CA4K RESTful API

Installation Guide

(For use with Windows 10/11 Pro or Windows Server 2019/2022)

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Must Read before you begin installation

- To use the RESTful API, you must be an experienced Web developer.

- Before installing the RESTful API, ensure that Microsoft Internet Information Services (IIS) is installed. IIS is included with the Windows operating system and may need to be enabled through **Windows Roles and Features** if it is not already available. See pages 7-9 for detailed steps.

- These instructions apply only when Windows IIS and all required components are installed on the same machine. If the RESTful API resides on a separate web server, the necessary messaging service will be missing, preventing communication with the database. To resolve this on a standalone web server, you must install either CardAccess 4K Web or CardAccess 4K Mobile Web (to include messaging), or install CA4K as a workstation.

- The installation of IIS and the RESTful API require Full Administrator privileges without any restrictions. This includes lowering the UAC settings to "Never Notify" and verifying there are no domain restrictions.

- The RESTful API is a wrapper for the Windows .Net API.

- The Restful API is language neutral.

- By default, the RESTful API will be set up to use **port 8081**.

- The RESTful API demo code is written in C# and JavaScript. It is located on the CA4K installation media, in the same directories as the Setup.exe files, under the **API > RESTfulAPI** folder.
- You can use the Postman testing utility to test the API functions.

Overview

This document provides a step-by-step procedure for installing Microsoft Internet Information Services (IIS) for use with the CA4K™ RESTful API. Prior to starting the installation, you must verify the computer meets the recommended computer specifications and you have the CA4K™ DVD (Installation media) and the correct CA4K™ software license with the API Enabled.

System Requirements

Ensure Recommended Server Requirements are met. Verify that the computer meets the specifications that are documented in the **CA4K™ System Requirements** (Computer Specifications) document.

Verify Full Administrator Permissions

The installation of CA4K™ and IIS requires Full Administrator permissions. Failure to provide these permissions will result in installation failures.

Related Documents

CA4K™ RESTful API Functions – Help Documentation
*(Located on the CA4K installation media, under the **API > RESTfulAPI** folder)*

See RESTful API Programming Tips below

Software Version Prerequisites

- A functional CA4K™ Complete Server running V1.1.16 SP-3, V1.1.54.162 SP4, or V1.2.x or later

  (If running an earlier 1.1.x version, we recommend upgrading to V1.1.54.162 SP4 at minimum to gain access to a broader range of API function calls)

Quick Start Steps

1. Purchase a CA4K, version 1.1.x or CA4K 1.2.x Software license with the **API Enabled.**

2. Perform a CA4K Complete Server installation

3. Install Windows Microsoft Internet Information Services (IIS). After IIS is installed, verify the Default IIS Website displays.

4. Install the RESTful API from the CA4K RESTful API Installation folder, using the **Setup.exe** program. *(Located on the CA4K installation media, under the **API > RESTfulAPI** folder)*

5. Verify the CA4K RESTful API folder was created in the CardAccess4K folder.

6. Verify the CA4K RESTful API Website displays in IIS and is started.

7. Refer to the RESTful API demo code if needed.

8. Use Postman test utility to do testing on the RESTful API.

Install IIS (Internet Information Services) Installation for Windows 10/11 Pro & Windows Server 2019/2022

Note: Installing IIS must be performed prior to installing the CA4K Web Client. Below are screenshots from Windows 10/11 Pro. The following screens may vary between different operating systems. If you are using Windows Server, you must go into **Server Manager** and click on **Add Roles and Features** then proceed to step 4, to turn on the Required IIS Components.
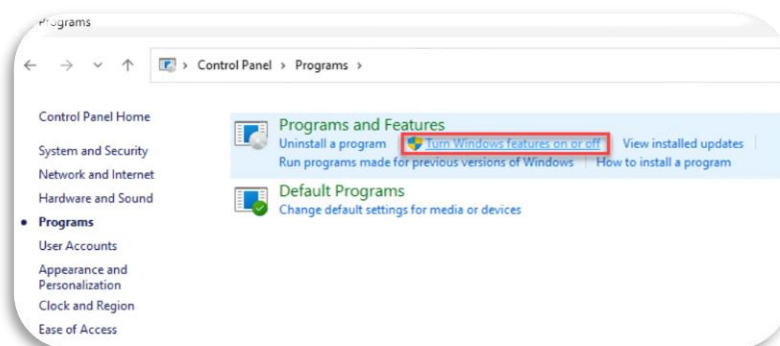
1.   Click on the **Search Bar** and type in **Control Panel**. Click on **Control Panel** to open.
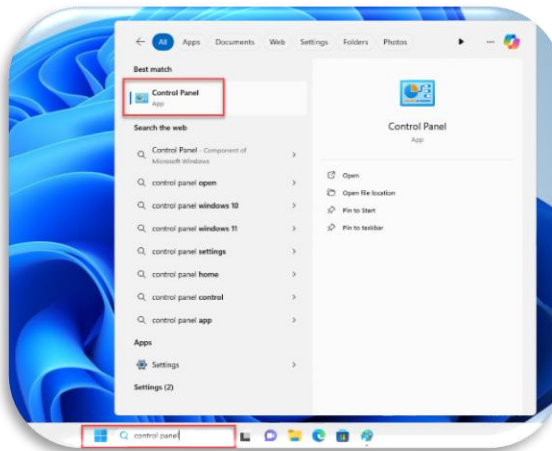
2.   In Control Panel, Click **Programs**
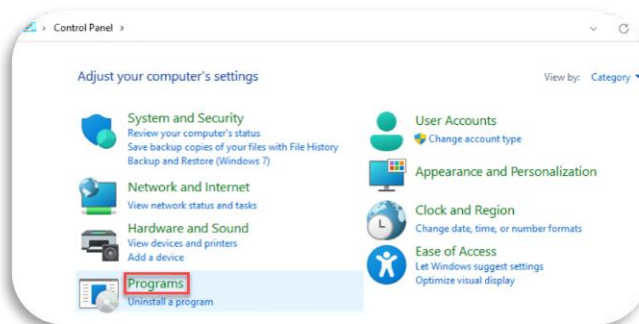
3.   In the Programs and Features Selection, select **Turn Windows Features on or off**

4. Turn on the Required IIS Components. Expand **Internet Information Services** (for Windows 10/11) or **Web Server** (for Windows Server) and select the required IIS components.

    Note*: Always Select any newer versions of .NET and ASP.NET*. Turning on windows features vary between Windows OS and Windows Server environments. Below are two screenshots of the selected components, one from Windows 10/11 Pro and another from Windows Server 2019/2022

Required IIS Components

- ## Internet Information Services / Web Server (IIS)
    - Common HTTP Features
        - Default Document
        - Directory Browsing
        - HTTP Errors
        - Static Content
        - HTTP Redirection
    - Health and Diagnostics
        - HTTP Logging
    - Performance
        - Static Content
    - Security
        - Request Filtering
    - Application Development
        - .NET Extensibility 3.5
        - .NET Extensibility 4.6
        - ASP.NET 3.5
        - ASP.NET 4.6
   - ISAPI Extensions
        - ISAPI Filters
- ## Management Tools
    - IIS 6 Management Console
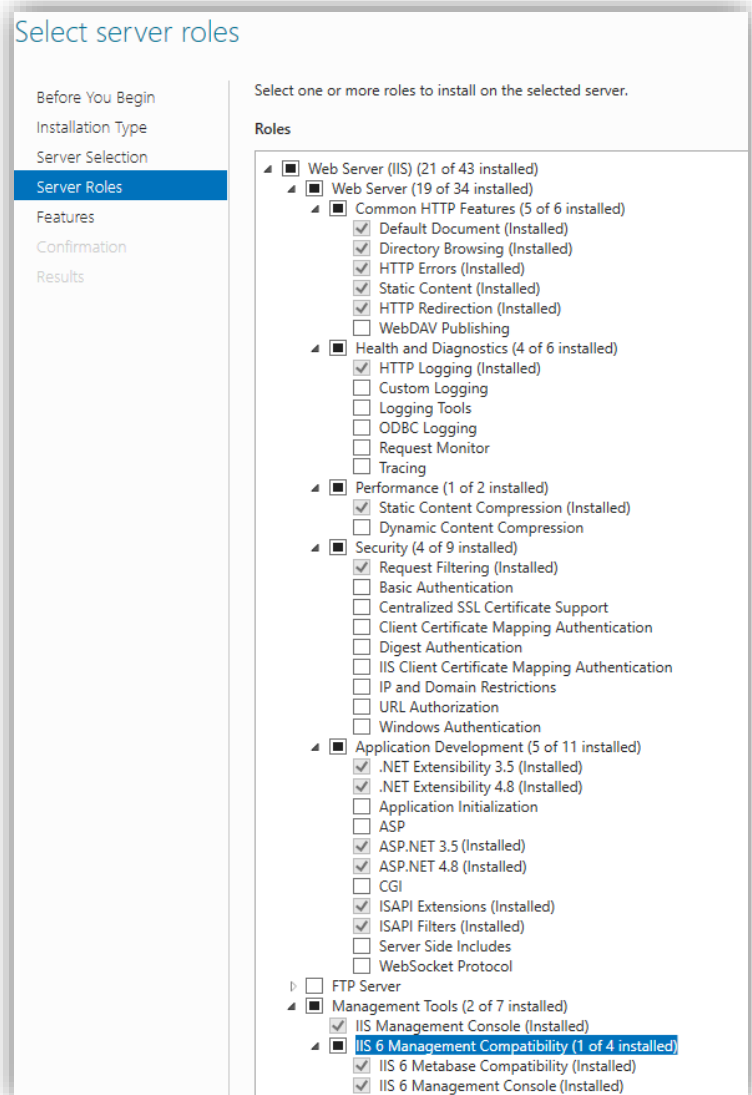   - IIS 6 Metabase Compatibility
    - IIS Management Console

5. After selecting the required components press **OK** to finish the installation.

   Note: For Windows Server, after selecting the required components, Press **Next,** until you get to the confirmation screen, then Press **Install** to finish the installation.

Windows 10/11 Pro
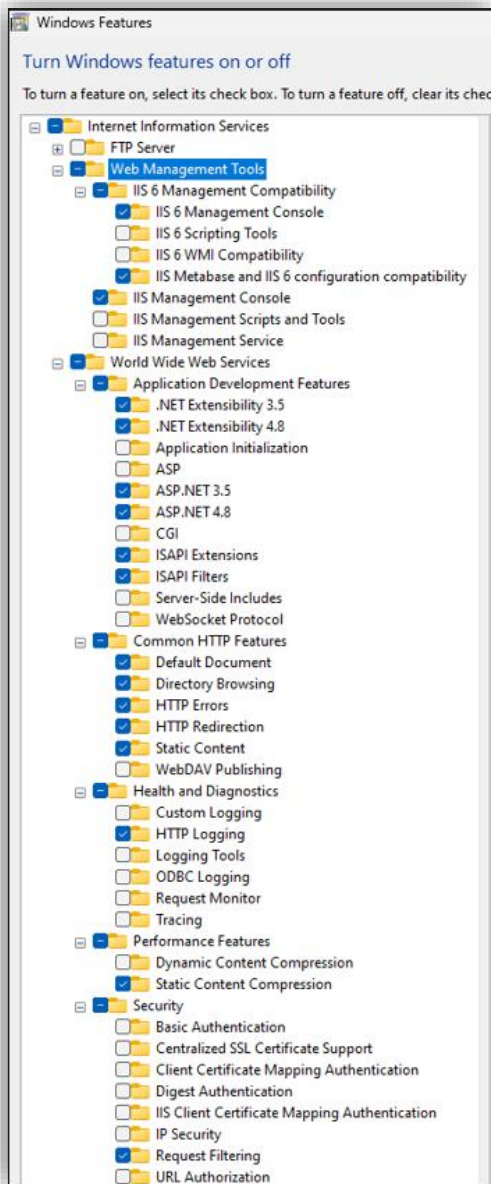
Windows Server 2019/ 2022

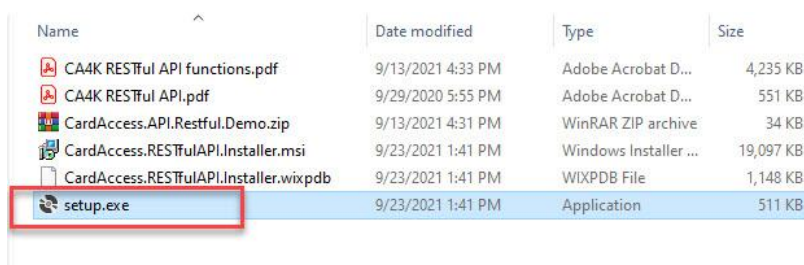9. You can verify that IIS installed successfully, type the following into a web browser:

   http://localhost (You will see Internet Information Services Splash Screen)

Note: After IIS is successfully installed, you must install the **RESTful API.**
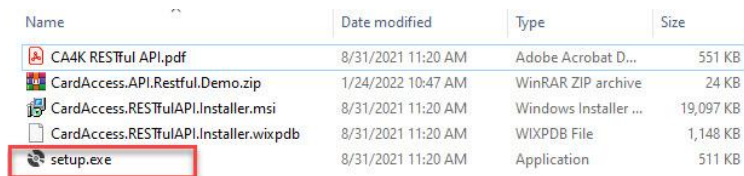
9

CA4K RESTful API Installation

Note: The Setup files for the RESTful API are on the CA4K installation media. The setup files are in different locations in CA4K V1.1.16 SP-3 and CA4K V1.1.35 SP-1/CA4K 1.2.x or later. It is very important to also install the service packs for each version.

1. Perform one of the following steps depending on the version of CA4K you are using.

   - **V1.1.16 SP-3** Go to the **CardAccess4K>RESTfulAPI** folder in the installation folder and open it. Click on **setup.exe** as per the screenshot below.

| Name	Date modified	Type	Size
CA4K RESTful API functions.pdf	9/13/2021 4:33 PM	Adobe Acrobat D...	4,235 KB
CA4K RESTful API.pdf	9/29/2020 5:55 PM	Adobe Acrobat D...	551 KB
CardAccess.API.Restful.Demo.zip	9/13/2021 4:31 PM	WinRAR ZIP archive	34 KB
CardAccess.RESTfulAPI.Installer.msi	9/23/2021 1:41 PM	Windows Installer ...	19,097 KB
CardAccess.RESTfulAPI.Installer.wixpdb	9/23/2021 1:41 PM	WIXPDB File	1,148 KB
setup.exe	9/23/2021 1:41 PM	Application	511 KB

   - **V1.1.35 SP-1 and later**-Go to the **CardAccess4K>API>RESTfulAPI** folder in the installation folder and open it. Click on **setup.exe** as per the screenshot below.

Name	Date modified	Type	Size
CA4K RESTful API.pdf	8/31/2021 11:20 AM	Adobe Acrobat D...	551 KB
CardAccess.API.Restful.Demo.zip	1/24/2022 10:47 AM	WinRAR ZIP archive	24 KB
CardAccess.RESTfulAPI.Installer.msi	8/31/2021 11:20 AM	Windows Installer ...	19,097 KB
CardAccess.RESTfulAPI.Installer.wixpdb	8/31/2021 11:20 AM	WIXPDB File	1,148 KB
setup.exe	8/31/2021 11:20 AM	Application	511 KB

   Note: The **RESTful API Demo code** can also be found in the above two locations.

2. Upon launching the setup.exe, the **Ready to Install** screen will display. For our demonstration, leave the **Web Site name** and the **Virtual Directory** name at the defaults. Click **Install**.
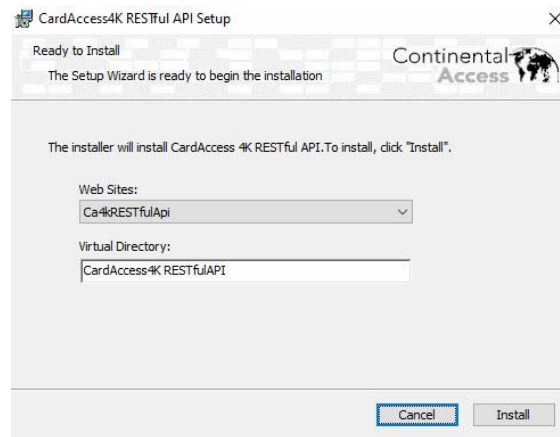
3. Upon clicking Install, a progress bar will display while setup.exe is installing files.
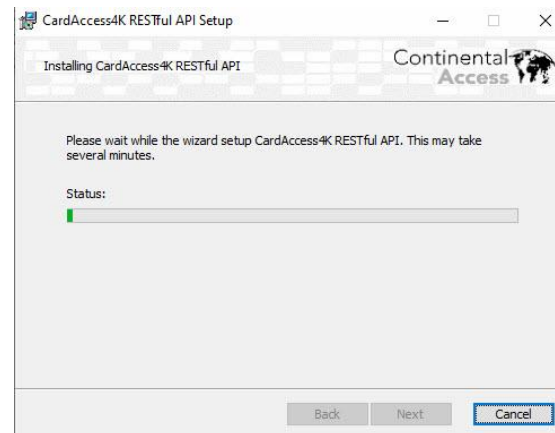
4. Upon the installation completing, click **Finish**.
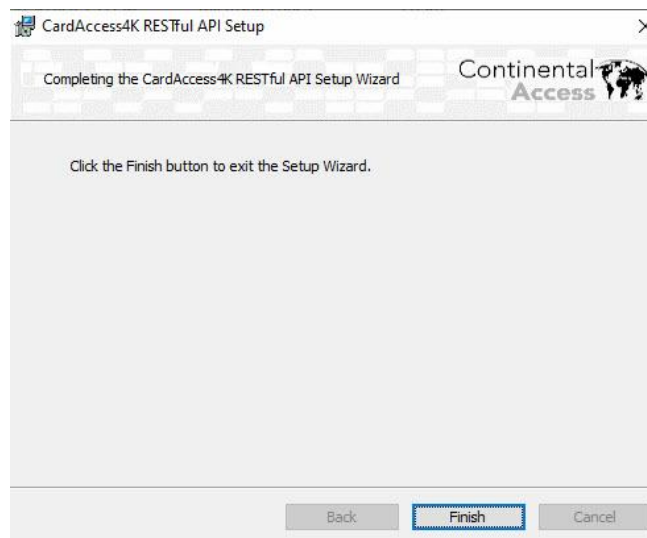
5. After the RESTful API installation is complete, verify the RESTfulAPI folder was created under the CardAccess4K folder.
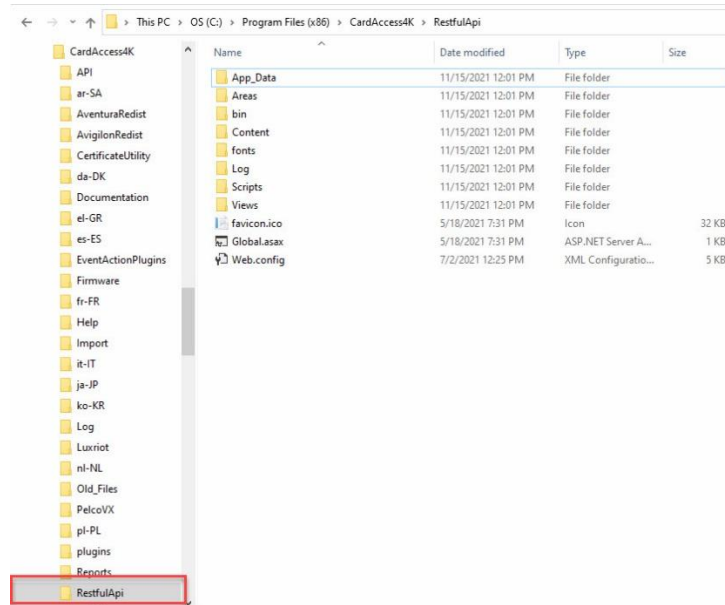
6. In addition to the RestfulApi folder being created in the CardAccess4K folder, launch IIS. In IIS, verify the **CA4K RestfulAPI site** is displaying. Right click on the **CA4K RestfulAPI site**, click **Manage Website**, and verify the site is Running.

RESTful API Programming Tips

You must be an experienced Web developer to use the RESTful API and the Demo code. The CA4K RESTful API is a framework that makes it easy to build HTTP services that reach a broad range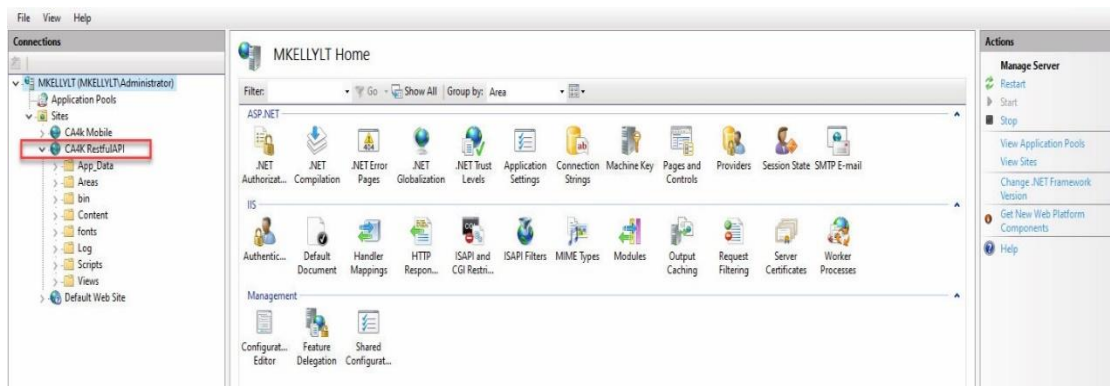 of clients, including browsers and mobile devices. This API was built as a wrapper WebAPI from .NET CardAccess.API and returns mostly JSON data. The RESTful API demo code is written in C# and Javascript. It can be found in the same folders as the Setup.exe files. The Demo Code zip file name is **CardAccess.API.Restful.Demo.zip**.

Important: For the complete ASP.NET API help page, refer to the *CA4K™ RESTful API Functions – Help Documentation* located in the CA4K installation directory under the **RESTful API** folder. You can also access it through Microsoft IIS by selecting **"Browse Website."** This will open the application, which provides step-by-step guidance on using the CA4K RESTful API. Selecting the **API** tab will display a full list of available API functions.
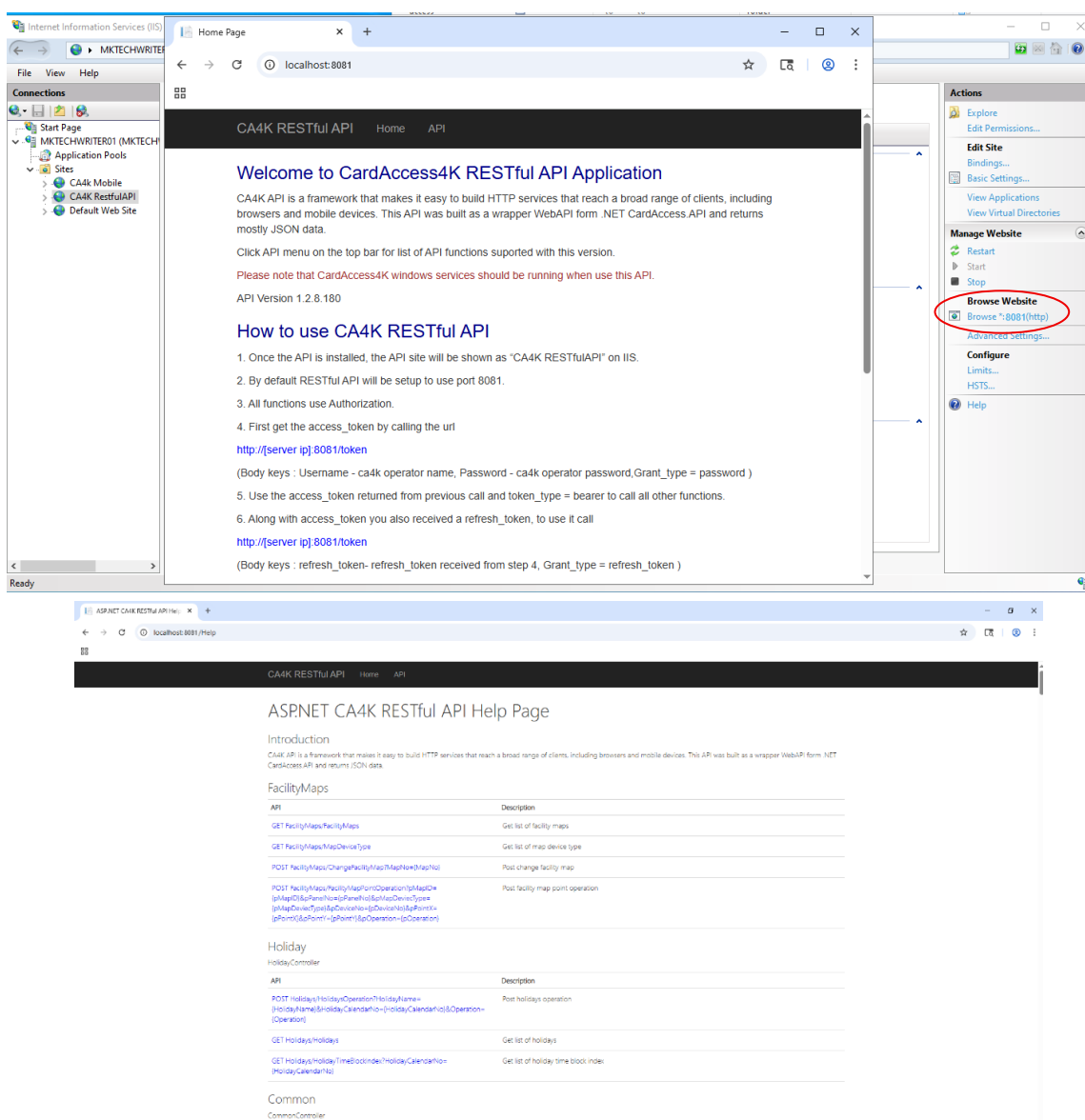
1. Once the RESTful API is installed, the IIS website name will be **CA4K RESTfulAPI**.

2. By default, the RESTful API is configured to use **port 8081.** You can change this port by selecting the CA4K RESTfulAPI site in Microsoft IIS and modifying the binding settings under "Edit Site."

3. All functions use **Authorization**.

4. First get the **access token** by calling the url http://<server ip>:8081/token
    a. Body keys
        i.   Username <- ca4k operator name
        ii.   Password <- ca4k operator password
        iii.   Grant_type = password

5. Use the access_token returned and token type = bearer to call all other functions.

6. **Example 1- (To Get badgeinfo)**
    a.   http://localhost:8081/Badges/BadgeInfo?badge=1234&facility=0
    b.   Body keys
        i. Authorization = bearer XXXXXXXXXXXXXXXXXX… , is the access_token return from token request call.

7. **Example 2** – (**Register to receive events using signalr).**
    @section scripts{
       @*test signalr*@
      @Scripts.Render("~/bundles/signalR")
     <script src="/signalr/hubs"></script>
      <script>
        $(function () {
            var alertHubService = $.connection.alertHubService;
             $.connection.hub.start().done(() =>alertHubService.server.connect());
            alertHubService.client.alertReceived = function (sde) {
            console.log(sde);
            };
            alertHubService.client.hcsStatusReceived = function (message) {
            console.log(message);
            };
          });
        </script>

Example using Postman to get Token

GET ▼ http://localhost:8081/token   **Send** ▼

Params Authorization ● Headers (9) Body ● Pre-request Script Tests Settings

○ none ○ form-data ● x-www-form-urlencoded ○ raw ○ binary ○ GraphQL

	KEY	VALUE	DESCRIPTION	**
☑	username	admin		
☑	password	admin@4k		
☑	grant_type	password		
	Key	Value	Description	

Body Cookies Headers (8) Test Results   Status: 200 OK Time: 26 ms Size: 1.13 KB | Save

Pretty Raw Preview Visualize JSON ▼ ⇥

```
1  {
2      "access_token":
           "IA2d16DLHEDOZeS9GmG_vmmqEqV2RyGkLiXCpDqIUPy2A9zswUqttt0AVmtom9_aCXM3LjYIVba5hVcfp10v85X8F6ZO5YijCxH8Pk2CaQb-5ytBP-V7N9qx84ijQQ4f9pkCk665uCwpmCcNKbMP1kqOh
           74LbXMH8ukwED0QHP6aXaKkpIvF8oIOz80R-XOpLfLqanLiQvLe0raRRf7ASkeeBcMRUuakObz81_EODh-bMKBQ4svJwbfZQj9VJJiIKNkrqk9ggPMg6txjBFdLUGA_H5Ae1GzVX05xdnXFdAN0AtXhVV7
           DEjo1p87mCI9jjJFqpBxEcwWXsoTfzP3ny1qsGmKUXhyD72u_GCrTQd_8RhQytJXzWydBWCYKeq_je6Ch_PnGa54QOxgLzqTtwzHdPSwvXn3zIuRkOMbKQUE4_7frSP1v1Rfeo28W7K7Fbs6UHKwCN7Wg9
           3TMLeuiDTCHmu5PYWtdH4WynVDDIuofKPRLYz9Aw_EB_BrU4HsN7xhGsSd7EIGtfPug",
3      "token_type": "bearer",
4      "expires_in": 86399,
5      "badges": "null",
6      "privileges": "null",
7      "operatorId": "1eeb696c-0e28-4702-8598-c379c95b45e1",
8      "roleId": "82b19834-4ef0-405b-9ad1-23860aaf4139",
9      "operatorFirstName": "admin",
10     "operatorLastName": "admin",
11     "passwordRequiresUpdate": "False",
12     ".issued": "Tue, 29 Sep 2020 15:37:01 GMT",
13     ".expires": "Wed, 30 Sep 2020 15:37:01 GMT",
14 }
```