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Category	■FAQ □SOP	**Related OS**	N/A
Abstract	How to Send WISE-4000 IO Data to and Receive Downlink Control from AmazonMQ Service on AWS via MQTT		
Keyword	WISE, MQTT, AWS, Amazon, Amazon MQ, Apache ActiveMQ		
Related Product	WISE-4000/LAN, WISE-4000, WISE-4220, WISE-4210-AP, WISE-4471, WISE-4671		

■ Brief Description

This document shows that how to use WISE-4000 and WISE-4220 series publish and subscribe topic to Amazon MQ service of AWS in MQTT protocol.

Users will establish a **security group** in **virtual private cloud** (VPC) and then, in **Amazon MQ** service, create an **Apache Active MQ** broker.

Finally, WISE-4000 and WISE-4220 series can publish and subscribe topic to Amazon MQ like Figure 1.

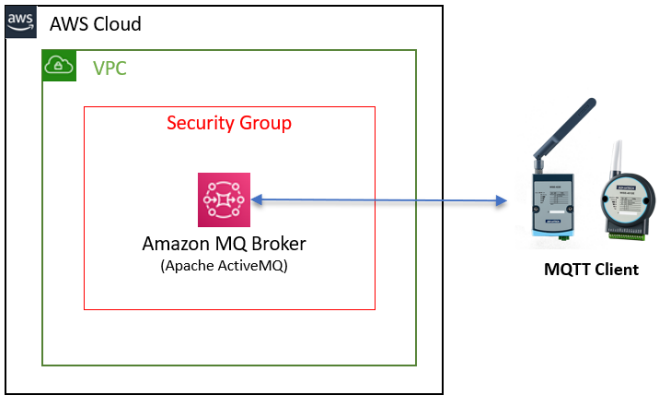

Figure 1. Architecture of WISE-4000/4220 communicating with Amazon MQ

※Please aware that AWS will charge reginal fee since this solution needs to establish an Amazon MQ service.

Test Environment:

⇨ WISE-4220: A2.14 B00

⇨ Amazon MQ: ActiveMQ 5.16.4

■ Brief Solution

About AWS's VPC information, please refer to the user guide below.

⇨ https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/concepts.html

About AWS's Amazon MQ information, please refer to the developer guide below.

⇨ https://docs.aws.amazon.com/amazon-mq/latest/developer-guide/welcome.html

The step 1 to step 6 refer to below Developer Guide.

⇨ https://docs.aws.amazon.com/amazon-mq/latest/developer-guide/getting-started-activemq.html#create-activemq-broker

Step1: Search "Amazon MQ" → Click "Amazon MQ". Just like Figure 2.

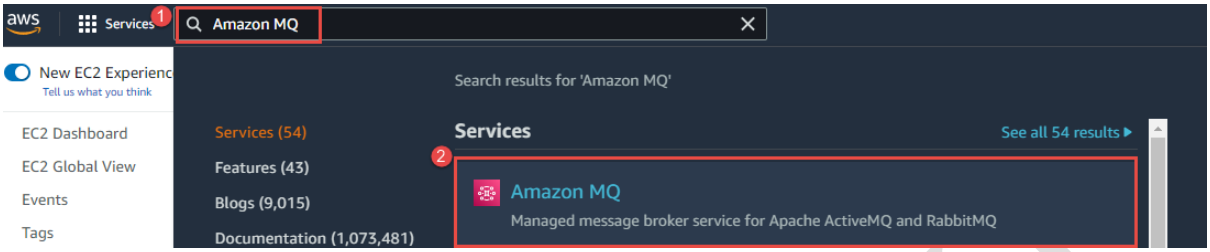

Figure 2. Searching Amazon MQ service of AWS

Step2: Click "Create brokers". Just like Figure 3.

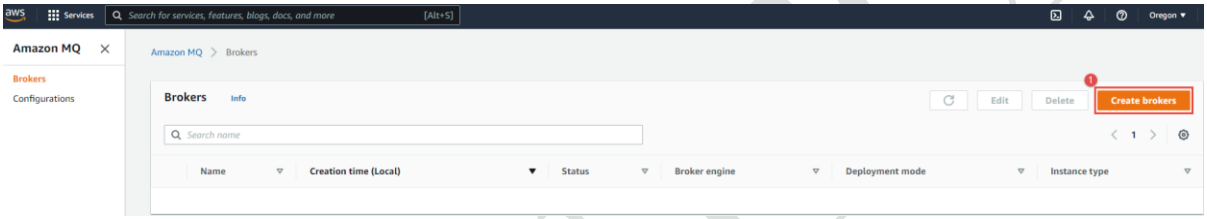

Figure 3. Creating a new broker

Step3: On the **Select broker engine** page, choose a broker type. In this case, **Apache ActiveMQ** was chosen. Just like Figure 4.

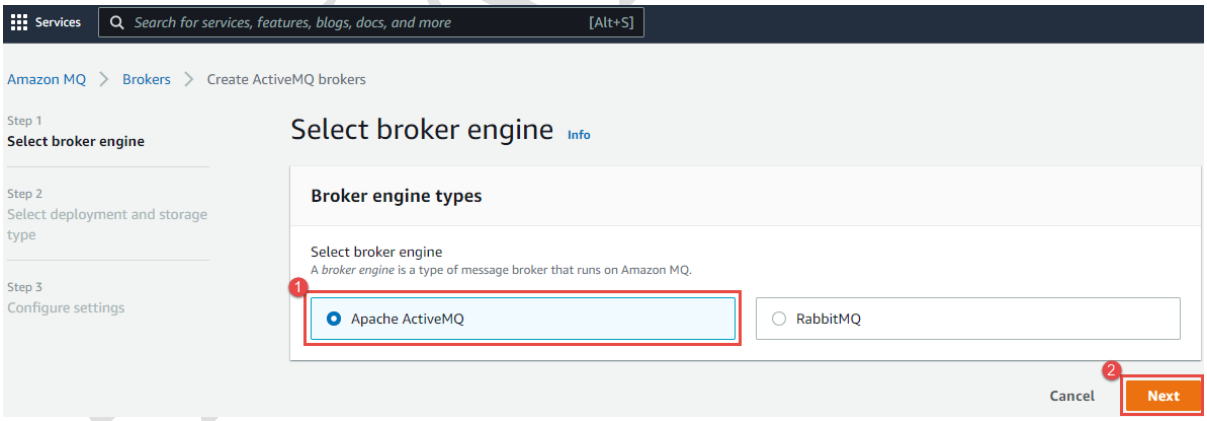

Figure 4. Choose a broker engine type

Step4: On the **Select deployment and storage** page, in the **Deployment mode** and **storage type** section, do the following:

a. Choose the **Deployment mode** (in this case, **Active/standby broker**)
b. Choose the **Storage type** (in this case, **Durability optimized**)

Just like Figure 5.

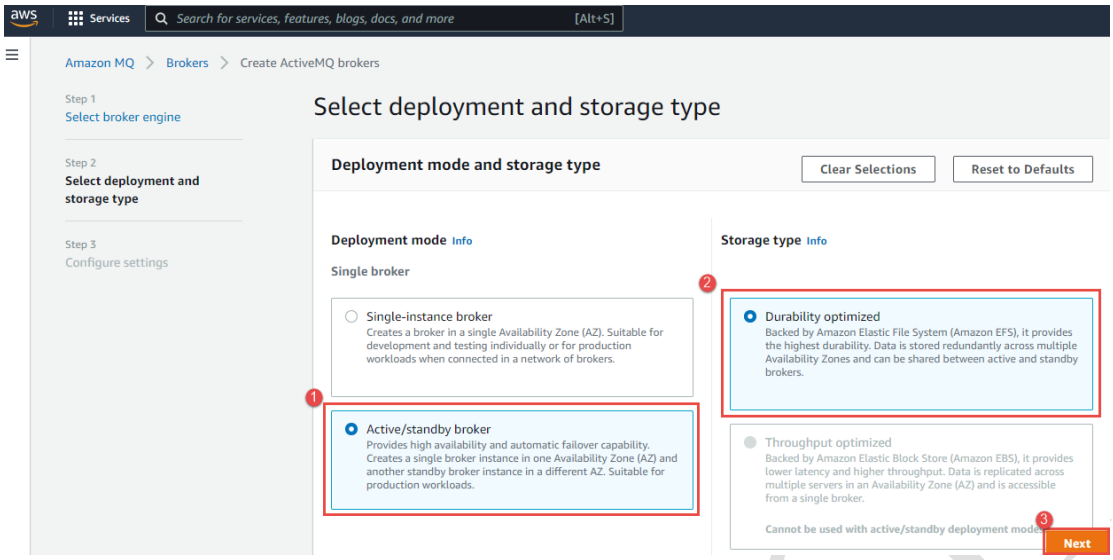

Figure 5. Select deployment and storage type

Step5: On the **Configure settings** page, in the **Details** and **ActiveMQ Web Console access** section, do the following. Just like Figure 6.

1. Enter the **Broker name**
2. Choose the **Broker instance type** (in this case, **mq.m5.large**)
3. Choose the Simple **Authentication and Authorization**
4. Determine **Username**
5. Determine **Password**

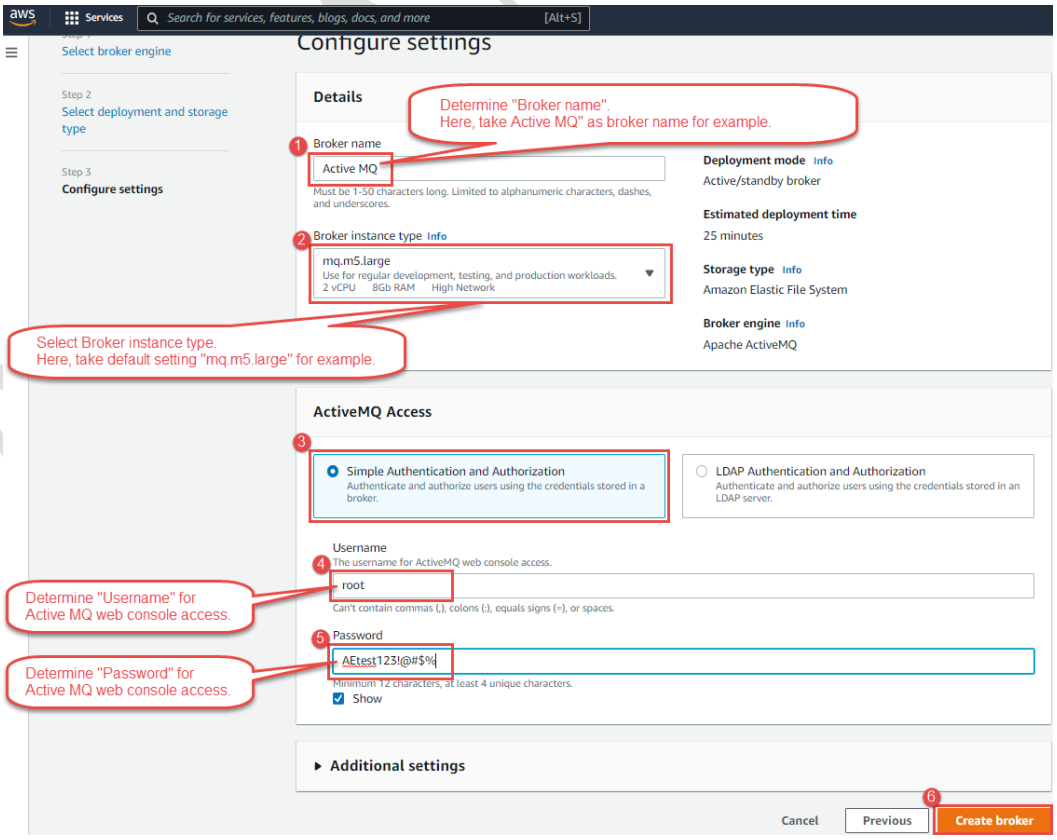

Figure 6. Configure setting page

Step6: While Amazon MQ is creating the broker, it will display the **Creation in progress** status. It takes about 15 minutes. When the broker is created successfully, Amazon MQ displays the **Running** status.

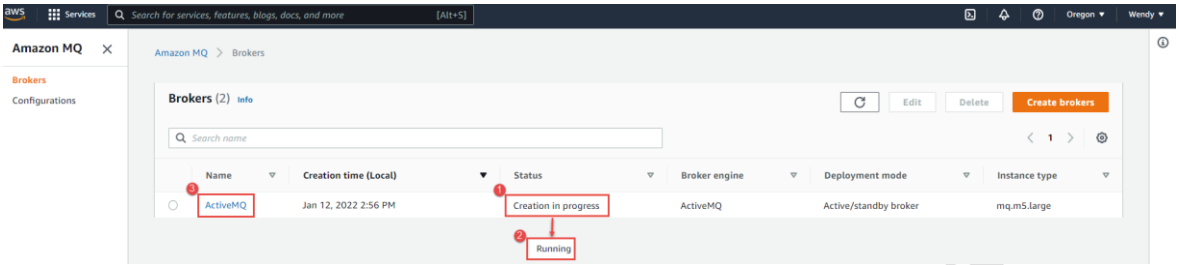

Figure 7. Process of creating a broker

Step7: When the broker is built successfully, please click into the **{ActiveMQ}** broker. After user finds out **IP Address** of the MQTT broker, user needs to click **Edit** button for more setting.

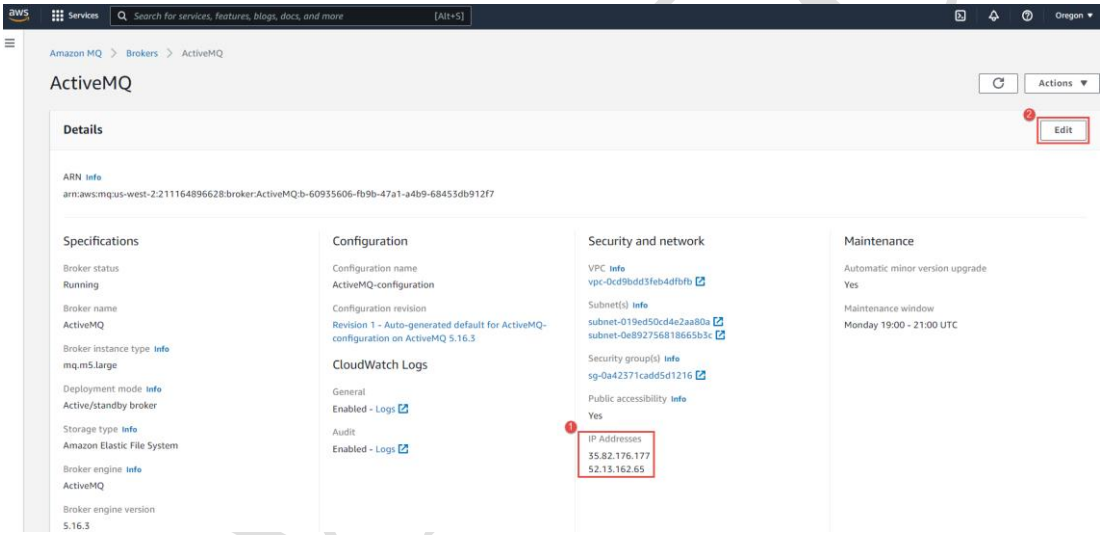

Figure 8. **Detail** page of the broker

Step8: On **Edit {ActiveMQ}** page, in the **Security and network** section, choose the security group, which open port 8883 and 61619. These 2 ports are set when creating a security group.

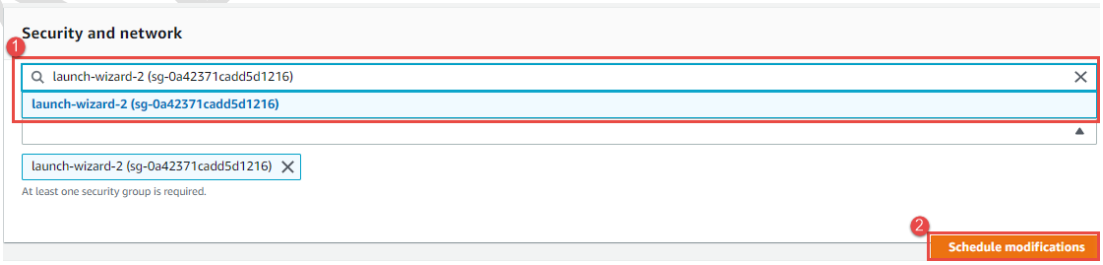

Figure 9. Choose a security group for the broker

Note: The below AWS User Guide describe how to **Create a security group**
https://docs.aws.amazon.com/vpc/latest/userguide/VPC_SecurityGroups.html#creating-security-groups

Step9: On **Amazon MQ console > Brokers > {ActiveMQ}** page, choose **Actions**, **Reboot broker**. When it reboots done, the setting in step 8 will occur.

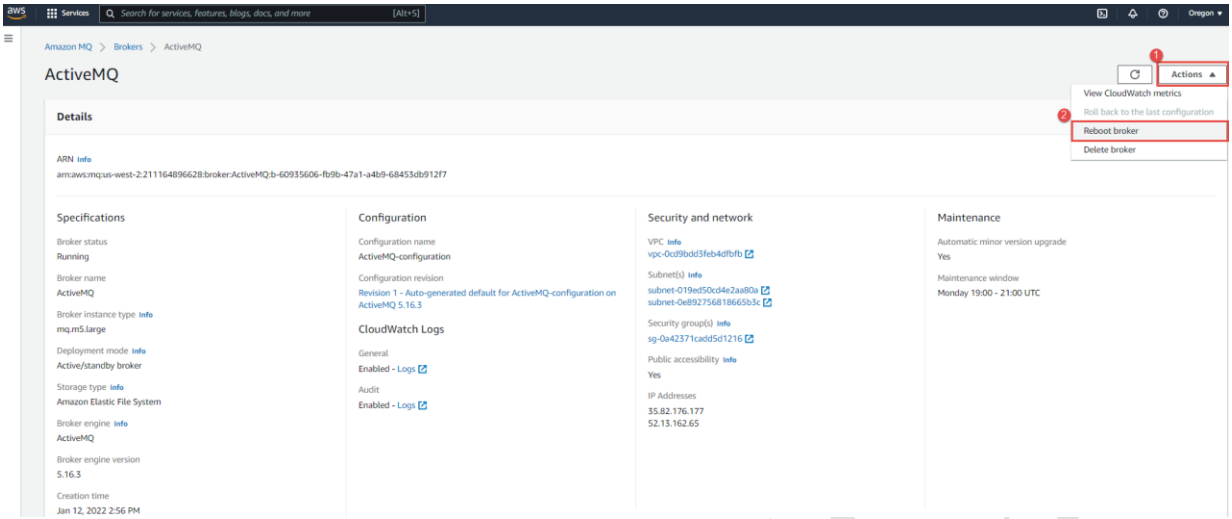

Figure 10. Rebooting the broker

Step10: On **Amazon MQ > Broker** page, please wait Amazon MQ rebooting the broker, it will display the **Rebooting** status. It takes about 5 minutes. When the broker reboot successfully, Amazon MQ displays the **Running** status.

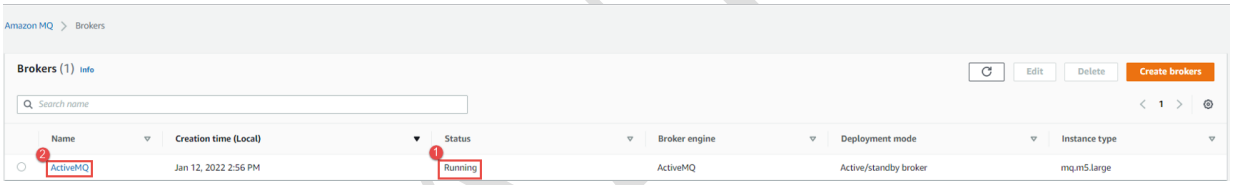

Figure 11. Process of rebooting the broker

Step11: On the **{ActiveMQ}** broker page, in **Connections** section, there are MQTT/SSL or WebSocket/SSL protocol **Endpoints**, just like Figure 12. Below Table 1 shows the example URL of the **{ActiveMQ}** broker.

Table 1. Example URL of sample broker

Domain Name	MQTT/SSL	WebSocket/SSL
b-60935606-fb9b-47a1-a4b9-68453db912f7-**1**.Mq.us-west-2.amazonaws.com:8883	35.82.176.177:8883	35.82.176.177:61619
b-60935606-fb9b-47a1-a4b9-68453db912f7-**2**.Mq.us-west-2.amazonaws.com:8883	52.13.162.65:8883	52.13.162.65:61619

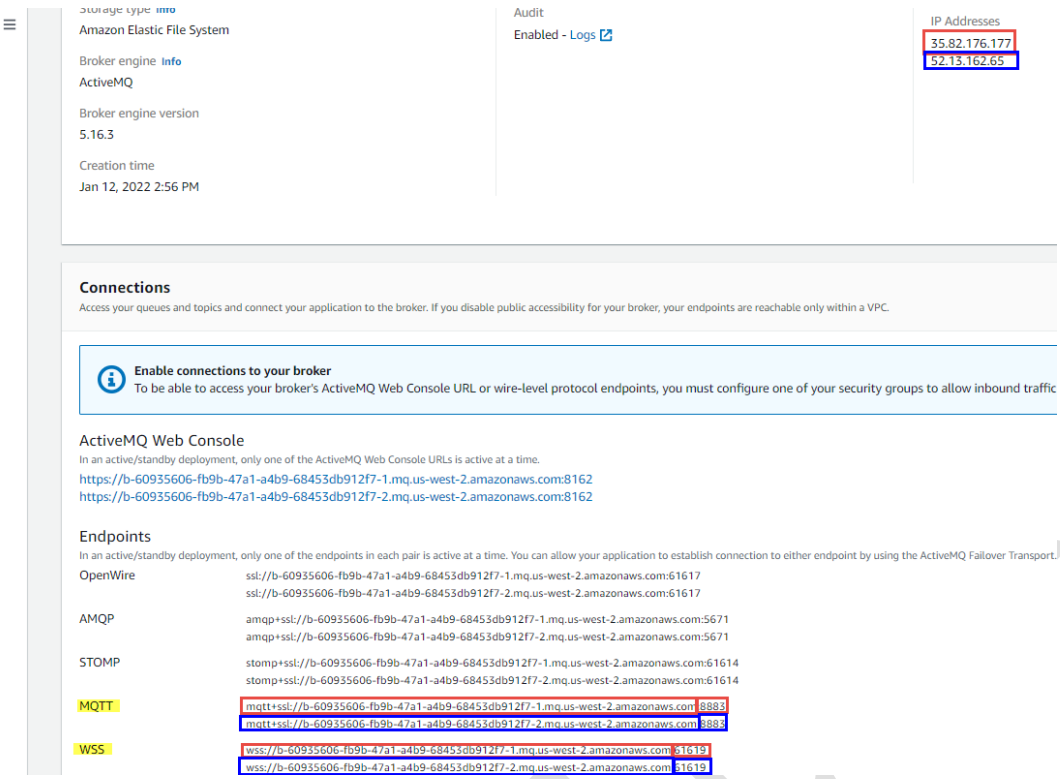

Figure 12. Endpoints of the sample broker

Step12: Open Web GUI of WISE-4000/4220 series and go to **Configuration > Cloud** to set on **Cloud Configuration** page. Just like right side of Figure 13. The following is the field introduction in config setting of WISE-4000/4220.

1. **Select Service**: Select a cloud service of WISE-4000/4200. In this case, the field is set as **"iSensing MQTT."**
2. **MQTT Host Name**: Input broker's IP or URL into this field. In this case, the field is set as **"52.13.162.65"** (refer to step 11)
3. **Port Number**: Input broker's port number. In this case, the field is set as **"8883"** (refer to Step 11)
4. **SSL Secure**: the function will make data transferred more securely. In this case, the field is set as **"Enable"** due to AWS only support via MQTT or WebSocket.
5. **WebSocket**: If user uses MQTT, click **Disable**. If WebSocket, click **Enable**. In this case, the field is set as **"Enable."**
6. **User Name**: Input broker's username. In this case, the field is set as **"root"** (refer to Step 5)
7. **Password**: Input broker's password corresponding to the username. In this case, the field is set as **"AEtest123@#$%"** (refer to Step 5)

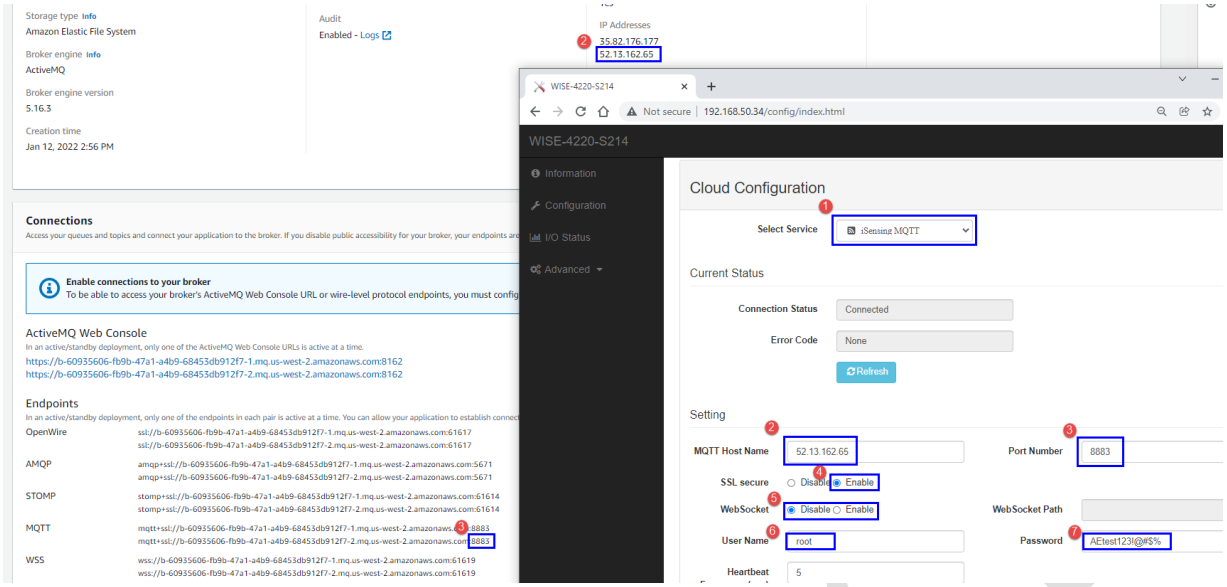

Figure 13. Setting of WISE connecting the broker

Step13: Go to **Advanced > Data Logger > Logger Configuration** page and turn on **I/O Log** switch in **Push Notification** section. Please notice that click **submit** button to save the setting. Just like Figure 14.

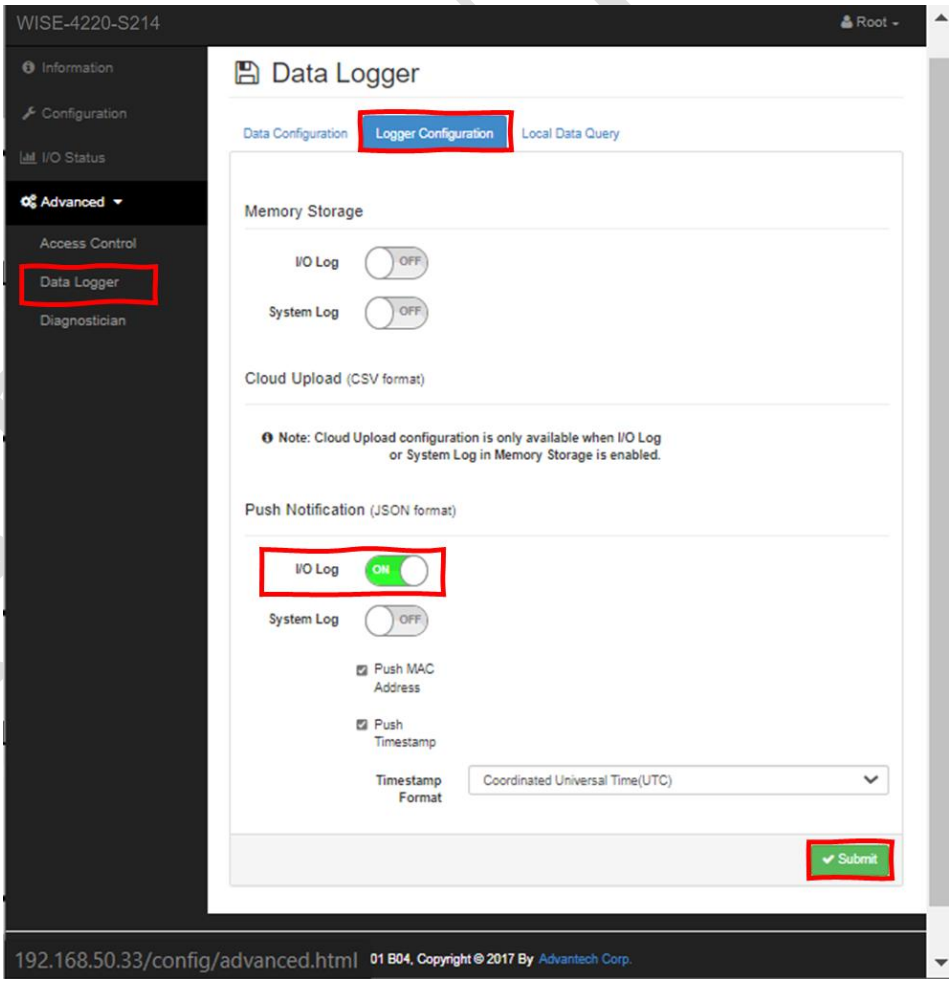

Figure 14. Turn on push IO log setting

Result: Please use any MQTT Client, such as MQTTBox, to subscribe the **{ActiveMQ}** broker with **Advantech/{74FE4858ED09}/data** topic. And the user will receive WISE-4000/4220's data from Amazon MQ. Just like Figure 15.

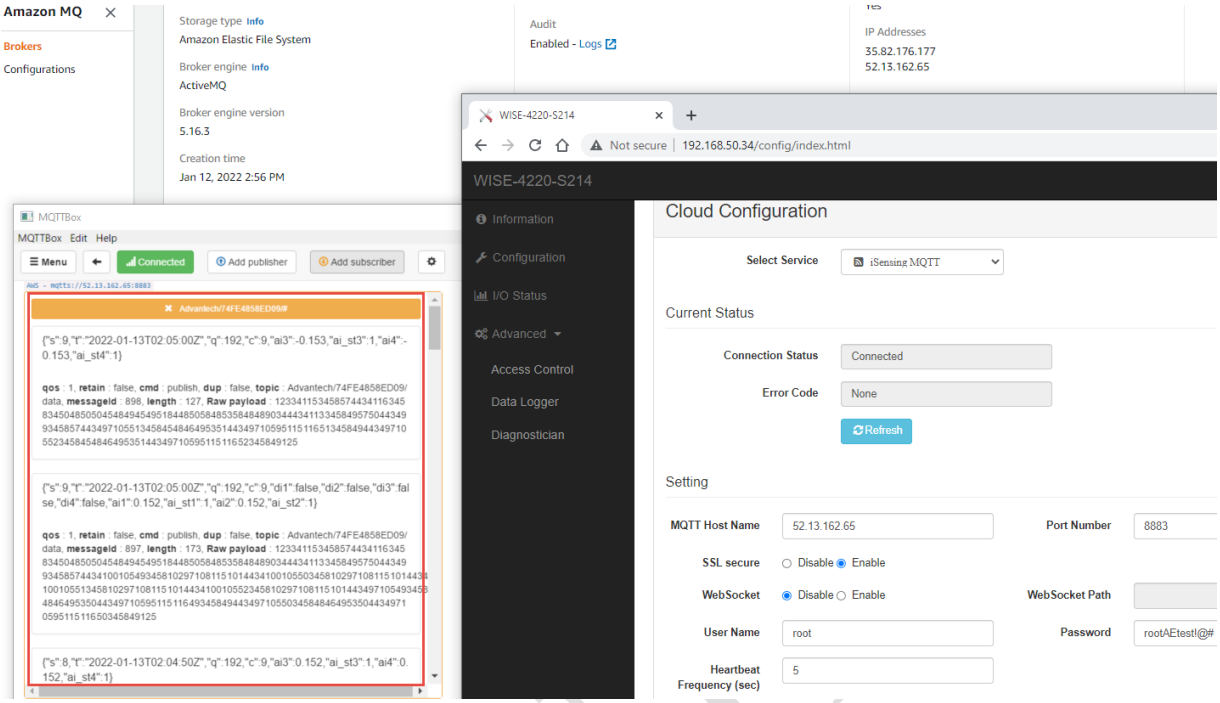

Figure 15. Subscribe topic of WISE-4000/4220