)(B) WISE FW support cloud upload/push data to Azure IoT Hub  
 (C) The topology of this documentation.

JSON messages does not storage in any file, it **only temporary storage in event hub for few hours**. Unless a user utilize these messages for another application, these messages will be deleted.

Step1. Refer to the website of Microsoft and create an account.

<https://docs.microsoft.com/en-us/azure/iot-hub/>

In the Azure portal, click New > Internet of Things > IoT Hub.

<https://portal.azure.com/?signIn=1#home>

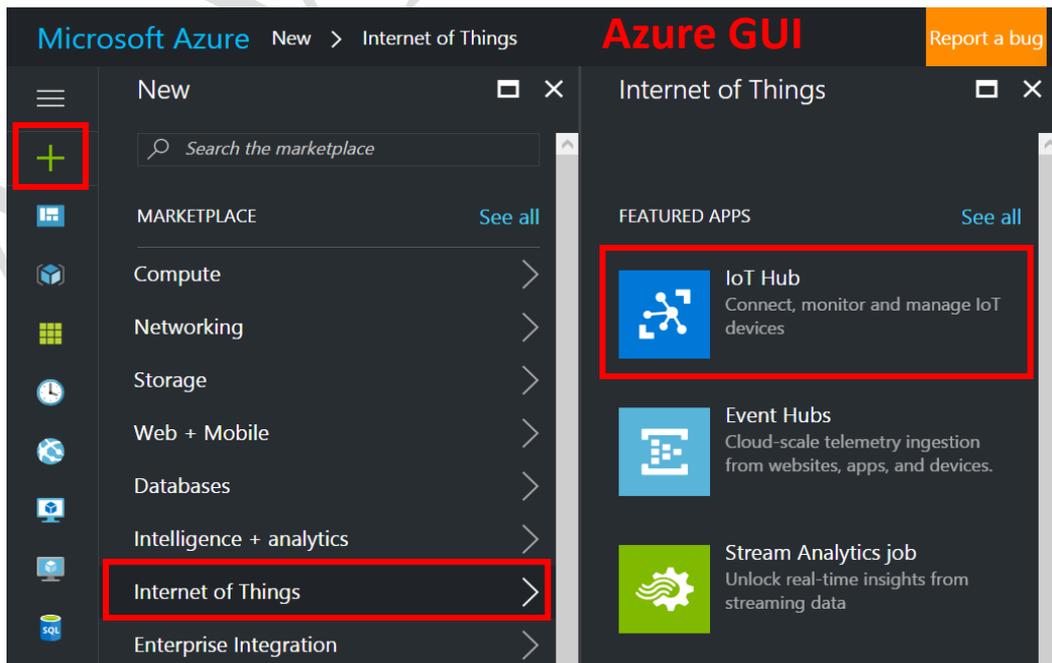
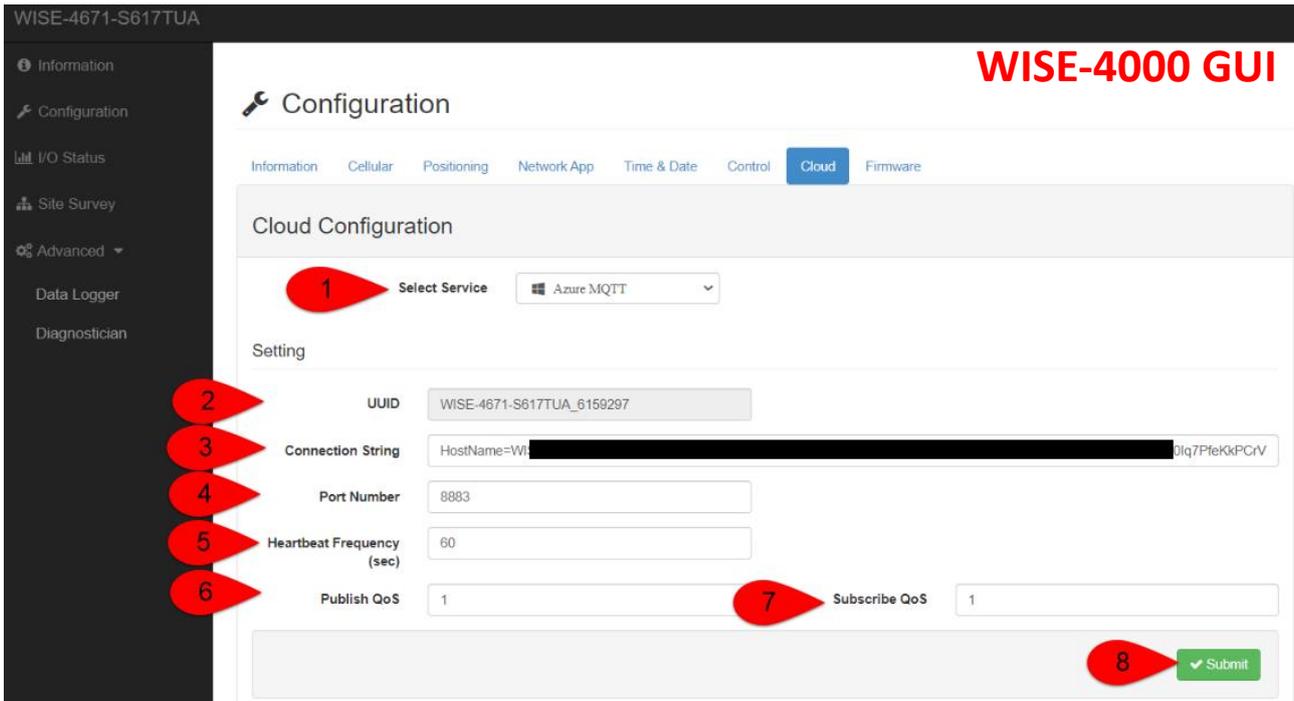
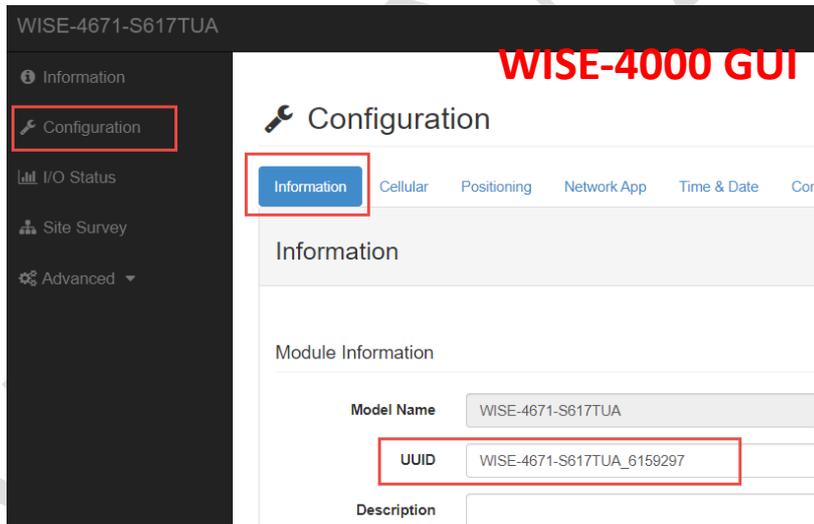


Figure 1. Create an account.

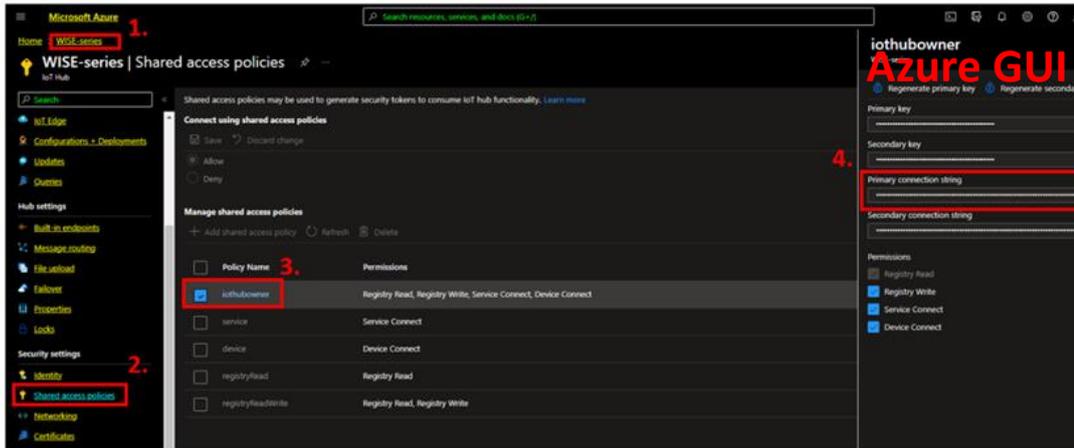
Step 2. Fill in the **connection information** in WISE-4000 GUI page.



1. Select "Azure MQTT" function in **CLOUD** configuration page.
2. UUID: which is set in **configuration/information** page. Cannot connect multiple devices with the same UUID.



3. Connection String: copy-paste from Azure GUI page -> **shared access policies/iothubowner/primary connection string**



4. Port: 8883 (TLS)
5. Heartbeat: 60 for example
6. Publish QoS: less than 2
7. Subscribe QoS: less than 2
8. **Submit** the modification

Step 3. Check the system clock in your WISE module. **The connection key is available within 365 days. If the WISE module timing is far different from the Azure server timing, the server will disconnect the client (WISE) automatically.** If a user is using WISE-4012E (figure 2), the system clock needs to be correctness after power-on every time due to there is no RTC hardware in this model.

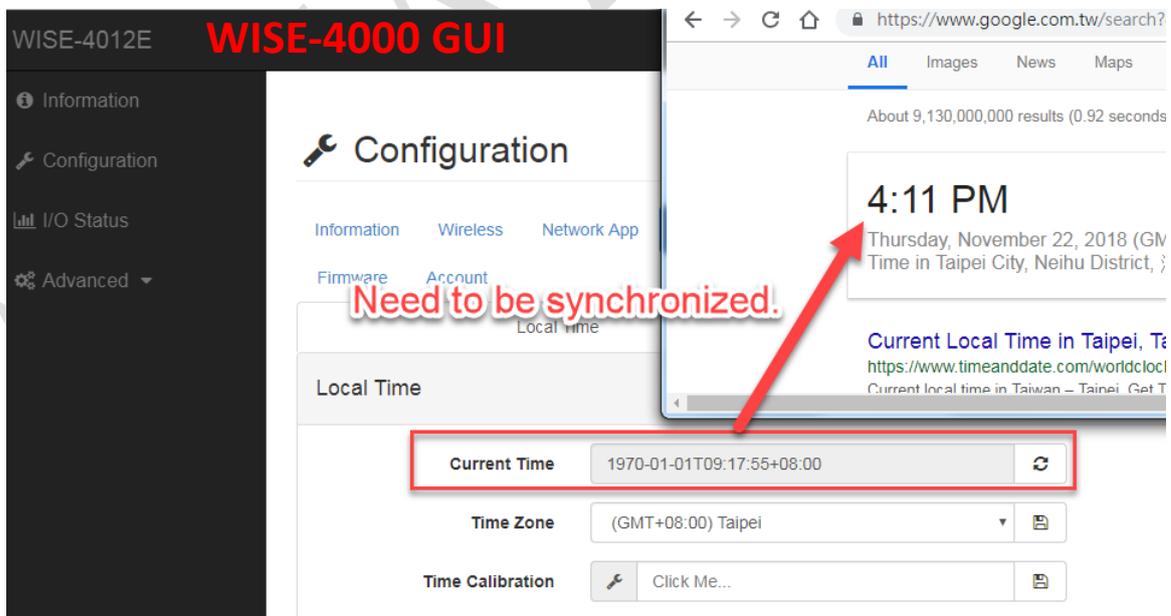


Figure 2. The system clock needs to be synchronized.

Step 4. **Enable push notification function** of WISE-4000 (figure 3).

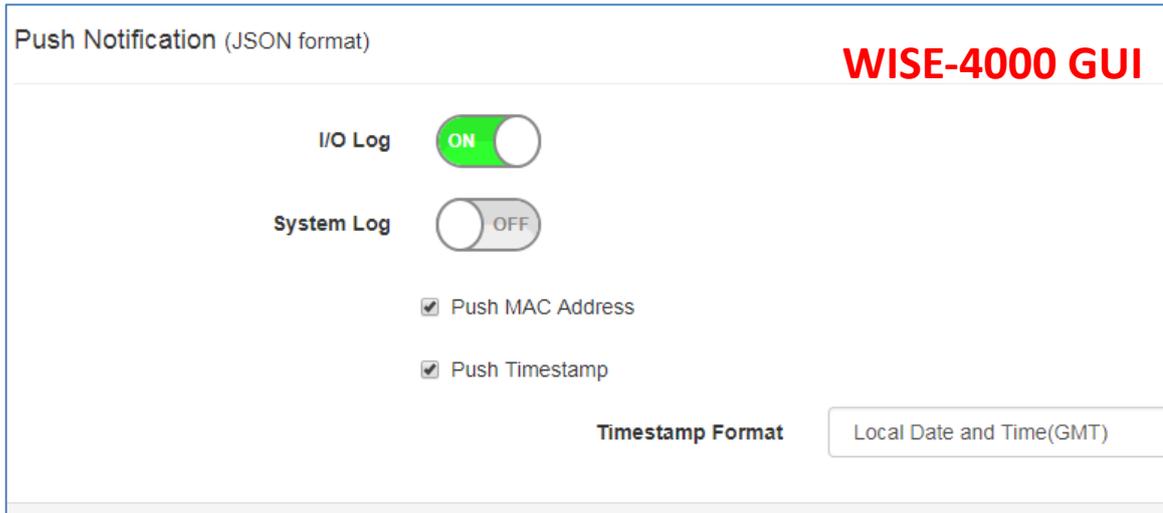


Figure 3. Enable PUSH notification.

Step 5. Open **Device** panel in Azure GUI and **Add** a new device (figure 4 & figure 5). The **Device ID** should be the same as **UUID** in WISE web utility. **Authentication Type** please set as **Symmetric Key**, enables the **Auto Generate Keys**, and **Enable** the **Connect device to IoT Hub** setting.

Noted: The **UUID** is setup in **Configuration** page of WISE web utility (figure 6).

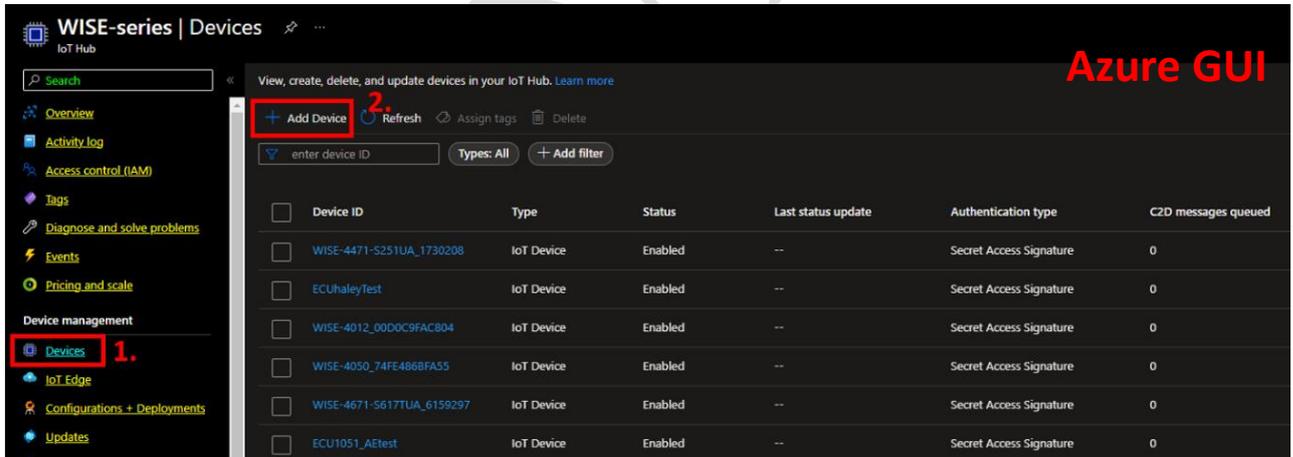


Figure 4. Azure IoT Hub with Device panel.



**Node-Red GUI**

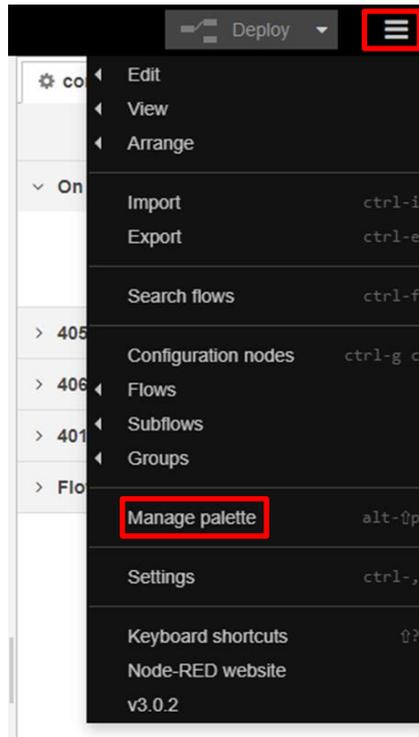


Figure 7. Install plug-in function of Node-Red to monitor WISE-4000’s data from Azure Iot Hub.

Step 7. Click install tag and type “**azure-iot-hub**” to find and install “**node-red-contrib-azure-iot-hub**” which is the plug-in function monitoring data from **Azure** (figure 8).

Noted: The introduction guide of the function, please see the link bellowed.

[node-red-contrib-azure-iot-hub \(node\) - Node-RED](#)

**Node-Red GUI**

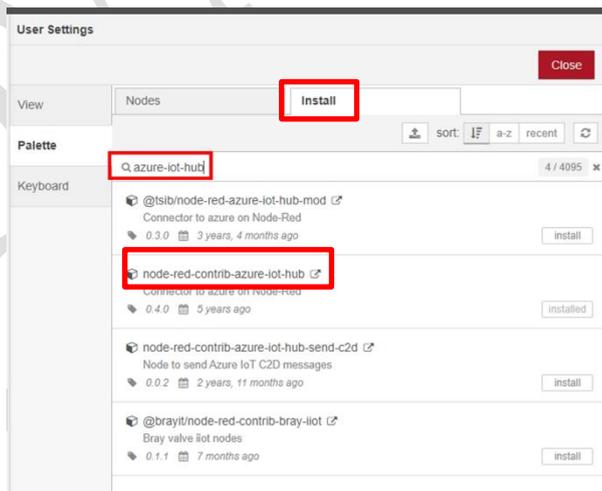


Figure 8. Install plug-in function for monitoring data from Azure Iot Hub.

Step 8. Shown as figure 9, After the function is installed, you can **drag the nodes** from the **nodes bar** at the left side of the website.

**Node-Red GUI**

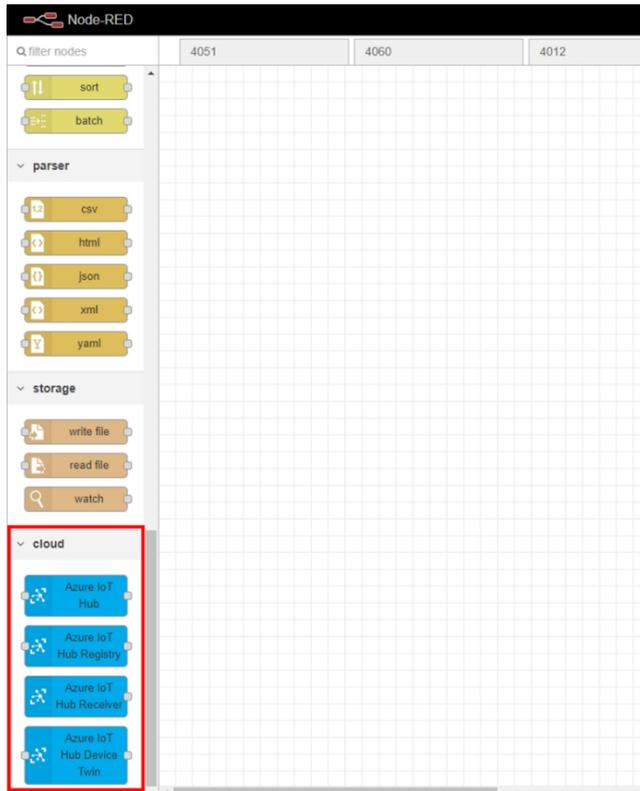


Figure 9. Nodes of Node-Red monitoring data from WISE-4000 through Azure IoT Hub

Step 9. Drag a “**Azure IoT Hub Receiver**” node to receive the data from Azure IoT Hub. Drag and connect a debug node with “**Azure IoT Hub receiver**” node as Figure 10 shown.

**Node-Red GUI**

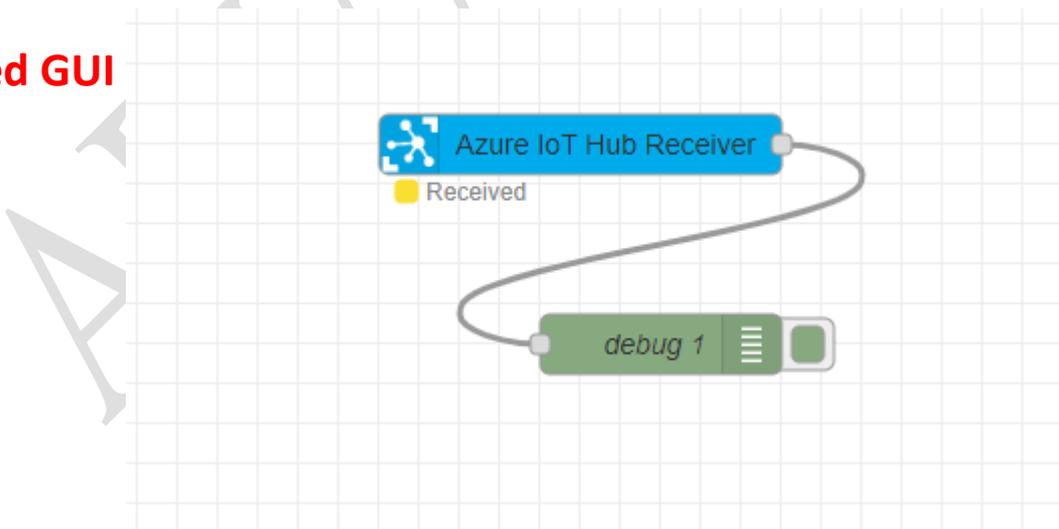


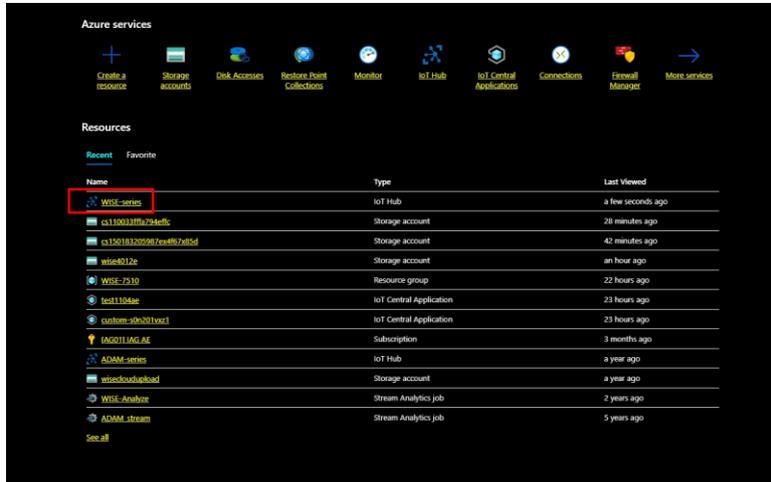
Figure 10. Connect **Azure IoT Hub Receiver** node with a “**debug**” node.

Step 10. Double click “Azure IoT Hub Receiver” node and enter the **ConnectionString** for your **Azure IoT Hub Receiver** and click Done.

Noted: Following steps to get **ConnectionString** for your Azure IoT Hub.

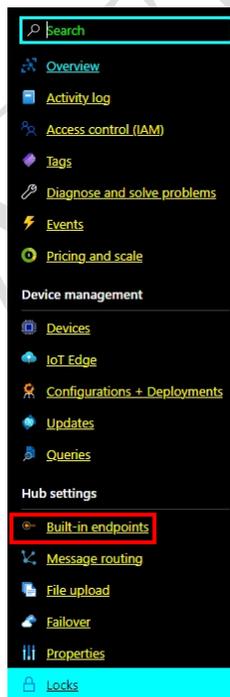
A. Go to Azure website and **click** IoT-Hub.

**Azure GUI**



B. Hub setting → Built-in endpoint

**Azure GUI**



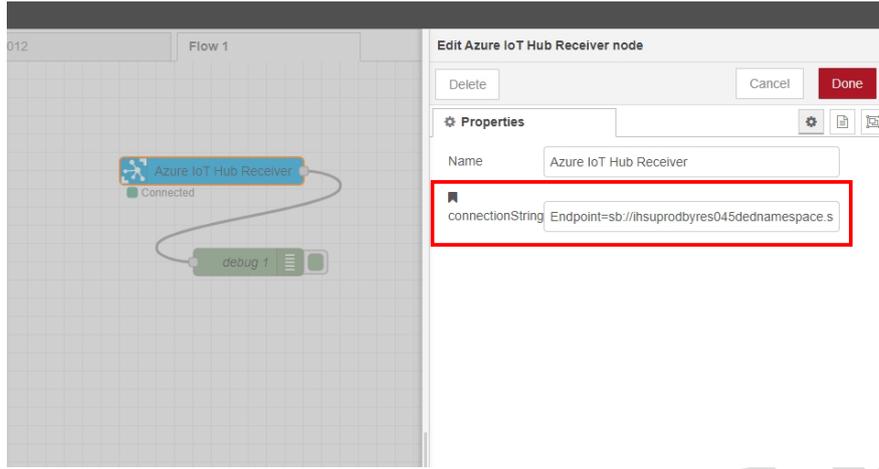
C. Copy the text from **Event Hub-compatible endpoint**.

**Azure GUI**



D. Paste the text to **Azure IoT Hub-Receiver** node

**Node-Red GUI**



**Results. Monitor the data which is pushed by WISE to Azure IoT Hub (figure 11). Click the bug icon then Node-Red will show the logs from WISE.**

**Node-Red GUI**

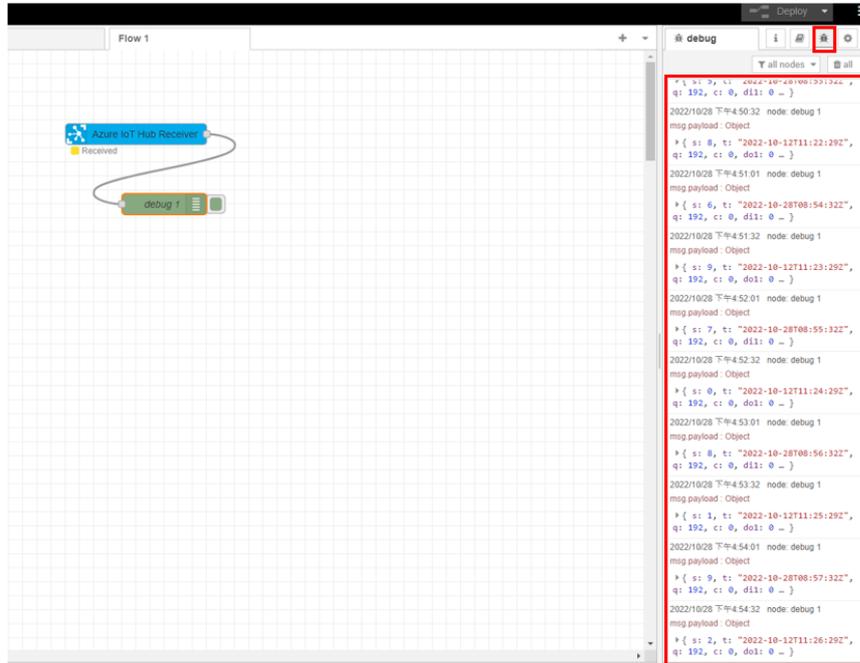


Figure 11. Node-Red monitoring pushed data from WISE.