VERSION 8

GAGETRAK WEB API SERVER

Intro Guide

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M-F 6:00 a.m. to 4:00 p.m., MST.
https://gagetrak.com/support/

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CHAPTER 1: INTRODUCTION

The GAGEtrak Web API Server (referred to as Web API) is an integration tool utilizing the RESTful API programming interface. When integrated correctly, this tool will allow the GAGEtrak Pro or Lite core applications to communicate critical data with other applications in your quality ecosystem.

It is important to understand, however, that this product and guide have been designed specifically for integration developers. Once installed and configured, the Web API Server and Identity Provider applications will help developers and administrators process and manage flows between GAGEtrak and the integrated applications in your network.

The application interface for the API Server and Identity Provider are run in a browser but because they run as a service, they do not need to be installed and configured on a web server, such as IIS or Apache. The Web API Server and Identity Provider are simple, straightforward tools that are intended to stay active on the host machine, bridging the gap between the GAGEtrak application data and your quality, accounting or reporting applications.

If you have been tasked with creating an integration with GAGEtrak, this guide will provide information on the Web API and IdP, as well as access to REST API documentation.

CHAPTER 2: INSTALLATION

System Requirements

Supported OS Versions:

- Windows Server 2019-2025 (Standard, Datacenter, Essentials)
- Windows 10 (64 Bit), Windows 11

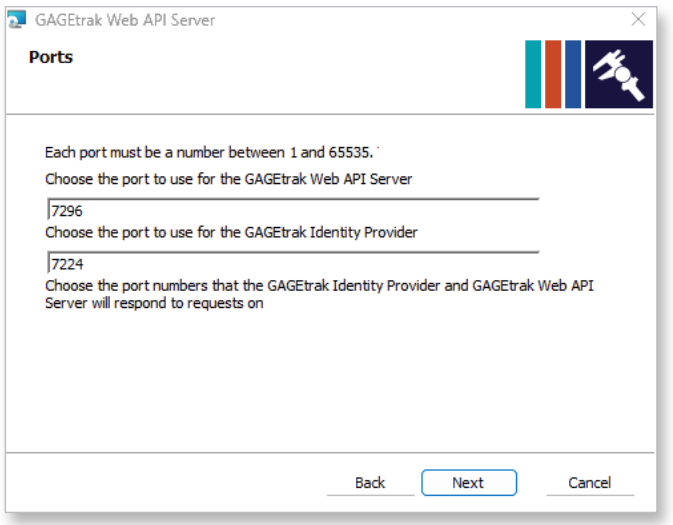
Supported Database Servers:

- Microsoft SQL Server versions 2016 and up (64 Bit recommended)
- PostgreSQL for Windows, version 17 or later
- Azure SQL and PostgreSQL (Database, Managed Instance or Azure VMs)
- Amazon Web Services Microsoft SQL Server (EC2 only) or PostgreSQL (RDS & EC2)

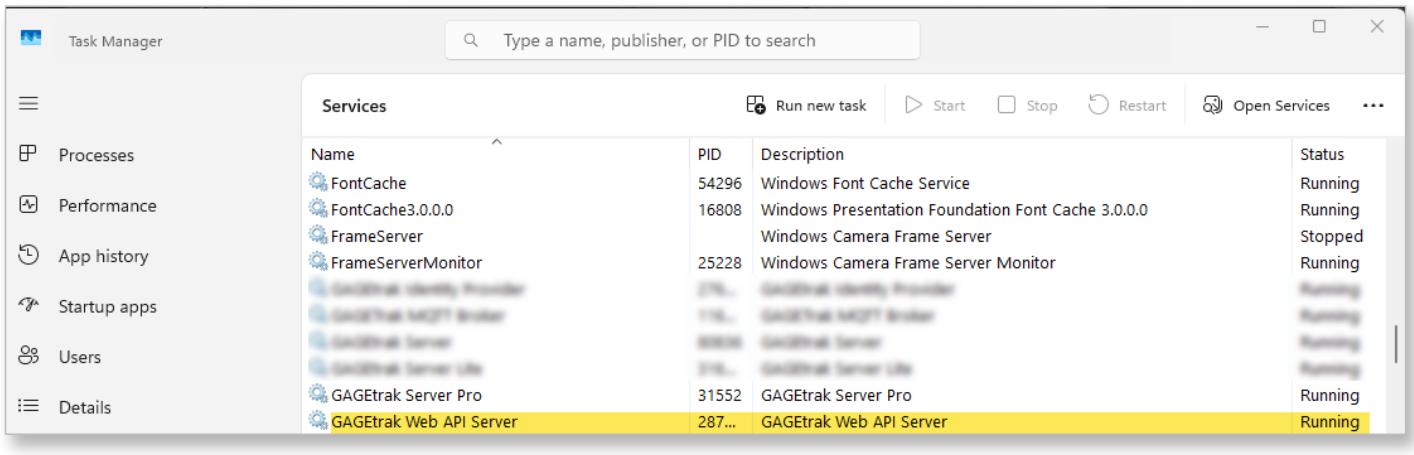
Installation

The GAGEtrak Web API Server should be installed on a Windows machine that is always running, such as a server or a hosted VM. On your Windows host, locate the GAGEtrak Web API Server setup file and run it as an administrator (right-click and select **Run as Administrator**). Follow the next steps of the install wizard; you will get the choice of installation location and the option to set the default ports used by the Web API Server and Identity Client. The default API ports provided in the install are simply TCP/UDP ports that are typically available without conflict; you can choose any port here that you prefer, but be sure to use different ports for the Web API Server and the Identity Provider.

Developer note: The Identity Provider (referred to as IdP), provides access tokens that are used to gain access to the Web API. The IdP supports the OAuth2 flows, Authorization Flow and Client Credentials Flow.



Once installation is complete, the Web API Server will run as an application service. Locate **Services** in the Windows Task Manager and ensure the GAGEtrak Web API Server **Status** is ***Running***.



No Windows Start Menu shortcuts will be created, because you will access the Web API Server and Identity Provider interfaces using a browser. The GAGEtrak Web API Server will, however, appear in Windows Programs & Features and can be uninstalled from there if necessary.

Troubleshooting Installation Issues on Windows Server

Some common issues that will prohibit the installer from completing installation are listed below and may help you overcome a failed installation.

ASP.NET CORE RUNTIME

The GAGEtrak Web API Server requires the .NET Runtime to function correctly; therefore, the installer will first attempt to install the required .NET Runtime version for the Web API. If you do not see the .NET Runtime install window appear when you first launch the installer, it could mean the correct version is already installed. However, if you encounter an installation error when attempting to start the Web API service, then it is possible the .NET Runtime installer either failed or was prohibited from installing. Should you encounter an error of this nature during installation, you can try the following steps:

1. Check the Windows Event Viewe. Typically, you will see a .NET-related error under the Windows Logs/ Applications. If there is a recent .NET error logged at the time you ran the Web API installer, then continue to step 2 below.
2. Cancel the GAGEtrak Web API installation. If the cancellation initiates a rollback, then you can proceed to step 3. If not, then open the Windows Control Panel and check if the GAGEtrak Web API Server is installed and attempt to uninstall it. If successful, locate the install directory (\Program Files (x86)\CyberMetrics\GAGEtrak Web API Server) and remove all folders.
3. Locate and download the latest ASP.NET CORE Runtime (Windows x64) from the Microsoft website. Once the latest .NET runtime has completed installation, restart the system and attempt the GAGEtrak Web API Server installation again.

If the issue persists, contact the CyberMetrics support team for assistance.

ANTIVIRUS

Many Antivirus applications can block the system changes made by this installer, i.e., Xcitiom and ĀURA antivirus products have been known to cause installation hang when the Web API installer is attempting to run the CreateMutex function to create named mutex objects in the Windows Registry.

If possible, disable any antivirus while installing this application if you encounter an installation hang, particularly if encountered near the end of the installation process (after a successful Service restart).

If you are unable to successfully install the Web API after applying either of the suggestions above, please contact the CyberMetrics Technical Support team for assistance.

Troubleshooting Post-installation Issues

Some issues that can prohibit the Web API from functioning correctly are listed below and may help you overcome any issues encountered post-installation.

GROUP POLICY OBJECTS RESTICT SERVICES

The Web API installs two Windows Services: GAGEtrak Web API (Gt.WebApi.exe) and GAGEtrak Identity Provider (Gt.IDP.exe). These services both utilize the Local Service Logon account by default, and the Web API cannot run and function correctly without these services, nor can any API transaction calls be made. It is imperative that these services and any related REST API calls be permitted to run without restrictions from any GPOs.

If the service connecting to the database server runs under a specific service account, GPOs can strip that account of the necessary user rights or permissions.

Common Blocking Policies:

- Deny log on as a batch job: Prevents an account from being used for batch processing, which is common for service accounts.
- Deny log on as a service: Specifically blocks an account from being used to log on as a service, another key function for service accounts.
- Deny log on through Remote Desktop Services: This can also be used to prevent remote, interactive logins using local accounts.

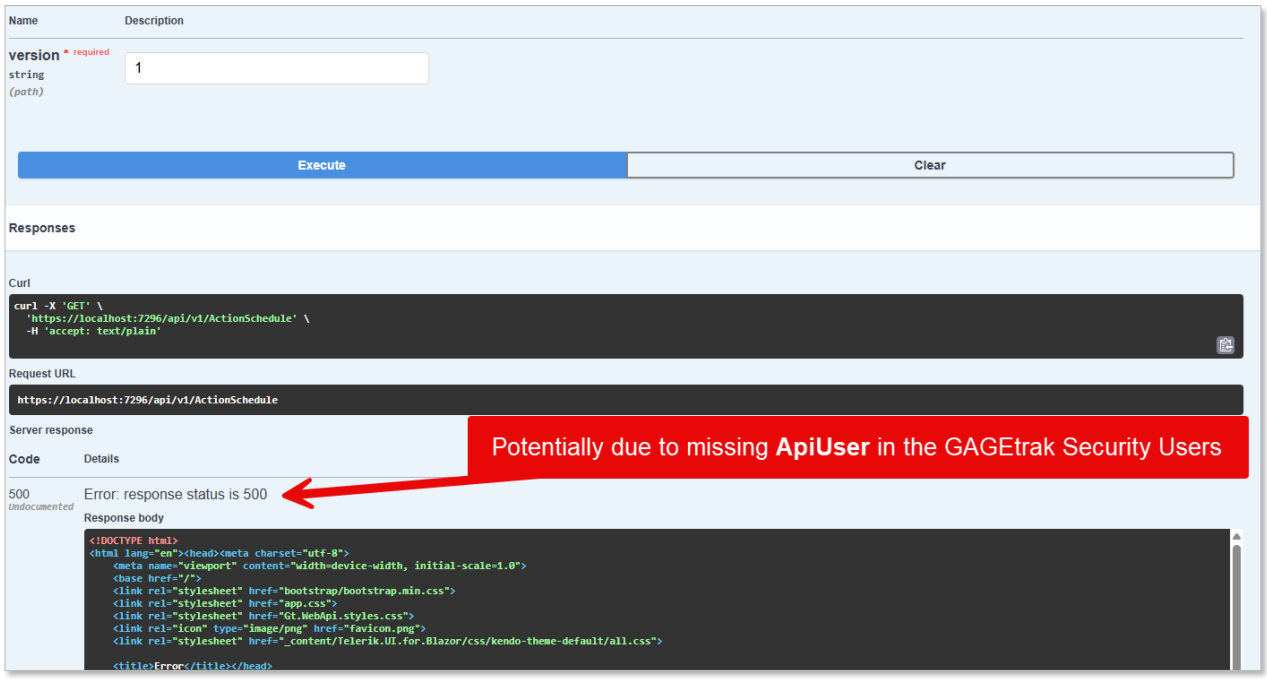
It is important to let your IT team know that you will be utilizing the Web API and that these services will depend on access to your MSSQL or PostgreSQL database.

FIREWALL RESTRICTIONS RESTICE SERVICES OR API CALLS

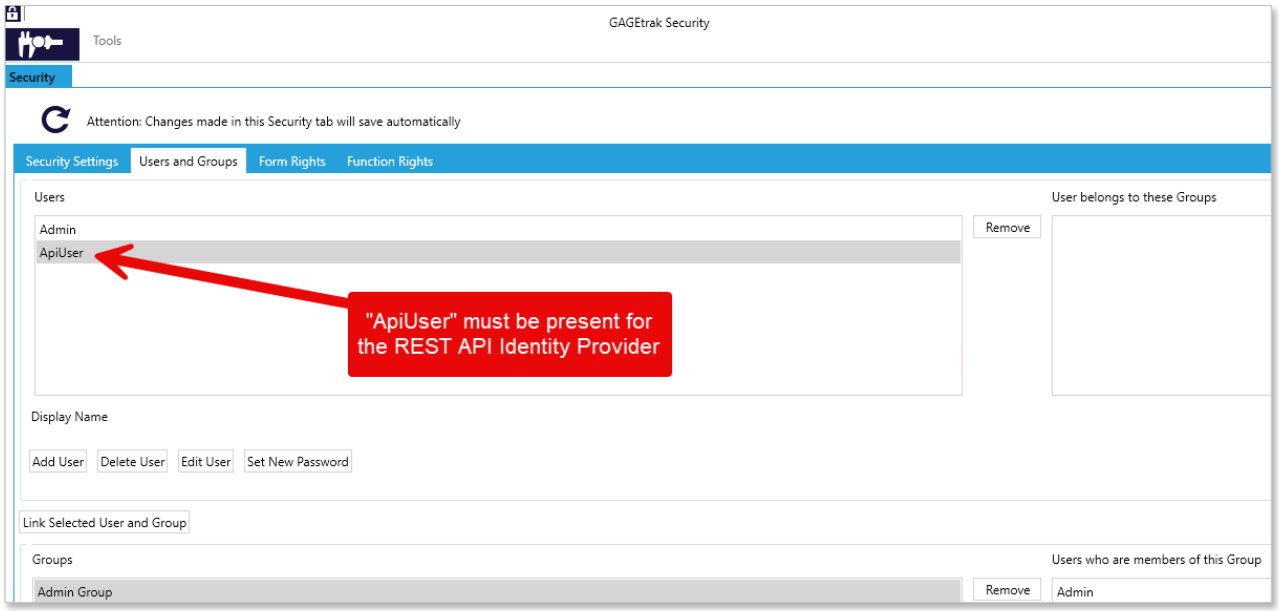
Certain Firewall restrictions can block access for both Windows Services as well as REST API calls; therefore, it is important to work closely with your IT team and let them know you will be utilizing a REST API and related services to access data within the organization's network environment.

500 ERROR ENCOUNTERED IN SWAGGER RESULTS

Some customers have reported an “Error: response status is 500” in the Swagger documentation test results. If you have upgraded from an older version of GAGEtrak, you may be missing the API User that is created in the GAGEtrak database for 8.8.2 and later versions. In the GAGEtrak Security module, the ApiUser needs to be present for the Identity Provider to process REST API calls. If the ApiUser is not present in the database, then you may encounter the response status 500 error in your Swagger test results. (See below)



You will need to create this user in the GAGEtrak Security module. Important: The Login/Custodian Name must be ***ApiUser***. Normally, this user is assigned to the Administrator group by default, but it does not matter which Security Group is assigned.



If you continue to experience issues, please contact the CyberMetrics Technical Support team for assistance.

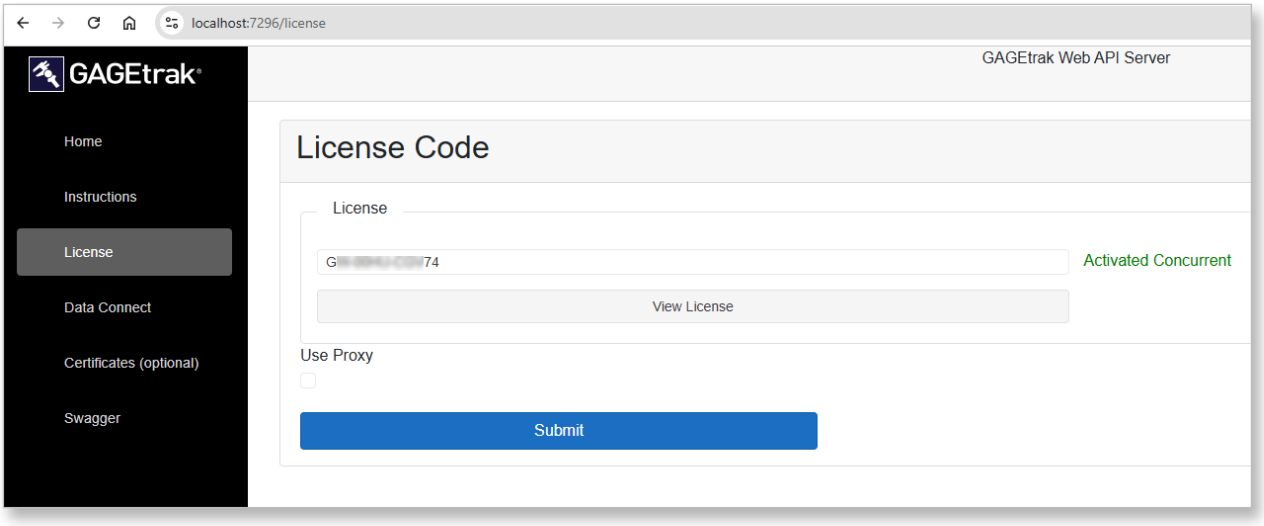
CHAPTER 3: CONFIGURATION

Once the GAGEtrak Web API Server is installed, you will need to access the Web API interface and enter your **License Code**. You will need to complete this step before you can make any configurations or access the Swagger API documentation.

Using a browser, type the name of the host and port in the address bar, i.e., ***https://localhost:7296***. If you are unable to access the interface, try restarting the service and verify that the interface port you entered is correct.

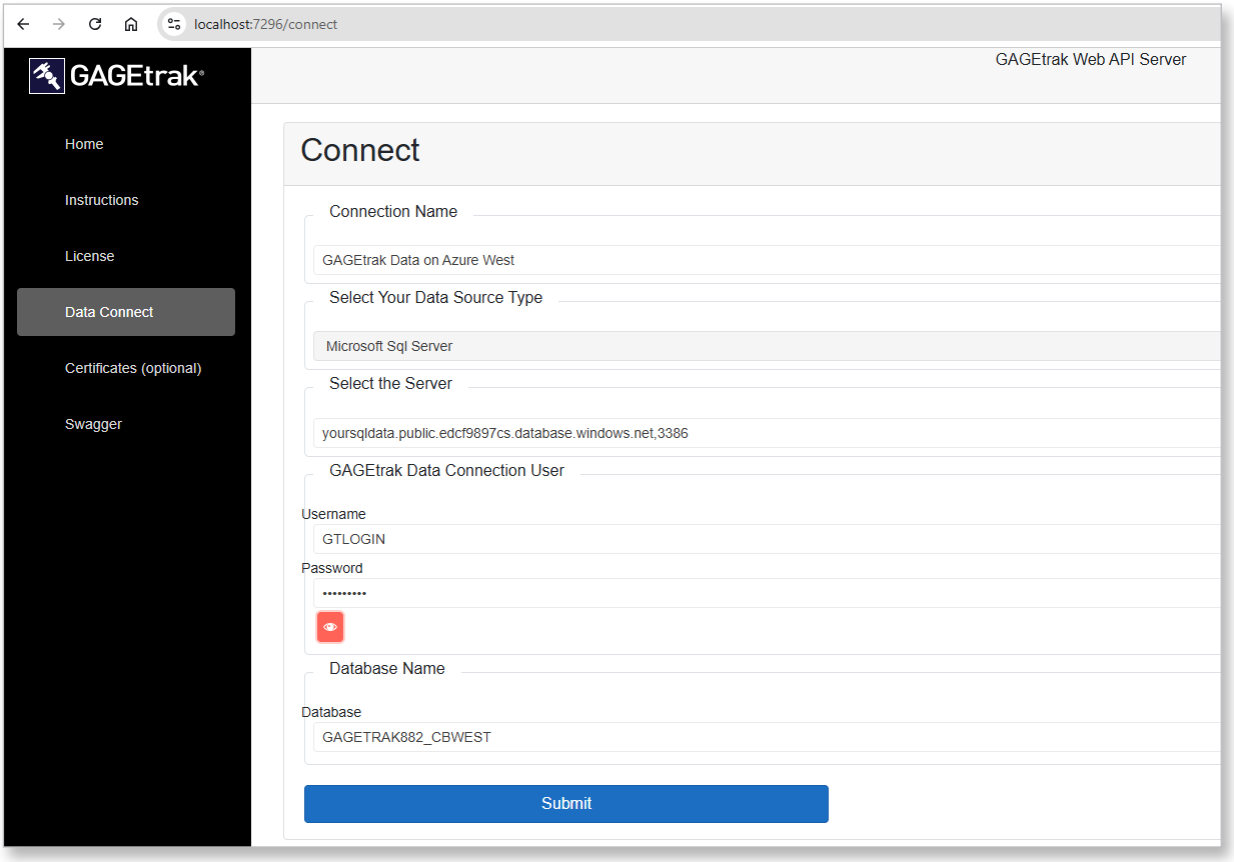
Enter your **License Code** and click **Submit**. If your organization uses Proxy services, you can select the **Use Proxy** option to enter your Proxy host credentials, URL and port. When the license code has been successfully confirmed, you will be returned to the home menu. Click **License** in the menu panel to confirm activation.

IMPORTANT: A persistent Internet connection with access to the licensing host is required for proper functionality.



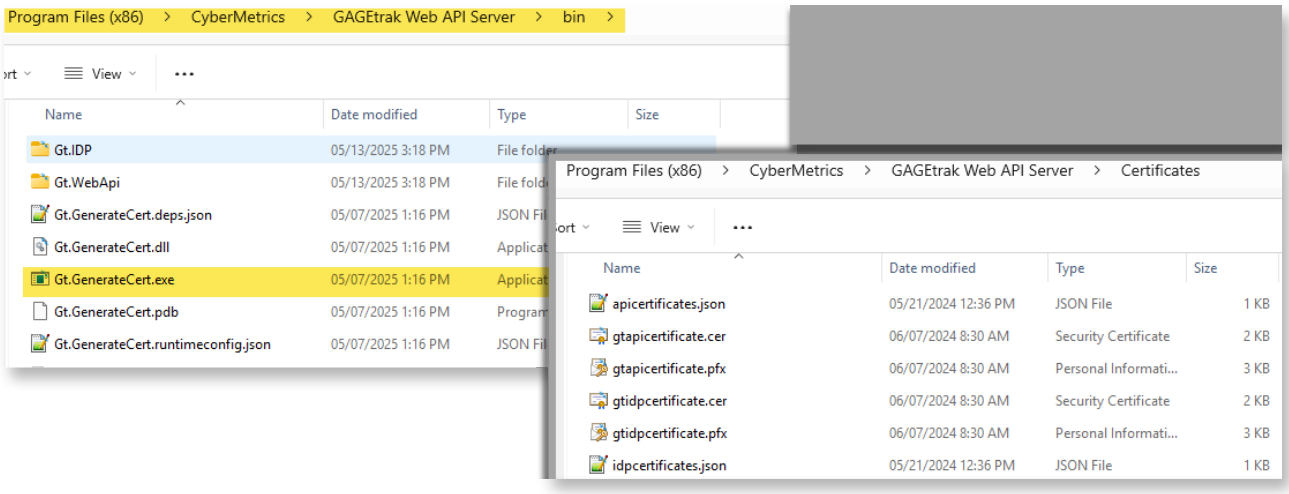
Next, you will need to enter the connection information for your GAGEtrak database. When you have completed the connection information, click **Submit**.

IMPORTANT: Only Microsoft SQL Server or PostgreSQL are supported (The SQLite database option is not supported).

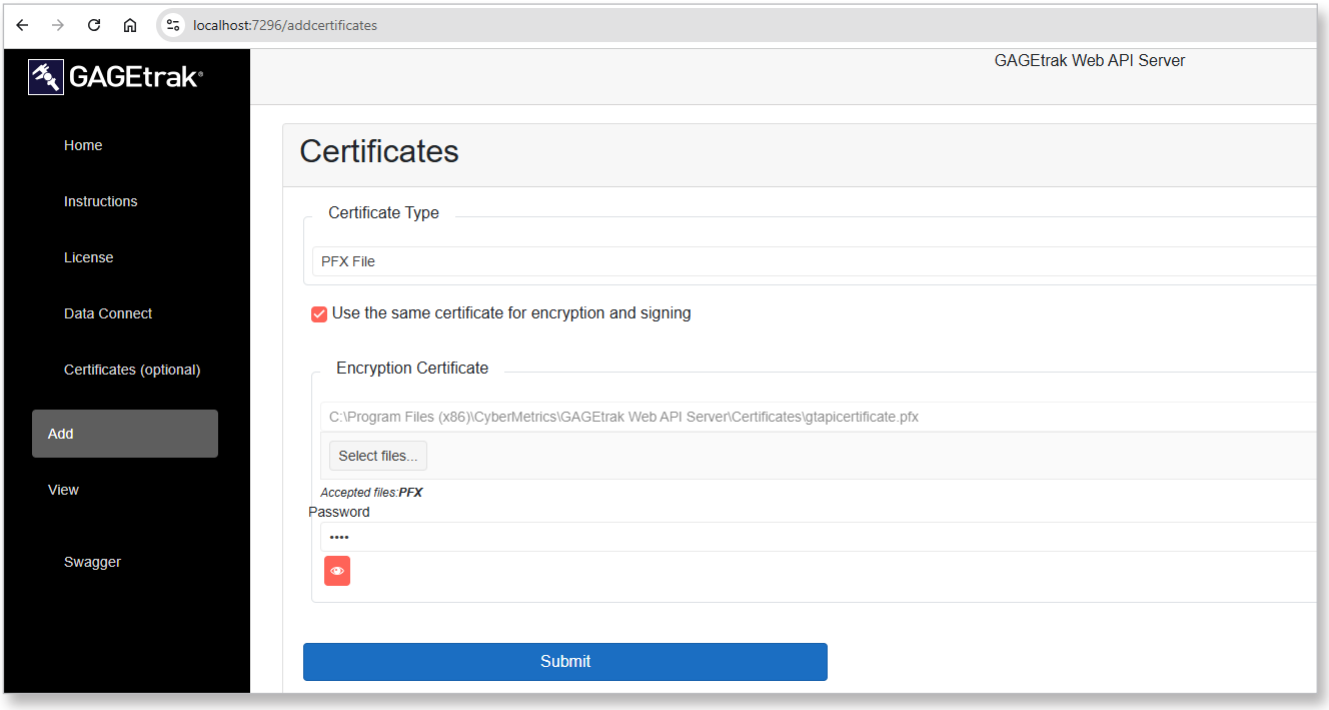


A self-signed certificate was created in the certificate root during installation of the Web API, so setting up your own trusted root certificate is optional. If you require an authority-certified SSL certificate, and you have already installed it to root certificates on this host, you can add it under the **Certificates** menu option.

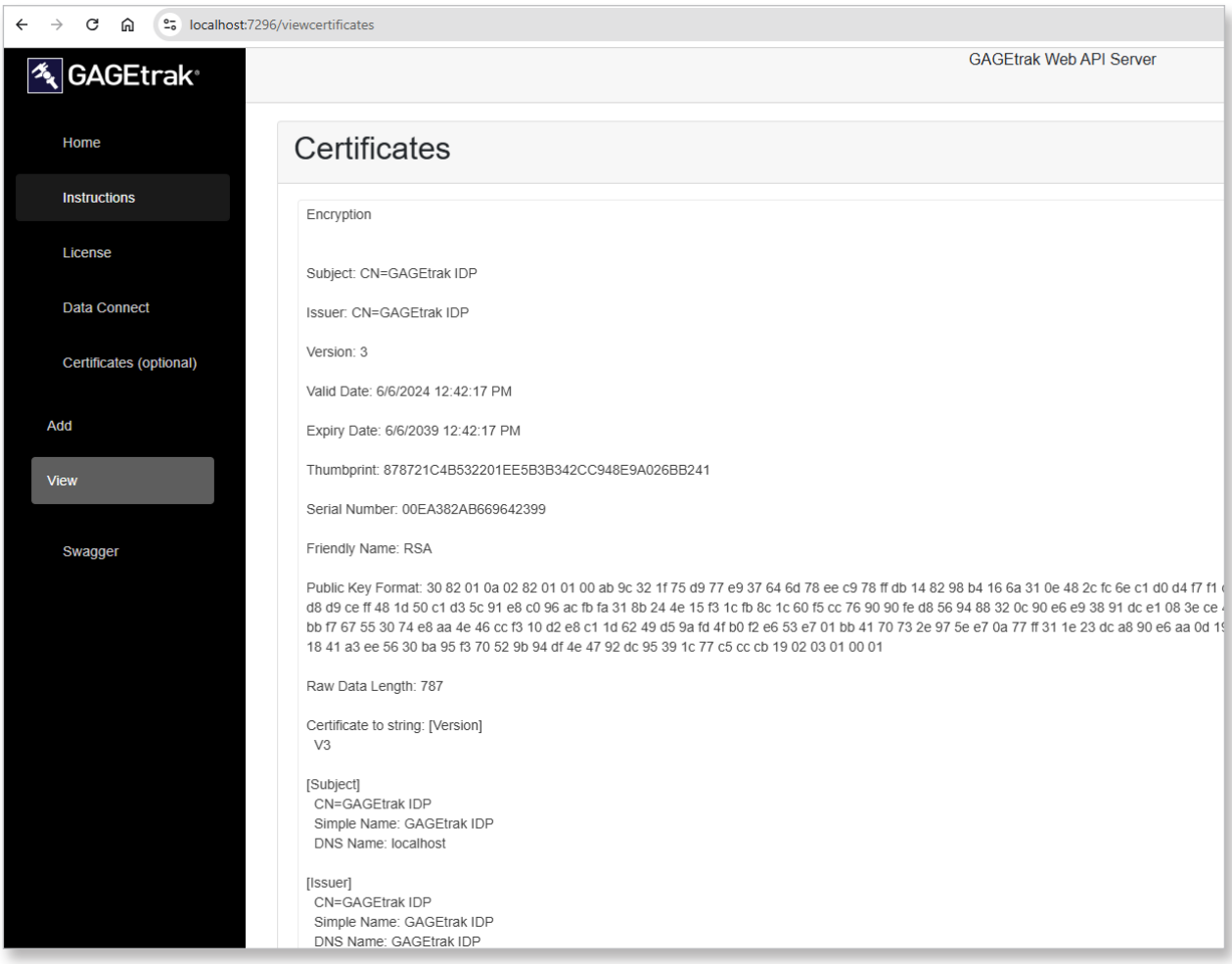
You can also generate your own cert using the ***Gt.GenerateCert.exe***, located under the root **bin** folder. From a Command line, use the "-?" switch to see certificate options, i.e., ***Gt.GenerateCert.exe -?***



Important: You will need to complete this step for both the Web API and IdP interfaces.



Use **View** to see information about the certificate on this host.

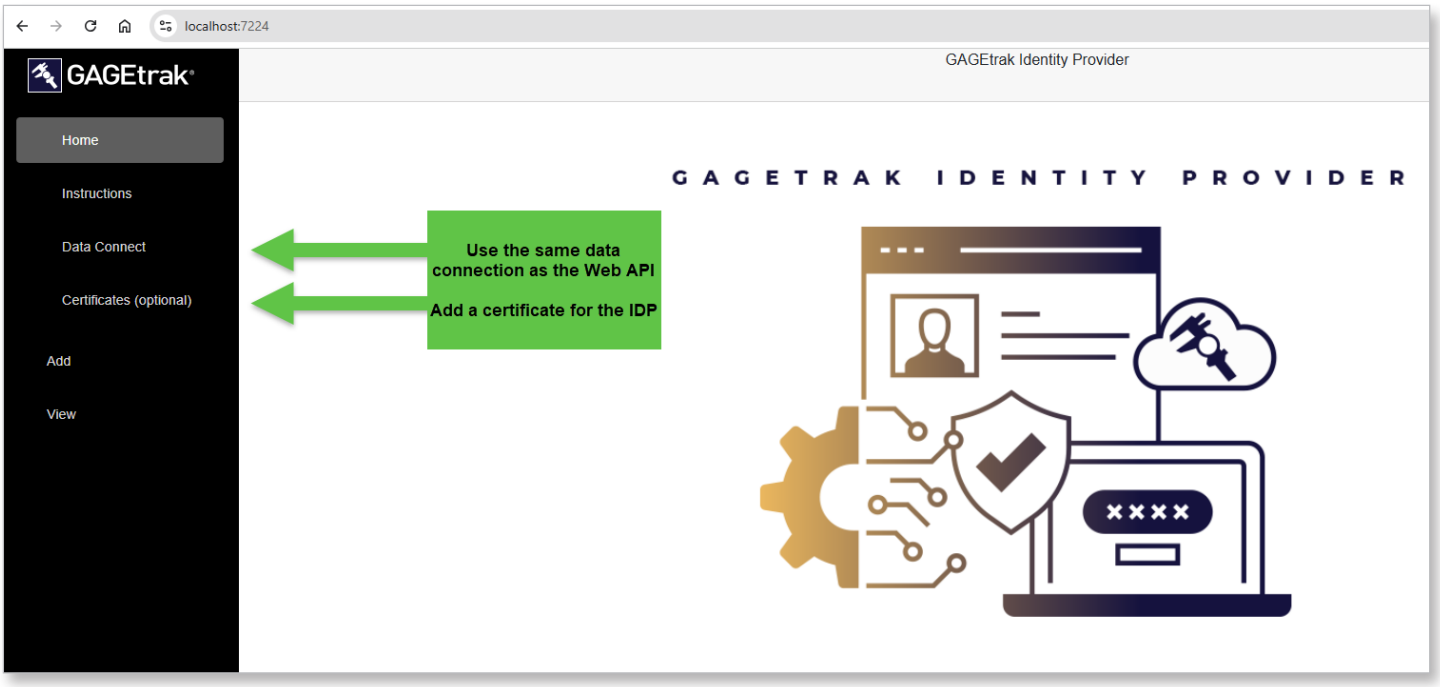


CHAPTER 4: CONFIGURE THE IDENTITY PROVIDER

As stated earlier in this guide, the GAGEtrak Identity Provider supplies the Tokens that are used to gain access to the Web API. The IdP supports the OAuth2 flows, Authorization Flow and Client Credentials Flow.

The IdP shares the license code with the Web API, so you will not need to enter and activate this separately. However, since the IdP occupies its own port and data connection, you will need to configure these in the IdP interface as well.

To access the Identity Provider interface, open your browser and type the name of the host and port in the address bar, using the assigned port you chose for the IdP during installation, i.e., ***https://localhost:7224***. Follow the same steps as you did above to create the database connection and add the Certificate.

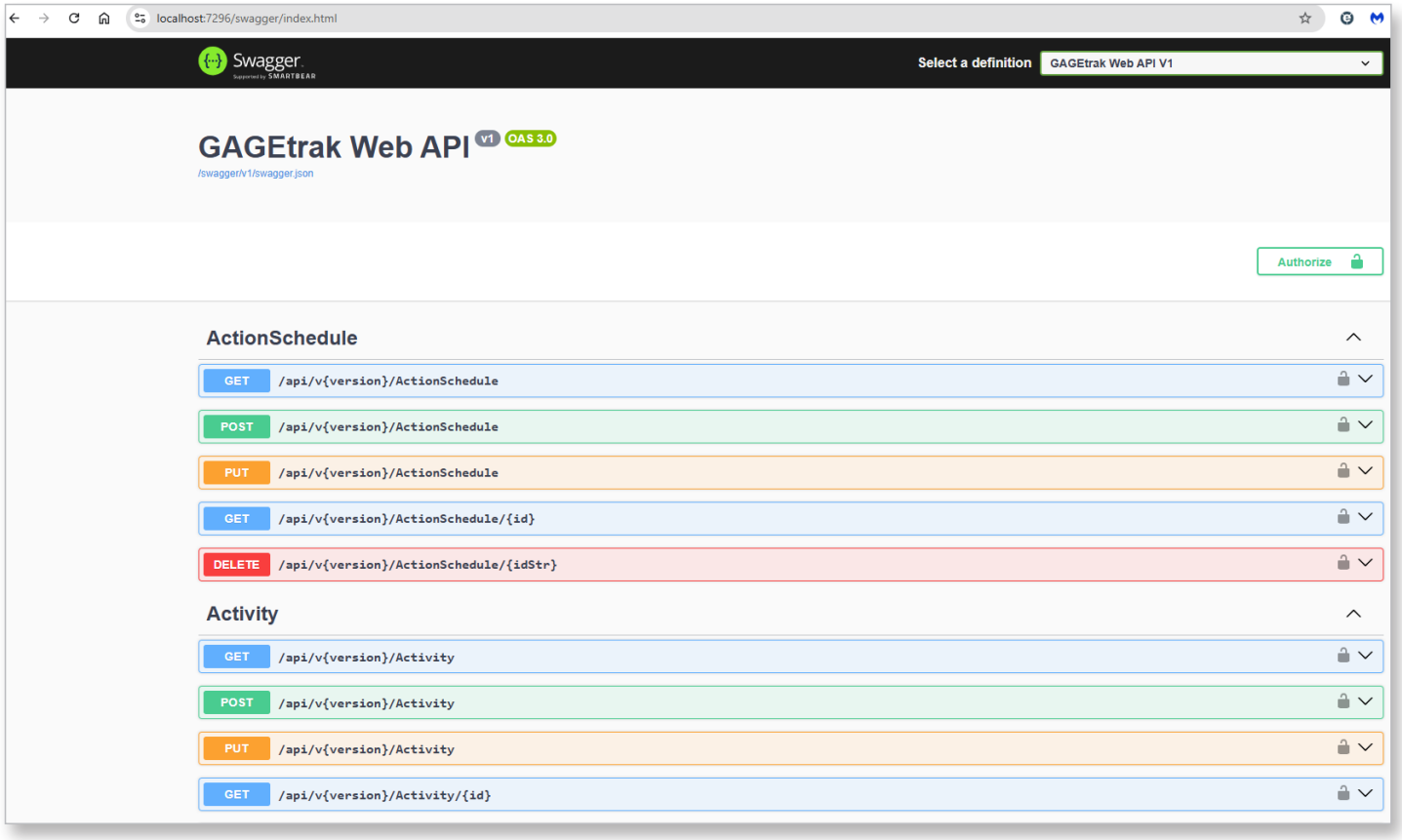


CHAPTER 5: API DOCUMENTATION

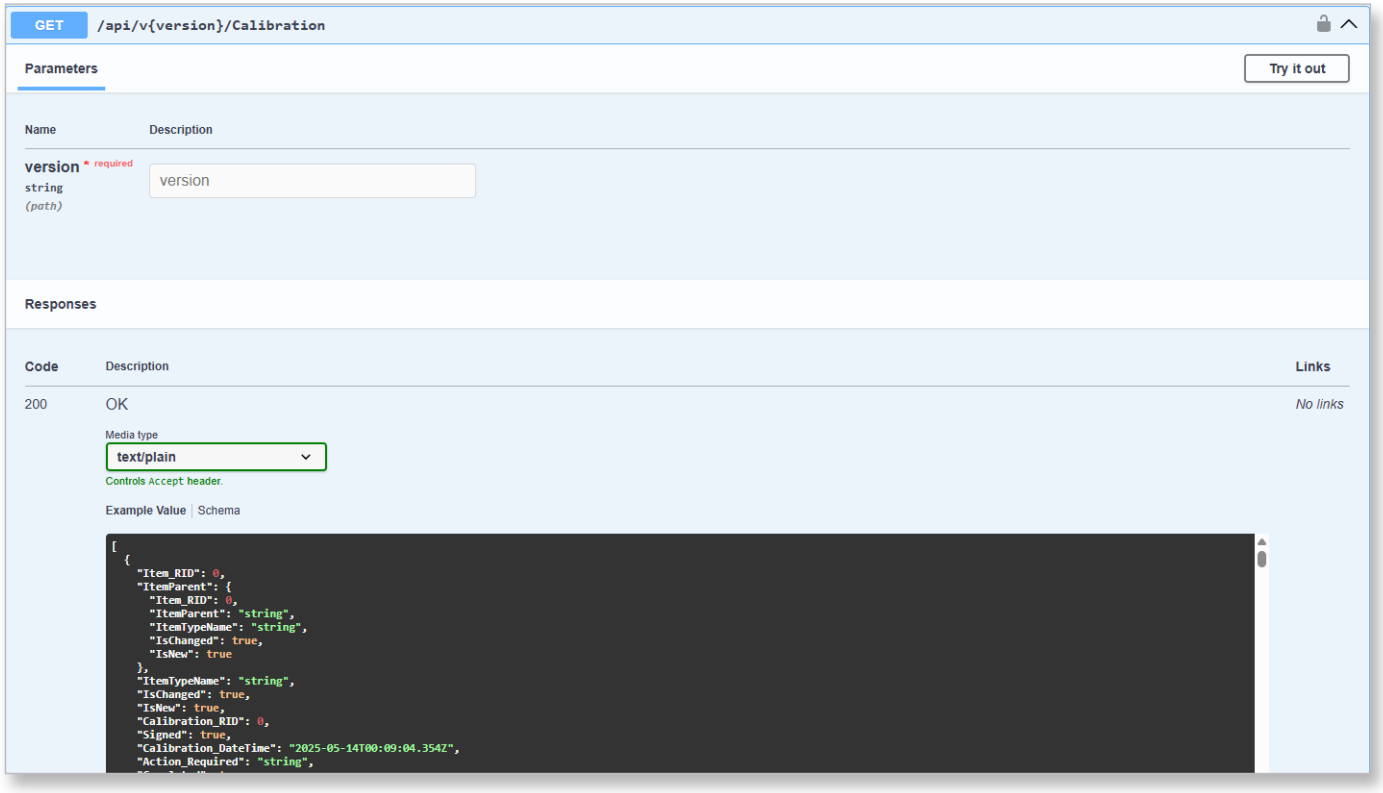
To access the API documentation framework, go back to the Web API interface in your browser. Click the **Swagger** link in the menu panel to access the GAGEtrak API documentation. After you click on the **Swagger** link, you will see a list of the entities found in GAGEtrak. Most of the essential data points have been exposed for typical API integration requirements.

The Swagger UI provides a visual, interactive interface for exploring and testing APIs. If you scroll down the listings, you will see all the GAGEtrak entities and CRUD operations available. You will also be permitted to operate and test on the entities directly within this interactive documentation.

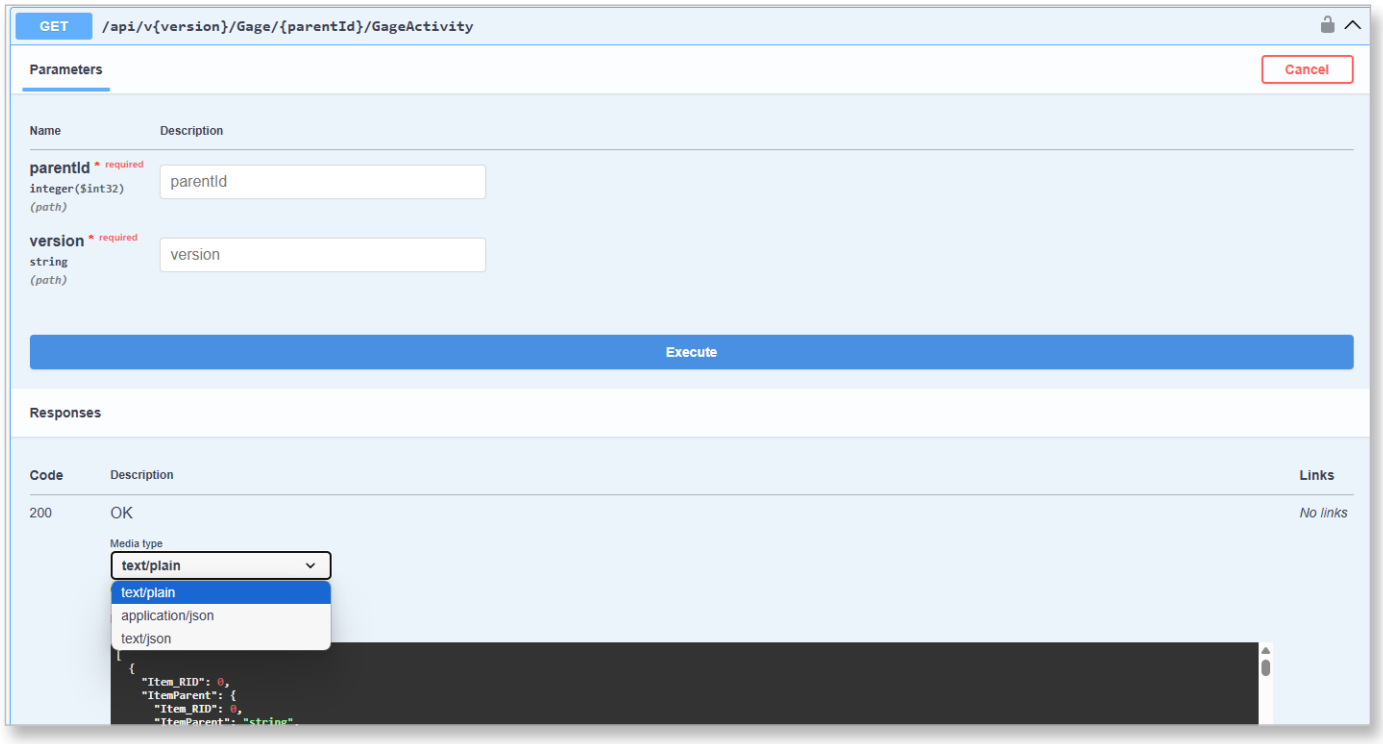
IMPORTANT: You will not be permitted to access the GAGEtrak Web API Swagger documentation or test without a valid License Code.



Click **Try it out** to access **Execute** and **Media type** options.



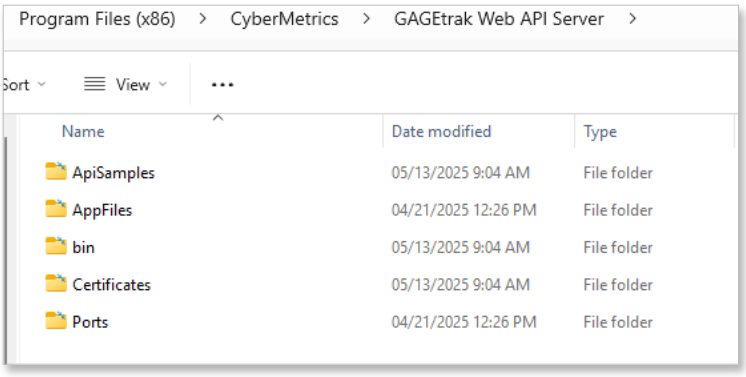
From here, you can execute test code and manage response media.



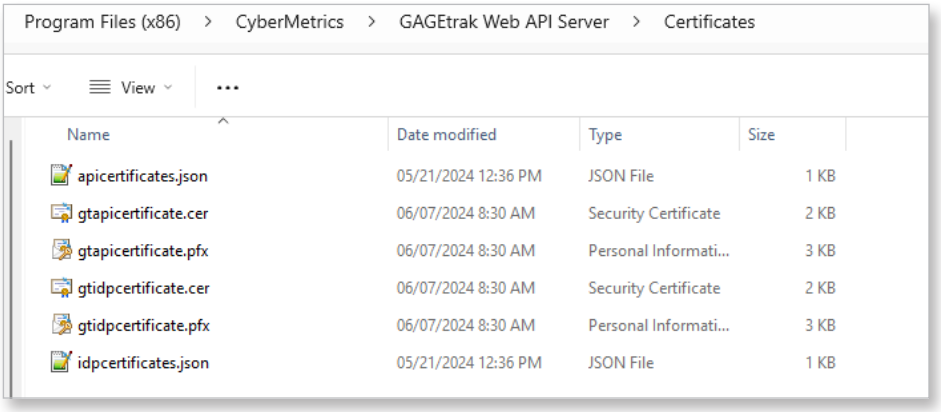
CHAPTER 6: SAMPLE PROJECTS

To assist integration developers, we have provided sample projects with the GAGEtrak Web API Server install. These projects can be found in the installation directory in the **ApiSamples** folder. To create a sample project, you will need coding experience with editors, like Visual Studio or Visual Code, etc. You will also need an installed GAGEtrak client and a GAGEtrak database in Microsoft SQL Server or a PostgreSQL server. Be sure the **License Code** and **Data Connection** have been established in the GAGEtrak Web API Server interface and the Identity Provider before you begin testing (see the **Configuration** section of this guide).

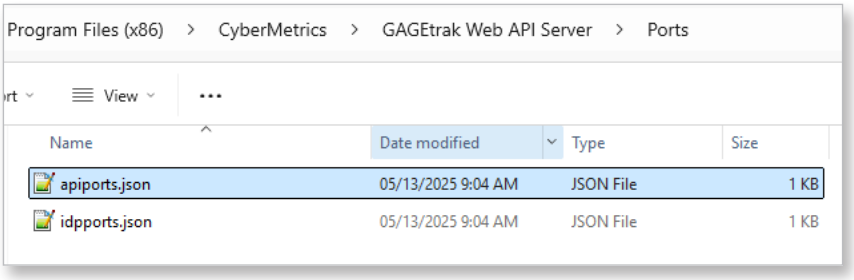
Before you begin your sample project, take a moment to review the content in the GAGEtrak Web API Server installation directory.



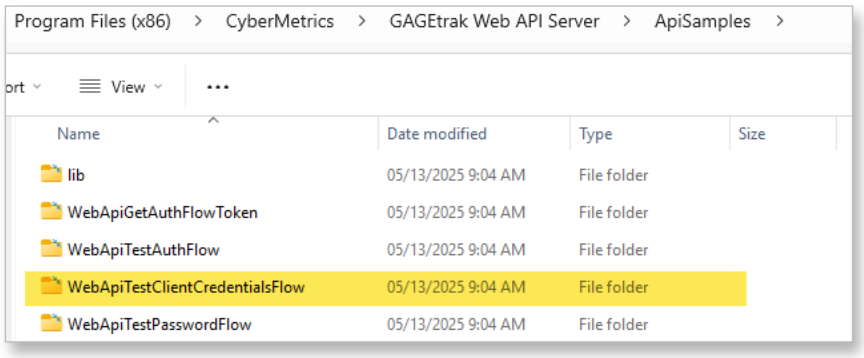
The **Certificates** folder contains the installed certificates for the Web API and IdP.



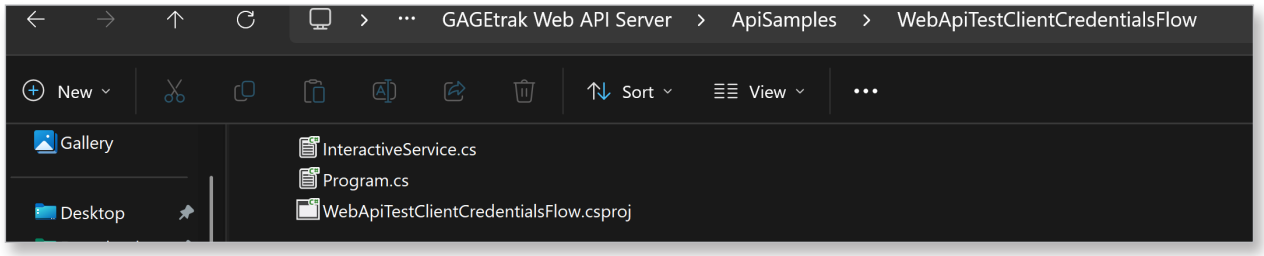
The **Ports** directory contains JSON files that store the ports selected during installation (these ports will also be used in your integration projects). If you ever forget the ports being used, you can reference these files.



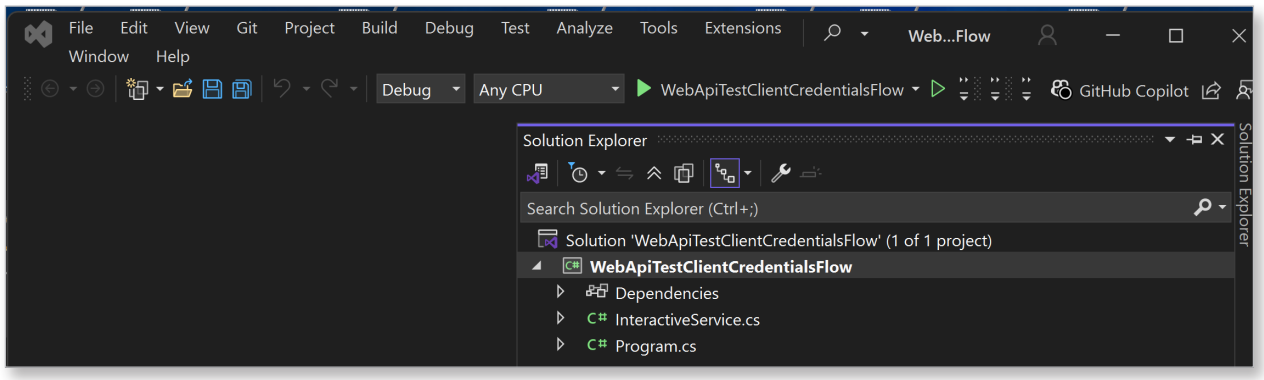
The **ApiSamples** directory has code samples that show the different OAuth2 flows supported, how to utilize them, how to get an access token and how to do CRUD operations on a gage. Each of the API samples are similar in this regard. Let's look at the **Client Credential Flow** example:



Open the **WebApiClientCredentialsFlow** directory. Then click on the **csproj** of the same name to open the project file in Visual Studio.



In the solution explorer, you will see two files: **Program.cs** and **InteractiveService.cs**.



Program.cs has the code to set up your project and to run the **InteractiveService.cs**, which is a background service. **InteractiveService** gets an access token and then uses the token in an **HttpClient** to perform CRUD operations on a gage.

Each of the sample projects provided will have similar coding examples. These are intended to give integration developers coding examples that will be used to build integrations with other systems. These examples should be all that is needed for developers to get started.

CHAPTER 7: CONCLUSION

Modern manufacturing environments require large amounts of real-time data exchange across distributed systems. RESTful APIs act as a bridge between modern manufacturing applications and systems, enabling seamless data exchange, automation and integration. Therefore, the GAGEtrak Web API Server can be a powerful tool for creating real-time data access between the GAGEtrak application and your other quality systems. Once completed, your entire organization can begin to reap the benefit of your integration efforts.

If you need any assistance working with either the Web API or IdP components, please reach out to our support team: https://gagetrak.com/support/.

TRAINING

To save time, avoid common mistakes and get the most out of your software, it is imperative to receive proper training and we offer a wide variety of training options to meet every need and budget.

Completion of comprehensive training entitles each participant to a completion certificate in order to provide proof to an auditor that you've received proper training from the software manufacturer.

Go to https://gagetrak.com/training-schedule/ for details about types of training, schedules and pricing.

CONTACT US

Feel free to contact us at any time, for any reason. We're here to help and value your feedback.
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