ICP DAS
IoTstar Bot Service
For LINE
User Manual

[Version 1.0.8 - 2024/06/21]

Warning

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Through the communication mechanisms provided by LINE company, this controller can send the notification messages and information regarding this controller to the related personal account. However, this function may not be available due to LINE company closes or terminates the communication mechanisms of their systems.

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1 Introduction

IoTstar is a software developed by ICP DAS for WISE/PMC/PMD controllers for use in a variety of Industrial IoT applications. IoTstar can be installed on a general PC platform and works as a Private IoT Cloud system, or on the VM (Virtual Machine) platform of Microsoft Azure, IBM Bluemix, Google Cloud or Amazon AWS, etc. and works as a Public IoT Cloud system. By using IoTstar to build an IoT Cloud system, it can provide 5 major services:

1. Controller Remote Access Service: Status Monitoring, System Setting, and Firmware Update for WISE/PMC/PMD controllers.
2. Sensor Data Collection Service: Collect the data of the sensor connected to the controller and import the data into the Database on cloud.
3. Sensor Data Visualization Service: Review the data of the sensor connected to the controller through Dashboard interface.
4. Sensor Data Report Service: Provide statistical report for the data of the sensor connected to the controller.
5. Bot Service with Mobile Phone: Review the data of the sensor connected to the controller by mobile phone Bot service.

Figure 1-1: System Architecture of IoTstar

IoTstar Bot Service for LINE is an optional software package for IoTstar that provides users a Two-way message interaction between the WISE/PMC/PMD controllers managed by IoTstar and LINE chat rooms. Through IoTstar Bot Service for LINE, the users can query the real-time I/O channel data (or power data) of the I/O module (or power meter) connected to the WISE/PMC/PMD controllers, and instantly change the values of the DO/AO output channels of the I/O modules (or power meters) connected to WISE/PMC/PMD controllers.

In addition, IoTstar Bot Service for LINE can receive the text message sent by the WISE/PMC/PMD controllers through the trigger of IF-THEN-ELSE logic rule and send the text message to the LINE account bound to the LINE chat room for the event notification. If WISE enables the image or video file forwarding function, IoTstar Bot Service for LINE can also send the photo or video file to the LINE account along with the text message, and user can also review the event list and the corresponding images of controller in the past.

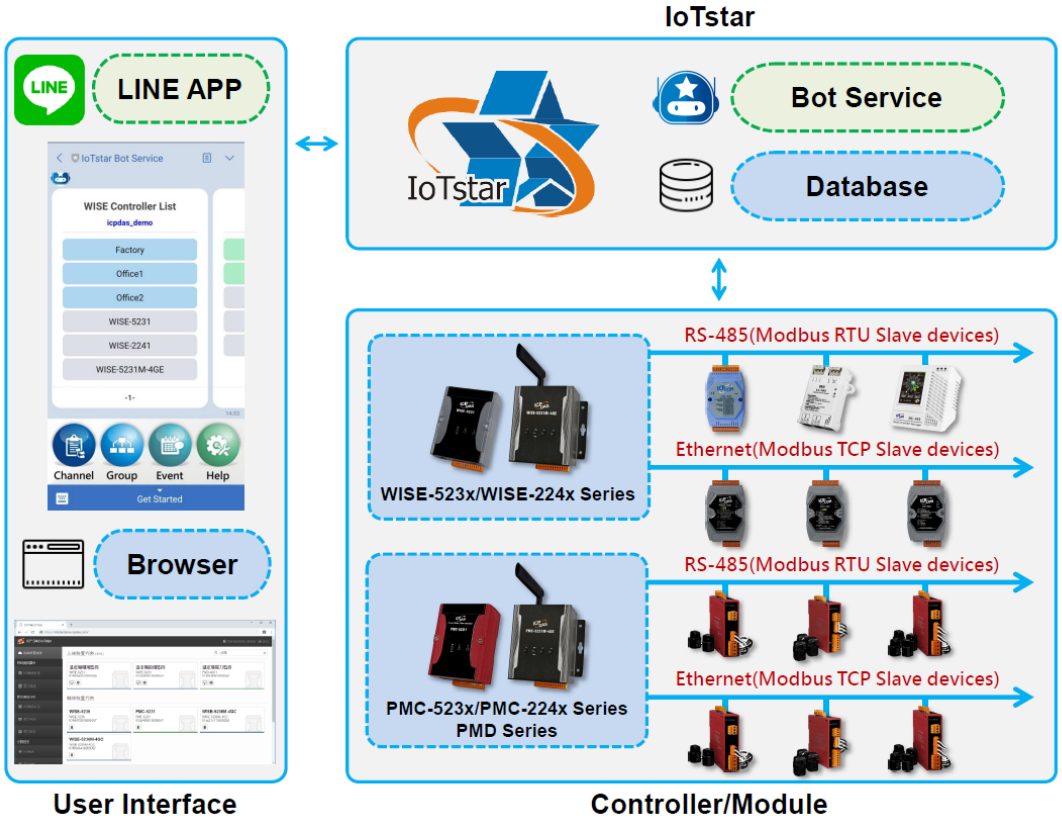

Figure 1-2: IoTstar Bot Service for LINE System Architecture

2 Before Installation

2.1 Precondition

Before using IoTstar Bot Service for LINE, you must first complete the setting of the following preconditions.

- Complete the installation of IoTstar, and complete the connection setting of IoTstar and WISE/PMC/PMD controllers.
- The network setting of the computer that installs IoTstar needs to be set as **"Public Network IP"** or "**Dynamic IP + DDNS**", and the user has to apply the **SSL certification** for the IoTstar website.
  - The HTTPS server must use a SSL certificate issued by a certificate authority widely trusted by general web browsers, otherwise LINE will reject to send messages with the web server of IoTstar.
  - "Appendix I" provides the Step-by-Step document for the application of the free SSL certificate from Let's Encrypt. Before apply the SSL certificate from Let's Encrypt, the IoTstar website must complete the setting of **Domain Name**.
- Make sure the LINE official account can be applied in the country that IoTstar Bot Service for LINE installed, and make sure the functions of LINE Messaging API can be enabled.
  - The user needs to apply the LINE official account by himself. For the detailed process, please refer to the section "2.3 The application and setting of the LINE account".
  - The following table provides the information of LINE official account solution, providing free, light and standard options:

	Free	**Light**	**Standard**
Monthly Fee	Free	Monthly fee depends on the country in which your account is registered.	
Free Messages	The number of free messages depends on the country in which your account is registered.		
Additional Message Fee	N/A	N/A Only available in Thailand.	Available Message fee depends on the country in which your account is registered.

The introduction websites of LINE account are as below: Taiwan, Japan, Thailand, Other

- The user can choose the LINE official account solution according to his requirement, and has to pay the fee derived from the selected LINE official account solution to LINE.

2.2 Software Requirements

- IoTstar requires v2.0.0 or later.
- The LINE App on Android or iOS requires version 8.11.0 or later.

2.3 The application and setting of LINE account

Following sections include the topics as below:

- Perform the creation of the Messaging API Channel through the LINE Developer website, then complete the creation of LINE official account.
- Complete the settings of the LINE Developer website and the LINE Official Account Manager website.

2.3.1 Creation of Messaging API Channel

i Log in to the Messaging API creation page of the LINE Developers website (the account you use to log in the website will have the authority to manage the LINE official account, add users, set up the roles of users, and transfer account).

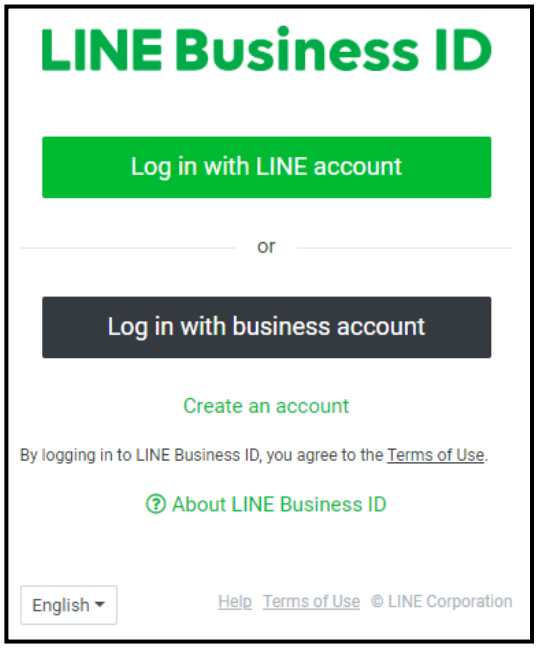

Figure 2-1: Login the LINE Developer Website

※If you have not logged in and registered on the LINE Developer website before, you will be asked to enter the information of "Name" and "Email address", after that you can start using it. (only on first time login)

ii Enter the information to create the Messaging API channel and confirm the information you enter, then check the "Terms of Use" and click "Create" to complete the creation of Messaging API channel.

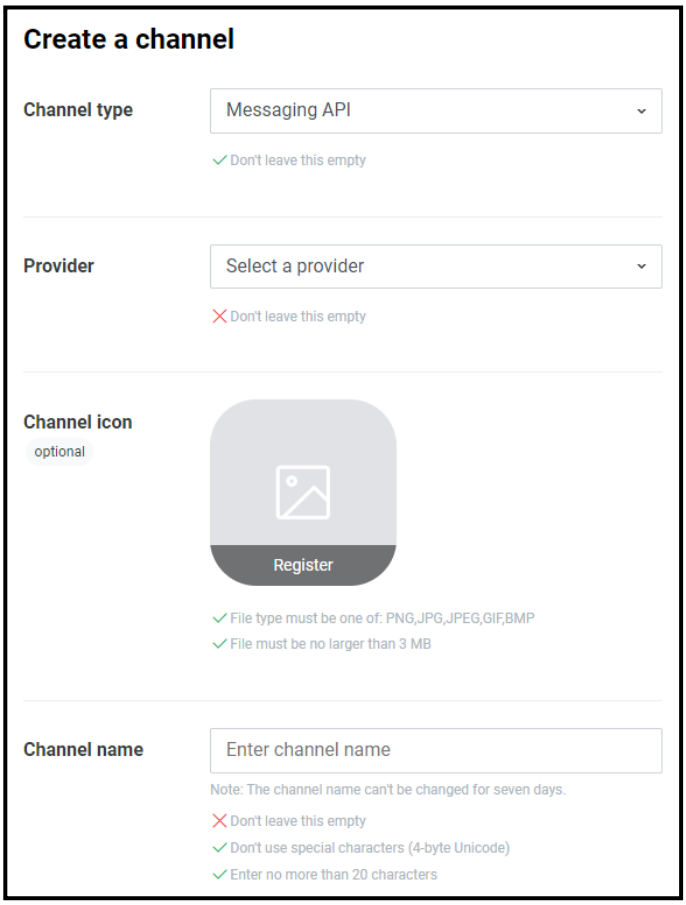

Figure 2-2: LINE Developer Website - Create Messaging API channel

※"Provider" field : In general, it is the company name. If it has been created, then select the existing one, or select "Create a new provider" to create a new one.

2.3.2 The setting of LINE Developer

i Under the page of Provider, click on the Messaging API channel you just created.

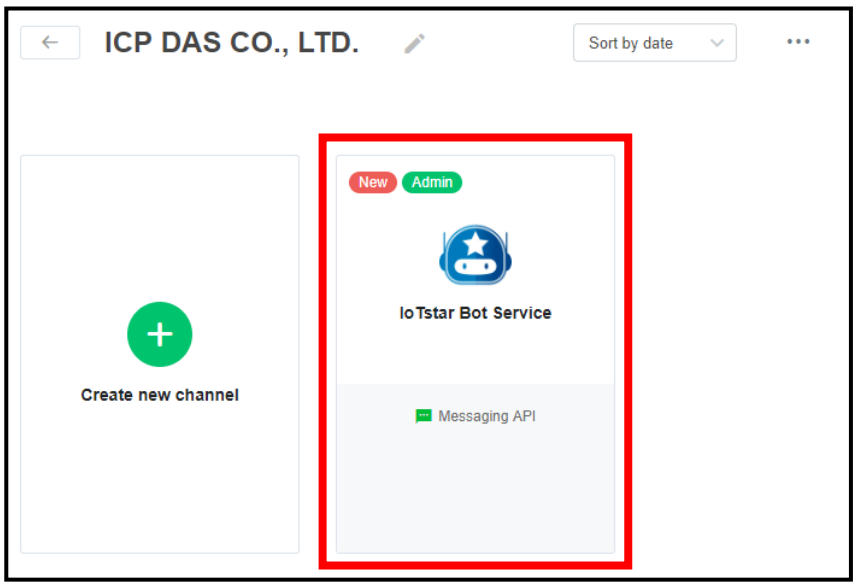

Figure 2-3: LINE Developer Website - Enter the Messaging API channel

ii Click the "Edit" button for the "Auto-reply messages" or "Greeting messages" under the "LINE Official Account features" section of the Messaging API tab.

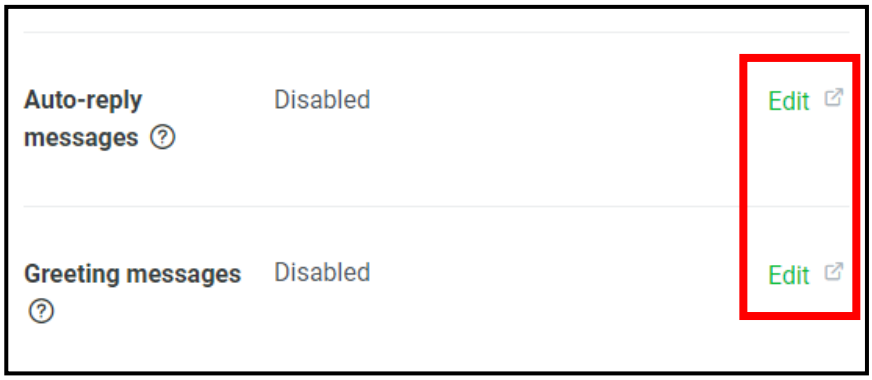

Figure 2-4: LINE Developer Website - The setting for LINE Official Account features

iii When Click the "Edit" button, The LINE Official Account Manager website will be opened. Disable the "Greeting message" and "Auto-response" under the "Response settings" section.

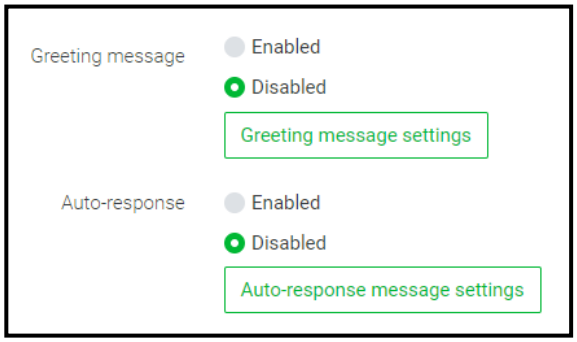

Figure 2-5: LINE Official Account Website - Response settings

iv Go back to the LINE Developer website, and click the "Issue" button of the "Channel access token (long-lived)" field in the Messaging API tab to generate a token.

Figure 2-6: LINE Developer Website - Create the Channel access token

v Click the right mouse button on the "QR code" image, and select "Copy Image Address" to get the "QR code URL".

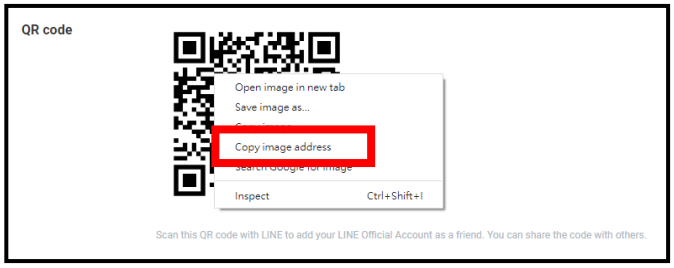

Figure 2-7: LINE Developer Website - Get QR code URL

vi After the settings are completed, you can get the information of "Channel ID" and "Channel Secret" in the "Basic Setting" tab and "QR code URL" and "Channel access token (long-lived)" in the "Messaging API" tab. Please record these information, later you will need these information to enable the functions of IoTstar Bot Service for LINE.

Please note: If you click the "Issue" button again to change the content of "Channel Secret" or "Channel access token" fields, please remember to modify the settings on IoTstar with the new information.

2.3.3 Change the solution of LINE@ accounts

i Log in to the LINE Official Account Manager website. Go to the page of LINE Official Account Manager and select the Messaging API channel you created.

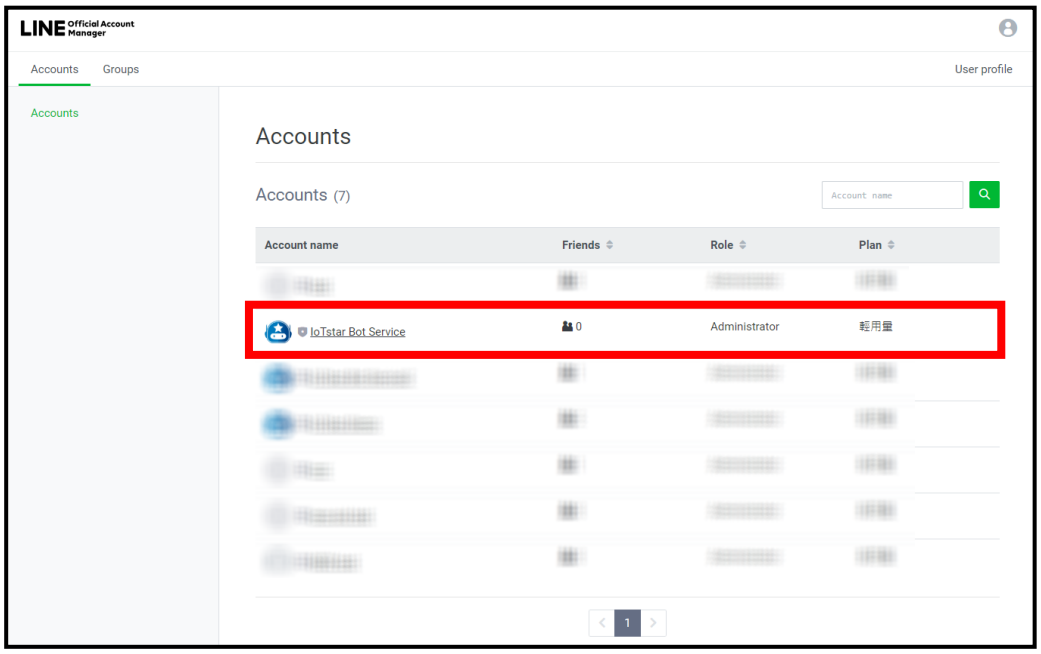

Figure 2-8: LINE Official Account Manager page

ii If you want to change to other solution options, you can click the "Settings" in the upper right corner and select the solution you required from the "Monthly plan" under the "Activity and billing" section of the left side menu and complete the settings for the payment procedure, then finish the procedures for the solution change.

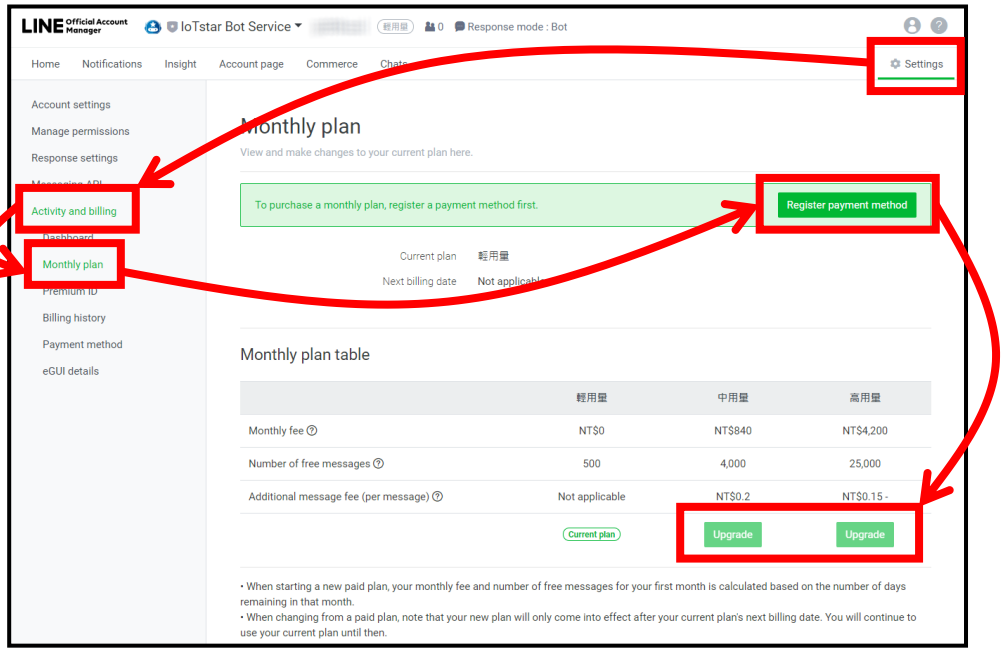

Figure 2-9: LINE Official Account Manager page - Monthly Plan

2.4 Enable IoTstar Bot Service for LINE function

To enable the Bot Service for LINE function on IoTstar, users have to install the IoTstar v2.0.0 (and later version) first, and then get the license file of trial service (or formal service) to enable the Bot Service for LINE function of the IoTstar. Users can obtain a full-function trial service for 90 days on the website, or contact with ICP DAS to purchase the upgrade code of formal service. The following sections will introduce the process to enable the Bot Service for LINE function.

- Get the license file of trial service or formal service.
- Import License File to enable Bot Service for LINE function.
- The setting of Bot Service for LINE function.

2.4.1 Obtain and enable the license file of trial service

i Click the "Download" button on the IoTstar official webpage.

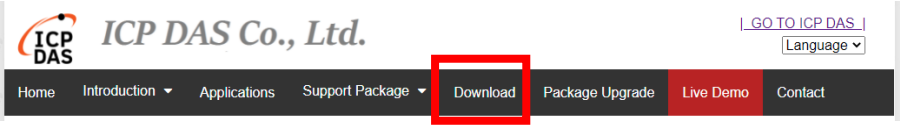

Figure 2-10: Obtain and enable the license file of trial service (1)

ii On the download page, click the "Apply for trail" button of "Trail Service for Support Package" section to enter the IoTstar "Trail Service for Support Package" page.

Figure 2-11: Obtain and enable the license file of trial service (2)

iii On the IoTstar "Trail Service for Support Package" page, select the "Bot Service for LINE" on the "Trail service option" field and enter the Hardware ID in the "Hardware ID" field. Click the "Download Trail License" button. If the above information is correct, users can obtain the license file of trial service.

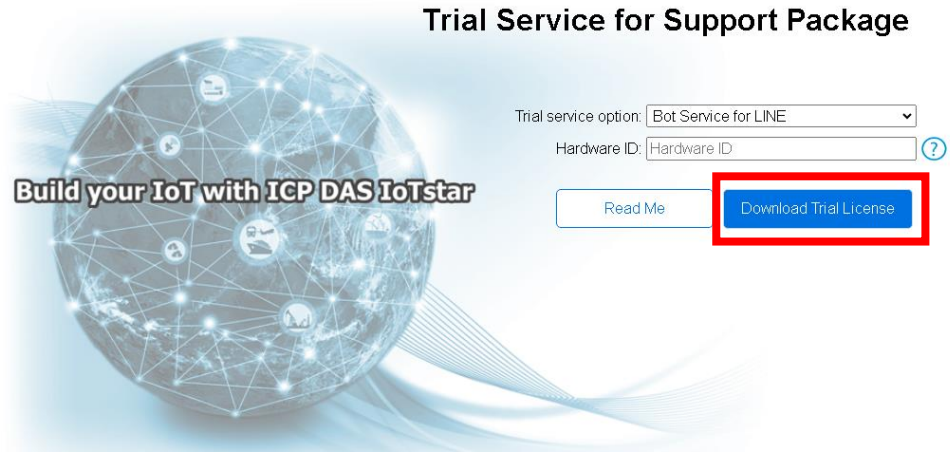

Figure 2-12: Obtain and enable the license file of trial service (3)

iv After getting the License file for Bot Service for LINE, please open the IoTstar system interface, click "License" button to enter the License setting window, and click "Browse" button to import the License File, and then click "OK" to enable the Bot Service for LINE function of the IoTstar. (The trial service will be displayed the

expiration date of bot service.)

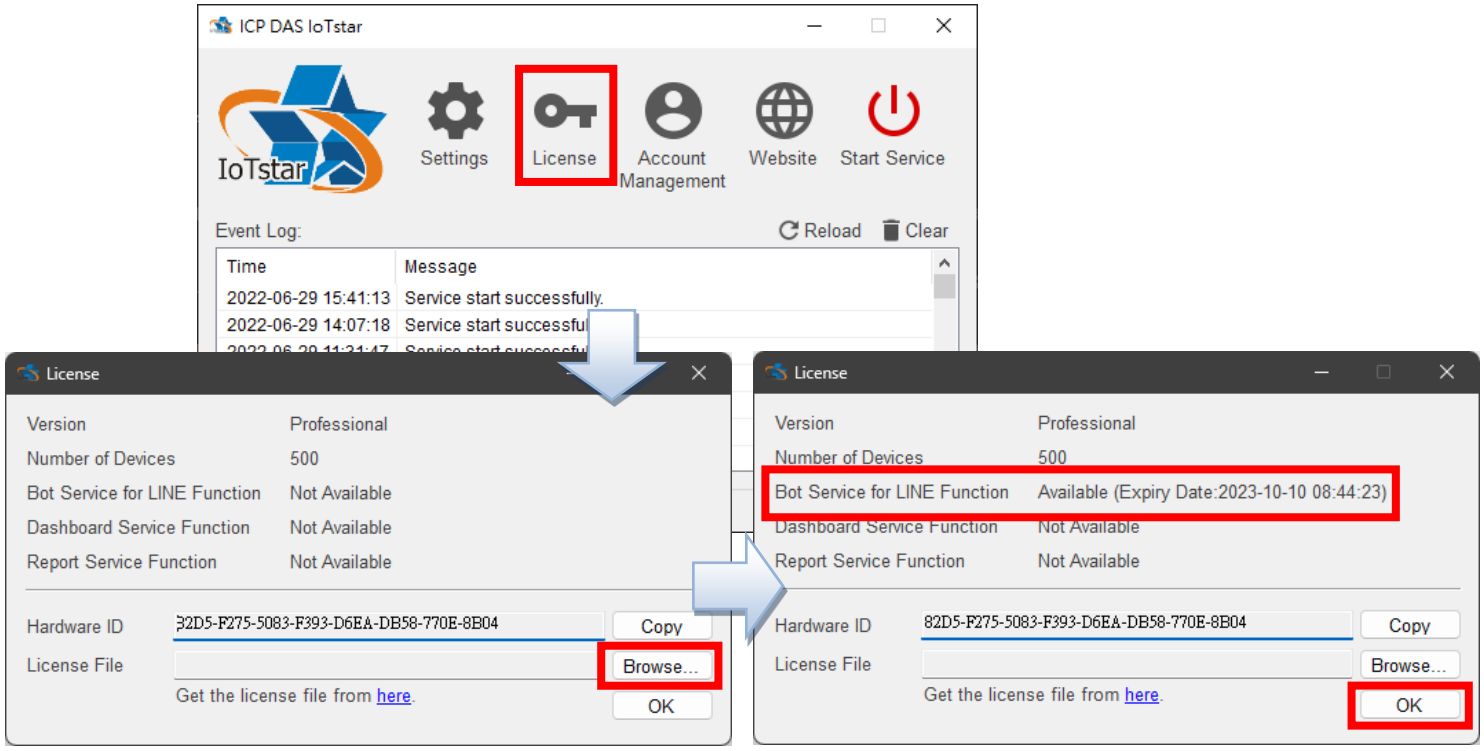

Figure 2-13: Obtain and enable the license file of trial service (4)

2.4.2 Obtain and enable the license file of formal service

To enable IoTstar Bot Service for LINE (Formal service), you have to install the IoTstar Professional version v2.0.0 (and later version) first, and then contact with ICP DAS to purchase the upgrade code to enable the IoTstar Bot Service for LINE (Formal service). The following steps will introduce the process to enable the IoTstar Bot Service for LINE (Formal service).

i Click the "Package Upgrade" button on the IoTstar official webpage.

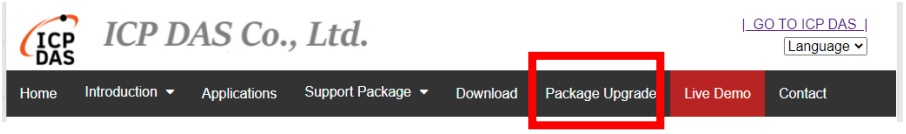

Figure 2-14: Obtain and enable the license file of formal service (1)

ii Enter the Serial Number of IoTstar (professional version) and the Upgrade Code to enable Bot Service for LINE, and click the "Upgrade" button to upgrade your IoTstar Serial Number with the authorization to use IoTstar Bot Service for LINE. Click "Generate the License File" to go to the registration page.

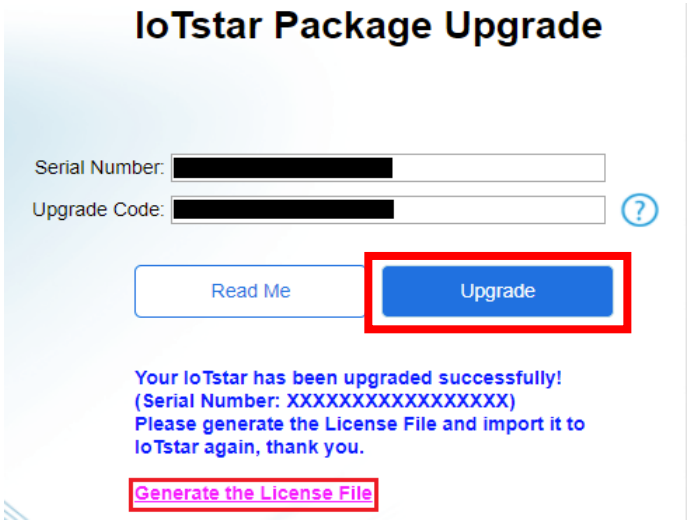

Figure 2-15: Obtain and enable the license file of formal service (2)

iii Enter the required information and click the "Registration" button to get the license file of formal service.

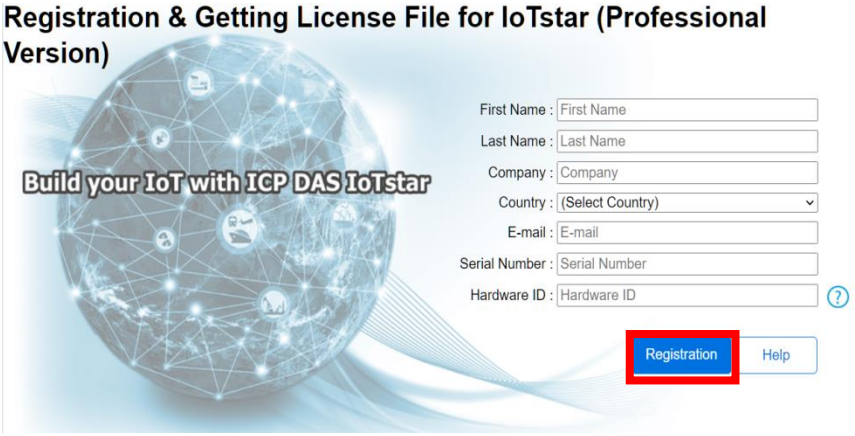

Figure 2-16: Obtain and enable the license file of formal service (3)

iv After getting the License file for Bot Service for LINE, please open the IoTstar system interface, click "License" button to enter the License setting window, and click "Browse" button to import the License File, and then click "OK" to enable the Bot Service for LINE function of the IoTstar.

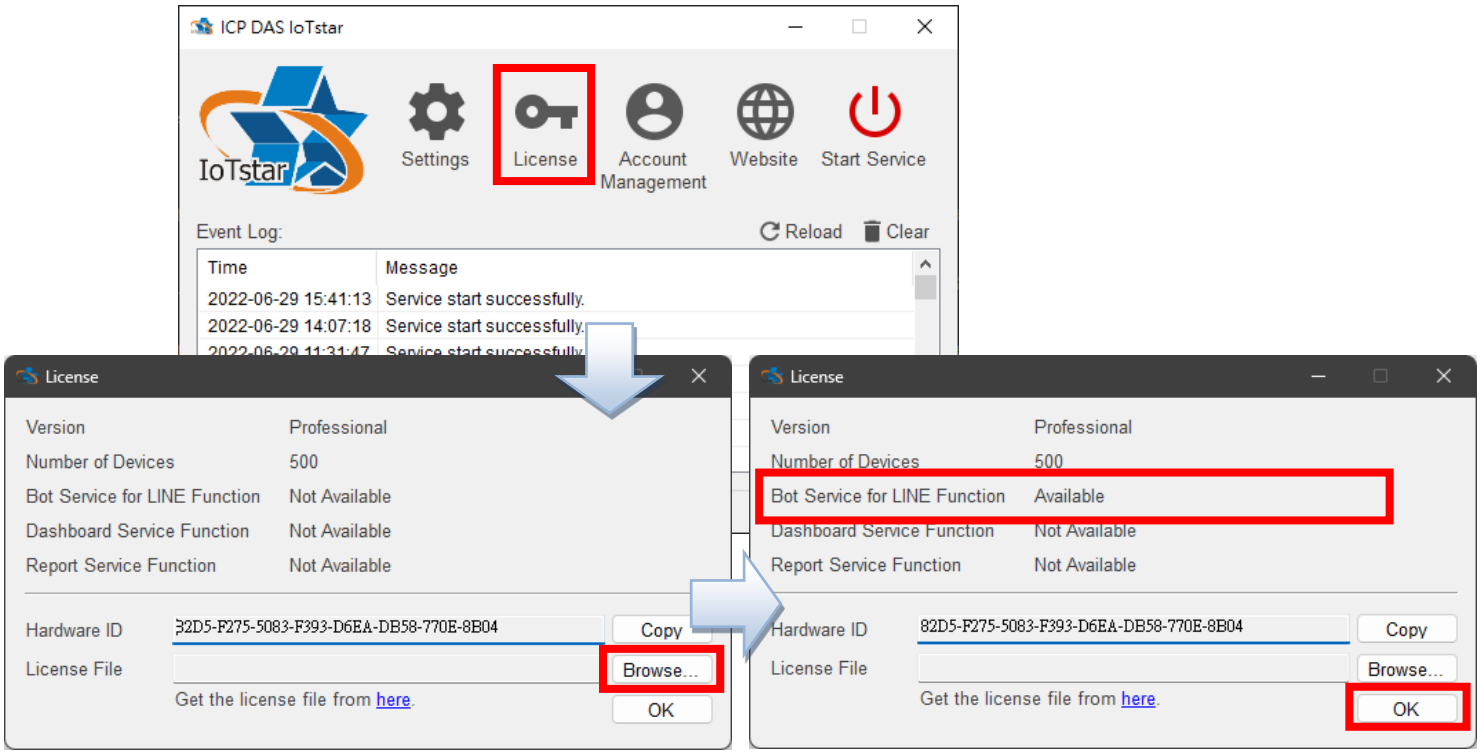

Figure 2-17: Obtain and enable the license file of formal service (4)

2.4.3 The setting of Bot Service for LINE and Webhook

i Click "Settings" button on the IoTstar system interface to enter the setting window. Select the tab of "Website" and select https of the "Type" field. If you have modified the IP/Domain Name of IoTstar when create Bot Service, you need to modify the "IP/Domain Name" field.

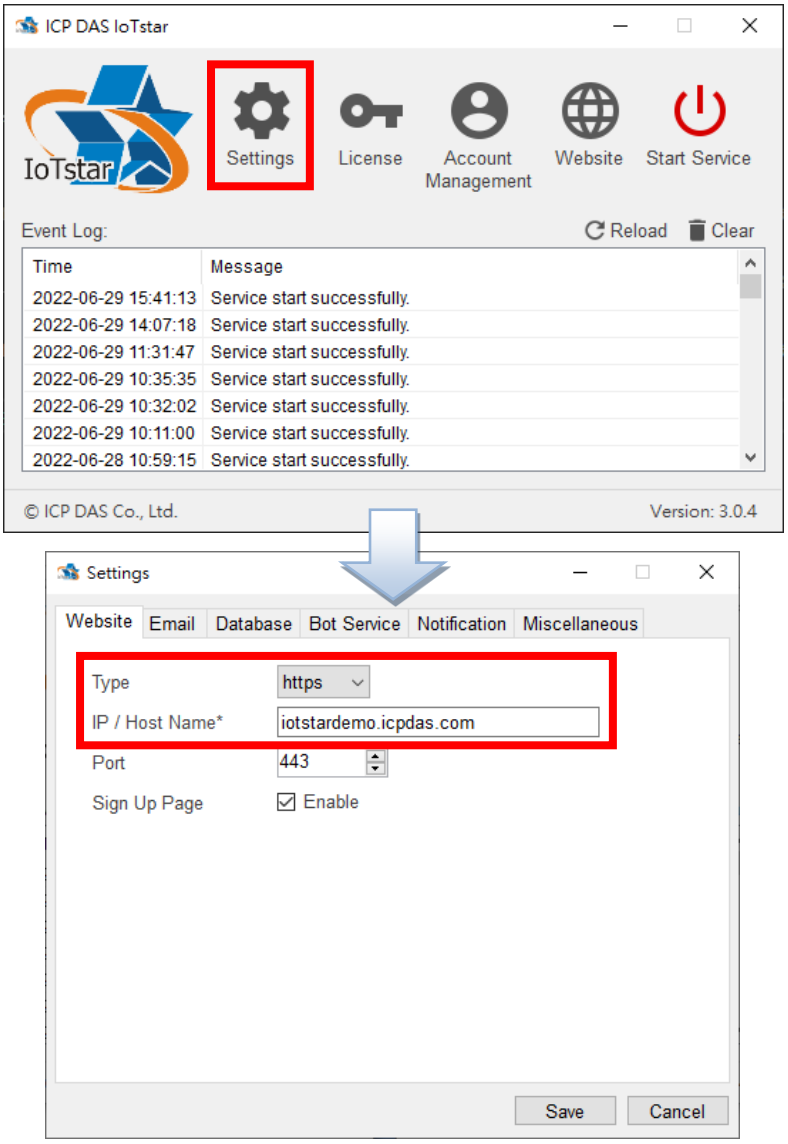

Figure 2-18: The settings to enable IoTstar Bot Service for LINE (1)

ii Select the tab of "Bot Service", check the "Enable" of "Function Status" field in the “LINE” section to enable the function, and enter the information you get from the "2.3.2 The setting of LINE Developer" section such as "Channel ID", "Channel secret", "Channel

access token" and "QR code URL" in the corresponding fields of “LINE” section.

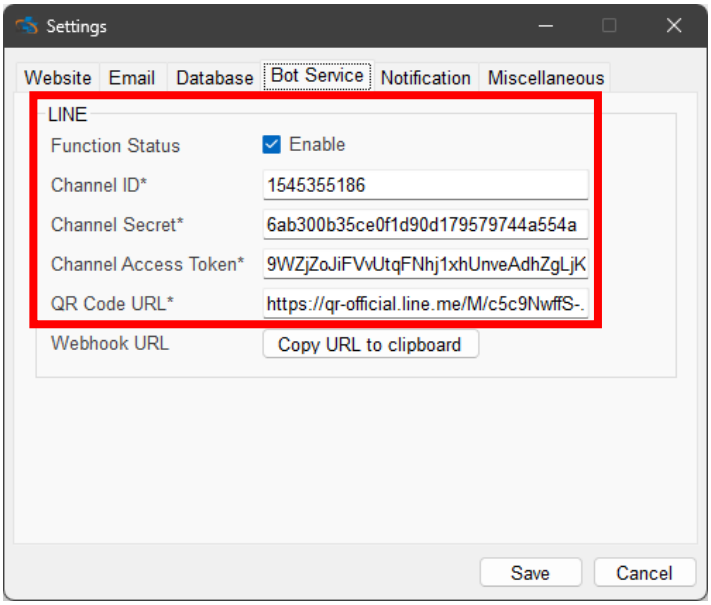

Figure 2-19: The settings to enable IoTstar Bot Service for LINE (2)

iii Click "Copy URL to clipboard" button of "Webhook URL" field to copy the URL of IoTstar.

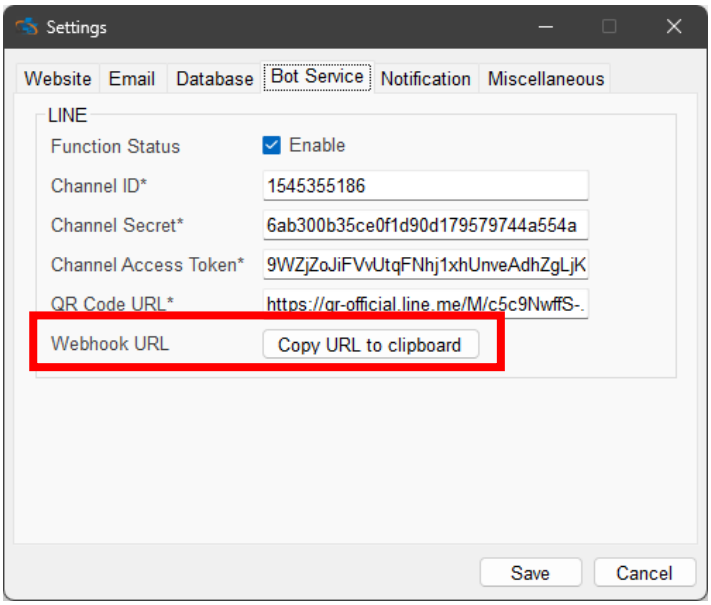

Figure 2-20: The settings to enable IoTstar Bot Service for LINE (3)

iv Go to the Messaging API channel page of LINE Developer website, paste the URL on the "Webhook URL" field by clicking the "Edit" button of the Messaging API tab and click "update" button, and turn on the switch of the "Use Webhook" to enable Webhook..

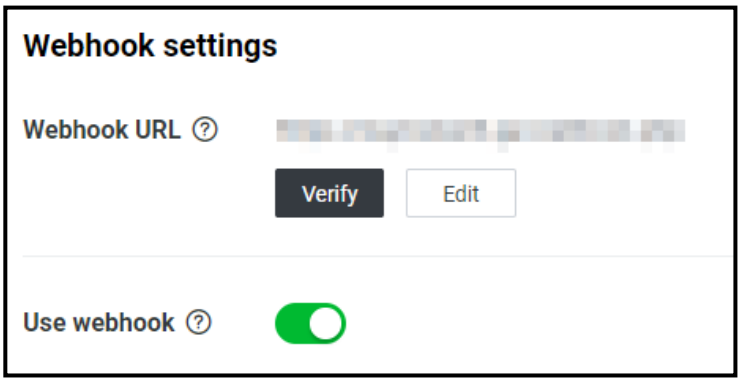

Figure 2-21: The settings to enable IoTstar Bot Service for LINE (4)

v Return to IoTstar system interface. Select the tab of "Miscellaneous", you can set the folder path for controller event video and photo file storage of "Video & Photo Folder" field. Click the "OK" button to complete the settings.

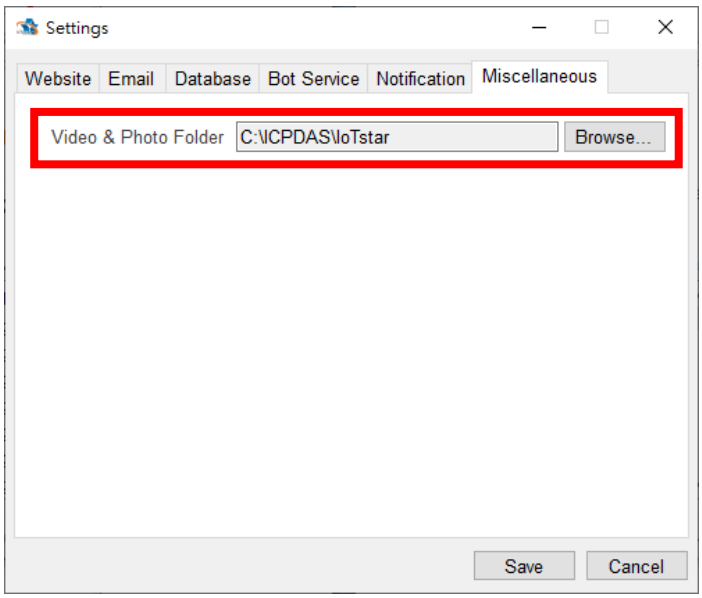

Figure 2-22: The settings to enable IoTstar Bot Service for LINE (5)

vi Click "Start Service" to launch IoTstar, then the Bot Service for LINE function will also be enabled at the same time.

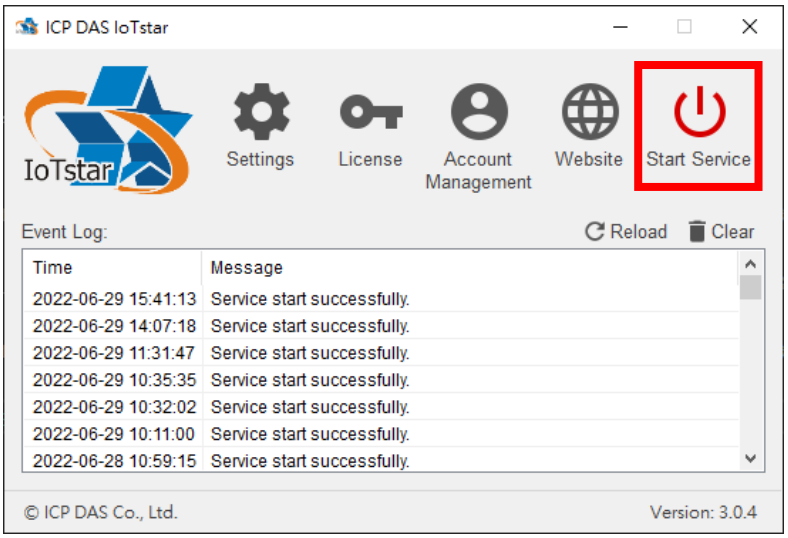

Figure 2-23: The settings to enable IoTstar Bot Service for LINE (6)

2.5 Import SSL certificate

To enable IoTstar Bot Service for LINE, user has to import the SSL certificate into IIS (Internet Information Service). The SSL certificate can be obtained for free or for a fee. So please use the IP or Domain Name of the IoTstar website to obtain its corresponding SSL certificate first, and then perform following steps to import the SSL certificate into IIS, or refer to "Appendix I" to apply the free SSL certificate of Let's Encrypt and import it into IIS. Please Note: If user follows the steps of Appendix I, the software will help user to get the SSL certificate, import it to IIS automatically. So please skip the steps in the section 2.5).

i Launch "Internet Information Services (IIS) Administrator" and click on the "Server Certificates".

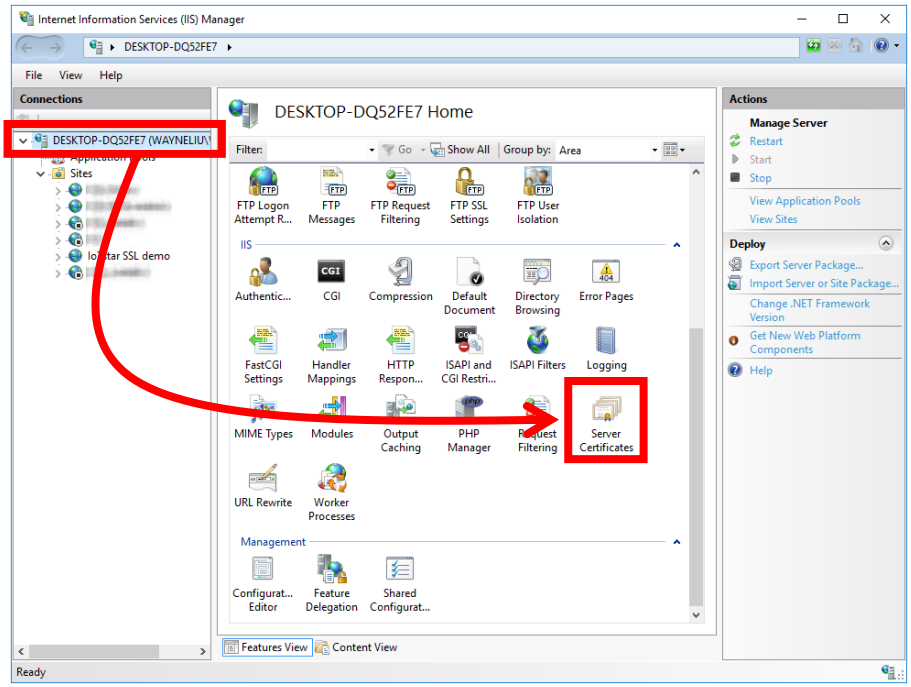

Figure 2-24: Launch IIS and go into SSL Certificates interface

ii Click the "Import…" on the right side of the "Server Certificates" window. Browse the SSL certificate in the **pfx** file format, enter the password of the certificate, and click the "OK" button to finish the import process.

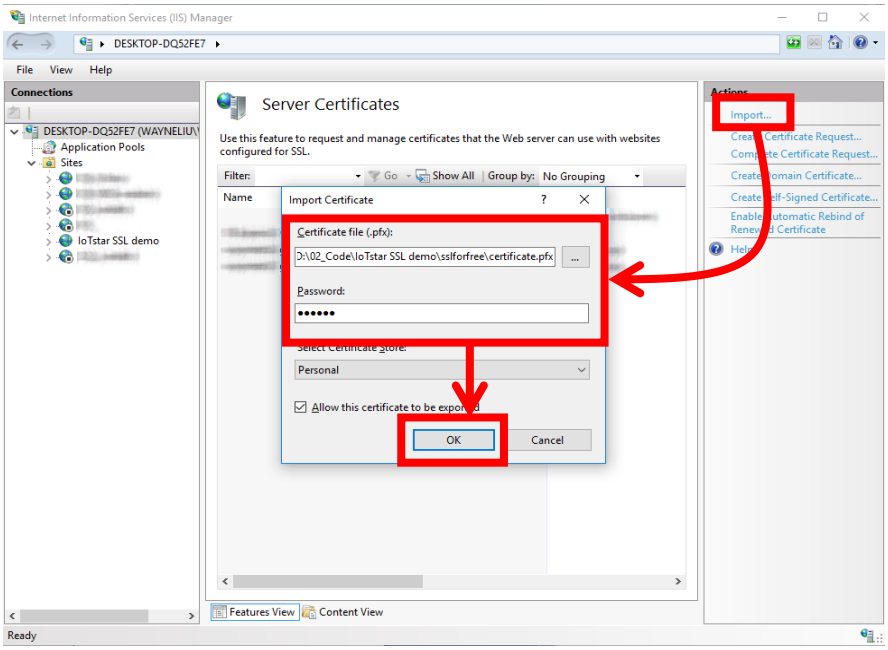

Figure 2-25: Import the SSL certificate

iii Select the IoTstar website on the left side of the IIS window, and click on the "Binding…" on the right side of the IIS window, and then select the IP/Host Name setting by the IoTstar. Finally, select the SSL certificate and click the "OK" button.

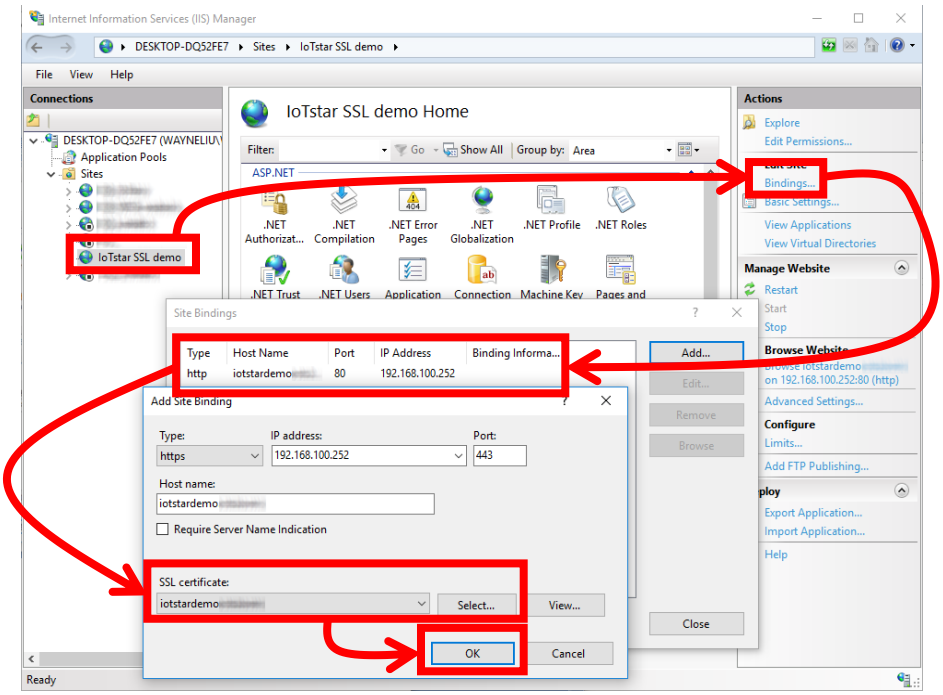

Figure 2-26: Enable the HTTPS connection of the IoTstar website

2.6 Verify the operation of Bot Service for LINE

Go back to the Messaging API page created by the LINE Developer website and click the "Verify" button of the "Webhook URL" field in the Messaging API tab. If the pop-up message displays "Success", it means the operation of IoTstar Bot Service for LINE is successful.

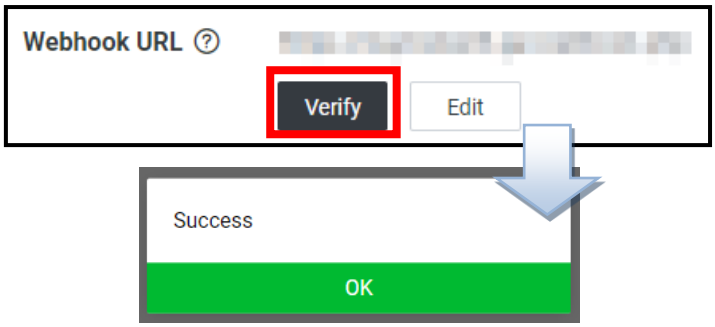

Figure 2-27: LINE Developer Website - Verify the operation of Webhook

If the operation is not successful, please verify the following items:

(1) The computer IoTstar installed must be equipped with **"Public Static IP"** or "**Dynamic IP + DDNS"**.

(2) The IoTstar website must has the SSL certificate, and the HTTPS server must use an SSL certificate issued by a certificate authority widely trusted by general web browsers.

(3) The content of "Webhook URL" of the "Messaging settings" section of the LINE Developer website must be correct. The format of the setting must be **https://(IoTstar web address)/webhook.php**.

(4) The "IP/Domain Name" under the "Web" tab of the "Settings" page on the IoTstar system interface must be correct.

(5) The "Channel ID", "Channel secret", "Channel access token" and "QR code URL" under the "LINE" section of the "Bot Service" tab of the "Settings" page on the IoTstar system interface must be correct.

(6) Check if the Service of IoTstar has been started.

2.7 Message sending setting from WISE/PMC/PMD to Bot Service for LINE

The user can edit the WISE/PMC/PMD's IF-THEN-ELSE logic rule setting to trigger the message sending operation. When WISE/PMC/PMD sends the message, the message will be sent to the corresponding LINE account via IoTstar Bot Service for LINE. The content of message can include the Real-Time I/O channels data, power data or Internal Register data. In addition, WISE also provide image or video data sending function to send the image or video data to the corresponding LINE account.

2.7.1 The settings of text message sending by WISE-523x/WISE-224x

i Launch a Browser to login into the WISE, and enter the "IoT Platform Setting" Page. Click the "Bot Service Message Setting" button under the "IoTstar Setting" section on the left side of the webpage to enter the "Bot Service Message Setting" page.

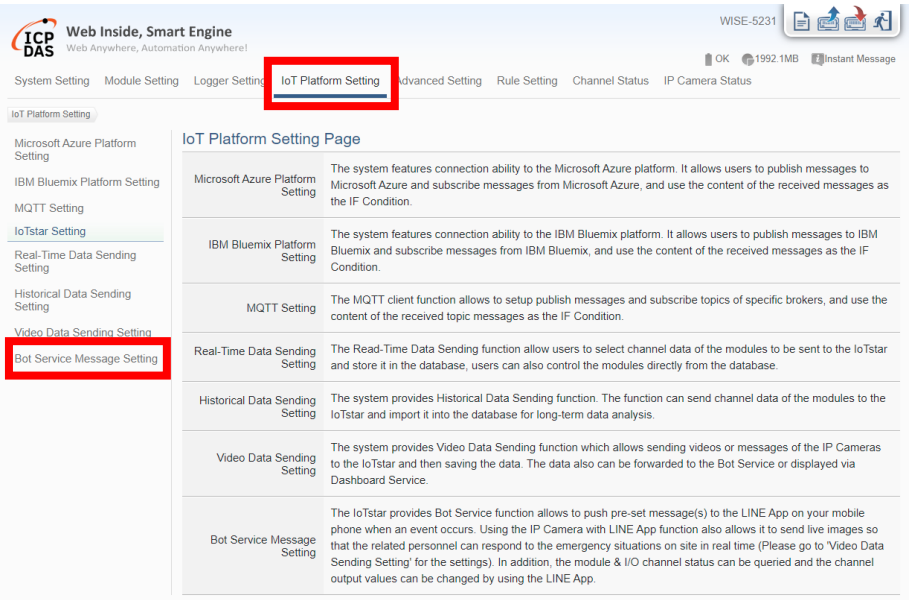

Figure 2-28: WISE Web Site - Bot Service Message Setting Page (1)

ii Click on "Add new Message" to open the "Bot Service Message Setting" Page.

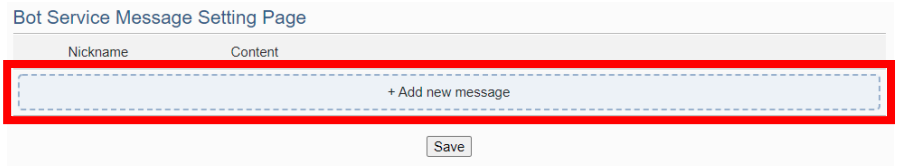

Figure 2-29: WISE Web Site - Bot Service Message Setting Page (2)

iii Input name in the "Nickname" field, and you could also input the description of this Bot Service message in the "Description" field. Enter the message in the "Content" field. The Bot Service message provides an encoded string for you to add current I/O channel data or Internal Register data into the Bot Service message. To make it easy to add the encoded string, WISE provides "Real-time variable editor" for users. Click on "OK" to confirm the setting and leave the setting page.

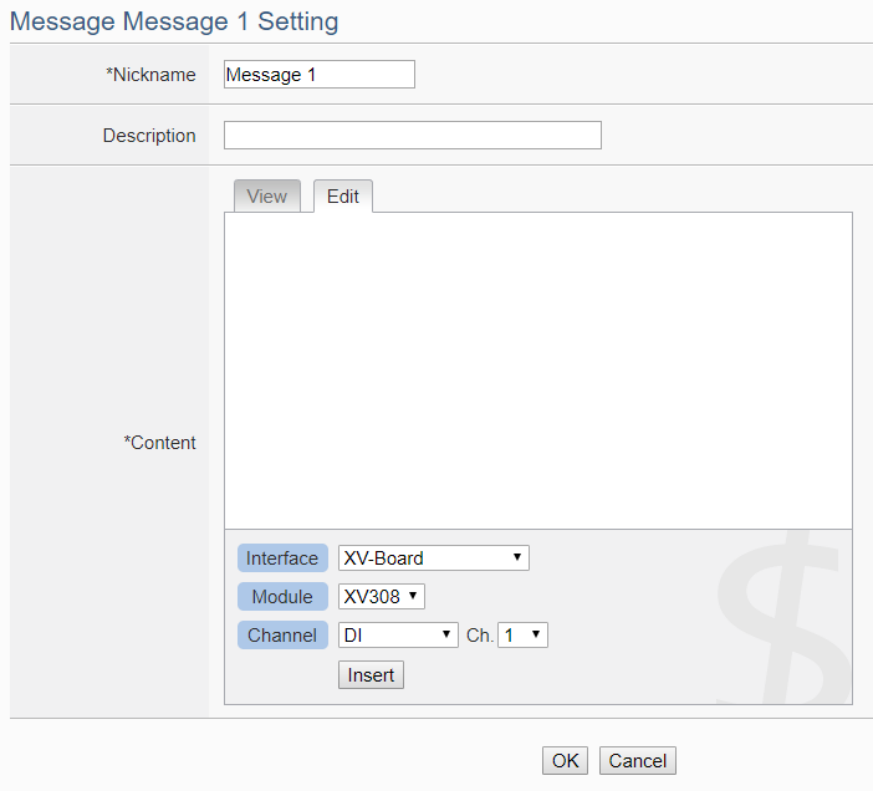

Figure 2-30: WISE Web Site - Bot Service Message Setting Page (3)

iv Repeat steps ii~iii to complete the settings of all Bot Service message. After you finish all the Bot Service message settings, click "Save" button to save the settings.

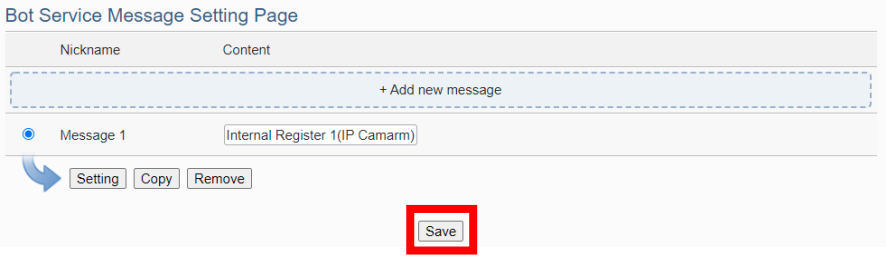

Figure 2-31: WISE Web Site - Bot Service Message Setting Page (4)

v Go to the "Rule Setting" page and click "Add new rule". The "Rule Setting" page will appear. Click the "Bot Service" option under the THEN/ELSE section, and select the Bot Service message. Now if the evaluation of the "IF statement" is "true", the selected Bot Service message will be sent, and the LINE accounts linked with the IoTstar account who manages this WISE controller will receive the messages in the Bot Service for LINE chat room.

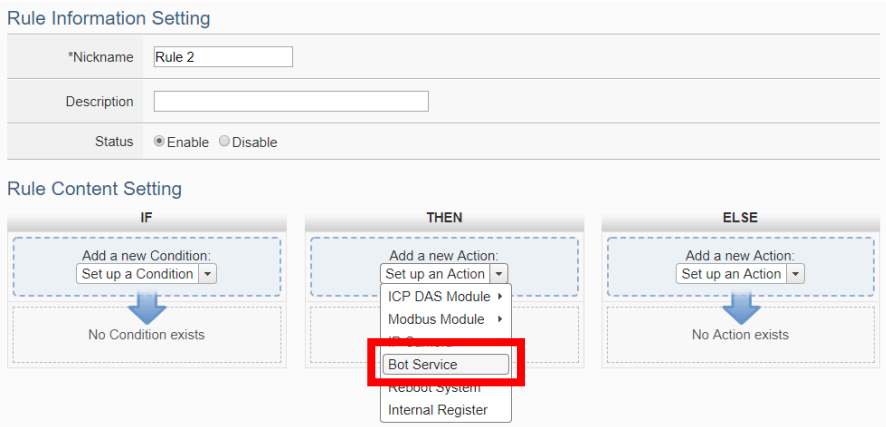

Figure 2-32: WISE Web Site - Rule setting with Bot Service Message

2.7.2 The settings of image or video message sending by WISE-523x/WISE-224x

i Launch a Browser to login into the WISE, and enter the "IoT Platform Setting" Page. Click the "Video Data Sending Setting" button under the "IoTstar Setting" section on the left side of the webpage to enter the "Video Data Sending Setting" page.

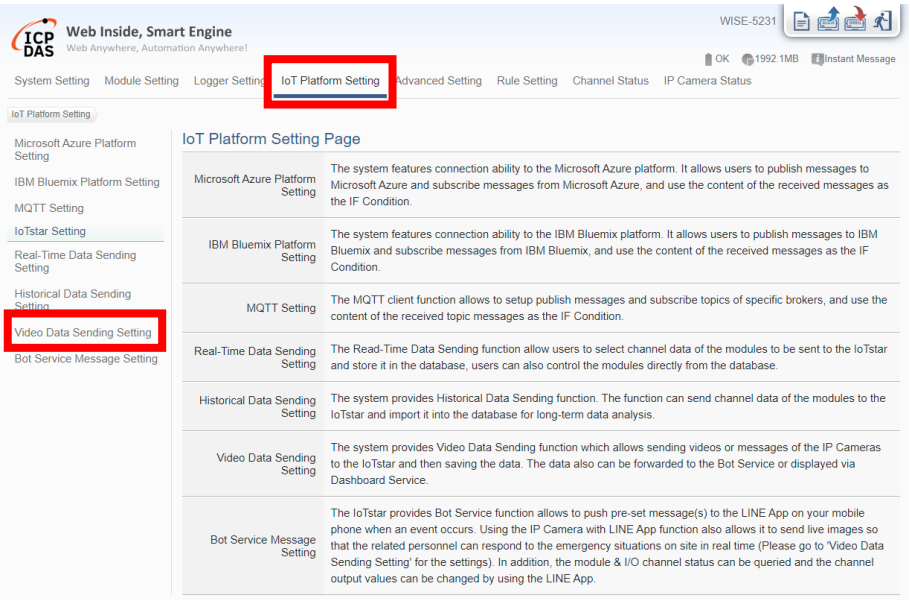

Figure 2-33: WISE Web Site - Bot Service Forward Setting Page (1)

ii Click the tab on the right-top corner of "Video Data Sending Setting" page. Choose the data source, and click the "Setting" button to enter the setting page.

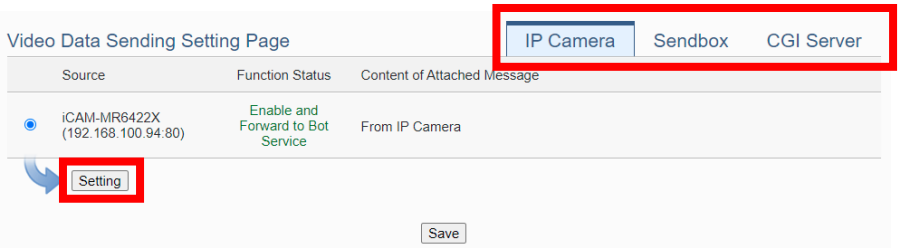

Figure 2-34: WISE Web Site - Bot Service Forward Setting Page (2)

iii Check the "Enable" function, and then the message setting interface will be shown as below. Enter the message in the "Content of Attached Message" field. Check "Forward to Bot Service" in the "Bot Service" field. Click on "OK" to confirm the setting and leave the setting page.

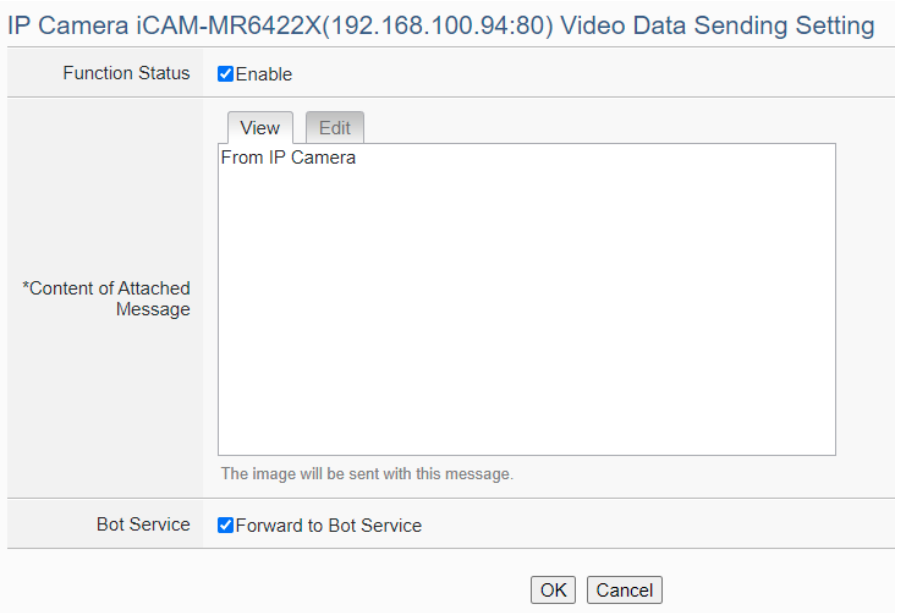

Figure 2-35: WISE Web Site - Bot Service Forward Setting Page (3)

iv After you finish all the settings, click "Save" button to save the settings. Now if WISE received the image or video data sending from the data source, WISE will send the image or video data with the text message to the Bot Service for LINE chat room.

2.7.3 The settings of text message sending by PMC-523x/PMC-224x/PMD

i Launch a Browser to login into the PMC/PMD, and enter the "IoT Platform Setting" Page. Click the "Bot Service Message Setting" button under the "IoTstar Setting" section on the left side of the webpage to enter the "Bot Service Message Setting" page.

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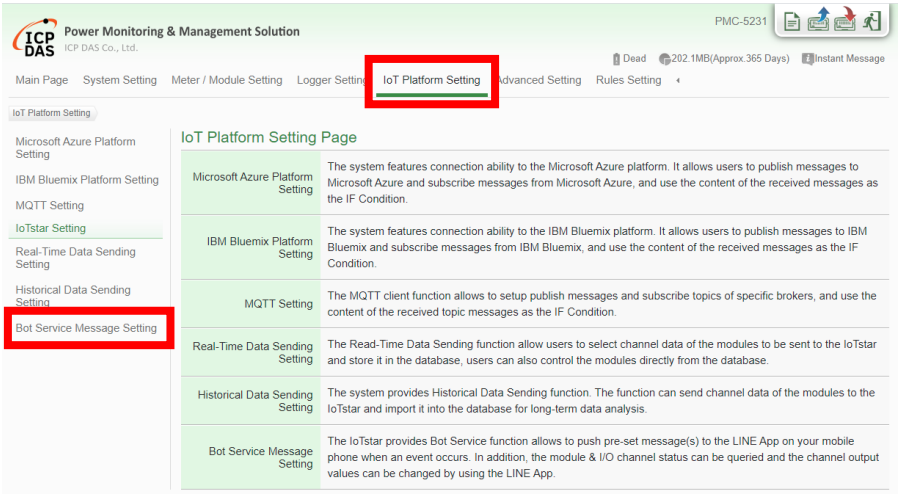


Figure 2-36: PMC/PMD Web Site - Bot Service Message Setting Page (1)

ii Click on "Add new Message" to open the "Bot Service Message Setting" Page.

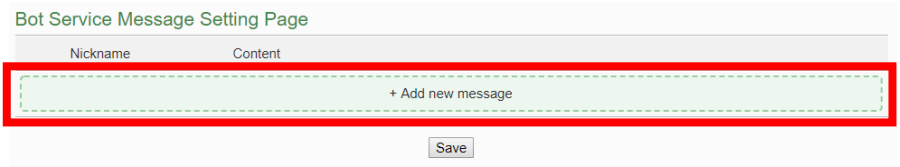


Figure 2-37: PMC/PMD Web Site - Bot Service Message Setting Page (2)

iii Input name in the "Nickname" field, and you could also input the description of this Bot Service message in the "Description" field. Enter the message in the "Content" field. The Bot Service message provides an encoded string for you to add current I/O channel data, power data or Internal Register data into the Bot Service message. To make it easy to add the encoded string, PMC/PMD provides "Real-time variable editor" for user. Click on "OK" to confirm the setting and leave the setting page.

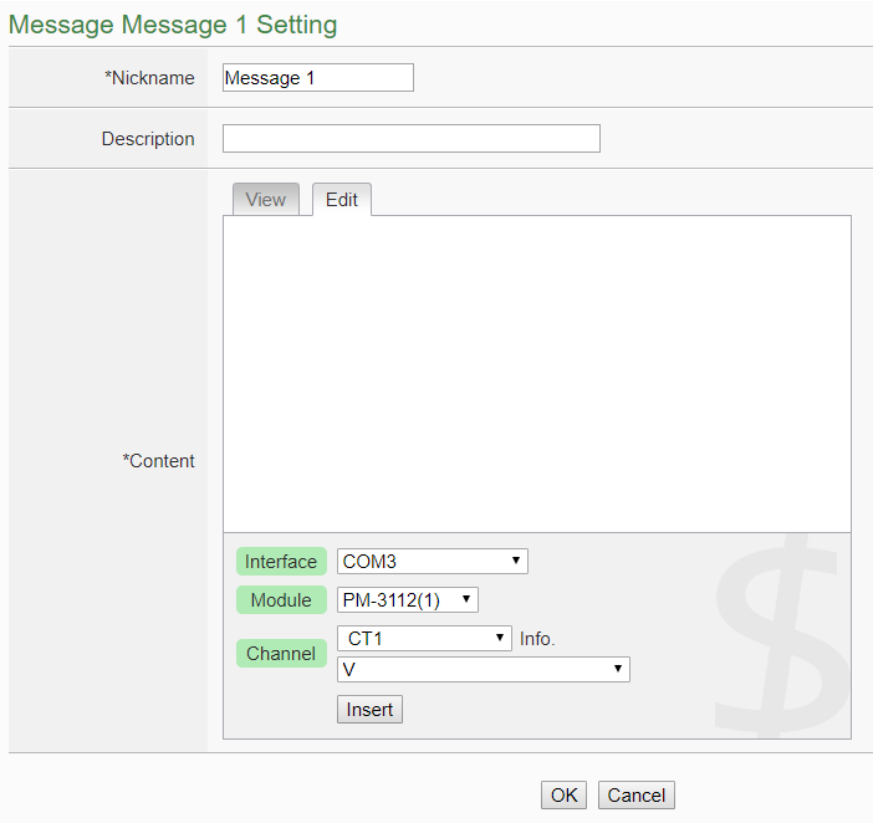


Figure 2-38: PMC/PMD Web Site - Bot Service Message Setting Page (3)

iv Repeat steps ii to iii to complete the settings of all Bot Service message setting. After you finish all the Bot Service message settings, click "Save" button to save the settings.

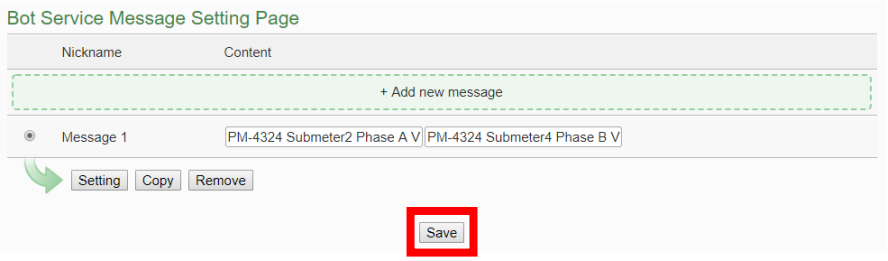


Figure 2-39: PMC/PMD Web Site - Bot Service Message Setting Page (4)

v Go to the "Rule Setting" page and click "Add new rule". The "Rule Setting" page will appear. Click the "Bot Service" option under the THEN/ELSE section, and select the Bot Service message, Now if the evaluation of the "IF statement" is "true", the selected Bot Service message will be sent, and the LINE accounts linked with the IoTstar account who manages this WISE controller will receive the messages in the Bot Service for LINE chat room.

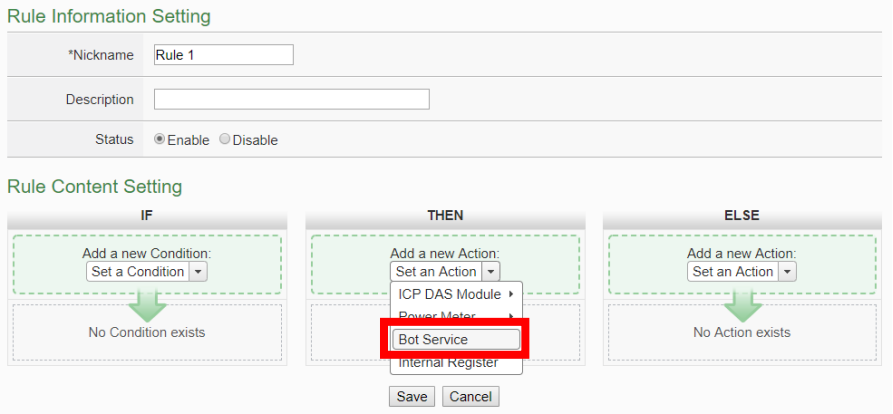


Figure 2-40: PMC/PMD Web Site - Rule setting with Bot Service Message

2.8 Real-time data sending setting form WISE/PMC/PMD

All I/O channel data (or Power data) displayed on IoTstar Bot Service are real-time data. Therefore, users need to complete the Real-time Data Sending Setting on the WISE/PMC/PMD controllers to show real-time data on IoTstar Bot Service for LINE.

2.8.1 Real-time data sending setting by WISE-523x/WISE-224x

i Launch a Browser to login into the WISE, and enter the "IoT Platform Setting" Page.

ii Click the "Real-time Data Sending Setting" button under the "IoTstar Setting" section on the left side of the webpage to enter the "Real-time Data Sending Setting" page.

iii Check the "Enable" function, and add channels to be displayed.

iv After all settings are completed, click "Save" button to save the setting.

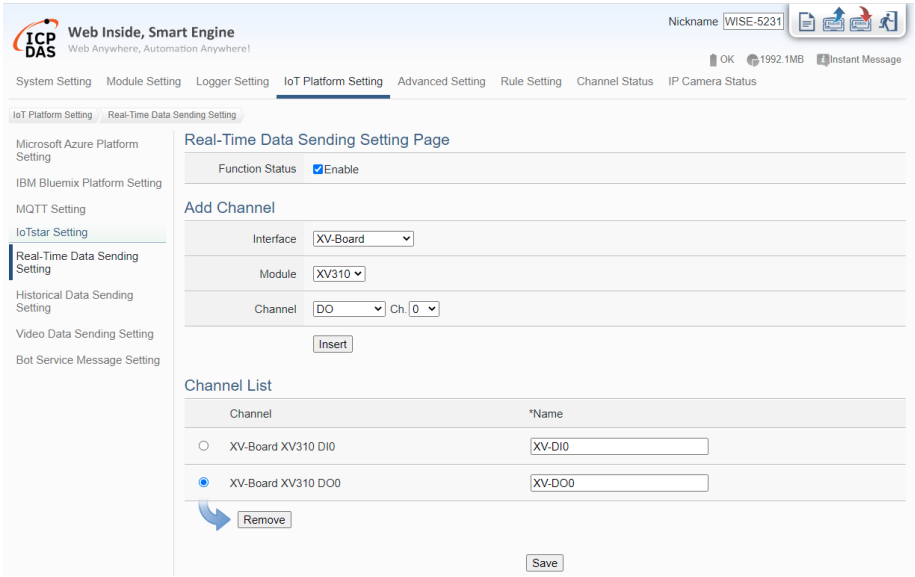


Figure 2-41: WISE Web Site - Real-time data sending setting

2.8.2 Real-time data sending setting by PMC-523x/PMC-224x/PMD

i Launch a Browser to login into the PMC/PMD, and enter the "IoT Platform Setting" Page.

ii Click the "Real-time Data Sending Setting" button under the "IoTstar Setting" section on the left side of the webpage to enter the "Real-time Data Sending Setting" page.

iii Check the "Enable" function, and add channels to be displayed.

iv After all settings are completed, click "Save" button to save the setting.

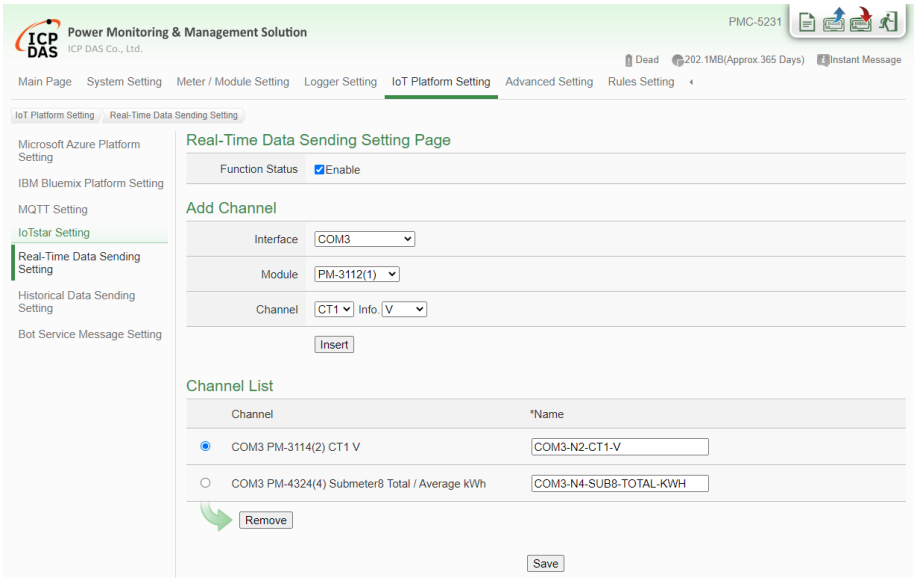


Figure 2-42: PMC/PMD Web Site - Real-time data sending setting

3 The Interface and Feature of IoTstar Bot Service for LINE

After the application and setting of the LINE account as described in the above chapter is completed, users can start the linkage setting between the personal LINE account and the IoTstar account. After the linkage setting completed, the Two-way message communication interaction between WISE/PMC/PMD controllers managed by IoTstar and the LINE account can be performed within the Bot Service for LINE chat room. Following is the feature IoTstar Bot Service for LINE provides:

- Monitoring/Control of the I/O channel data (or power data): Review the real-time I/O channel data (or power data) and change the value of the DO/AO channel of the I/O modules (or power meter) connected to WISE/PMC/PMD.
- Monitoring of the grouping data: With the IoTstar's grouping function, can quickly monitor the real-time data of the grouping I/O channels (or power loop).
- Event Notification: The logic rule of Event notification can be set on the WISE/PMC/PMD controller. When the conditions of the IF-THEN-ESLE logic rule are met, the action of "Event message sending" will be triggered to send the message to all linked LINE accounts.
- Review the historical events of controllers: Records the event messages sent by the WISE/PMC/PMD controller and the user can review the content of the event message from the event list, including the message text, images and videos.

The interface and function of IoTstar Bot Service will be described below.

3.1 Join Bot Service for LINE account and enable the linkage

Log in to the IoTstar website, click on "Account Maintenance" button on the "System Information & Setting" section on the IoTstar Webpage; the Account Maintenance Setting page will be displayed as below. Find the "Bot Service for LINE" section, click the icon on the right side of the "Bot Service for LINE" section to open the QR Code window of the Bot Service account. Use LINE APP to scan the QR Code and add the account.

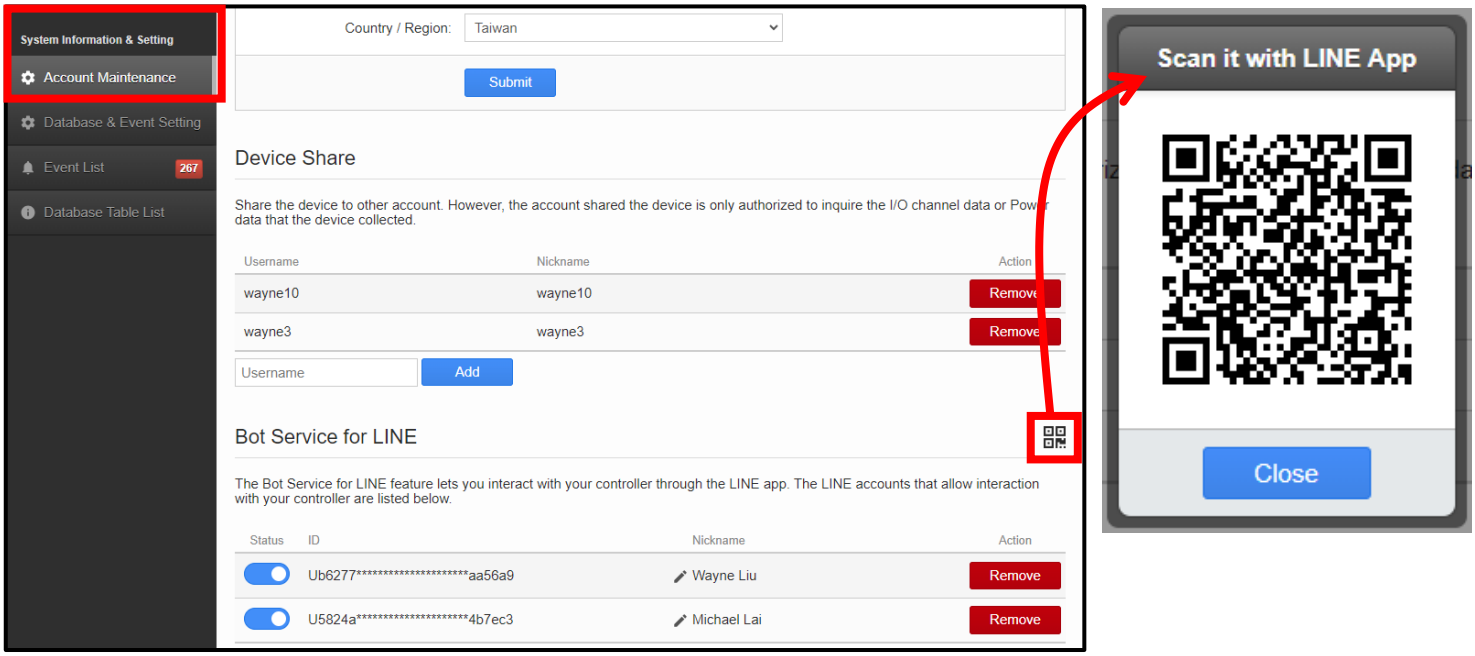


Figure 3-1: Open the Bot Service for LINE account QR Code window for scanning

After adding the account, select the language and the IoTstar account to be linked in the LINE chat room.

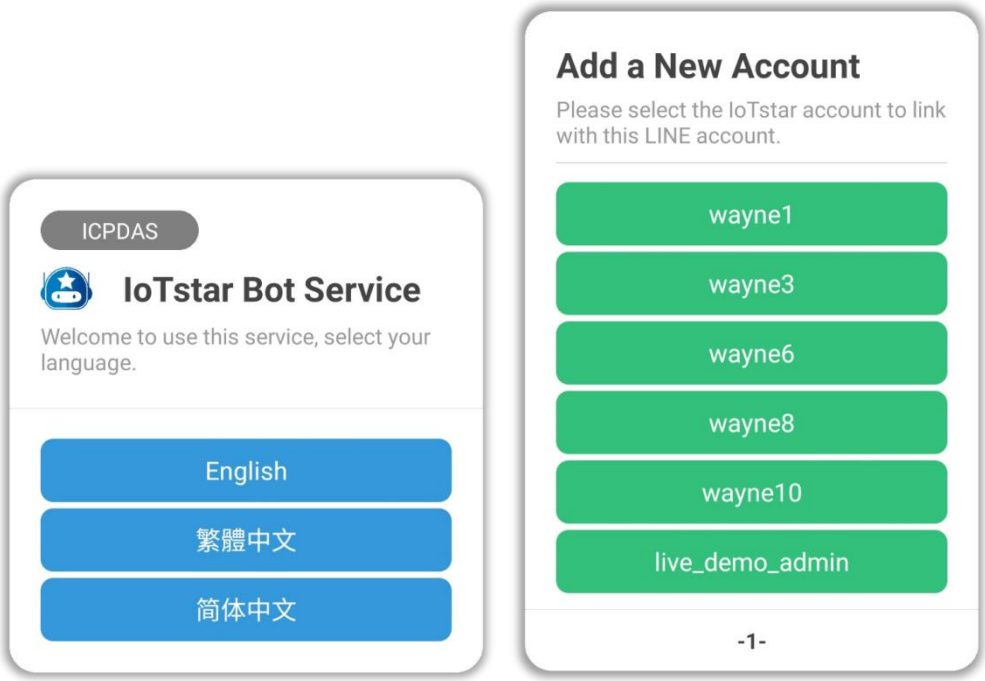


Figure 3-2: Bot Service for LINE chat room - select the language and the IoTstar account

Go back to the IoTstar website, enable the LINE accounts in the "Status" field of the "Bot Service for LINE" list to complete the linkage between the LINE account you select and the IoTstar account. Here you can enable/disable/delete the LINE account, and change the account's name.

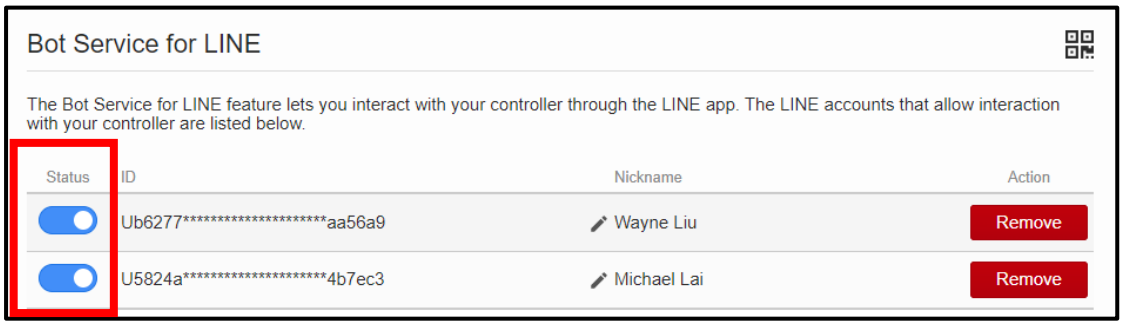


Figure 3-3: Enable the linkage of IoTstar account and LINE account

3.2 Bot Service for LINE chat room interface

After completing the account linkage of the IoTstar account and the LINE account, users can see the function buttons in the menu located in the lower area of Bot Service for LINE chat room. There are four function buttons as Channel, Group, Event and Help, and users can click the button to perform the corresponding function.

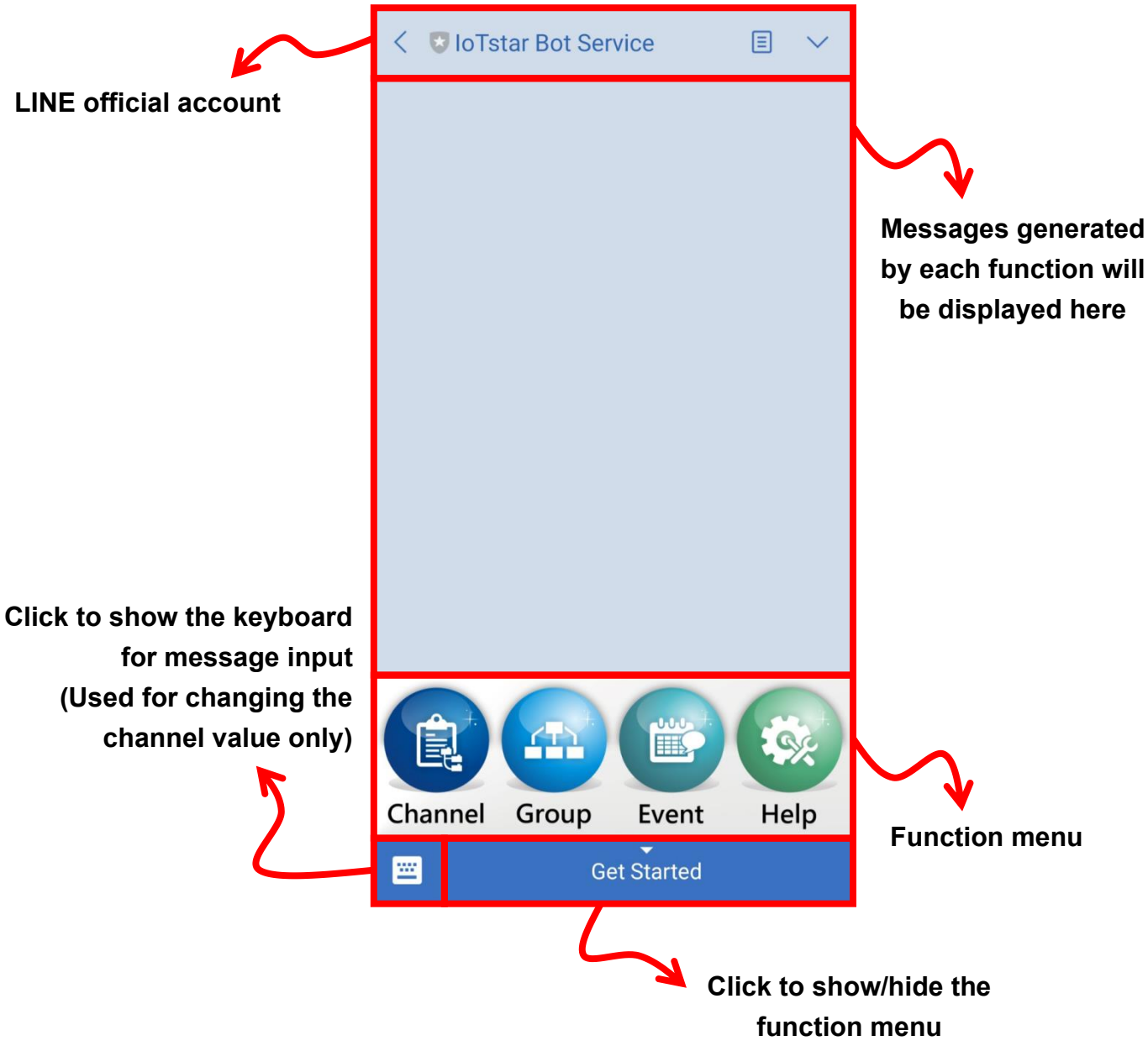


Figure 3-4: Bot Service for LINE chat room - User Interface

3.3 The function of Channel and Group

The messages generated by the channel and group functions will be described as below:

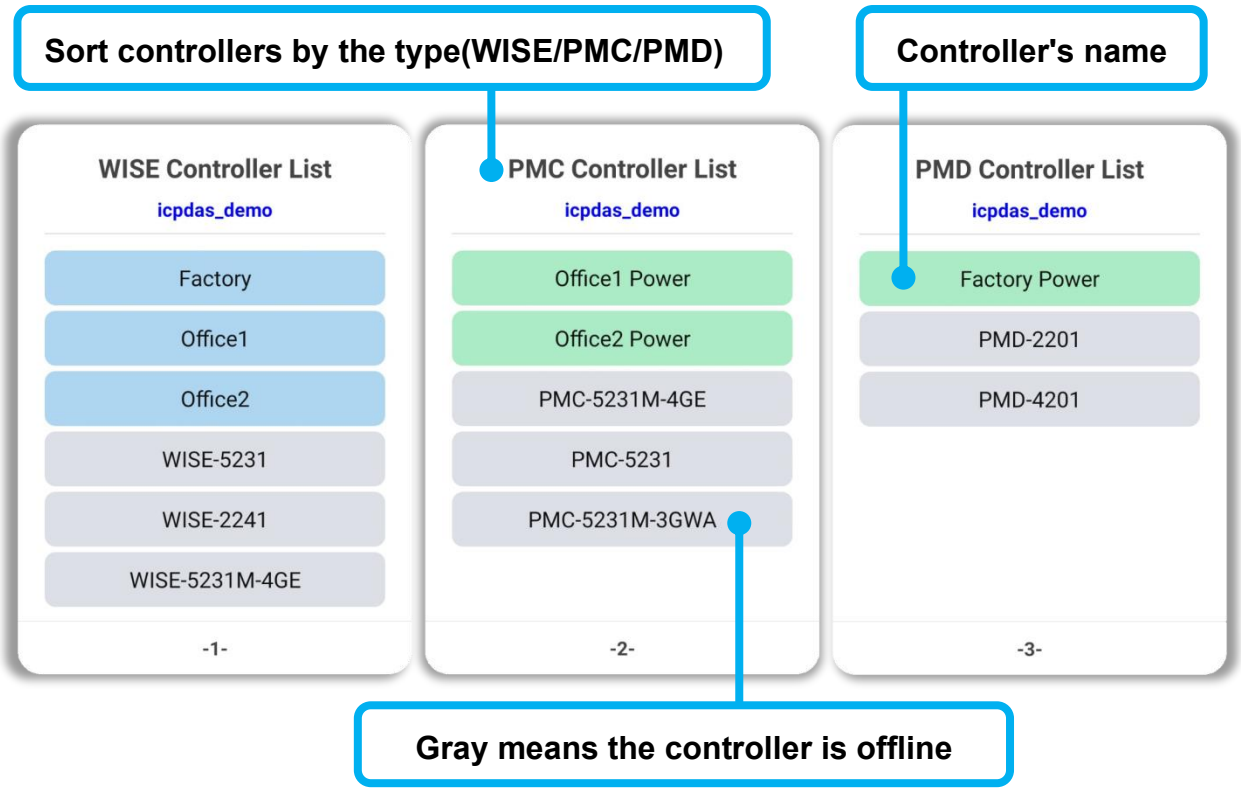


Figure 3-5: Bot Service for LINE chat room - Controller List

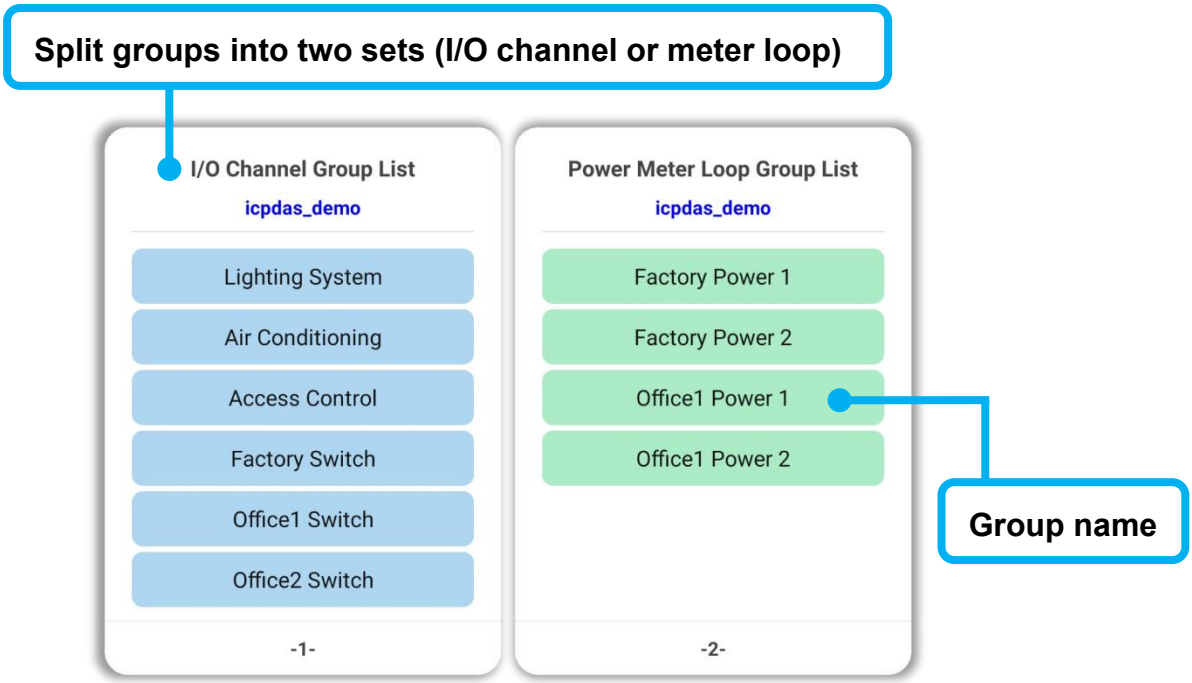


Figure 3-6: Bot Service for LINE chat room - Group List

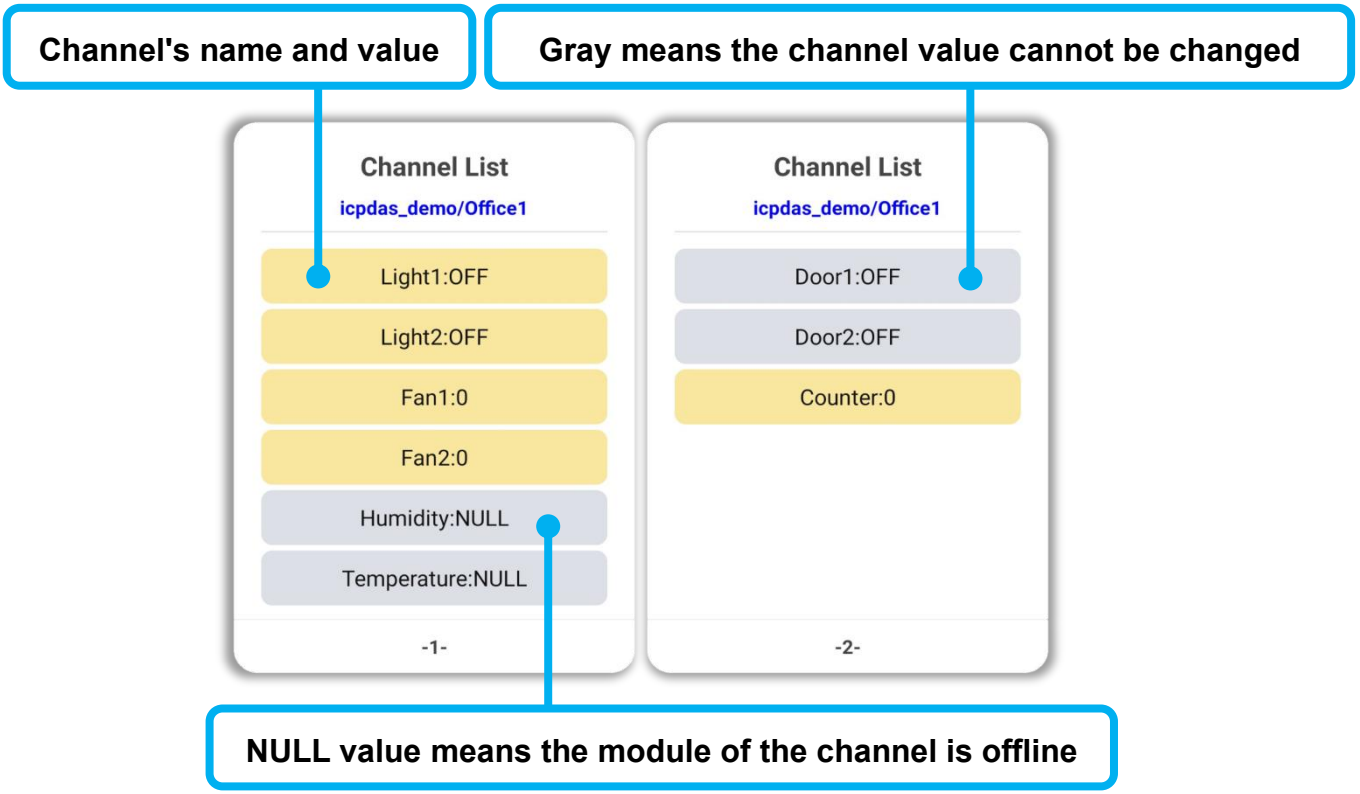


Figure 3-7: Bot Service for LINE chat room - Channel List

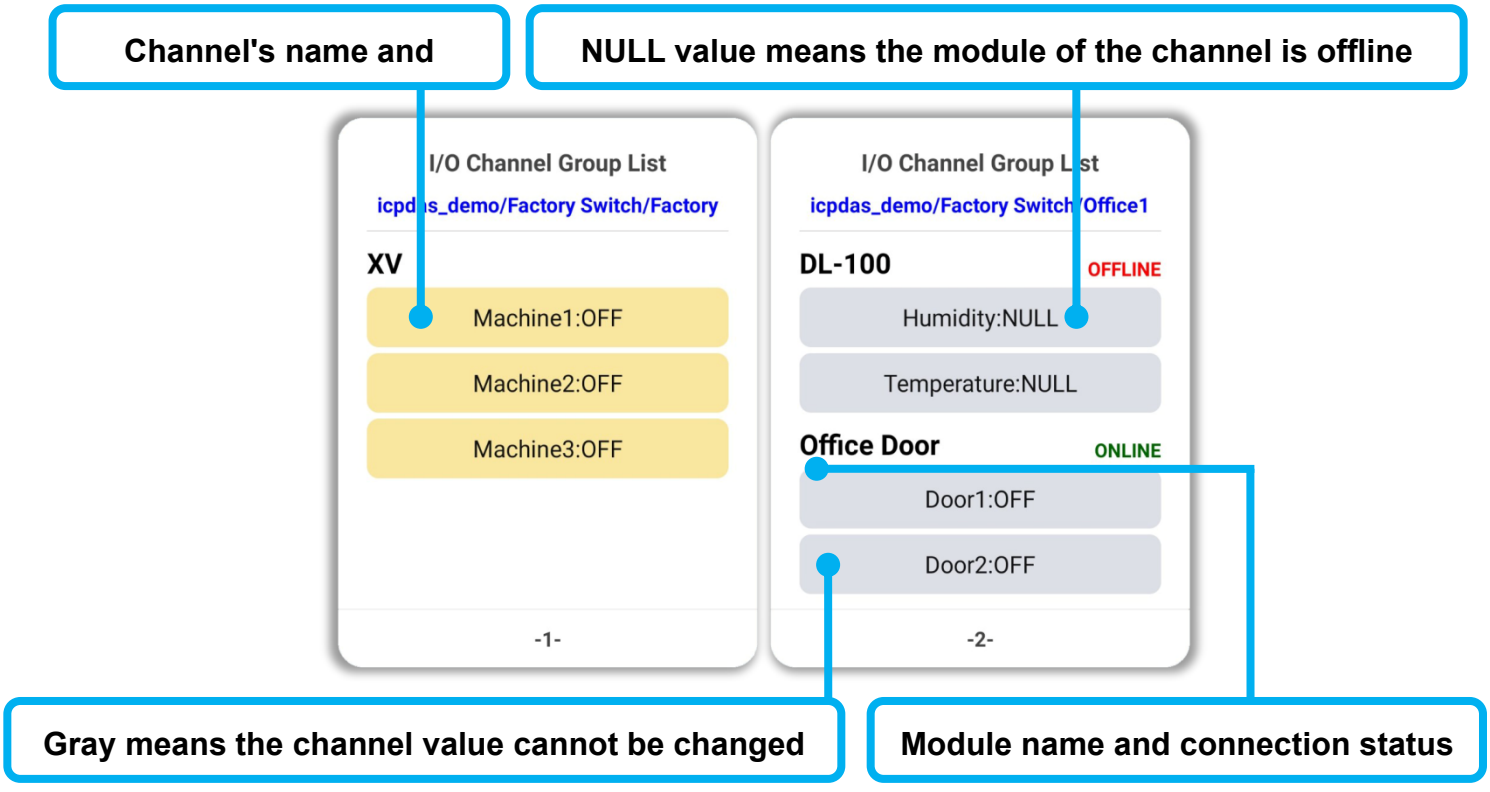


Figure 3-8: Bot Service for LINE chat room - Group Channel List

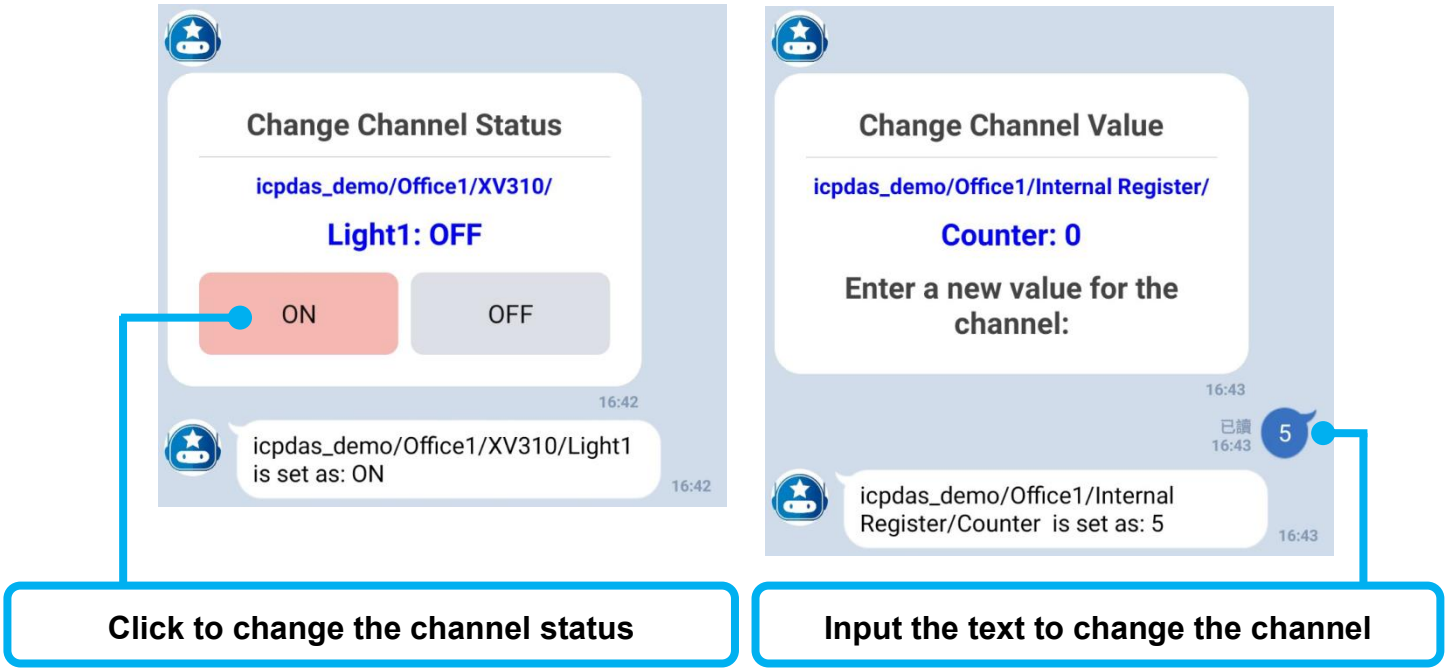


Figure 3-9: Bot Service for LINE chat room - Change Channel Status/Value

※To display I/O channel data (or power data) in the list of Channel/Group interfaces as above, users need to follow "2.8 Real-time data sending setting form WISE/PMC/PMD" section to perform the settings of real-time data sending. Besides, to show I/O channel data (or power data) in Group list, users have to perform the grouping settings on IoTstar webpage: create the group and add real-time channels into it, and then the channels would be shown on the Group list.

3.4 The function of Event Notification

The IF-THEN-ELSE logic rule can be set on WISE/PMC/PMD controller to send a notification message to the corresponding LINE chat room when the event is triggered, and the WISE controller can use the image or video file forwarding function to send the picture or video files at the same time. For more detail, please refer to "2.7 Message sending setting from WISE/PMC/PMD to IoTstar Bot Service" section.

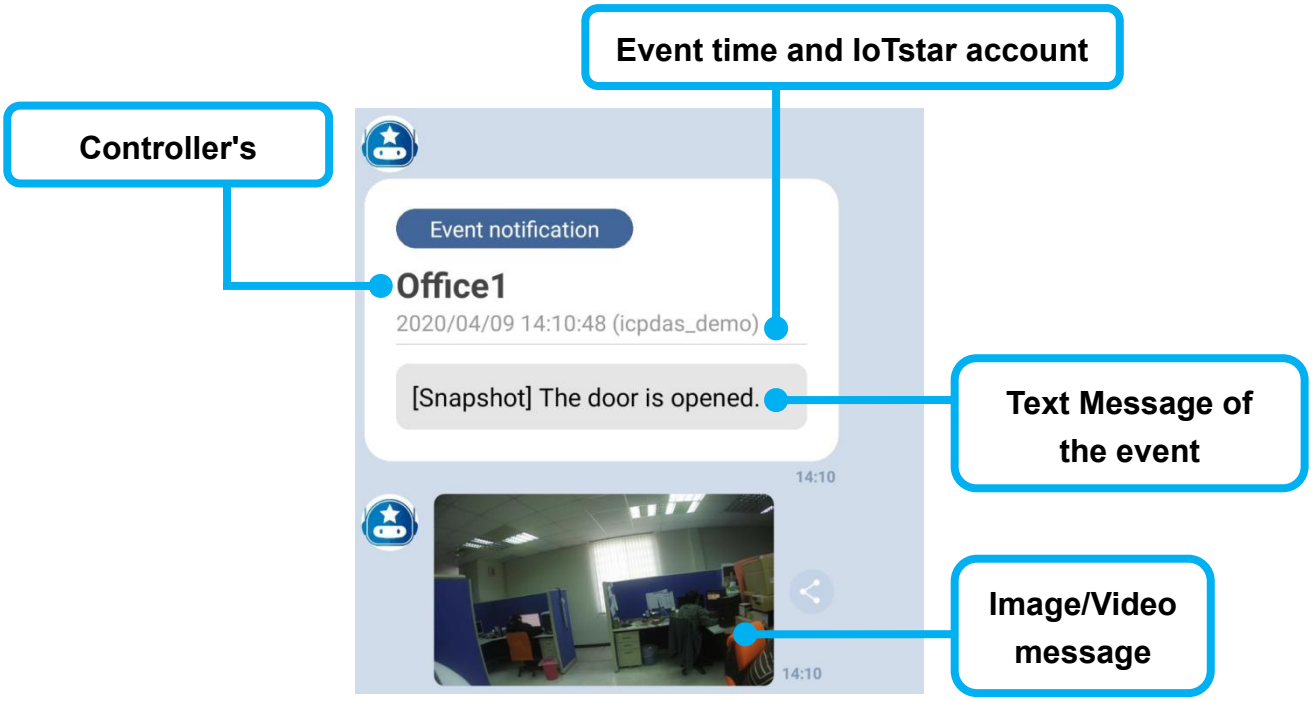


Figure 3-10: Bot Service for LINE chat room - Event Notification

3.5 The function of Event

Click "Event" in the menu, the "Event Browsing Function" message will be generated, and the "Search by time" and "The last 10 events" functions will be provided to query the past events.

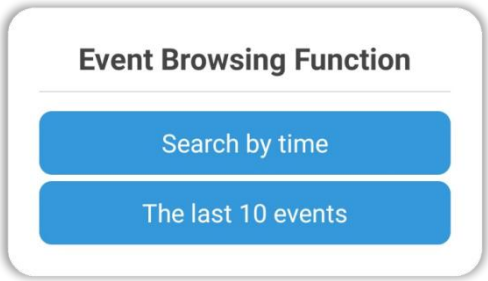


Figure 3-11: Bot Service for LINE chat room - Event Browsing Function

The event list is displayed in the units of 10 events each time. If the number of events is greater than 10 events, click the "Next 10 events" button, it will continue to display the next 10 events until the end of the events list.

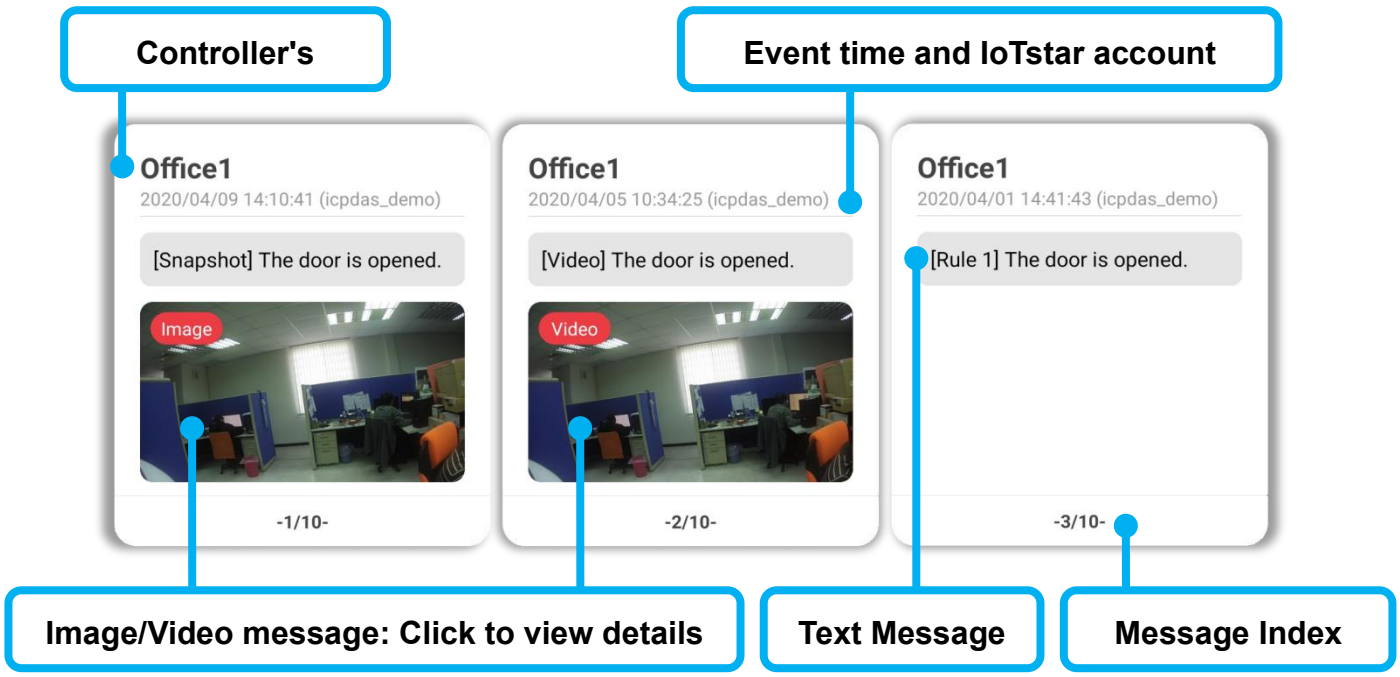


Figure 3-12: Bot Service for LINE chat room - Event List

3.6 The function of Help

Click on the "Help" function of the menu, it will help user to review the information of the currently IoTstar account, and provide "Account Setting", "Language Setting" and "Relevant information".

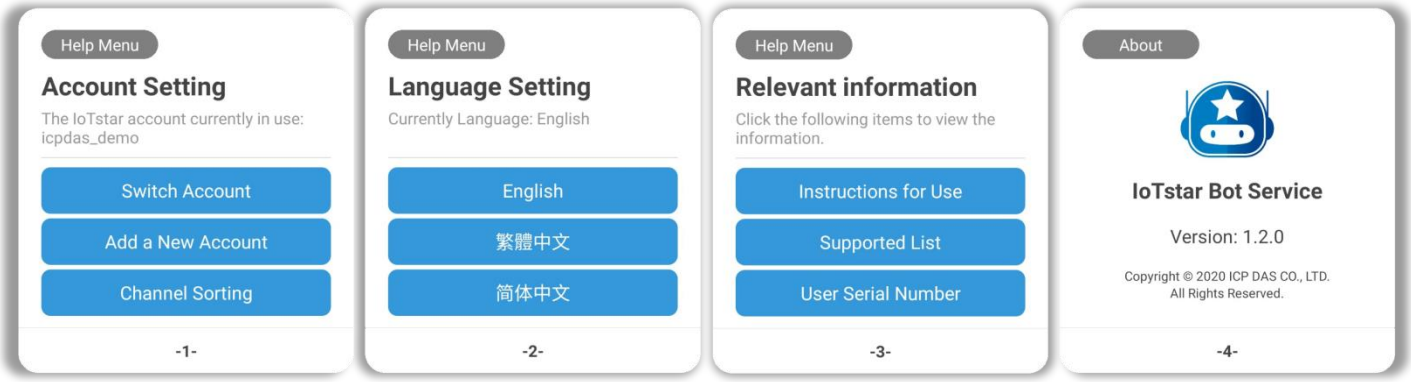


Figure 3-13: Bot Service for LINE chat room - Help Manu

- **Switch Account**: One LINE account can monitor multiple IoTstar accounts, click to switch to other IoTstar account to monitor the controllers belongs to it.
- **Add a New Account**: One LINE account can monitor multiple IoTstar accounts, click to add a new IoTstar account.

- **Channel Sorting**: If this function was enabled, the channel list would be sorted by the module. Otherwise, it would follow the sequence of the "Real-time data sending setting" on the controller.

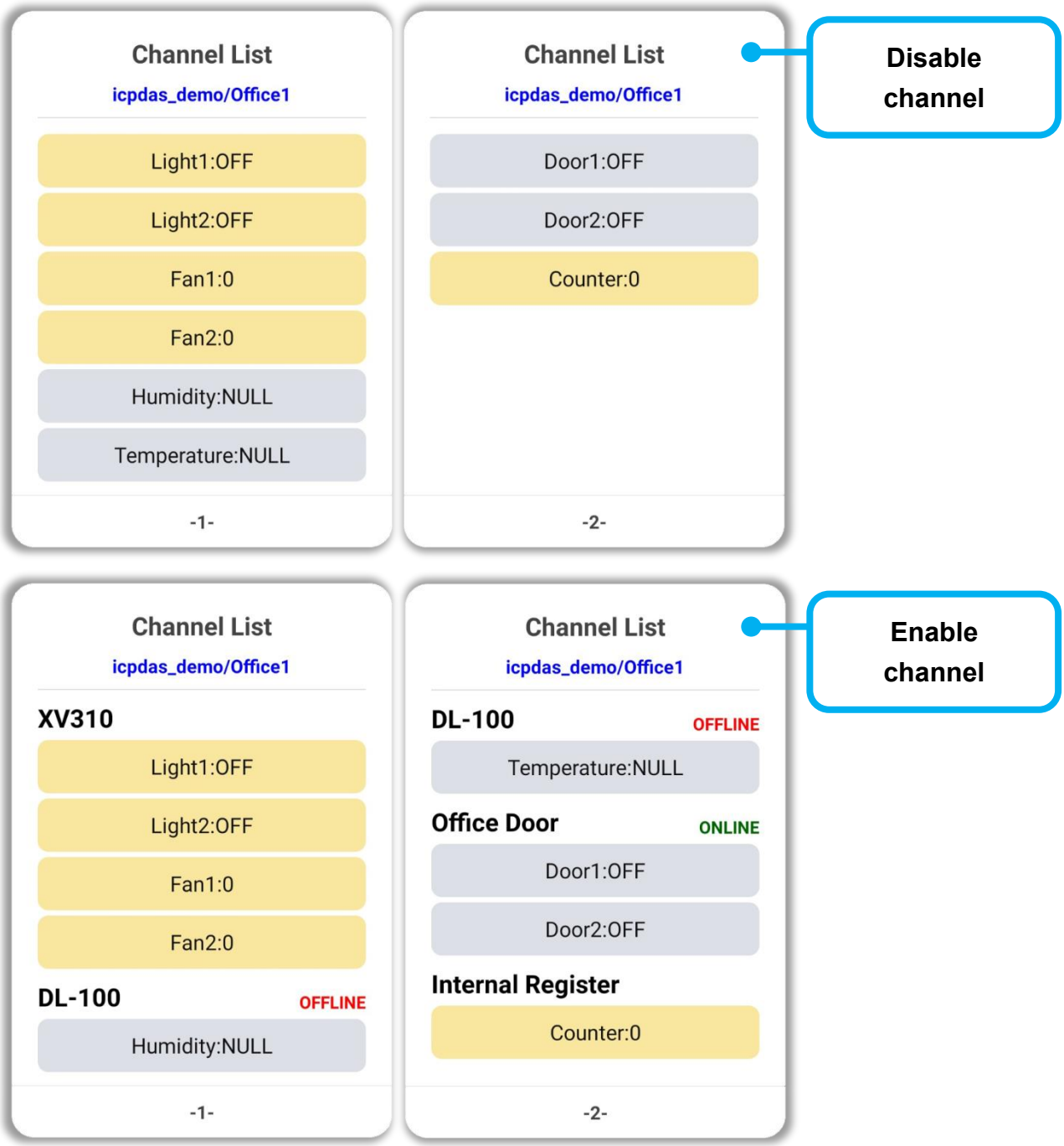


Figure 3-14: Bot Service for LINE chat room - Channel Sorting Function

Appendix I : Apply free SSL from "Let's Encrypt"

Let's Encrypt is a free, automated and open digital certificate authority service (Certificate Authority; CA) provided by Internet Security Research Group (ISRG). For the detailed information of "How the Let's Encrypt Digital Certificate Authority (CA) performs the issuance/cancellation of the Domain certification and digital certificate", please refer to the URL link .

Let's Encrypt uses the ACME protocol to verify if the Domain is controlled by the user and then will issue the certificate for the Domain if the application is approved. In order to get the certificate, you need to use an ACME Client software. So we suggest you to select an ACME Client software which is suitable for the installed environment of IoTstar from the recommended list. Following we use the win-acme as an example to demonstrate the steps to apply a free SSL certificate from Let's Encrypt:

(1) Please confirm that IoTstar has been installed successfully and work smoothly, and make sure the IoTstar website has its own Domain Name. If the above 3 conditions are met, then you can issue an application of SSL certificate from Let's Encrypt.

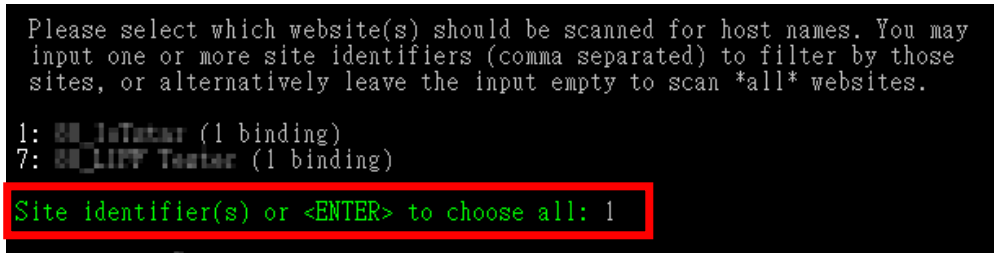
(Before performing the following steps, please confirm that the relevant settings of IIS and the path of the website will not be changed anymore. If the settings of IIS are changed after you completing the following steps, please delete the certificate and re-create a new certificate from step 4 to avoid the failure of automatic certificate update.)

(2) Download the latest 64 or 32 bit pluggable version of win-acme , create a folder in any directory and unzip the file into this folder (If the directory location is determined, please do not change the location again, it is recommend using C:\Program Files or C:\Program Files (x86)).

(3) After unzipping the file you download, right click on the wacs.exe, select "execute as system administrator" to launch the file, and perform the following steps to complete the application and creation of SSL certificate:

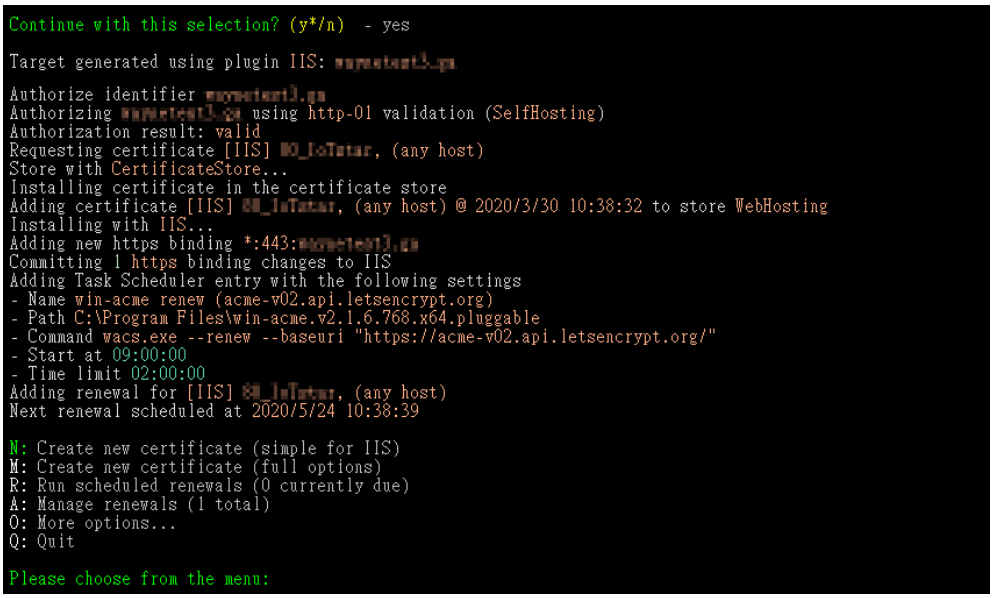
A. Select "N: Create new certificate (simple for IIS)" to perform the creation of a new certificate.

B. Select the number of the IoTstar website and apply a certificate for it.



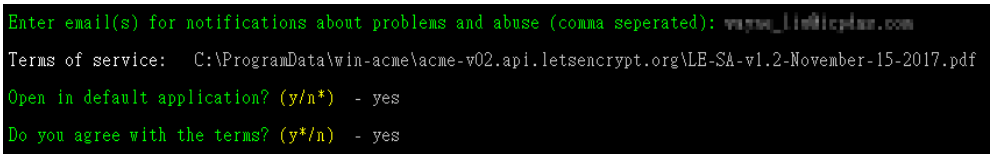
C. Select "3: Pick *all* bindings" to select all bindings of IoTstar website.

D. After the steps above, if all selections are correct, input "yes", the software will start the process to create the certificate. During the process, you can see the information and update time in the information list. After the process is completed, the software will automatically return to the main menu.



Please Note:

If you are using Let's Encrypt for the first time, you will be asked to provide an email address for the notification of the "Automatic Update Failure" event, input "yes" to agree the "Let's Encrypt Subscriber Agreement" for the proceeding.



※Maximum Application Frequency:

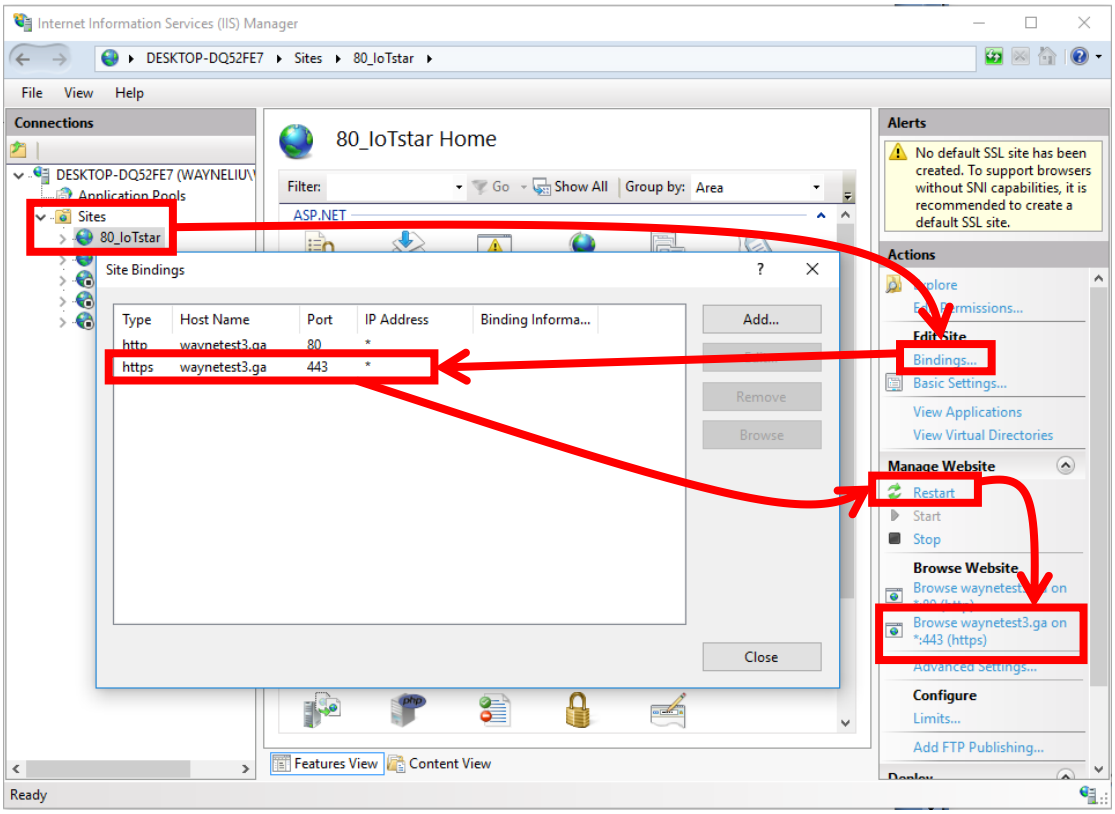
For the same Registered Domain: 20 times a week

For the same Domain Name: 5 times a week

For the same IP Address: 10 times every three hours

Due to the maximum application frequency includes the frequency of both creation and update operations, please do not launch the Application of certificate frequently to avoid exceeding the limitation.

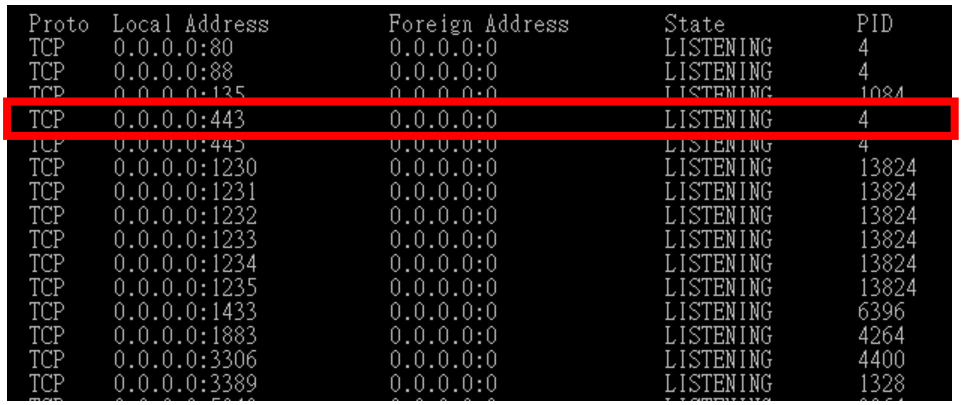
(4) Launch "Internet Information Services (IIS) Administrator", select the IoTstar platform, and click on the "Binding" on the right side of the window. You will see an HTTPS type binding being automatically generated. Click "Restart" and then click on the HTTPS website to check if the IoTstar website can be executed successfully.



※Troubleshooting: Port 443 has been occupied

A. Launch "Command Prompt" in the "Start Menu" of Windows. After the "Command Prompt" window is opened, input "**netstat –ano**" and press Enter.

B. Find the item which Proto is "TCP", and the number after the ":" of the "Local Address" is 443; record its PID value. In this example, the following figure shows the PID is 4.



Proto	Local Address	Foreign Address	State	PID
TCP	0.0.0.0:80	0.0.0.0:0	LISTENING	4
TCP	0.0.0.0:88	0.0.0.0:0	LISTENING	4
TCP	0.0.0.0:443	0.0.0.0:0	LISTENING	4
TCP	0.0.0.0:1230	0.0.0.0:0	LISTENING	13824
TCP	0.0.0.0:1231	0.0.0.0:0	LISTENING	13824
TCP	0.0.0.0:1232	0.0.0.0:0	LISTENING	13824
TCP	0.0.0.0:1233	0.0.0.0:0	LISTENING	13824
TCP	0.0.0.0:1234	0.0.0.0:0	LISTENING	13824
TCP	0.0.0.0:1235	0.0.0.0:0	LISTENING	13824
TCP	0.0.0.0:1433	0.0.0.0:0	LISTENING	6396
TCP	0.0.0.0:1883	0.0.0.0:0	LISTENING	4264
TCP	0.0.0.0:3306	0.0.0.0:0	LISTENING	4400
TCP	0.0.0.0:3389	0.0.0.0:0	LISTENING	1328

C. In the "Command Prompt" window, input "**tasklist / FI "PID eq 4**" (please replace 4 with the PID value you got from the previous step). If the "Image Name" is "System" (shown as below); it indicates that the port 443 has been used properly by System. If not, it means the port is occupied by other program.

Image Name	PID	Session Name	Session#	Mem Usage
System	4	Services	0	6,556 K

D. If the "Image Name" is not "System", it means the port 443 is occupied by other program. Please close the program which occupies port 443, and re-start the application of the SSL certificate again.

(If Skype have been installed on the Windows system, Port 443 may be occupied by Skype. You can open the Skype window, then click on the Tools menu and select Options. Click on the Advanced tab, and go to the Connection sub-tab. Untick or uncheck the checkbox for "Use port 80 and 443 as an alternative for additional incoming connections" option. Click on the Save button and then restart Skype to make the change effective.)