

# PI World 2019 Lab

Getting Started with PI Web API using Postman  
(v1.2)



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# 1. Introduction

In this course we will learn to retrieve data from a PI System using PI Web API. This includes both real-time data and asset data.

For this course, we will be using the Public PI Web API endpoint that OSIsoft maintains and whose access is detailed is listed here on the OSIsoft's technical website.

<https://customers.osisoft.com/s/productcontent?id=a7R1I000000XyglUAS>

If the link above does not work, please search for "*Public PI Web API - Access Information*". The required disclaimer is included below in this document.

## 2. Getting Started

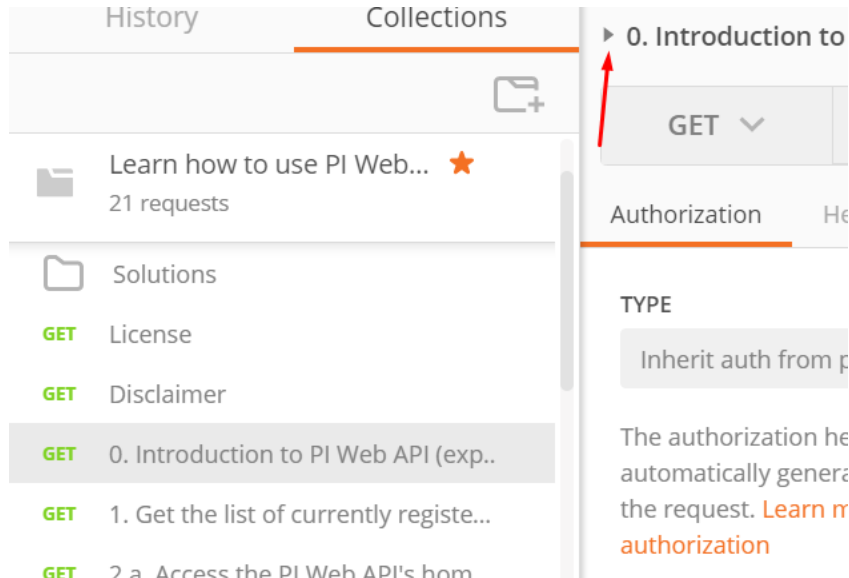
All the learning activities for this PI Web API course are in an application called Postman installed in your virtual environment. Postman is a great third-party application that helps make requests against any RESTful APIs like PI Web API.

To get started, log in to your virtual environment and open Postman by locating its icon in the taskbar.



If you are not using a virtual environment, you will need to install Postman and import the training first. Those steps are detailed below in the “How to install Postman and import the training” section.

Next make sure the “Collections” tab on the left pane is selected and expand the triangle next to introductory request “Introduction to PI Web API”.



Then go through the various steps looking at the description in each to make your first requests with PI Web API.

## 2.1 How to install Postman and import the training

If you are not using a virtual environment, it is also possible to do this training on your own by first installing Postman and importing the training into Postman.

You can install Postman by visiting their website <https://www.getpostman.com/>. You find an installer for a variety of platform such as Windows, Mac and Linux.

Once you have Postman installed, you can import the training by selecting “Import” from the top menu bar, selecting “Import From Link” and pasting in the link below.

<https://www.getpostman.com/collections/5e3cc5681c1576b5a7f0>

The Postman content gets updated on an annual basis the latest version of the Postman collection will be posted:

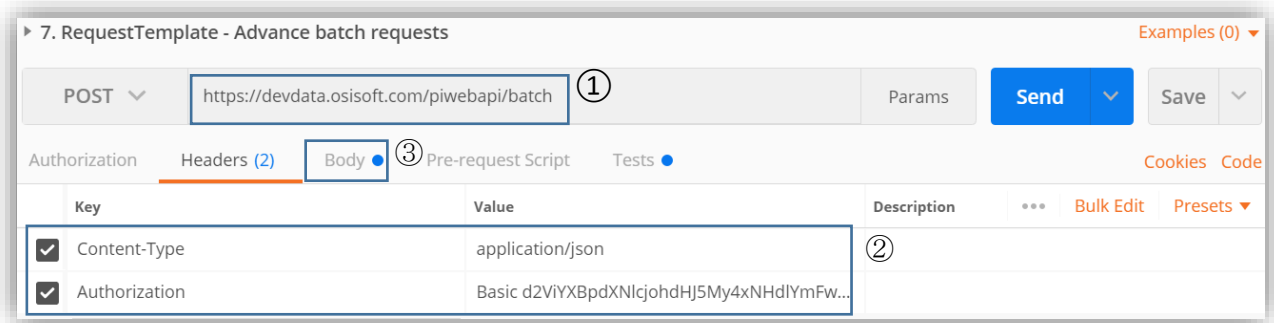
<https://github.com/osisoft/PI-Web-API-Getting-Started-Guide>

## 2.2 Postman Introduction

You will find Postman easy to use but allow me to explain the UI.

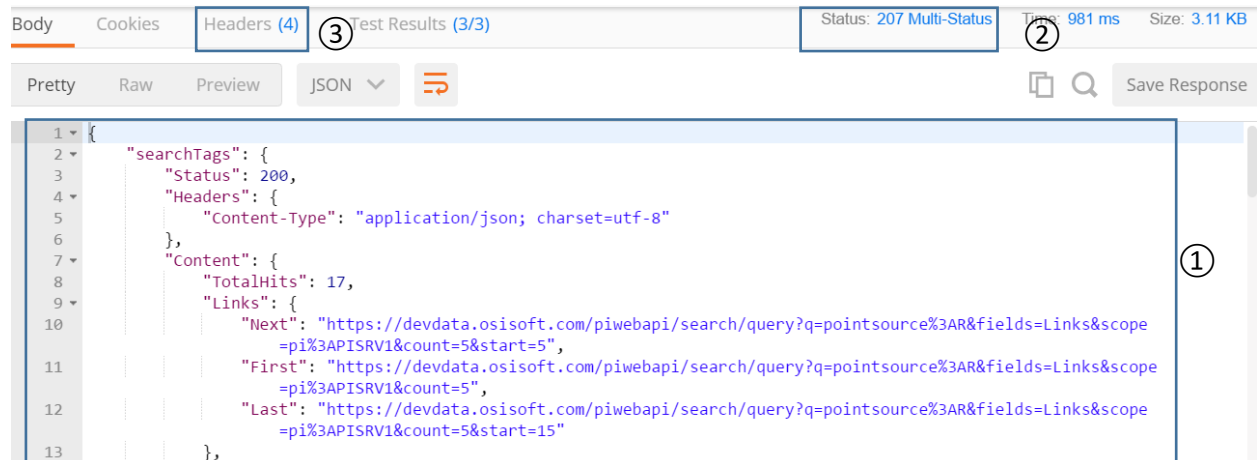
The top half of the right pane is to help you write requests against PI Web API.

Example of a request:



From this pane, you can write the URL (①) that will be used in the request, fill in the header information (②) and if required the body information (③) as well. The send button will send this request to the PI Web API Service.

After sending a request to PI Web API, a response will be received. This response might include the data you requested (①) or some details about an issue your request had. The bottom half of the right pane is this response. The most important part is the body of the response when you are requesting information, but the status (②) and headers (③) will also tell you information about your request or the impact (element creation, etc.) that it had on the targeted PI System.



I hope you enjoy the training!

The data retrieved from PI Web API is always in a format called JSON, if you are unfamiliar with JSON, please read the introduction below before continuing with the training.



## 3. JSON Introduction

Here is a very quick introduction to what you need to know about JSON with respect to this course.

First, here is an example of JSON data you may see coming from PI Web API.

```
{
  "Items": [{
    "Timestamp": "2018-03-17T07:33:58Z",
    "Value": 141.9776,
    "Good": true
  },
  {
    "Timestamp": "2018-03-17T07:37:28Z",
    "Value": 133.155029,
    "Good": true
  }
  ]
}
```

JSON is made up of name/value pairs. For example, "Good" is a name with value "true". Names are strings, but the values can have different types, such as numbers, strings and true/false. Also important is that each name is unique within its respective {}. The other data type we see in this example is an ordered array, for example the value of the name "Items" is an array with two items.

### 3.1 JSONPath

With this structure of unique names and arrays, we can define the notation of a path, called JSONPath. As with path in Windows, JSONPath are ways to access the various sub-structures in any JSON objects.

Let's look again at a JSON object.

```
{
  "A": 1234,
  "B": [
    {"Val": 12},
    {"Val": 34}
  ],
  "C": {
    "D": 5678
  }
}
```

To be able to define a path, we first need an identifier for the whole JSON object, this is the "\$" character (think of a drive letter for a Windows path, or "/" for a Mac path). To refer to a child element, we use the dot notation. For example "\$.A" refers to the value 1234.

We can refer similarly to children of children, for example "\$.C.D" is equal to 5678.

For arrays, we use typical index notation, for example \$.B[0].Val refers to the value 12. In the case of JSONPath, the first item in the list is accessed using the index 0.

The last path definition that we need, is a way to retrieve all objects within an array, we can do so with the character "\*". For example, \$.B[\*].Val refers to an array with value 12, 34.

## 3.2 JSONPath evaluation

To test out these various path notations, you can use the website: <http://jsonpath.com/>. Copy the above JSON object, paste it in the JSON textbox. You can now try the paths above, or other paths to see the results. This site will also be helpful when you try it out with data that comes from PI Web API in the exercises.

### Inputs

Output paths

#### JSONPath Syntax

Example '\$.phoneNumbers[\*].type' See also [JSONPath expressions](#)

#### JSON

```
1 {
2   "A": 1234,
3   "B": [
4     {"Val": 12},
5     {"Val": 34}
6   ],
7   "C": {
8     "D": 5678
9   }
10 }
11
12
```

### Evaluation Results

```
1 [
2   12,
3   34
4 ]
```

## 4. Disclaimer

The public PI Web API endpoint is intended for research and development purposes under the terms detailed in the [PI Developers Club Agreement](#) and [PI Square Terms of Use](#).

Although we are planning to continuously support and enhance the public PI Web API endpoint, we cannot guarantee data quality, availability nor a time period within which issues will be fixed.

## 5. Where to go next

- Learn to configure a PI Web API instance: <https://pisure.osisoft.com/community/Learn-PI/programming-in-pi-web-api>
- Start asking away questions in our community page: <https://pisure.osisoft.com/community/developers-club/restful-pi-system-access>
- Look up what the community has already written on PI Web API: <https://pisure.osisoft.com/community/developers-club/restful-pi-system-access/blog/2015/04/17/getting-started-with-pi-web-api>



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from you!**

<https://feedback.osisoft.com/>





Save the Date!

OSIsoft PI World Users Conference in Gothenburg, Sweden. September 16-19, 2019.

Register your interest now to receive updates and notification early bird registration opening.

[https://pages.osisoft.com/UC-EMEA-Q3-19-PIWorldGBG-RegisterYourInterest\\_RegisterYourInterest-LP.html?\\_ga=2.20661553.86037572.1539782043-591736536.1533567354](https://pages.osisoft.com/UC-EMEA-Q3-19-PIWorldGBG-RegisterYourInterest_RegisterYourInterest-LP.html?_ga=2.20661553.86037572.1539782043-591736536.1533567354)

