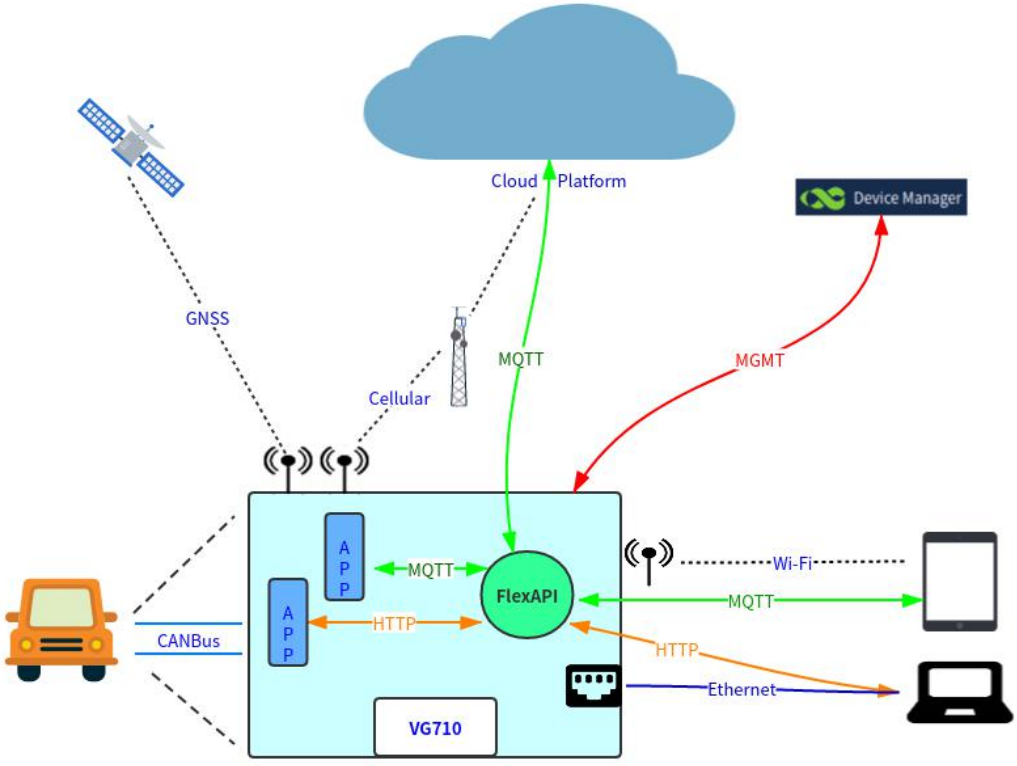
VG710 & FlexAPI Overview

Introduction

We introduced FlexAPI for the fast evolving IoT applications, which highly value easy integration, openness, flexibility, extensibility and programmability.

IoT is used intensively all over the world, smart things and even legacy devices are more and more connected to the cloud to make the world more digitalized and our lives easier. Besides, Edge computing is a rising power which features fast response, low latency and local intelligence. Cloud & Edge computing which complements each other come together could form a smarter solution and better world.

The following figure helps to understand how our powerful VG710 vehicle gateway plus its flexible FlexAPI could ease your application: **connect & serve**.



In the above figure, our VG710 at the central part physically connects to the vehicle, GNSS satellites, cellular base station, cloud platforms, Wi-Fi equipped tablet and Ethernet equipped industrial PC. Besides, service data stream flow from FlexAPI to cloud platform, local Python/Docker APPs and LAN device software.

VG710 overview

An ideal solution first needs powerful hardware features.
Our VG710 vehicle gateway has the following advantages:

1. Specially designed all in one solution

In a single box integrates:
Cellular LTE Advanced Cat6
Wi-Fi 5
Gigabit Ethernet
GNSS with Dead reckoning support
Accelerometer and gyroscope sensors
CANBus
Serial interface
IOs and Bluetooth

2. Powerful networking ability

High speed cellular WAN for always online & fast connection.
High speed WLAN for seamless wireless experience.
High speed Gigabit LAN for stable connection.

3. Edge computing ready

Processing power:
ARM Cortex A7 Quad-Core 717MHz
RAM: 512MB(optional 1GB)
eMMC storage: 8GB
Python & Docker support

4. Vehicle condition aware

Supports real-time GNSS location, motion detection, IO monitoring and OBD-II/J1939 data acquisition to know exactly what’s going on.

5. Proven embedded firmware

Modular design, stable, efficient, high availability and auto fault recovery.

FlexAPI overview

An ideal solution further needs flexible software for application integration. Here comes the FlexAPI, which provides unified data and control services.

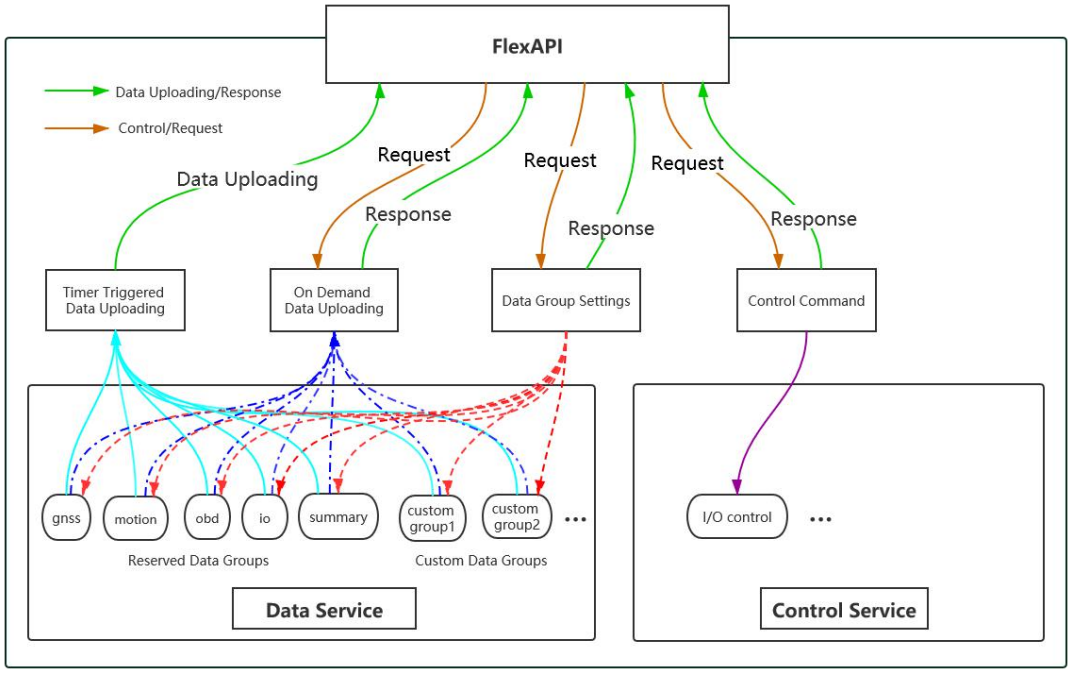
FlexAPI is designed to be Cloud and Edge friendly, you can use it for both your cloud platform integration and field Edge computing. It’s network oriented and programming language independent.

For Cloud platform integration, FlexAPI provides MQTT APIs and acts as MQTT client.

For Edge computing, you can use your Python or Docker APP to access its service, or even from your LAN device software. You also have the freedom to use MQTT or HTTP per your choice.

The following outlines the choices to use FlexAPI:
1. Cloud platform integration.
2. Run python APPs inside VG710 gateway.
3. Run docker APPs inside VG710 gateway.
4. Access FlexAPI from LAN device software via MQTT broker.
5. Access FlexAPI from LAN device software via REST API.

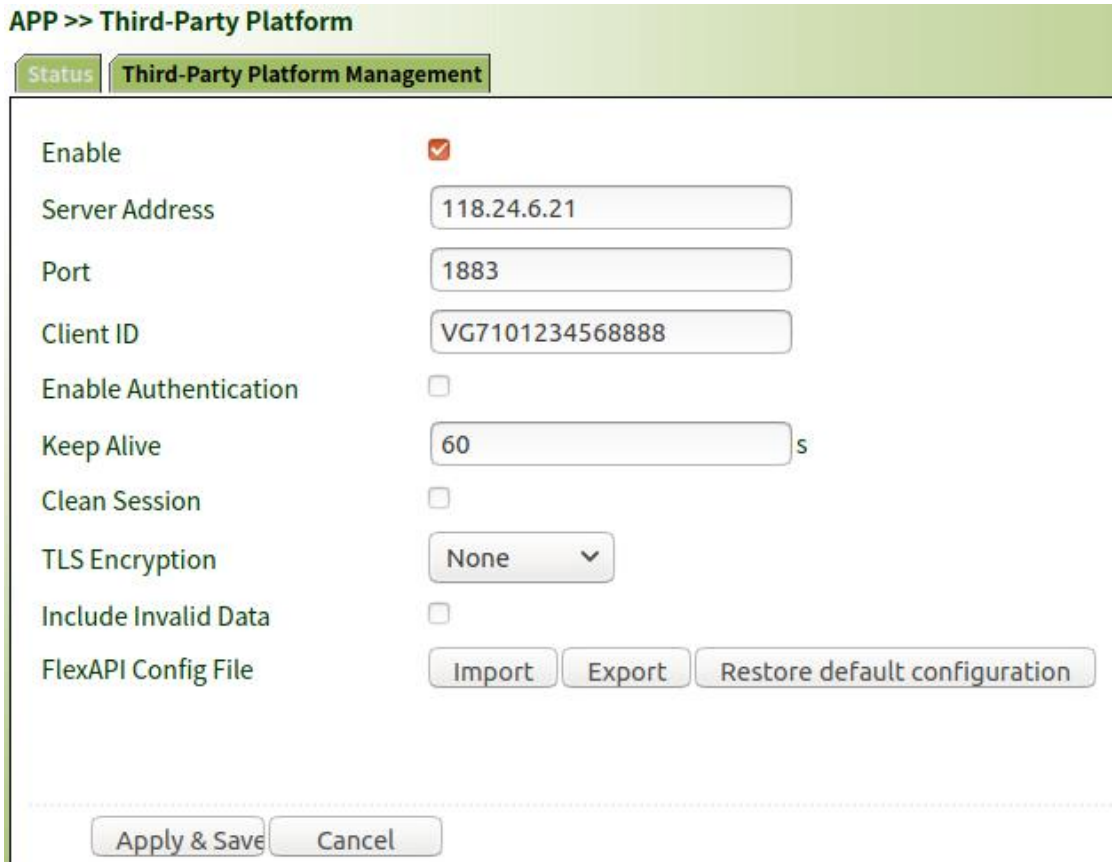
The following figure illustrates FlexAPI in MQTT form.



FlexAPI Use Cases

1. Cloud platform integration

You first need to setup your MQTT broker and make it accessible.
Configure your MQTT broker settings which includes its address, port and authentication.
Client ID needs to be unique so that your platform could distinguish multiple VG710 gateways.
Check WebUI: **APP >> Third-Party Platform**



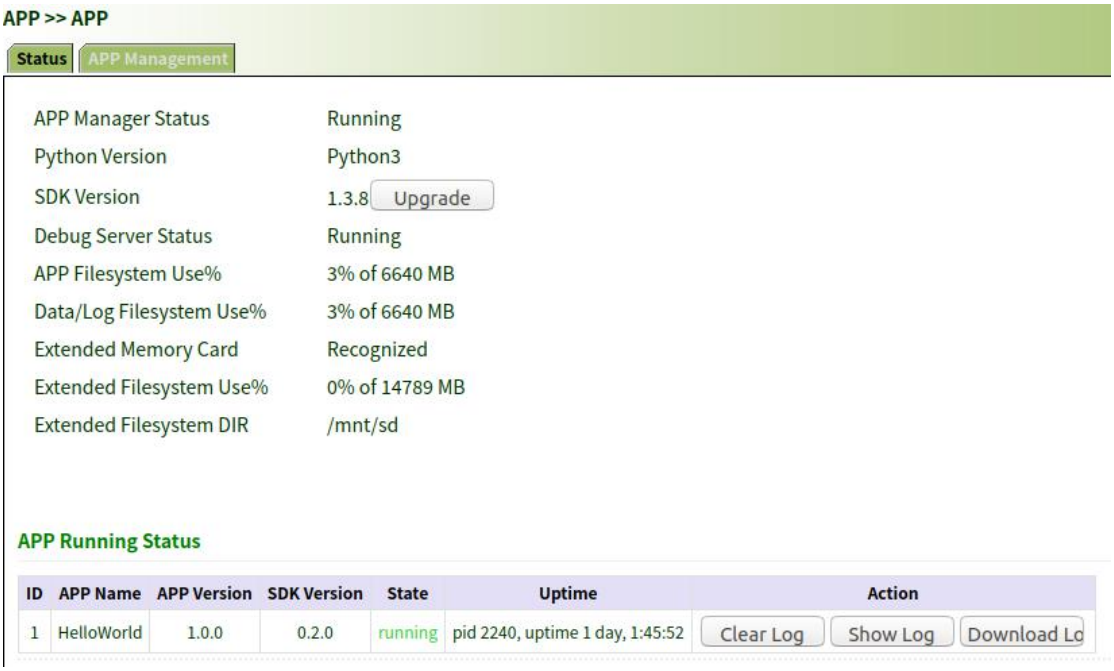
2. Run python APPs inside VG710 gateway

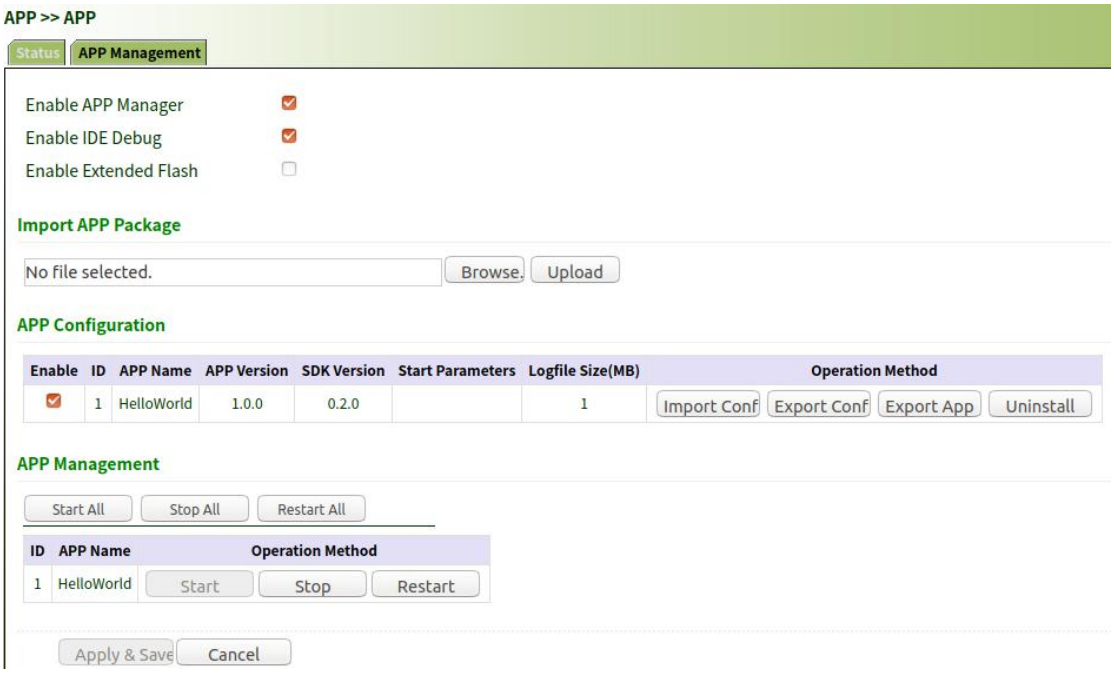
You first need to install python SDK on VG710.

After that you can use VS Code IDE to connect to VG710, edit and pack your APPs.

Then you can import, configure and start your APPs.

Check WebUI: **APP >> APP**



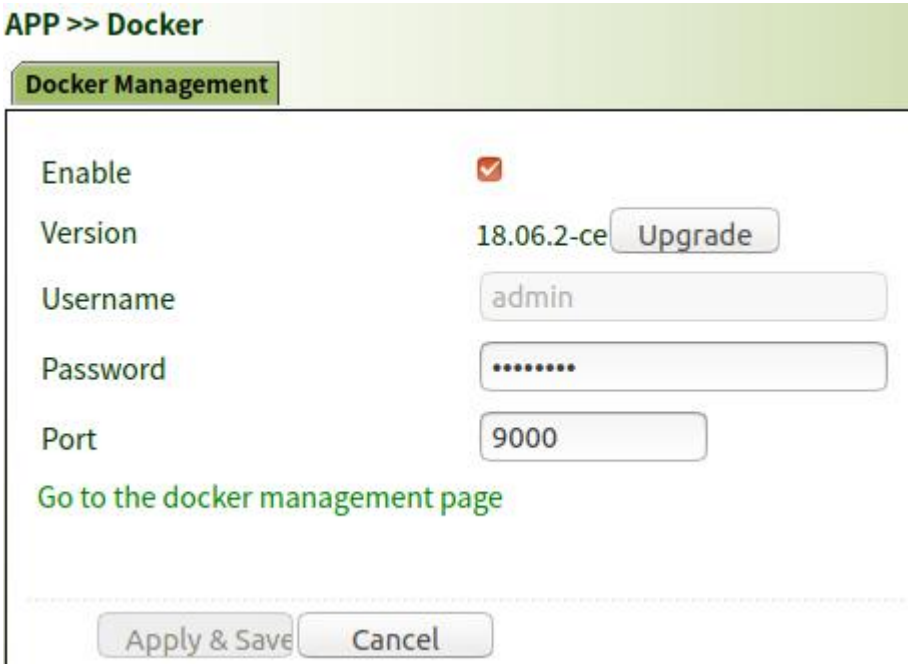


3. Run docker APPs inside VG710 gateway

You first need to install Docker SDK.

On docker management page, you can import or pull your Docker images to create docker APPs.

Check WebUI: **APP >> Docker**

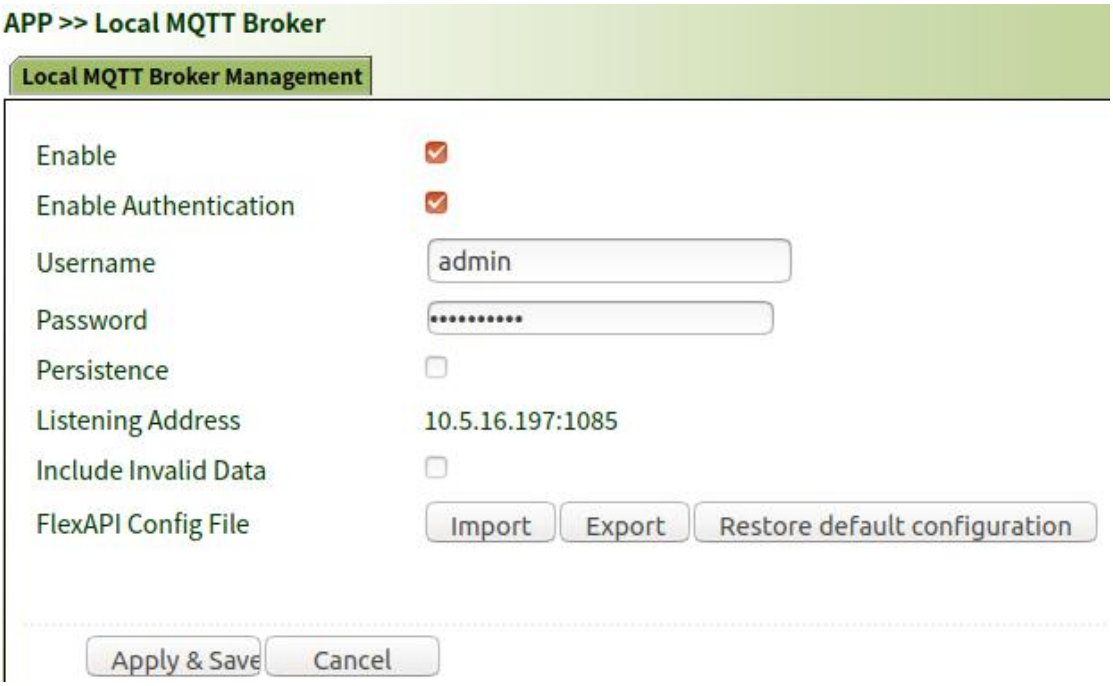


4. Access FlexAPI services via MQTT broker

Your APPs can use MQTT client to connect to MQTT broker for FlexAPI services. Examples include tablet connected to VG710 via Wi-Fi or industrial PC connected to VG710 via Ethernet.

You first need to enable the Local MQTT Broker and set your password for authentication.

Check WebUI: **APP >> Local MQTT Broker**



5. Access FlexAPI services via REST API

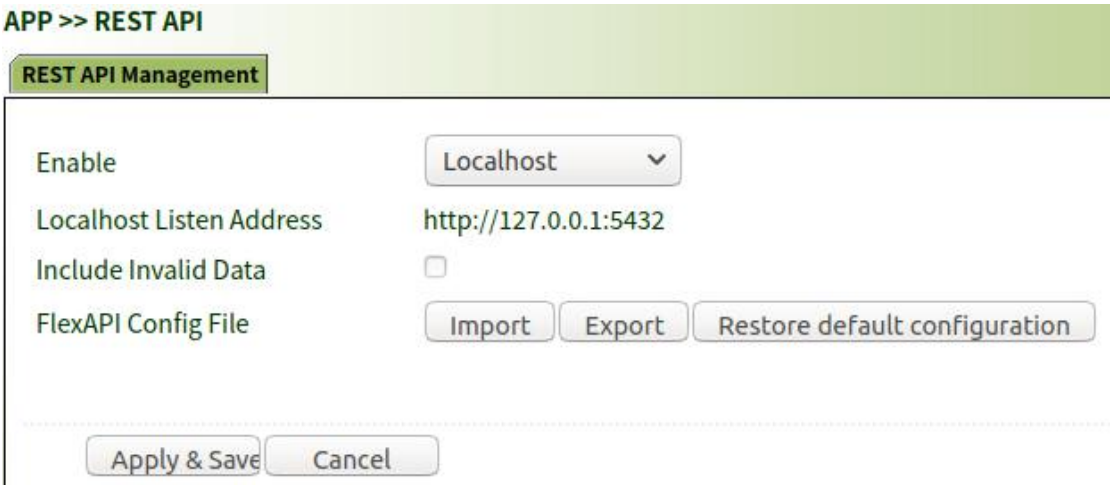
Your APPs can also use REST style APIs for FlexAPI services.

You first need to enable REST API for localhost or localhost & LAN access.

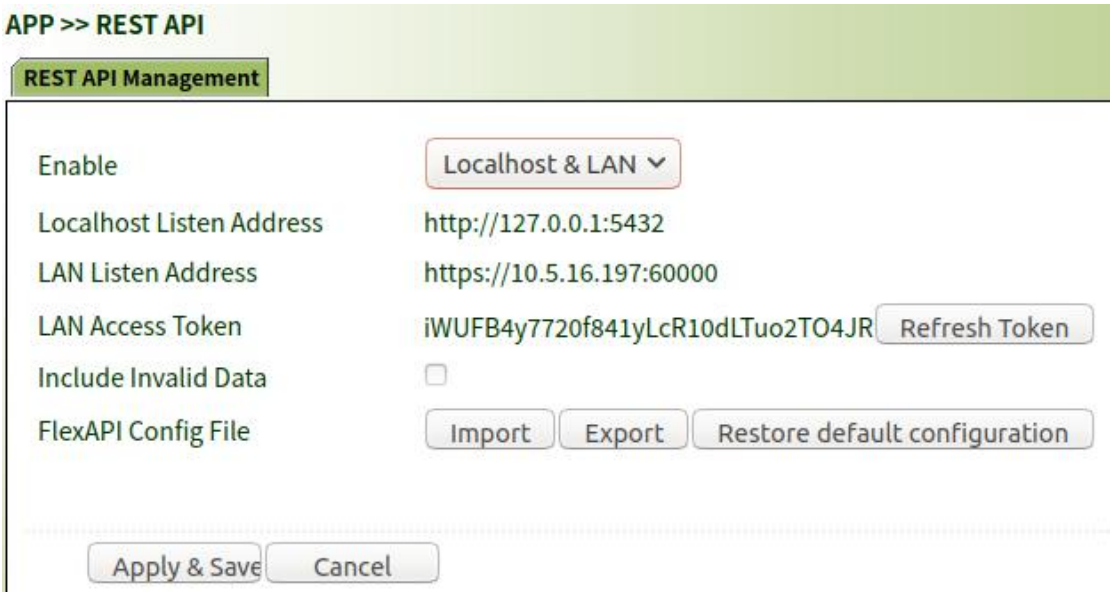
Check WebUI: **APP >> REST API**

For localhost only access, which means your APPs run on VG710, check the following settings.

In this case you will use HTTP for service access and you don't need authentication process.



For localhost & LAN access, check the following settings. In this case you will use HTTPS for service access and your APPs need to use access token for authentication.



Device Manager

FlexAPI mainly focuses on business and application integration.
For VG710 system management you could use our Device Manager.

What is Device Manager

- Central management platform for InHand router & gateway
- Intuitive user interface
- Fast & Easy management at scale

Device Manager will simplify your daily tasks such as:

Online/Offline statistics
Data usage statistics
Location tracking
Signal strength tracking
Configuration backup & restore
Firmware update
Edge Computing deployment
Setup tunnel for remote trouble shooting

Effortless Setup

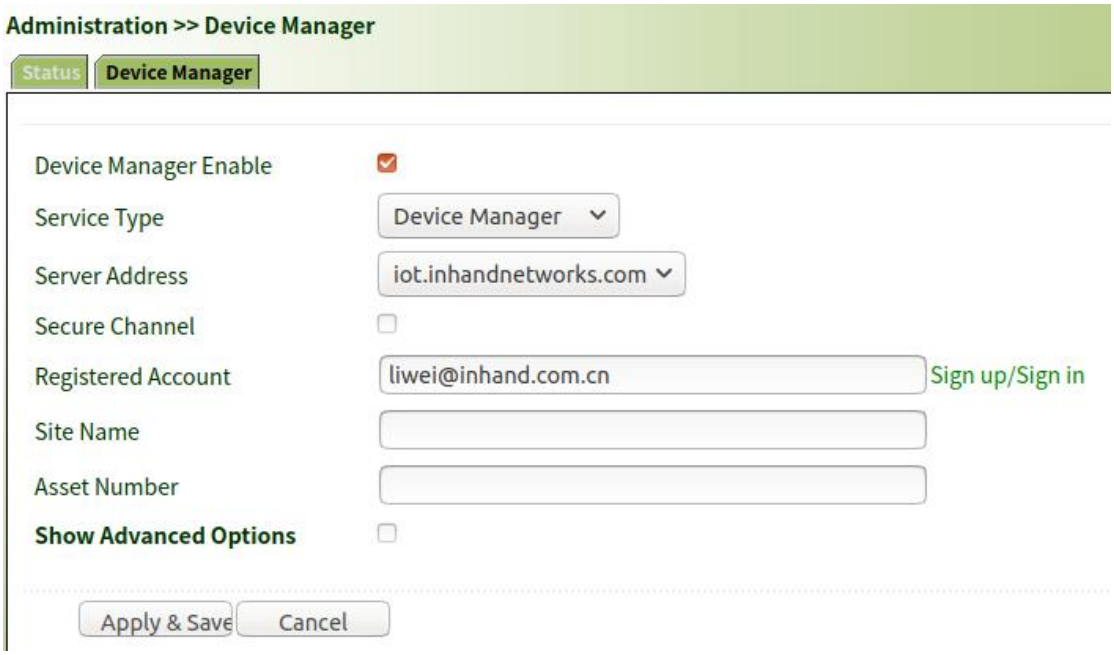
Easy as 1-2-3

1.Register your Device Manager account

Please go to https://iot.inhandnetworks.com and create your account.

2.Configure VG710 Device Manager settings

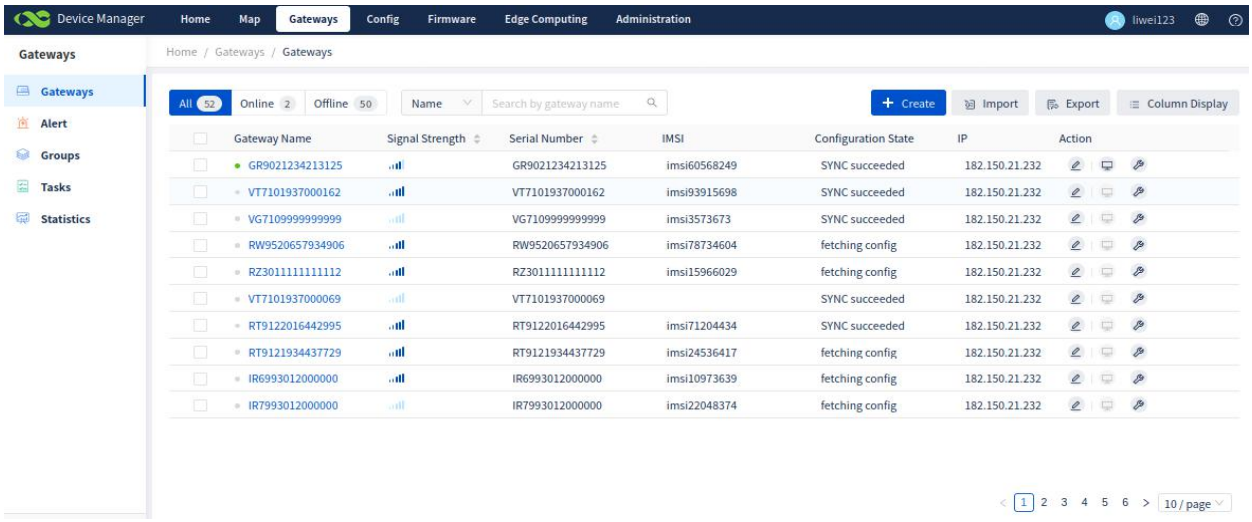
Check WebUI: Administration >> Device Manager
Enable Device Manager, input your registered account, then click Apply & Save. After that, VG710 will automatically connect to Device Manager.



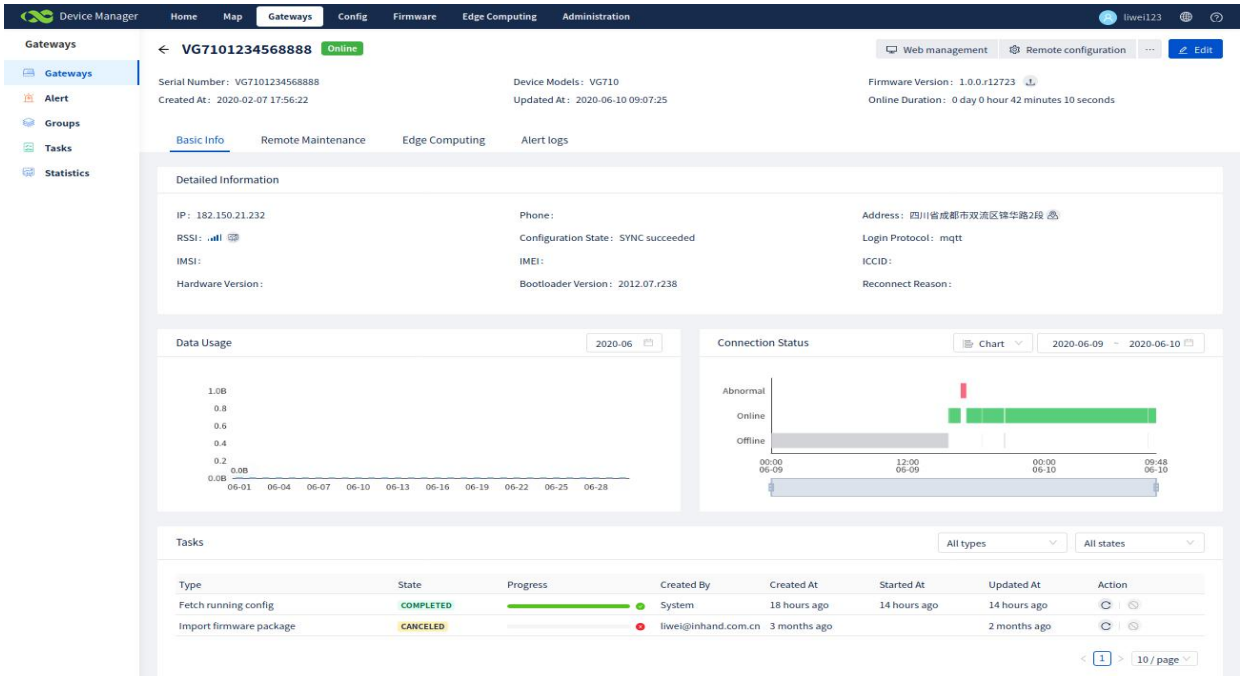
Once VG710 is connected to Device Manager, the status shows as below

3.Start monitoring and managing your VG710

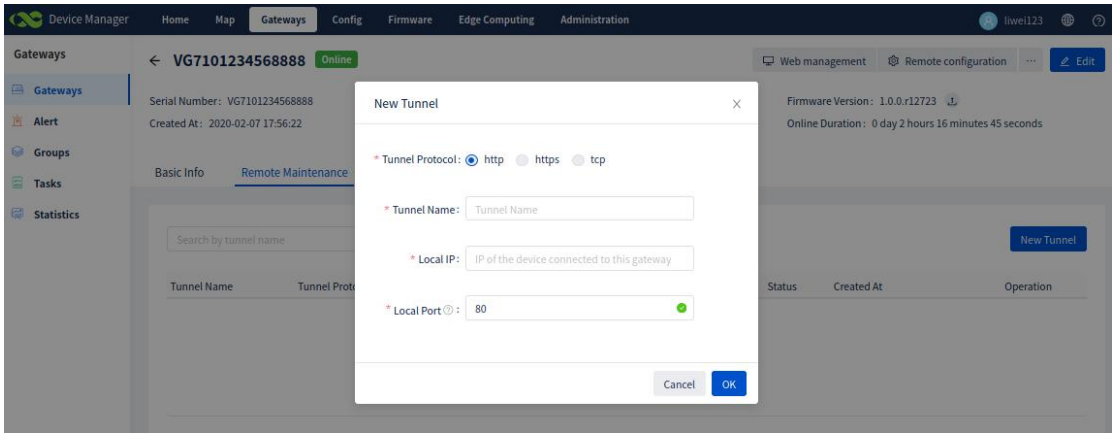
Sigh in https://iot.inhandnetworks.com with your registered account.
Start managing all your VG710 devices via Device Manager.
List view shows as below



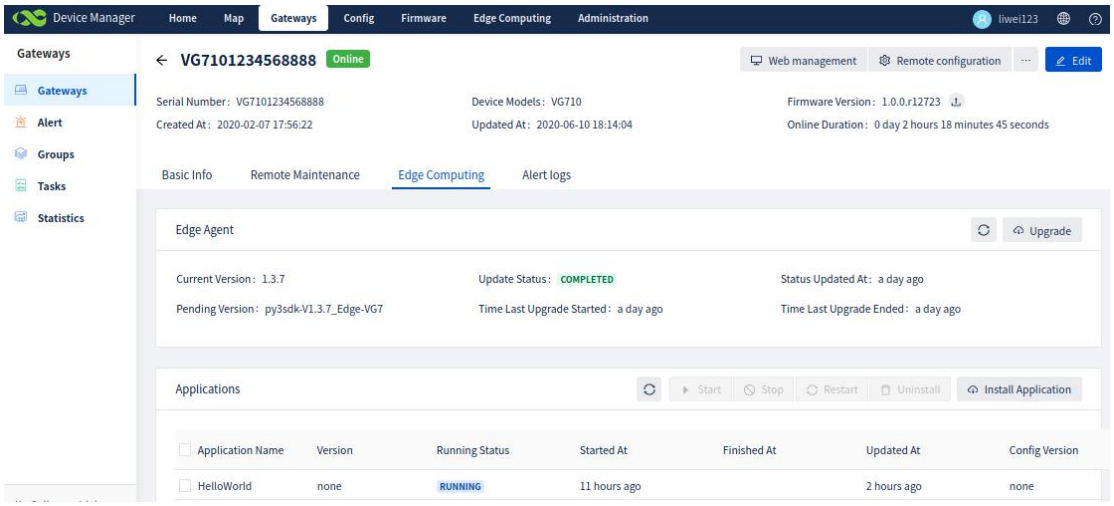
Device detail shows as below



Direct access your remote device's web services as if you were on-site.



Edge Computing management: Deploy your APPs.



Reference documents

For 3rd party platform integration:

《FlexAPI_Reference_for_3rd_party_platform_v1.0.3.pdf》

For LAN Edge computing application via MQTT broker:

《FlexAPI_Reference_for_LAN_application_v1.0.3.pdf》

For LAN Edge computing application via REST API:

《FlexAPI_Reference_for_LAN_application_REST_API_Version_v1.0.0.pdf》

For Python APP development & deployment:

《VG710_Python_APP_Development_Guide.pdf》