

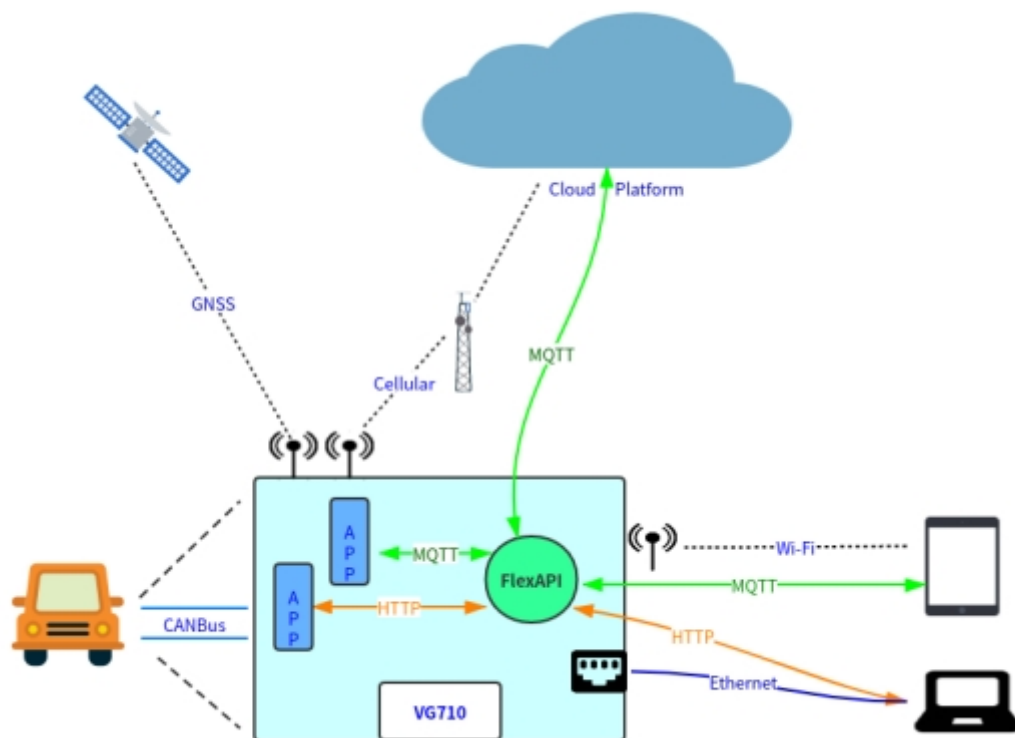
VG710 & FlexAPI Overview

1. 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.



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

2. VG710 overview

An ideal solution first needs powerful hardware features.

Our VG710 vehicle gateway has the following advantages:

- **Specially designed all in one solution**

In a single box integrates:

- Cellular LTE-Cat6

- Wi-Fi 5
- Gigabit Ethernet
- GNSS with Dead reckoning support
- Serial interface
- 3D-accelerator
- CANBus
- IOs
- **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.
- **Edge computing ready**

Processing power:

 - ARM Cortex A7 Quad-Core 717Mhz
 - RAM: 512MB(optional 1GB)
 - EMMC storage: 8GB
 - Python & Docker support
- **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.
- **Proven embedded firmware**

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

3. 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.

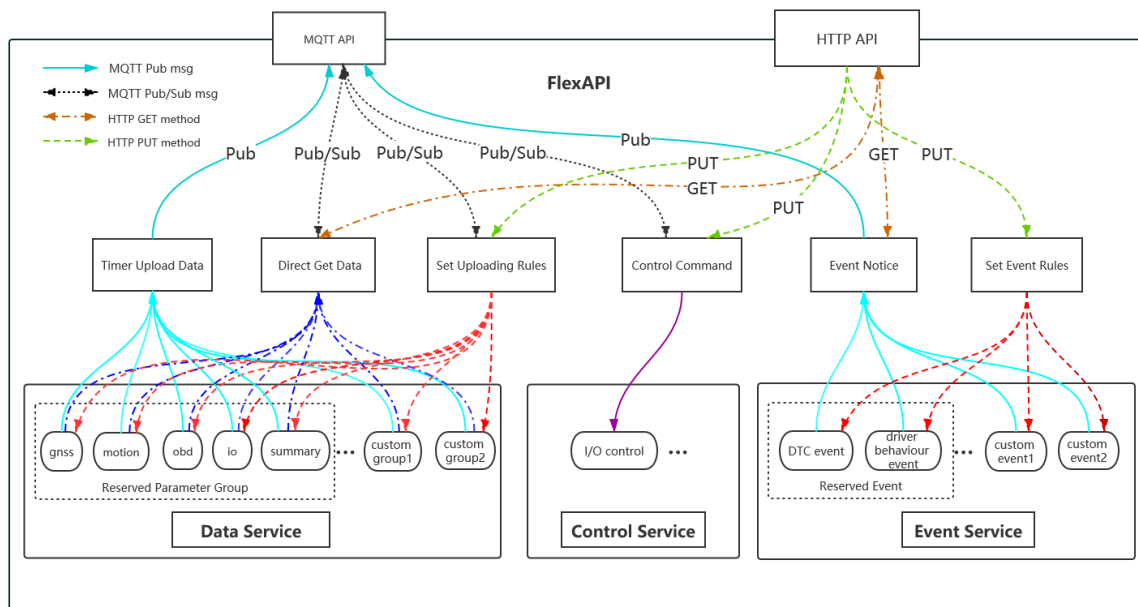
For Cloud platform integration, FlexAPI provides MQTT APIs and acts as MQTT client.

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.

The following figure illustrates FlexAPI in MQTT form.



4. FlexAPI Use Cases

4.1 Cloud platform integration

4.1.1 Use the MQTT protocol

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**

APP >> Third-Party Platform

Third-Party Platform Management

Enable	<input checked="" type="checkbox"/>
Server Address	<input type="text"/>
Port	<input type="text"/>
Client ID	<input type="text" value="VG710123456888"/>
Enable Authentication	<input type="checkbox"/>
Keep Alive	<input type="text" value="60"/>
Clean Session	<input type="checkbox"/>
FlexAPI Config File	<input type="button" value="Import"/> <input type="button" value="Export"/>

Apply & Save

Cancel

4.1.2 Use the TCP protocol

Check WebUI: **APP >> Third-Party Platform** , then choose **TCP** tab.

Basically, you need to provide IP address and port of TCP server, client ID(Usually the device serial number).

APP >> Third-Party Platform

Status MQTT **TCP**

Enable ☒

Server Address

Port

Client ID

Keepalive Interval s

Keepalive Retry

Include Invalid Data ☐

FlexAPI Config File

4.2 Run python APPs inside VG710 gateway

You first need to install python SDK.

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**

APP >> APP

Status APP Management

Your gateway

Extended Memory Card Unrecognized

APP Manager Status Running

Python Version Python3

SDK Version 1.3.6

Debug Server Status Stopped

APP Filesystem Use% 0% of 6640 MB

Data/Log Filesystem Use% 0% of 6640 MB

Extended Filesystem Use% 0%

APP Running Status

ID	APP Name	APP Version	SDK Version	State	Uptime	Action
1	HelloWorld	1.0.0	0.2.0	running	pid 2486, uptime 1 day, 10:13:48	<input type="button" value="Clear Log"/> <input type="button" value="Show Log"/> <input type="button" value="Download Log"/>

APP >> APP

Status APP Management

Your password has been changed successfully

Enable APP Manager ☒

Enable IDE Debug ☐

Enable Extended Flash ☐

Import APP Package

No file selected.

APP Configuration

Enable	ID	APP Name	APP Version	SDK Version	Start Parameters	Logfile Size(MB)	Operation Method
<input checked="" type="checkbox"/>	1	HelloWorld	1.0.0	0.2.0		1	<input type="button" value="Import Conf"/> <input type="button" value="Export Conf"/> <input type="button" value="Export App"/> <input type="button" value="Uninstall"/>

APP Management

ID	APP Name	Operation Method
1	HelloWorld	<input type="button" value="Start"/> <input type="button" value="Stop"/> <input type="button" value="Restart"/>

4.3 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**

APP >> Docker

Docker Management

Enable ☒

Version 18.06.2-ce

Username

Password

Port

[Go to the docker management page](#)

4.4 Access FlexAPI from LAN device software

Examples include tablet connected to VG710 Wi-Fi or industrial PC connected to VG710 Ethernet.

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

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

Enable Authentication



Username

admin

Password

.....

FlexAPI Config File

Import

Export

Apply & Save

Cancel

5. Reference documents

For 3rd party platform integration:

FlexAPI_Reference_for_3rd_party_platform_v1.0.8.pdf

FlexAPI_Reference_for_3rd_party_platform_TCP_version_v1.0.2.pdf

For LAN Edge computing application:

FlexAPI_Reference_for_LAN_application_v1.0.8.pdf

FlexAPI_Reference_for_LAN_application_REST_API_Version_v1.0.5.pdf