VS Code Installation

Step-01: Go to Microsoft Store and search for VS code and do install it

Step-02: Open VS code and go to **File** in left top corner and select **New Text File**

Paste the given code in the new text file (code give be provided in the zip file NAME)

Step-03: Go to **Terminal** in Top left corner and paste the below one by one and press enter and also install the python from Microsoft store.

Pip install paho-mqtt

Pip install request

Step-04: Go to the code and change the Broker ip address in line no. 77

To know broker IP address, go to command prompt and type ipconfig and enter, the Ipv4 address of your connected network is your Ip address.

Step-05: Save the code with extension .py (example receive.py) and run the code to check if any error in present.

Step-06: Again, to create another file, Go to **New Text File** and paste the given code below.

Cd (location of your previous saved file)

Timeout /t 1000

Python receive.py

And save this code in the following location in your PC with name **start.bat**
C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Startup

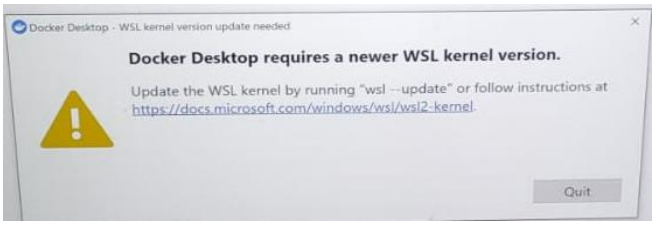
```
1   cd C:\Users\hp\Downloads
2   timeout /t 1000
3   python receive.py
```

Docker Installation

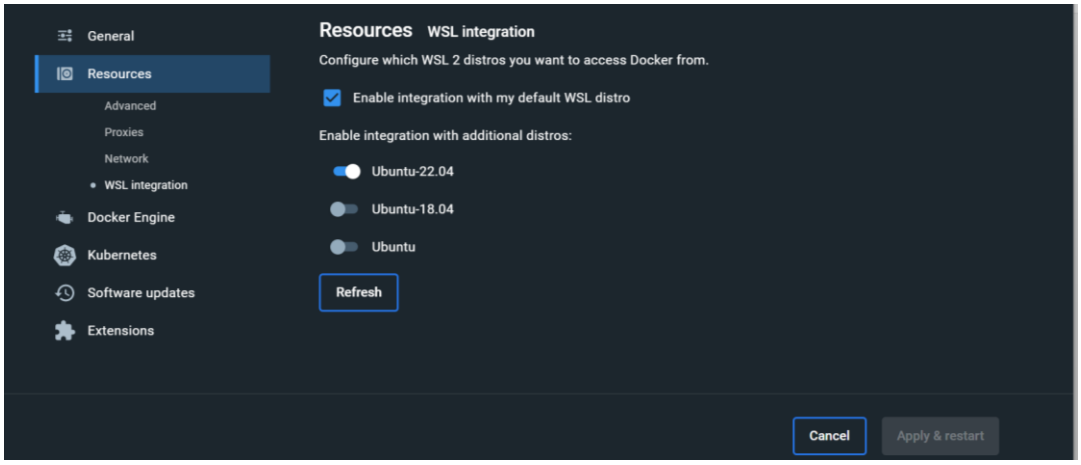
Step-01: Docker Installation (window/Linux/intel)

https://www.docker.com/products/docker-desktop/

if below popup is shown while installation download the following
https://wslstorestorage.blob.core.windows.net/wslblob/wsl_update_x64.msi



Step-02: Go to Setting at the top, go to Resources, WSL integration, enable and apply.



Ubuntu Installation

Step-01: Go to Microsoft store and install Ubuntu 22.04 2 LTS

Step-02: it will take some time to start. Set the password and username when it asks for.

Aws cli Installation

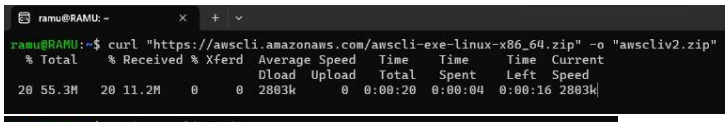
Step-01: Run the following commands one by one in Ubuntu

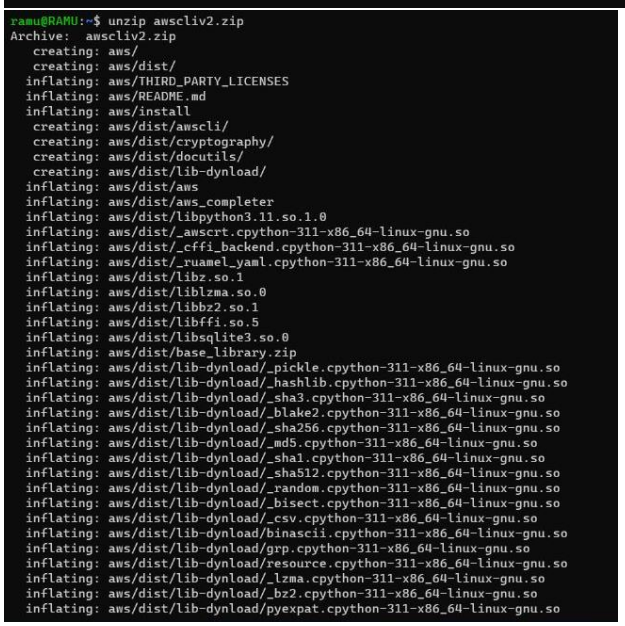
- ➔ sudo apt install unzip
- ➔ curl "https://awscli.amazonaws.com/awscli-exe-linux-x86_64.zip" -o "awscliv2.zip"
- ➔ unzip awscliv2.zip
- ➔ sudo ./aws/install

after all the commands done. To check the installation type aws –version and press and below line should appear if the installation is done successfully.

```
sunanda@sunanda:~$ aws --version
aws-cli/2.12.3 Python/3.11.4 Linux/5.15.90.1-microsoft-standard-WSL2 exe/x86_64.ubuntu.22 prompt/off
```

Note: Try again and again after some time gap if any error like directory not found is coming.





Thingsboard Installation

Step-01: Create a folder name IIotboard in the following location in your PC

\\wsl.localhost\Ubuntu-22.04\home\sunanda

Step-02: Copy paste the docker-compose file in that folder
(docker_compose.yaml file will be provided)

Step-03: Run the following Commands in Ubuntu

pwd

cd aws/

aws configure --profile ecr-rw-iiot

->AWS Access Key ID: AKIASEWXBQRCUB4VE5XK

->AWS Secret Access Key: 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

->Default region name: ap-south-1

->Default output Format: json

cd

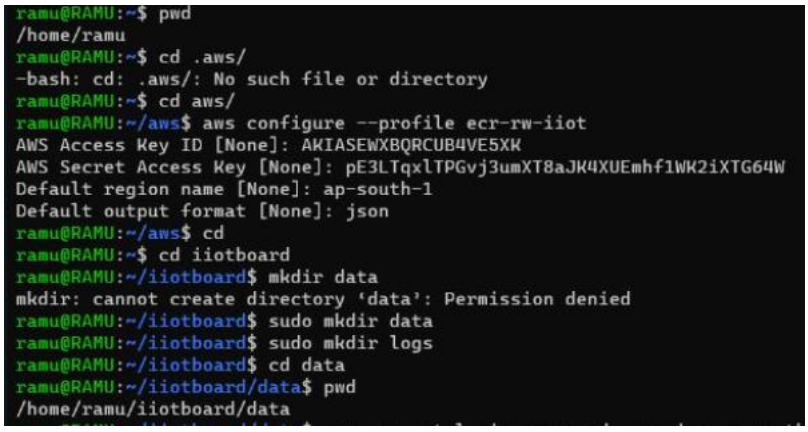
cd iiotboard

sudo mkdir data

sudo mkdir logs

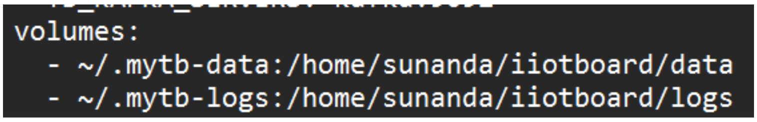
cd data

pwd



Copy the output in docker-compose in last subsection Volumes instead of given location

Example:



Step-04: Run the following commands in Ubuntu

->aws ecr get-login-password --region ap-south-1 --profile ecr-rw-iiot

->sudo chmod 666 /var/run/docker.sock

->aws ecr --region ap-south-1 | docker login -u AWS -p
eyJwYXlsb2FkIjoiMHlaUkQvdTFvcnZTL21rTkxGTDZnckdrMU96ZTVWdzJ2M0xTZ
09OcGVEQTRNUTdXbnJmNkMzOU95Qm1VaFZzNFBBT3RWbk5xQlc3ZjYxTzlwT
WFNZTVLRlhqKzVxSS9BRUwySUR0V2ZhRmtPNFZHVElRUWszdkRmTWgrWFlmc
kZJNG8rY2ZHVWRvajM3SmRZVFFJSXU4clppcUR2ZHBURFJBWDUvZlAzc1NRd2d
wc1RRMVRFcmRKblZSMURGVm1LTDF2NFlOMEZoTG1KcmdRUWcvNVNBb1phV
npKVnVSZnBFOWpraTBkQ3dpdFNhdU5ldmNCWWNiSlBNZnFxUDFmMlhwN1Rz
U1JwMDMxaDA0dHVaTFJhbVR4b2dyaG05UlRKT2kvaXdYaC9qUFE0VW43cmVx
YzhoSE94OG4yR3Rnb3RLS0VOV1NIVFA3Qk1JREMrSksyL05WYWNBNVBlWWZ0
dFZ1RldpblFuMjF2b0Q0c0pUdDlKYVFKR1lWdmJORkhZSllFcEJnZTUwYXBJbHk3
WkdmSXZGQ1JoWWJ3MHFTejRKSVVxRkRWR083Y29YWE5ldktyMUh1M2U5R0t
ET3BUczNkUm9GSXFiSm9zNTVVTGUzeW9LNkdXNjVGei9Galo3NExwT1A1NDlZ
NTZNQVBPNWFydDV6S3lSM1R2ak9XVGxDUE8xRnBLalRacm5VSnNjMkpoVWM
wWmFKclU3bjVDcThkak1ONDFlTkFWRHdxZElPQmhBcVVvcEJJdmk5bzZ3VzND
M0VqR1BvRzFBSUJFYUc5SktvYlNYQ2NhcVAzVTNjT0RwekVuWDBySjY1cW5tNG
phQ0FGQ25McmxJcHVEQ1l4ekhGUjRzelVJckxTVTVqaHRSdURZaXo5d1Frdk1nW
Gd2VlFlMEphSDZ6RnA5TUVYY3FIbGNGVzhYWkNuQzhwNk40Q0lCbC8xa2Z3Qk
0wZ1BXVk5iV2k1eFpVVlpxZnQ2emJjeGJNQWJZTDZkS0VIbTRVblNTVm5jL1hnTn
U5anB3V1lNTGY0NEd3SzBvOUtKTTBHSEZmOGVxd0ZMRXl0enF5S0JoVDBZWk9
LaUswcVQ5dVZYNjRpeTM2QjFvR3hMQXE3VURKS2t0MVFwaktWWDc0MllHRW
JwMGdLWkh4SWlTaHoyd2wvUmhrR0FOQmtwNzl0TFNlOWJFV2RLZGNjZC9XW
DB5Z3UzRFplRFh6NHU4NVdZd2RQUnlwQkdEZkZMMGZmTEIvWVZzcTlZd3BwM
HYrdEM2MHFrbW55dm9qSXdQM0VITU40dElGdVl6TitXQm9VeHdocEdzWHZoV
TRtcnRJejdqSFk2a1hKbmRINE93QVhJUFo5U0Z4THlmUVhyK3dpU0xhS1RUTFFJ

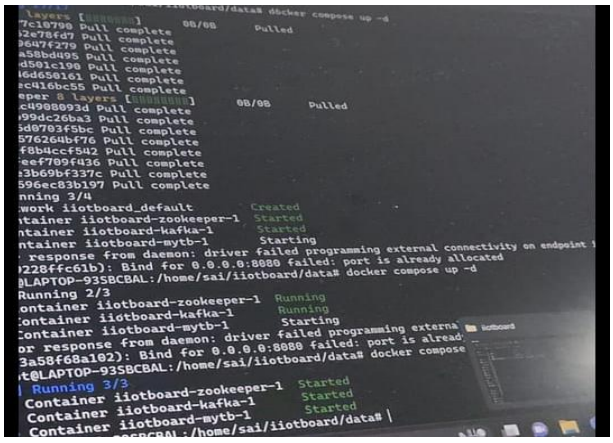
T3lTUGJaYnU0PSIsImRhdGFrZXkiOiJBUUlCQUhpSFdhWVRuUlVXQ2Jueis3THZN
RytBUHZUSHpIbEJVUTlGcUVtVjI2QmR3d0ZyTHFzMUFBYTMxbzZUR0szV2Z2MX
FBQUFBZmpCOEJna3Foa2lHOXcwQkJ3YWdiekJ0QWdFQU1HZ0dDU3FHU0liM0
RRRUhBVEFlQmdsZ2hrZ0JaUU1FQVM0d0VRUU0xOThEcVZTMm1pM09FTXdTQ
WdFUWdEdWhKeGhjenNLUHlIRzQ4QkRVaW9IOWVzd09zWU1UOUEzK0VGQW
RBK0RoRERCeXlnRHVPQlI1bWM1ZUFCeDZCZ3Y0UVFqc1dTRjBEZU5mRnc9PSIsI
nZlcnNpb24iOiIyIiwidHlwZSI6IkRBVEFfS0VZIiwiZXhwaXJhdGlvbiI6MTY4ODE2Mz
E1N30= 147553616965.dkr.ecr.ap-south-1.amazonaws.com/iiot-cassandra

Note: Should get Login Succeeded for complete sign in

-> docker pull 147553616965.dkr.ecr.ap-south-1.amazonaws.com/iiot-cassandra

-> docker compose up -d

Rerun the following code multiple times until all the 3 containers are started.

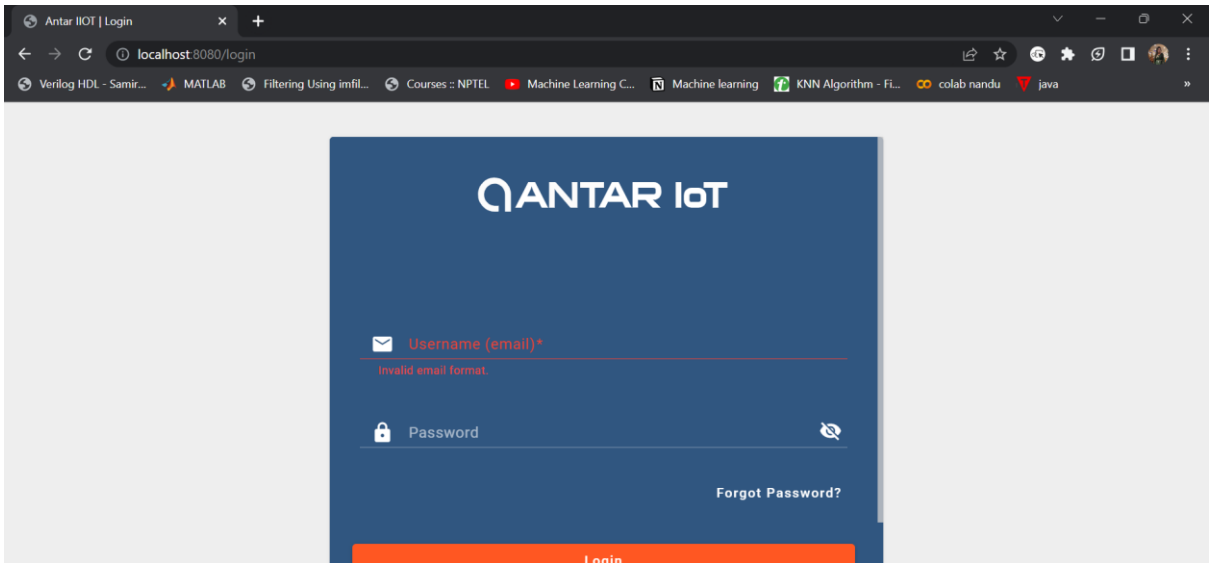


Go to docker Desktop, you will find a container with name Iiotboard.

-> docker compose logs -f mytb

Step-05: Run the docker container and Open **Localhost:8080** in browser

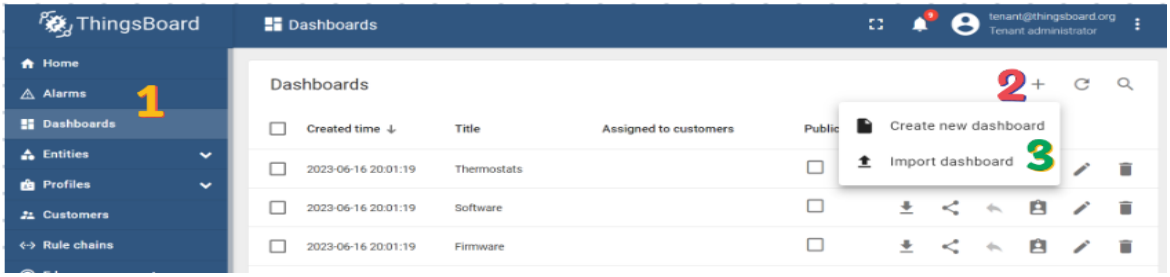
Note: wait for some time after docker starts and to open the localhost



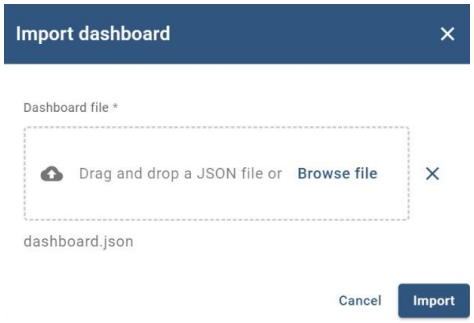
- Demo Accounts: login - **antarsmarthomestesting@gmail.com**
- password – **Antar@1234**

Setup in Thingsboard

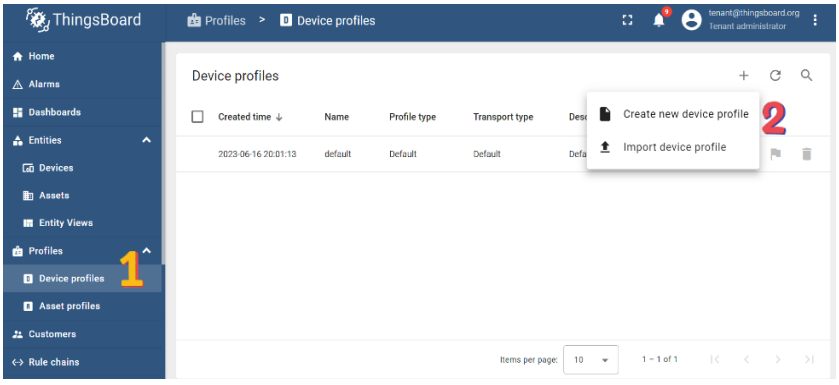
Step:01 - Import the dashboard (it will be provided)

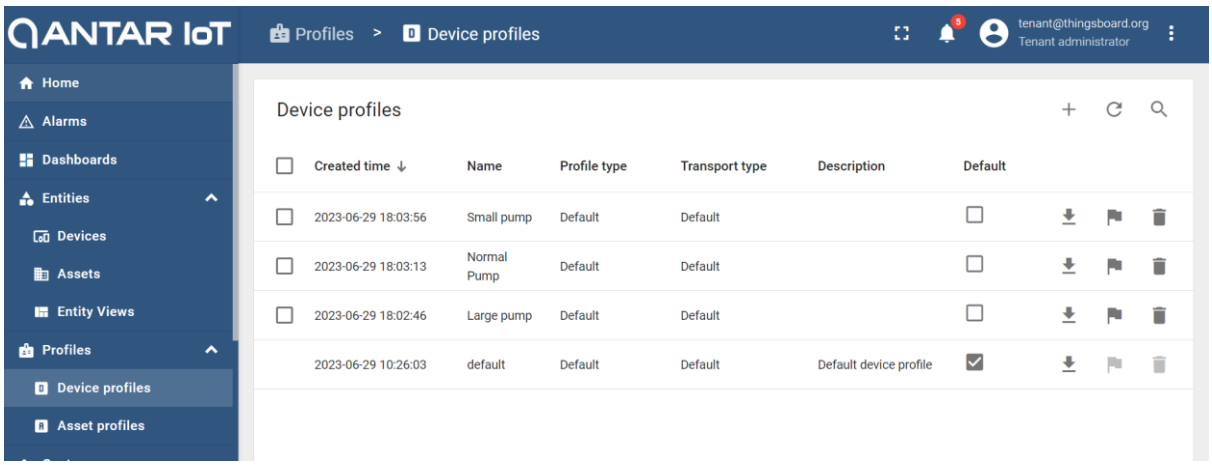


Step:02 – Upload the dashboard by clicking on **Browse File** and import

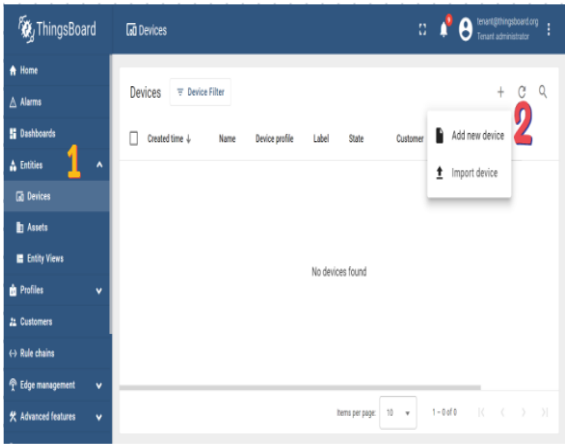


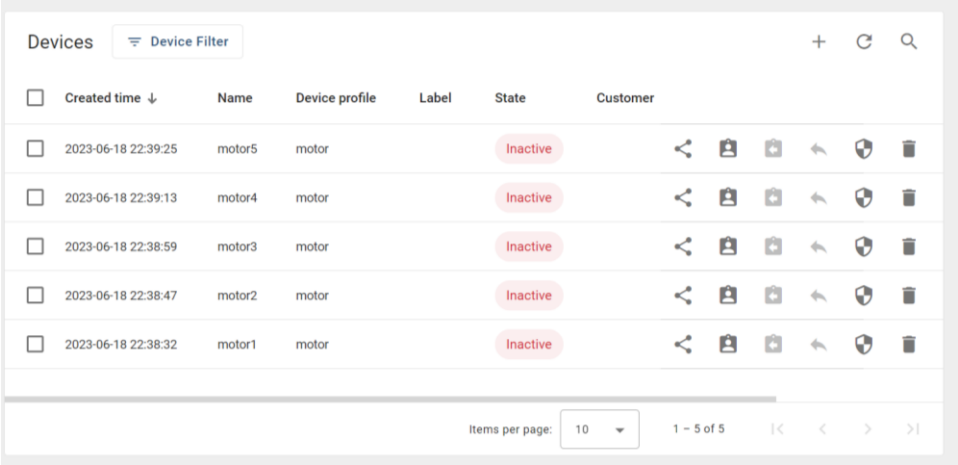
Step:03 – Import 5 device profiles namely for device1, device2 etc(1 device Profile will be provided for reference)



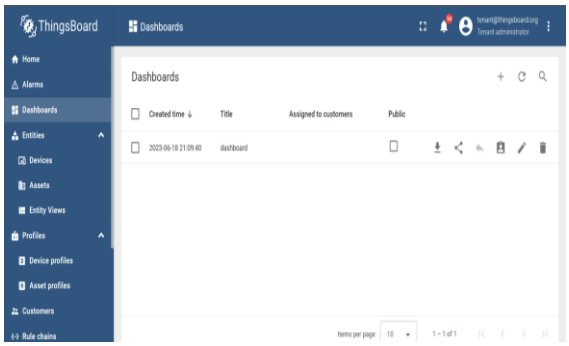


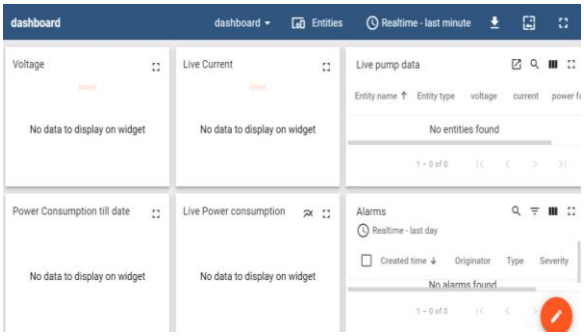
Step:04 – Import 5 Devices (namely Motor1, Motor2, Motor3, Motor4, Motor5) and add the device profile accordingly like motor1 of small pump, like motor2 of large pump





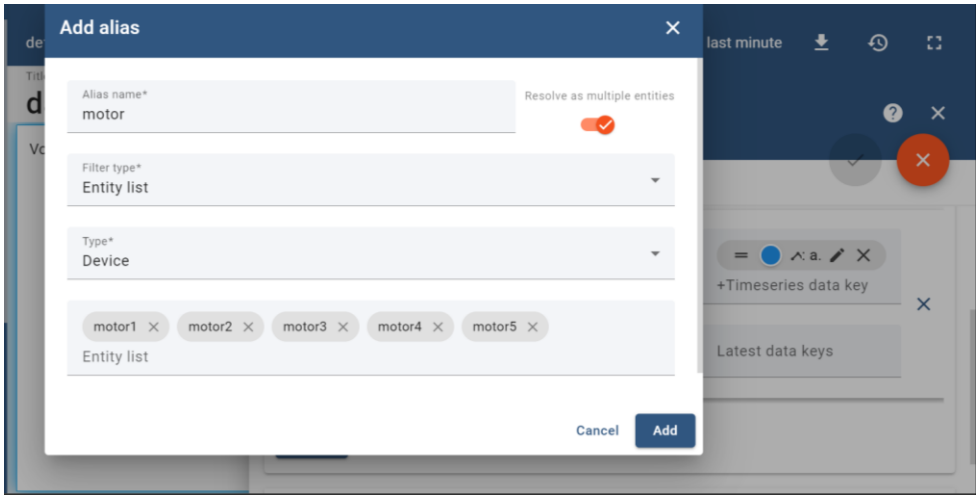
Step:05 – Setup the Main dashboard



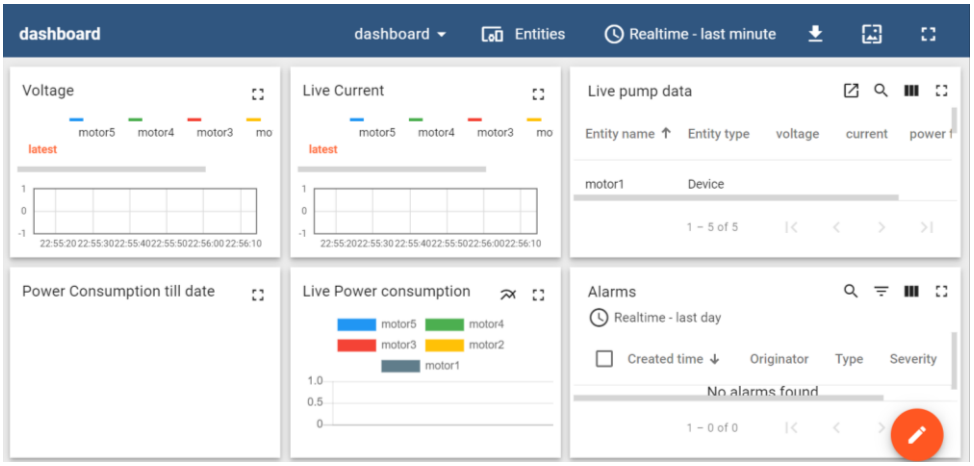


Click on pencil to edit . Edit all the widgets and setup and also add the following Entity alias

1st click on the below and later the pencil icon on top of all widgets. And add the alias followingly.

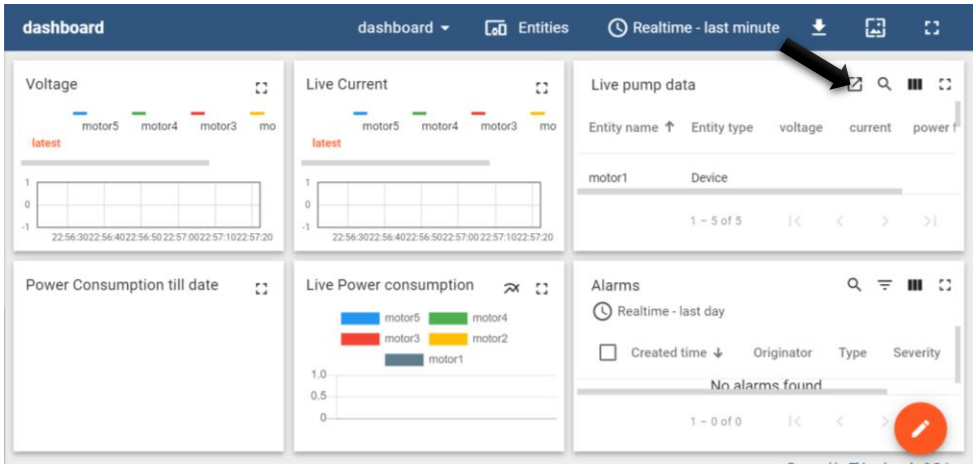


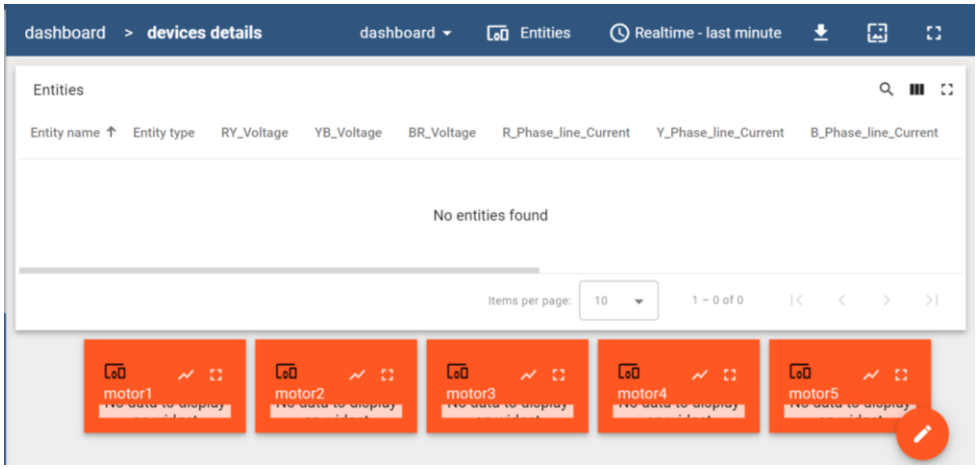
By setting up the alias in all the widgets. Save the changes by clicking the button



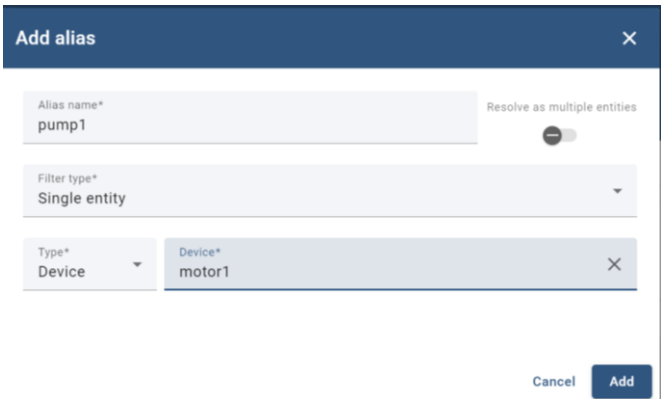
Step:06- Setup the complete dashboard

Go to device details option in Live Pump data widget

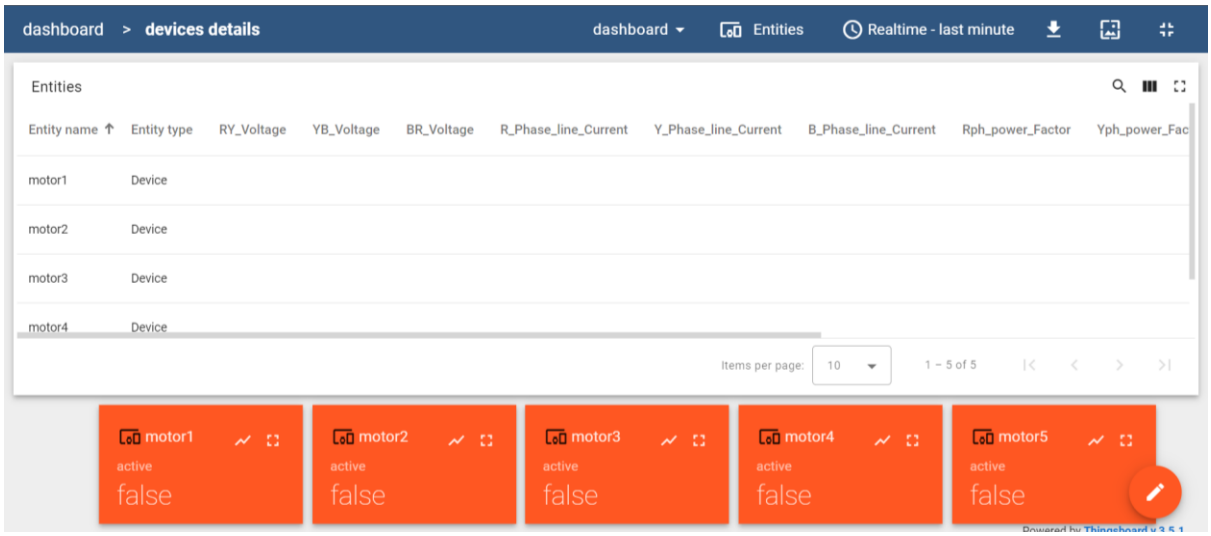




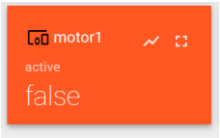
Here also setup with the same entity alias (namely motor) to the Entities widget and save the change by clicking and for Individual device details create another entity alias as follow.



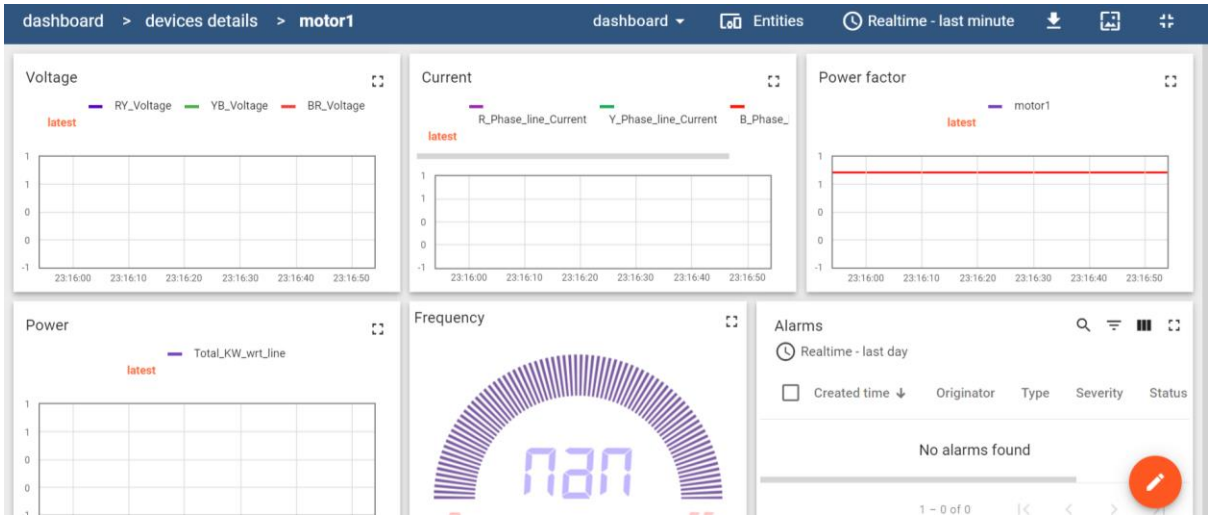
Similarly define for all the motors namely pump1, pump2, pump3, pump4, pump5.



Step:07 – Setup for individual details



go to motor and setup/edit all the widgets with the specific entity (likely for motor1 all widgets with pump1 entity alias, motor2 all the widgets with pump2 entity alias and go on) and save the changes by clicking on . For edit click on pencil icon

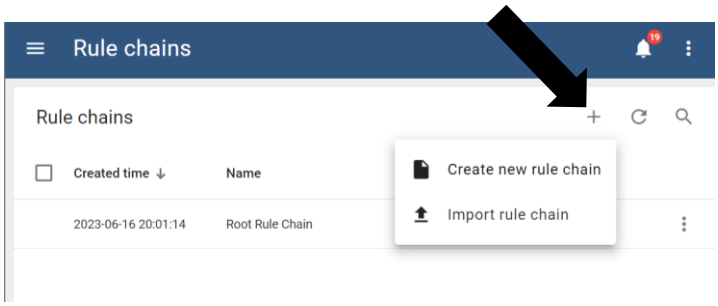


Similarly change for all the individual devices with their entity alias.

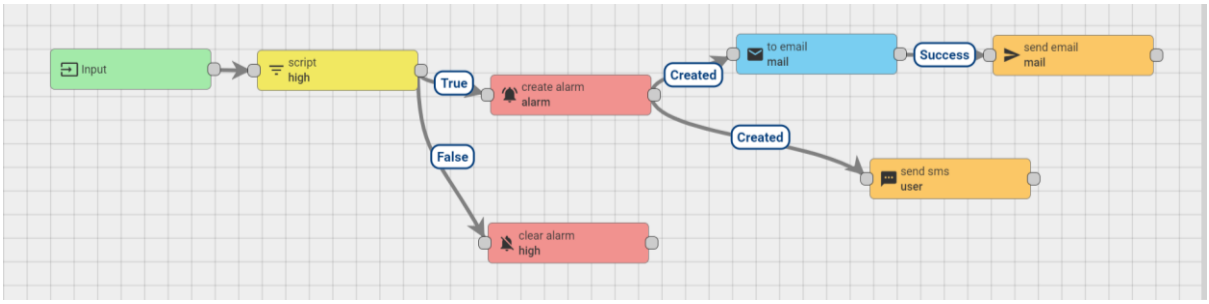
After this final dashboard is ready.

Step:08 – Rule chain setup

Go to root rule chain and import rule chain namely alarm of 3 and warehouse (Will be Provided). And save them by clicking

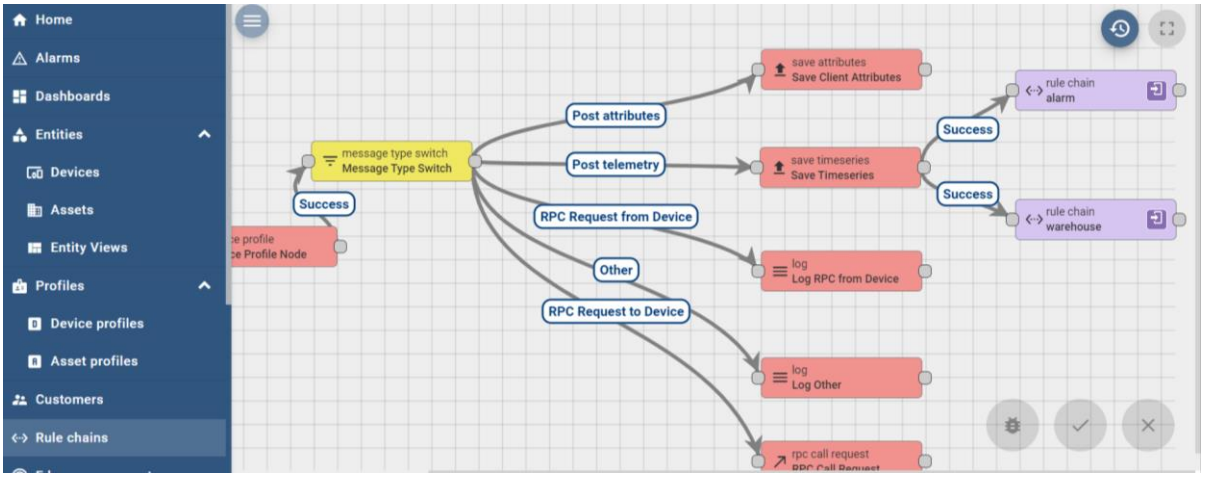


- 3 Alarm named rule chain



- Warehouse named rule chain

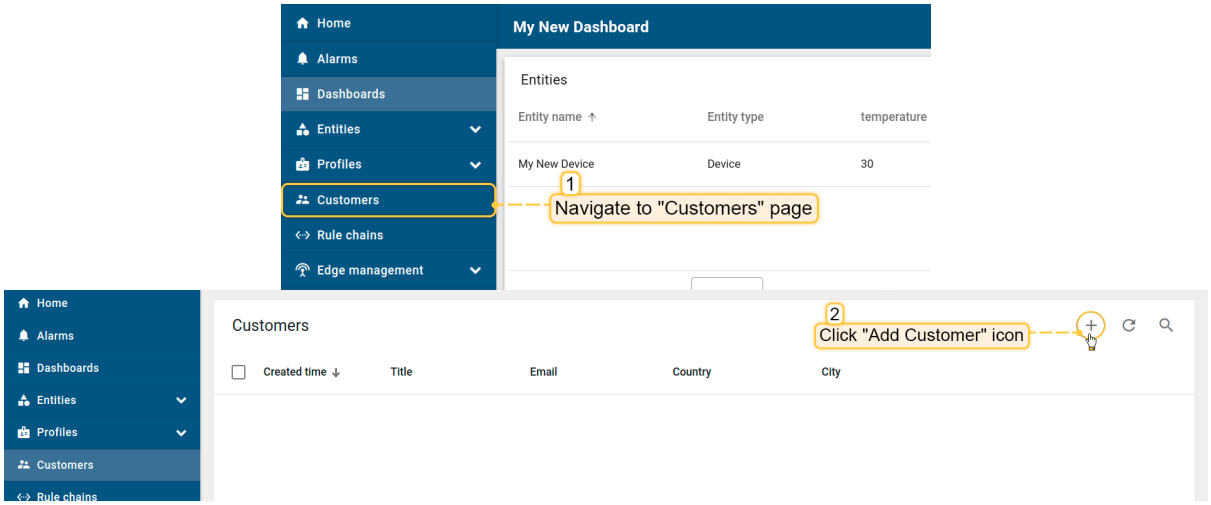
- 3 Root Rule Chains

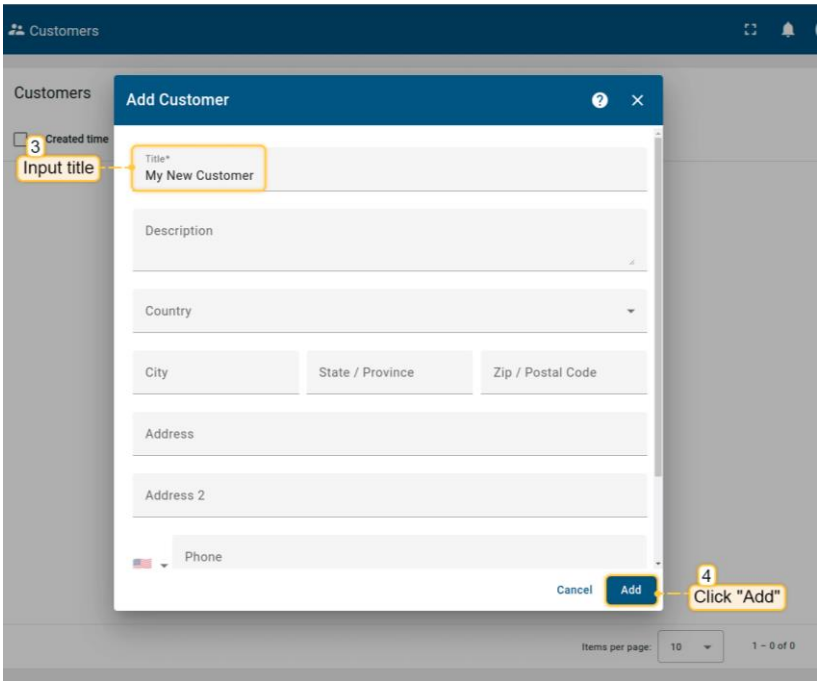


Step-09: Assign Customer

Let’s create a customer with title “My New Customer”. Please see instruction below:

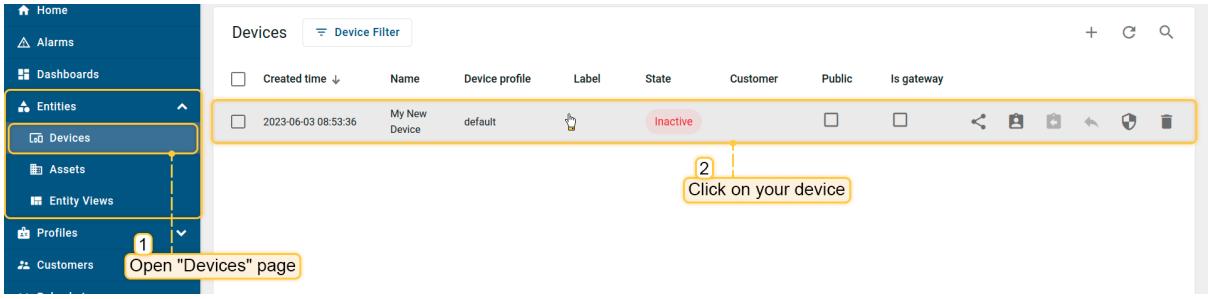
- Navigate to the Customers page;
- Click the "+" sign to add a customer;
- Input customer title and click "Add".

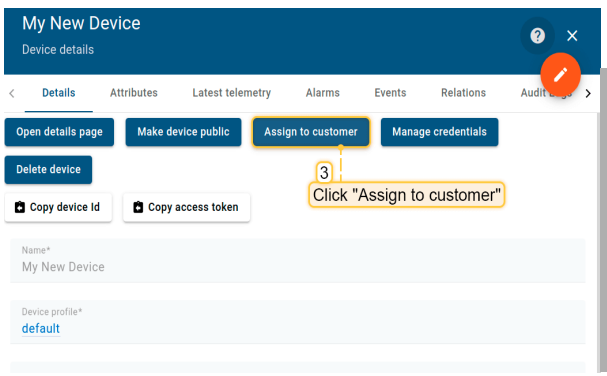


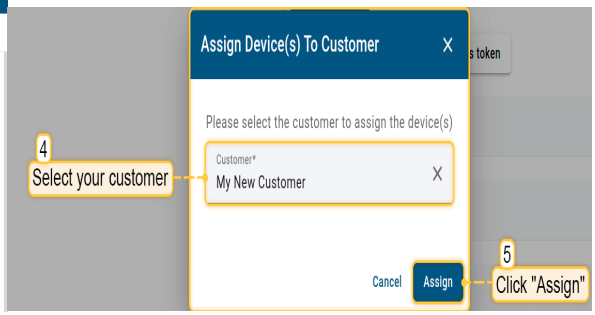


Let’s assign device to the customer. The customer users will have ability to read and write telemetry and send commands to devices.

- Open "Devices" page, then select your device to open its details;
- Click "Assign to customer" button;
- Select the customer to whom you want to assign the device, and then click "Assign";
- You have changed the owner of the device. In the "Customer" column, you can see the owners name of the device;

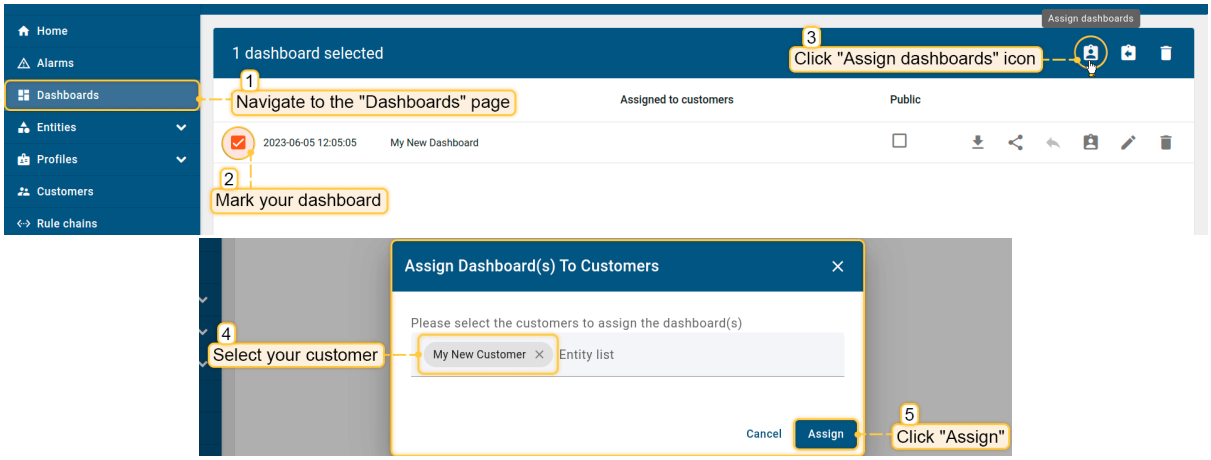






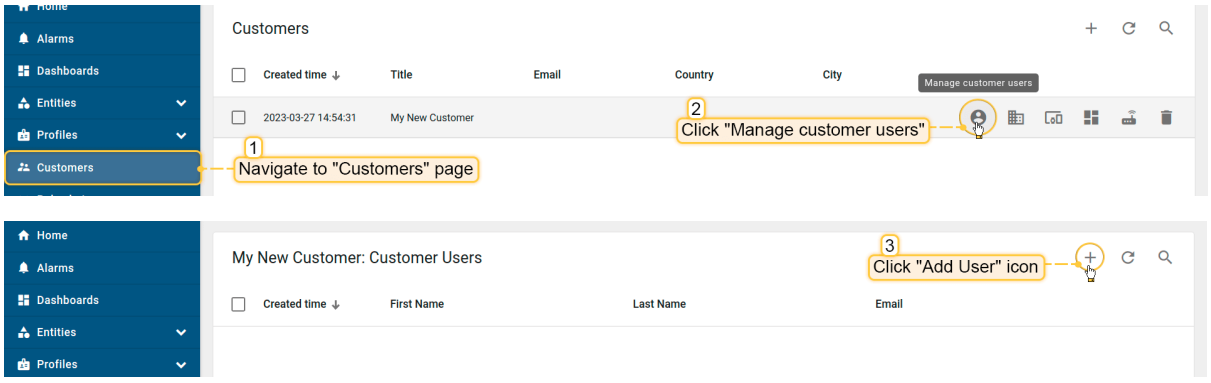
Let’s share our dashboard with the customer. The customer users will have read-only access to the dashboard.

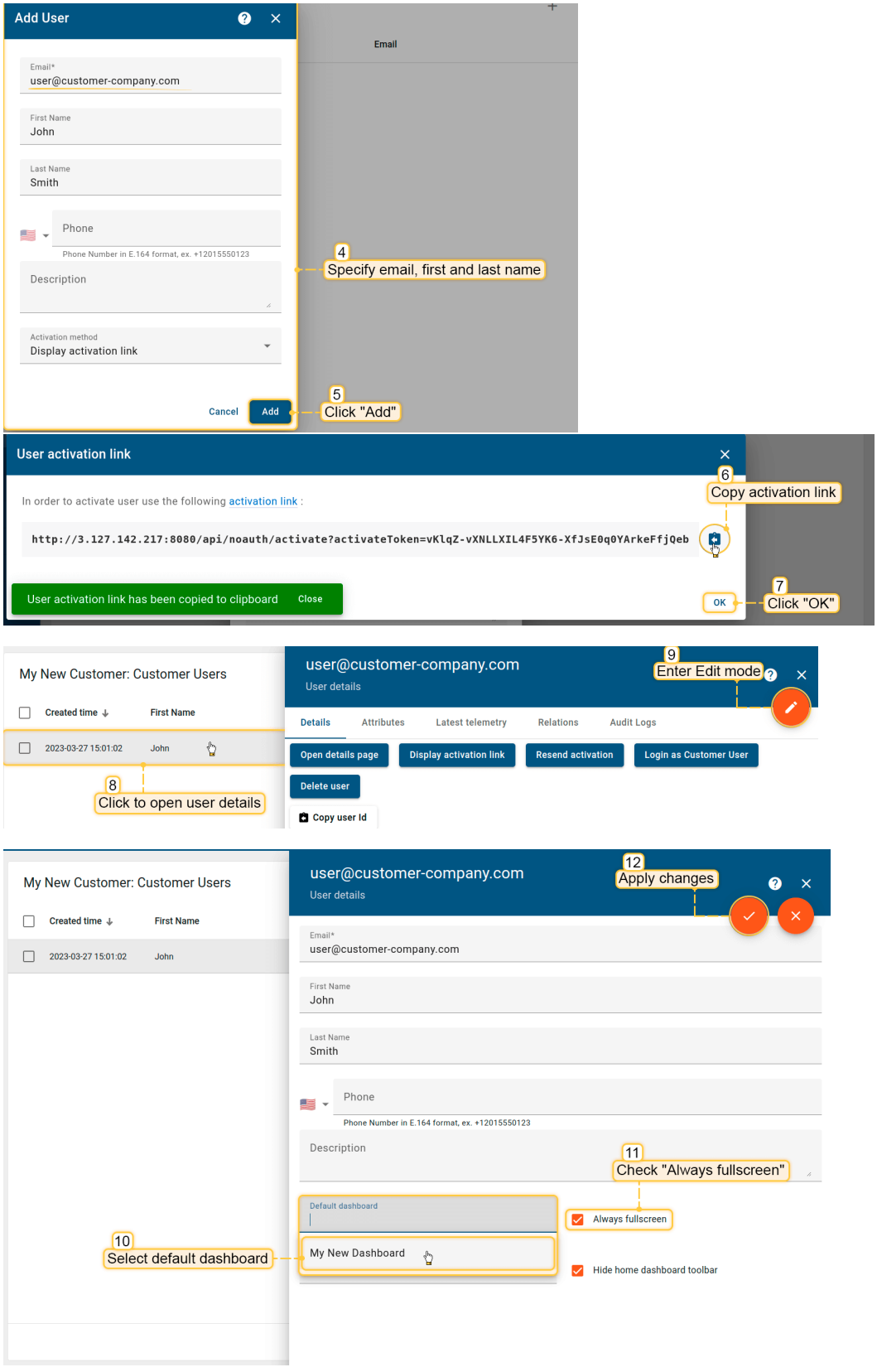
- Open "Dashboards" page. Mark your dashboard and click the "Assign dashboards" icon;
- Mark "My New Customer" and click "Assign";
- Navigate to the "Customers" page. Click "Manage customer dashboards" icon for "My New Customer";
- "My New Dashboard" is assigned to your customer.



Create Customer Account:

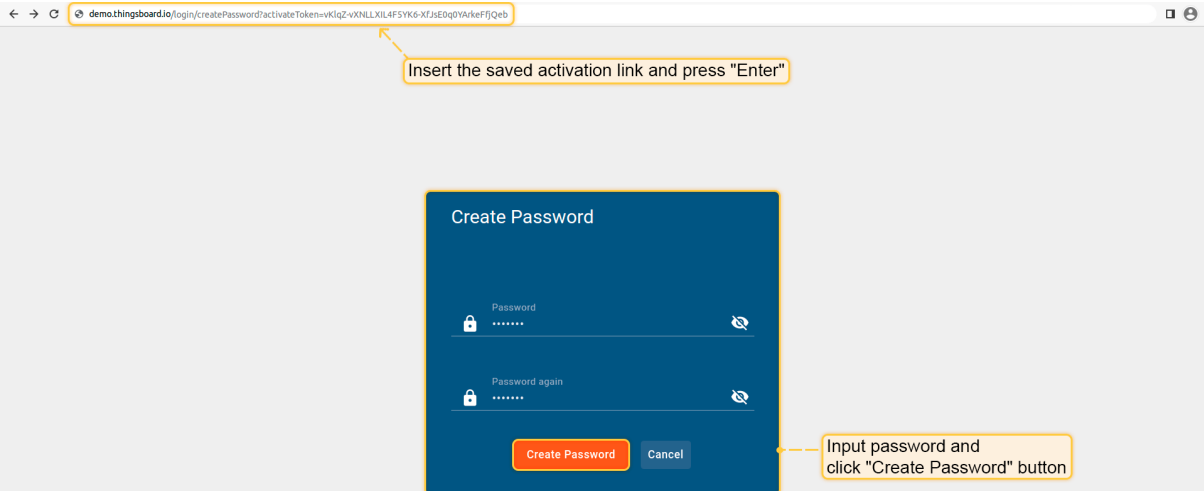
- Navigate to "Customers" page. Find your customer in the list of customers and then click on the "Manage customer users" icon;
- Click the "Add user" icon in the top right corner of the table;
- Specify email that you will use to login as a customer user and click "Add";
- Copy the activation link and save it to a safe place. You will use it later to set the password. Click "OK";
- Click on the created user to open details. Click "pencil" icon to enter edit mode;
- Select default dashboard and check "Always fullscreen". Apply changes.





- Paste the previously copied link into a new browser tab and press Enter. Come up with and enter a password twice, then press "Create Password". You will automatically login as a customer user;

- You have logged in as a Customer User. You may browse the data and acknowledge/clear alarms.



Set Thershold value:

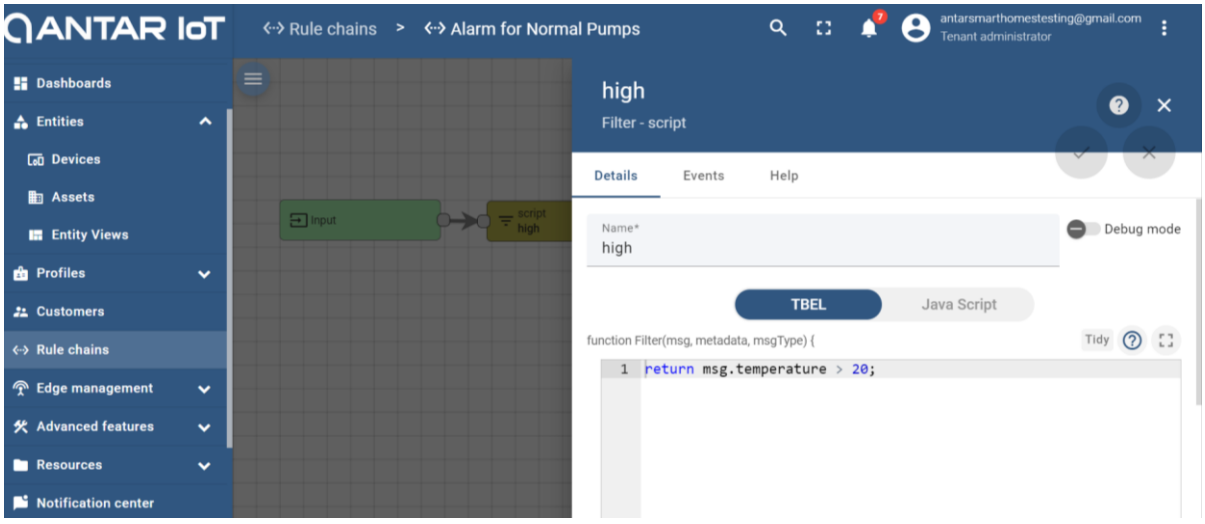
Step-01: Go to Rule Chains. And navigate to Alarm for large, Normal, small pump.

Step-02: Click on to script block and click on edit button. Write function on filter function according to your threshold values.

Eg: return (msg.BR_Volatge > 220) || (msg.RY_Voltage >230) || (msg.RY_Voltage>240);

In code for OR -> ||

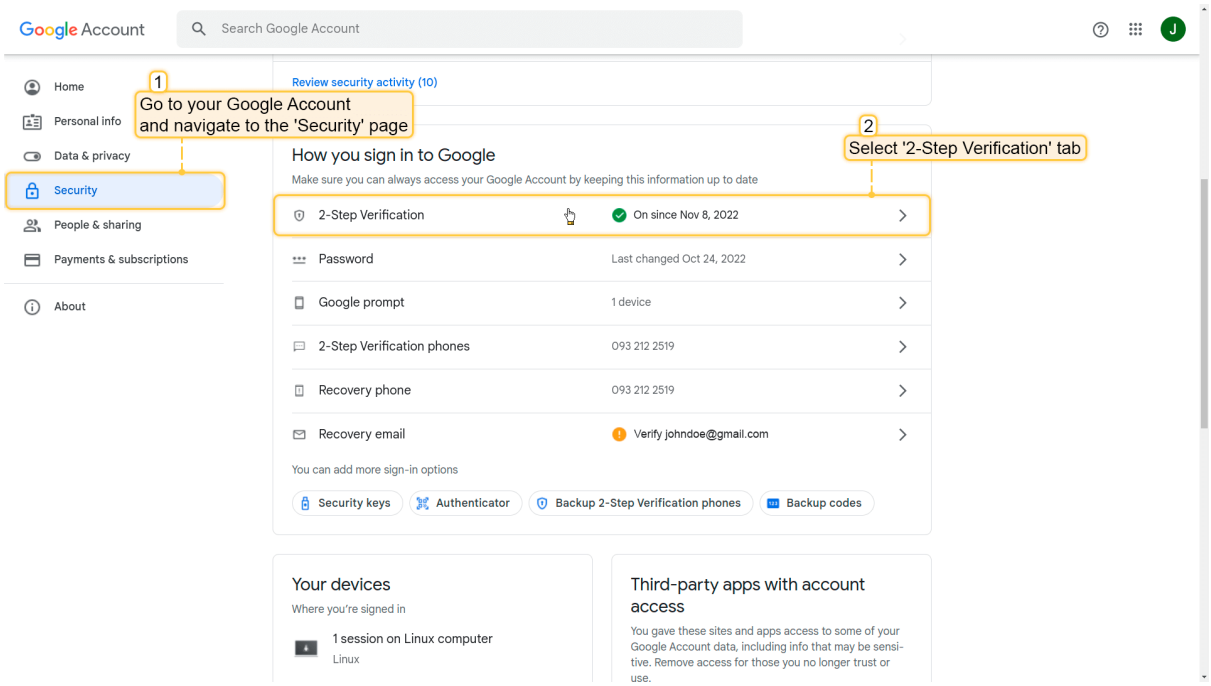
For and -> &&

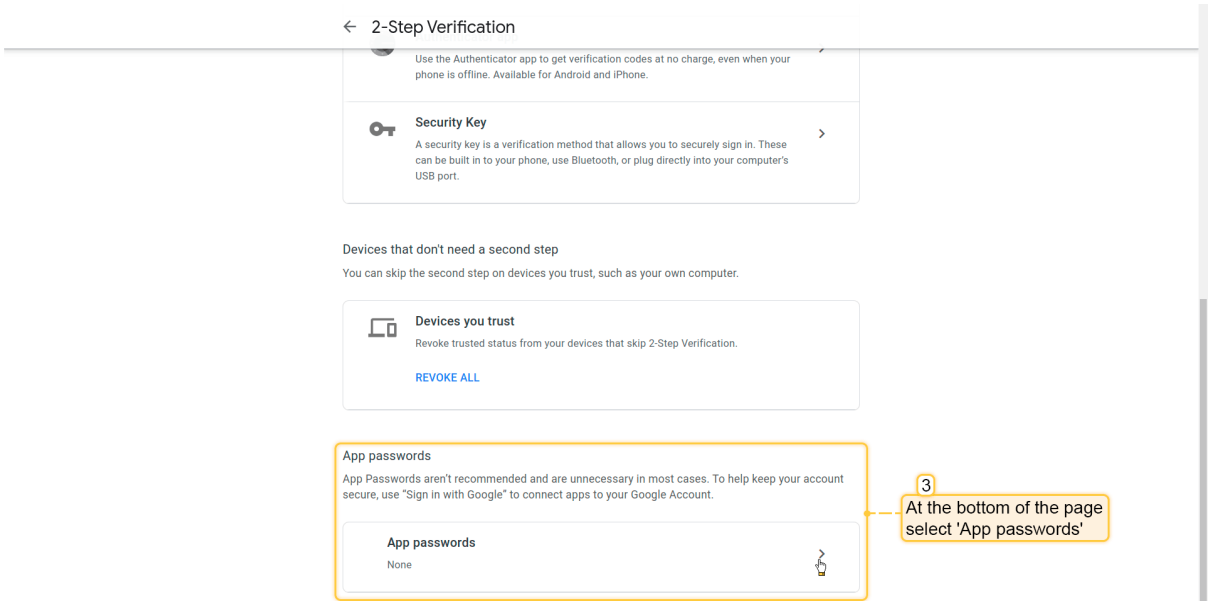


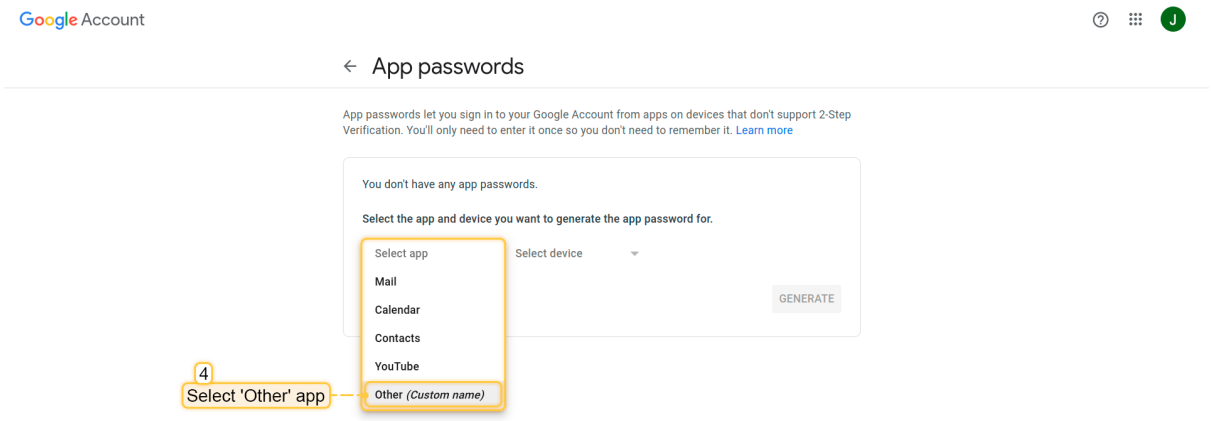
Mail Setup in Thingsboard

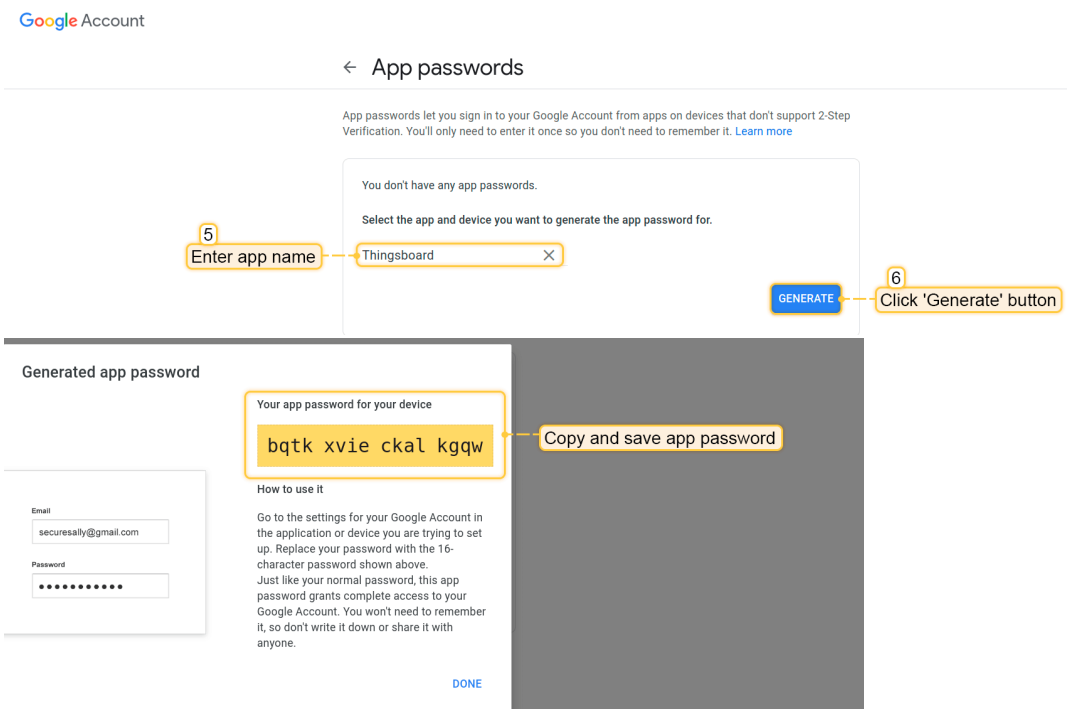
In order to use Gmail, you will need to enable two-step verification

Follow the below steps to configure.


Google Account
Search Google Account
Home
Personal info
Data & privacy
Security
People & sharing
Payments & subscriptions
About
1
Go to your Google Account and navigate to the 'Security' page
Review security activity (10)
How you sign in to Google
Make sure you can always access your Google Account by keeping this information up to date
2
Select '2-Step Verification' tab
2-Step Verification
On since Nov 8, 2022
Password
Last changed Oct 24, 2022
Google prompt
1 device
2-Step Verification phones
093 212 2519
Recovery phone
093 212 2519
Recovery email
Verify johndoe@gmail.com
You can add more sign-in options
Security keys
Authenticator
Backup 2-Step Verification phones
Backup codes
Your devices
Where you're signed in
1 session on Linux computer
Linux
Third-party apps with account access
You gave these sites and apps access to some of your Google Account data, including info that may be sensitive. Remove access for those you no longer trust or use.


2-Step Verification
Use the Authenticator app to get verification codes at no charge, even when your phone is offline. Available for Android and iPhone.
Security Key
A security key is a verification method that allows you to securely sign in. These can be built in to your phone, use Bluetooth, or plug directly into your computer's USB port.
Devices that don't need a second step
You can skip the second step on devices you trust, such as your own computer.
Devices you trust
Revoke trusted status from your devices that skip 2-Step Verification.
REVOKE ALL
App passwords
App Passwords aren't recommended and are unnecessary in most cases. To help keep your account secure, use "Sign in with Google" to connect apps to your Google Account.
App passwords
None
3
At the bottom of the page select 'App passwords'


Google Account
App passwords
App passwords let you sign in to your Google Account from apps on devices that don't support 2-Step Verification. You'll only need to enter it once so you don't need to remember it. Learn more
You don't have any app passwords.
Select the app and device you want to generate the app password for.
Select app
Select device
Mail
Calendar
Contacts
YouTube
Other (Custom name)
GENERATE
4
Select 'Other' app

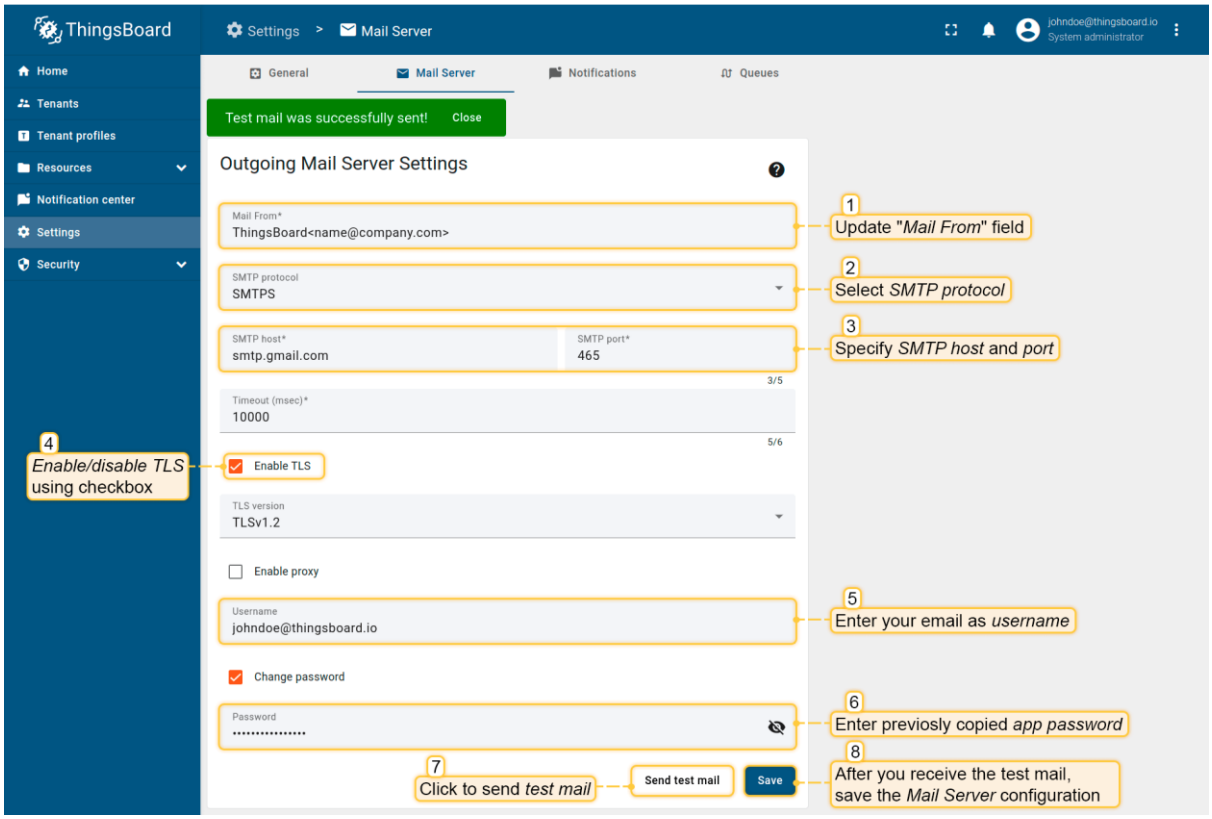


Once this is ready, you should be able to setup mail server using the information below:

- SMTP host: **smtp.gmail.com**;
- SMTP port: **465**;
- Username: antarsmarthomestesting@gmail.com;
- Password: previously created **app password**.

You can also enable/disable TLS using checkbox.

Click '**Send test mail**' button.

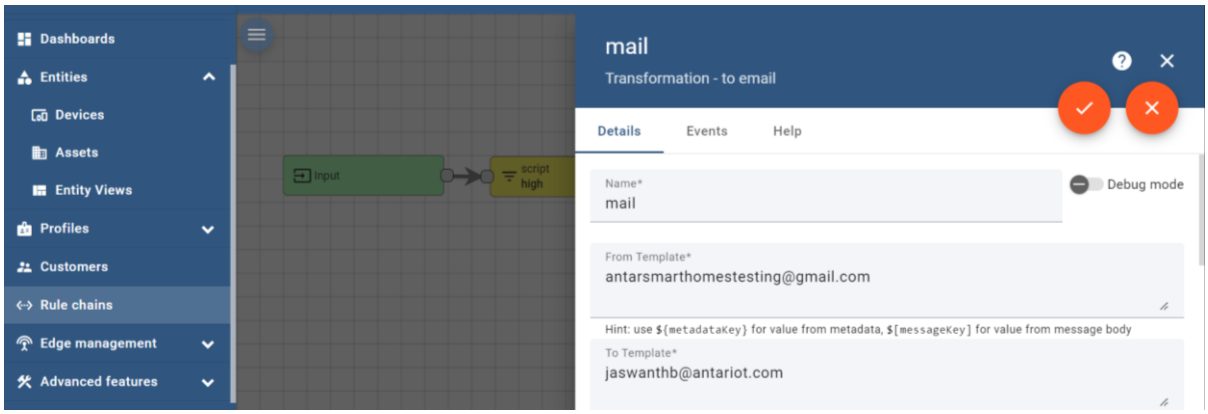


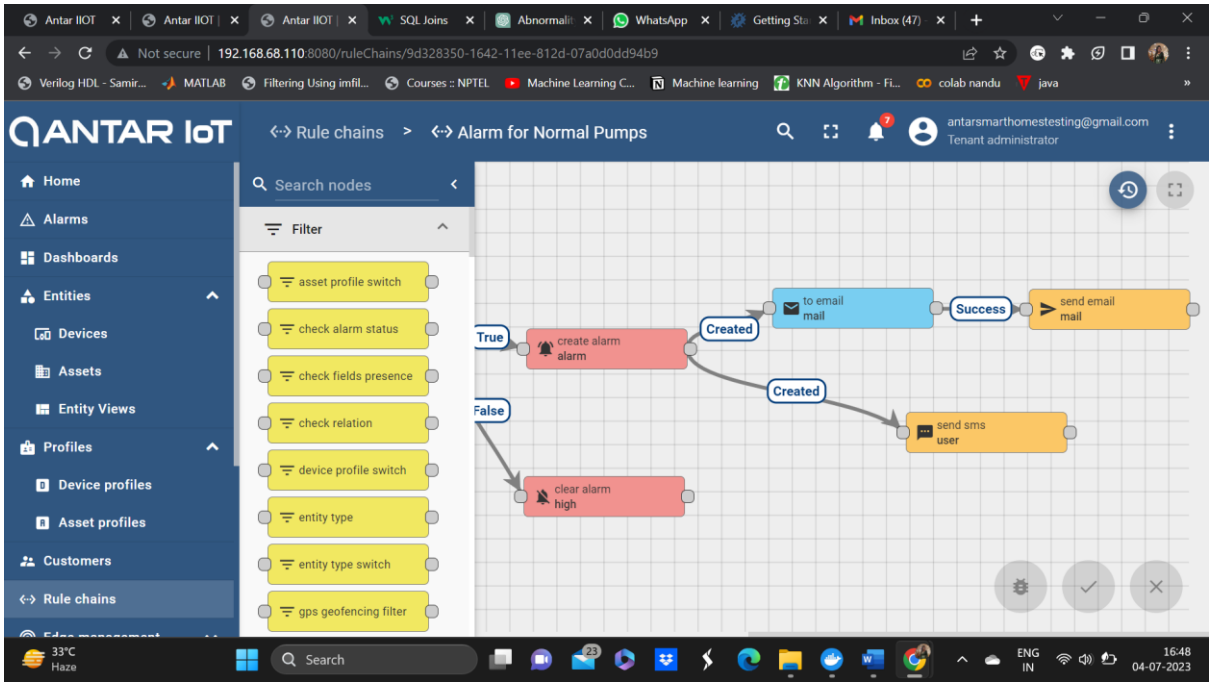
Once you receive test mail on your email, save Mail Server configuration. In case of error in configuration, you should receive a popup with the error log.

To setup mail for alarms:

Step-01: Go to Rule Chians and navigate to Alarm for large, small and normal pump.

Step-02: Click on to email block in the rule chain. change the to template and from template. And save.





Mosquitto Broker Installation

Step-01: click the following link to download the Broker

https://mosquitto.org/files/binary/win64/mosquitto-2.0.15-install-windows-x64.exe

Step-02: Open services a check for status of mosquito broker and start the service.

Step-03: Create a text file with name **passwd** in the desktop. In format Username:password

Ex: AntarIoT:Antar@1234

Step-04: drag this folder on to the following location.

C:\Program Files\mosquitto

Step-05: Edit the conf file which is present in the following location C:\Program Files\mosquitto.

Add the following code to the conf file at the end

port 1883

listener 9001

protocol websockets

socket_domain ipv4

allow_anonymous false

password_file C:\Program Files\mosquitto\passwd.txt

Step-06: open cmd as administrator and enter the following cmd.

mosquitto_passwd -U password.txt

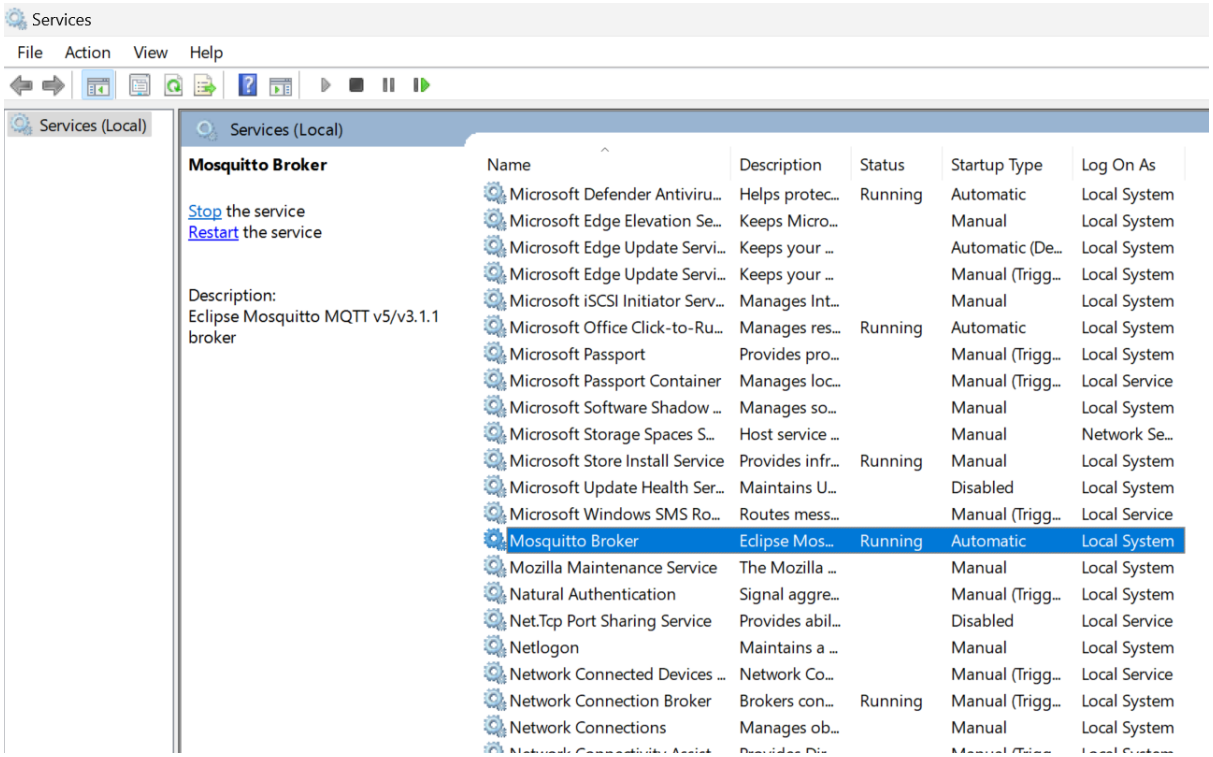
netsh advfirewall firewall add rule name=”mqttTcpPort” dir=in action=allow protocol=TCP localport=1883

Through this cmd the password will be changed to hash.

```
C:\Windows\System32>cd/

C:\>cd program files

C:\Program Files>cd mosquitto

C:\Program Files\mosquitto>dir
 Volume in drive C has no label.
 Volume Serial Number is 5CD6-A842

 Directory of C:\Program Files\mosquitto

17-07-2023  11:16    <DIR>          .
08-07-2023  12:12    <DIR>          ..
16-08-2022  19:04               230 aclfile.example
16-08-2022  19:04           135,368 ChangeLog.txt
30-06-2023  13:24    <DIR>          devel
16-08-2022  19:04             1,568 edl-v10
16-08-2022  19:04            14,197 epl-v20
06-07-2022  03:13         3,415,552 libcrypto-1_1-x64.dll
06-07-2022  03:13           685,056 libssl-1_1-x64.dll
16-08-2022  19:04            40,449 mosquitto.conf
16-08-2022  19:05            87,040 mosquitto.dll
16-08-2022  19:11           382,464 mosquitto.exe
16-08-2022  19:05            18,432 mosquittopp.dll
16-08-2022  19:05            76,288 mosquitto_ctrl.exe
16-08-2022  19:07           122,880 mosquitto_dynamic_security.dll
16-08-2022  19:04            22,528 mosquitto_passwd.exe
16-08-2022  19:05            51,712 mosquitto_pub.exe
16-08-2022  19:05            79,872 mosquitto_rr.exe
16-08-2022  19:05            81,920 mosquitto_sub.exe
16-08-2022  19:04             1,886 NOTICE.md
17-07-2023  11:15                16 password.txt
16-08-2022  19:04               355 pwfile.example
16-08-2022  19:04               939 README-letsencrypt.md
16-08-2022  19:04             2,453 README-windows.txt
16-08-2022  19:04             3,768 README.md
30-06-2023  13:24            66,085 Uninstall.exe
              23 File(s)      5,291,058 bytes
               3 Dir(s)  395,962,576,896 bytes free
```

```
C:\Program Files\mosquitto>mosquitto_passwd -U password.txt

C:\Program Files\mosquitto>netsh advfirewall firewall add rule name="mqttTcpPort" dir=in action=allow protocol=TCP localport=1883
Ok.


C:\Program Files\mosquitto>ipconfig

Windows IP Configuration


Wireless LAN adapter Local Area Connection* 1:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

Wireless LAN adapter Local Area Connection* 10:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

Wireless LAN adapter Wi-Fi:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::485:4069:7549:8c9e%8
   IPv4 Address. . . . . . . . . . . : 192.168.68.113
```

Step-07: go the services and restart the mosquito service.



MQTT Explorer

Step-01: install using the following link

https://github.com/thomasnordquist/MQTT-Explorer/releases/download/0.0.0-0.4.0-beta1/MQTT-Explorer-Setup-0.4.0-beta1.exe

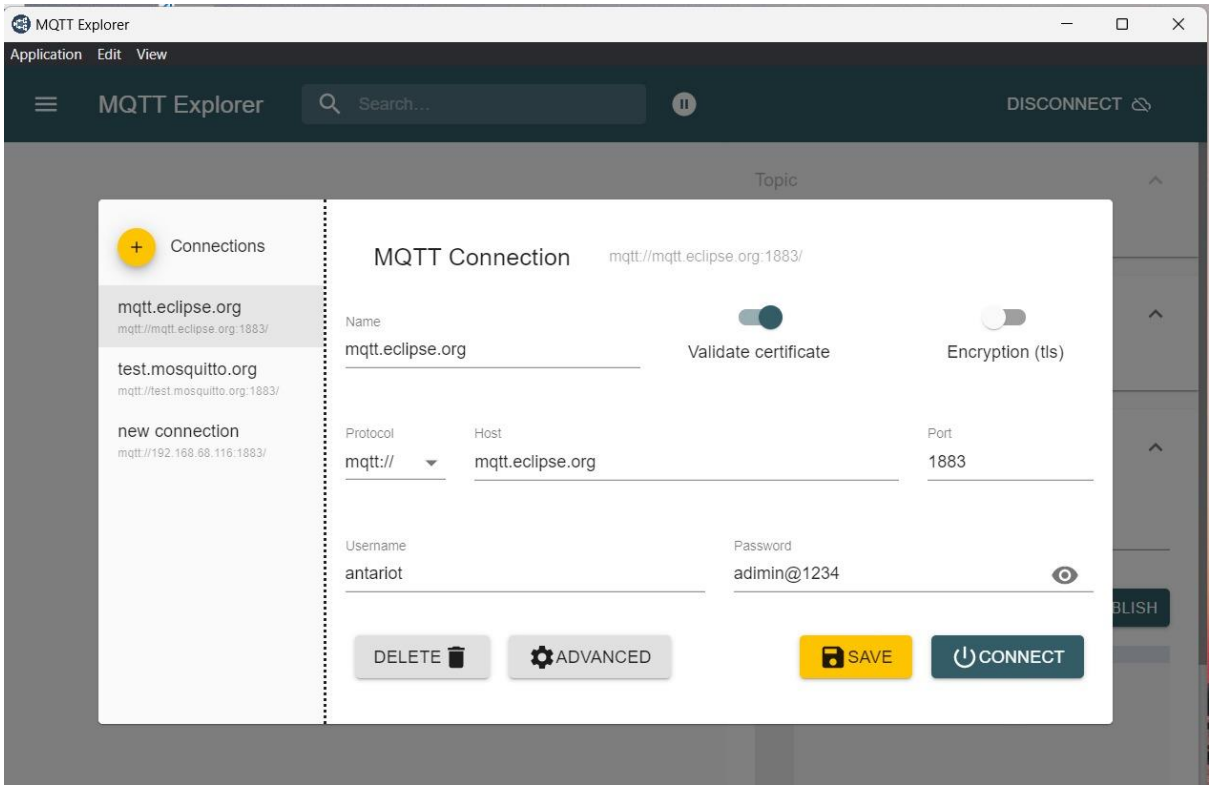
Step-02: Setup the MQTT Connection by below details and connect

Host -> mqtt.eclipse.org

Port -> 1883

Username -> antariot

Password -> admin@1234


MQTT Explorer
Application Edit View
MQTT Explorer
Search...
DISCONNECT
Topic
Connections
mqtt.eclipse.org
mqtt://mqtt.eclipse.org:1883/
test.mosquitto.org
mqtt://test.mosquitto.org:1883/
new connection
mqtt://192.168.68.116:1883/
MQTT Connection
mqtt://mqtt.eclipse.org:1883/
Name
mqtt.eclipse.org
Validate certificate
Encryption (tls)
Protocol
mqtt://
Host
mqtt.eclipse.org
Port
1883
Username
antariot
Password
adimin@1234
DELETE
ADVANCED
SAVE
CONNECT