Veterans Data Integration and Federation Enterprise Platform (VDIF-EP):

InterSystems Application Programming Interface (API) Manager

User Guide

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Department of Veterans Affairs (VA)
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Revision History

Date	Revision	Description	Author
08/09/2023	1.1	Updates: • Updated Figure 2. • Updated Figure 3.	VDIF-EP API Manager Development Team
08/03/2023	1.0	Initial *Veterans Data Integration and Federation Enterprise Platform (VDIF-EP) InterSystems Application Programming Interface (API) Manager User Guide* document.	VDIF-EP API Manager Development Team

Artifact Rationale

Per the Veteran-focused Integrated Process (VIP) Guide, the User's Guide is required to be completed prior to Critical Decision Point #2 (CD2), with the expectation that it will be updated as needed. A User Guide is a technical communication document intended to give assistance to people using a particular system, such as Veterans Health Information Systems and Technology Architecture (VistA) end-users. It is usually written by a technical writer, although it can also be written by developers, product or project managers, or other technical staff. Most user guides contain both a written guide and the associated images. In the case of computer applications, it is usual to include screenshots of the human-machine interfaces, and hardware manuals often include clear, simplified diagrams. The language used is matched to the intended audience, with jargon kept to a minimum or explained thoroughly. The User Guide is a mandatory, build-level document, and should be updated to reflect the contents of the most recently deployed build. The sections documented herein are required if applicable to your product.

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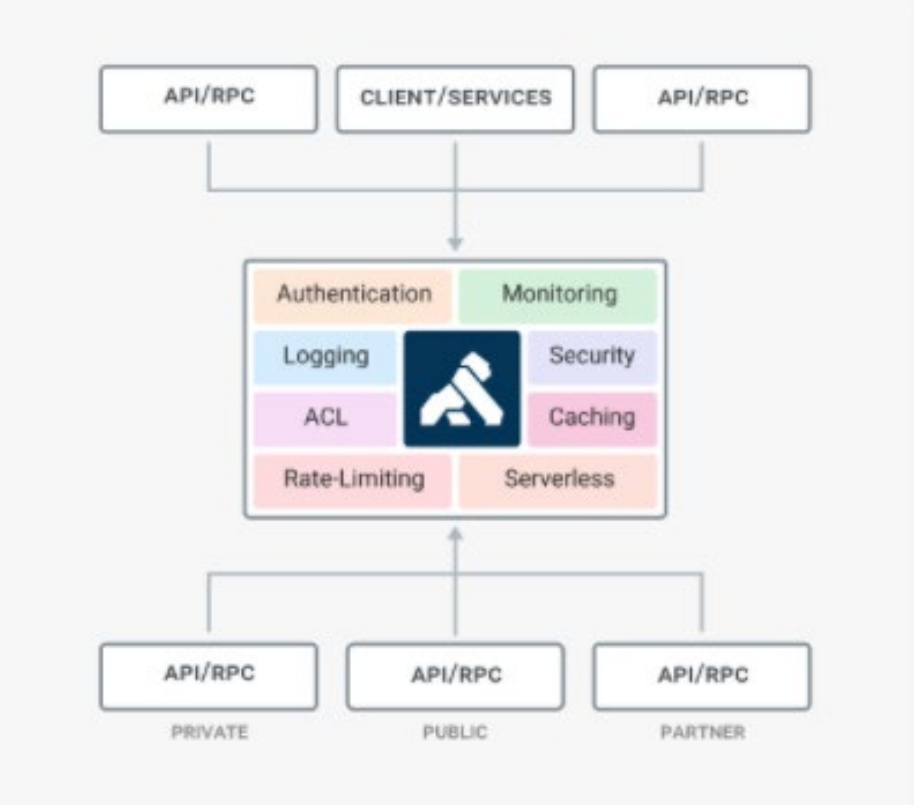
1 Introduction

1.1 Purpose

The Veterans Data Integration and Federation Enterprise Platform (VDIF-EP) Application Programming Interface (API) Manager is a *c*ommercial-off-the-shelf (COTS) product from InterSystems that provides a way to route API traffic through a centralized gateway, which then forwards requests to the correct target endpoints. It is an application that resides on an InterSystems IRIS for Health data platform. API Manager serves as a gateway between applications (e.g., Fast Healthcare Interoperability Resources [FHIR] R4 a subset of Health Level Seven [HL7]) and the intended API.

NOTE: The process for project teams to request an application be added is currently under development.

Figure 1: API Manager Overview



This guide focuses on the Developers' portal, which displays information necessary for a developer to code against an API and incorporate that API into application code.

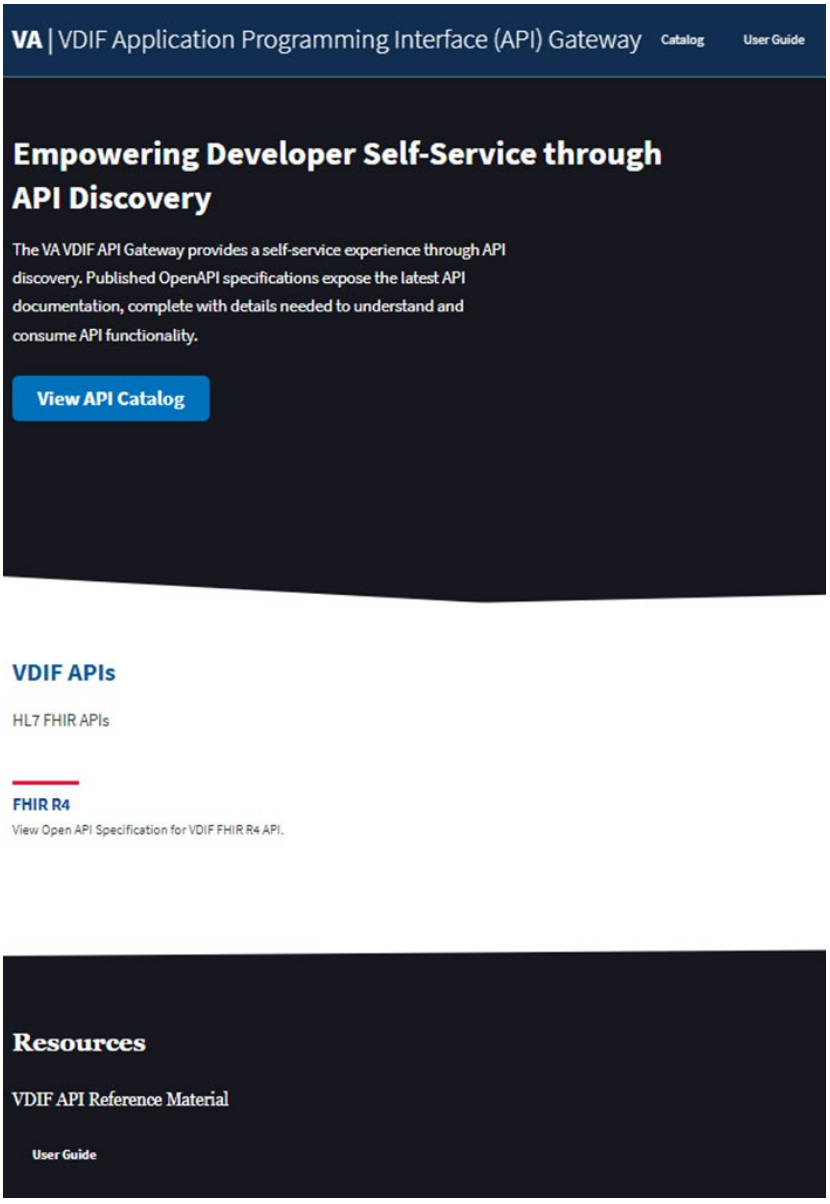
2 System Summary

The VDIF-EP API Manager application is hosted on Amazon Web Service (AWS). The system is only accessible within the VA intranet. The Developers' portal is intended for internal VA users to discover existing APIs available for use through self-service.

3 Getting Started

The Developers' portal (Figure 2) is available to all VA users from the VA intranet.

Figure 2: API Manager Developers' Portal



3.1 Logging On

To log onto the Developers' portal, do the following:

1. Open a browser (e.g., Microsoft© Edge or Google© Chrome).
2. Navigate to the API Manager Developers' portal.
3. Currently, no signon credentials are required, since the API Manager Developers' portal and catalog screens are *not* integrated with Single Sign On internal (SSOi).

3.2 Exit System

To exit the Developers' portal, close the browser. Logout is *not* necessary.

4 Using the Software

4.1 Navigation

Navigation of the Developers' portal is accomplished by:

- Pressing buttons.
- Selecting links.
- Using built-in browser features, such as a link to go back to the previous page.

4.2 Catalog Access

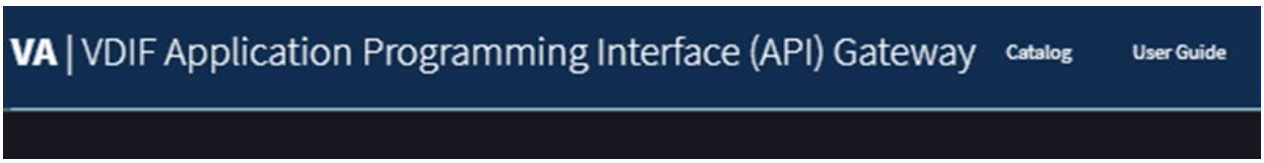
The Developers' portal Catalog contains a list of all available APIs that are exposed to consumers.

To access the Catalog, navigate from the Developers' portal main screen to the Catalog by selecting either of the following options:

- "**Catalog**" link (Figure 3).
- "**View API Catalog**" button (Figure 4).

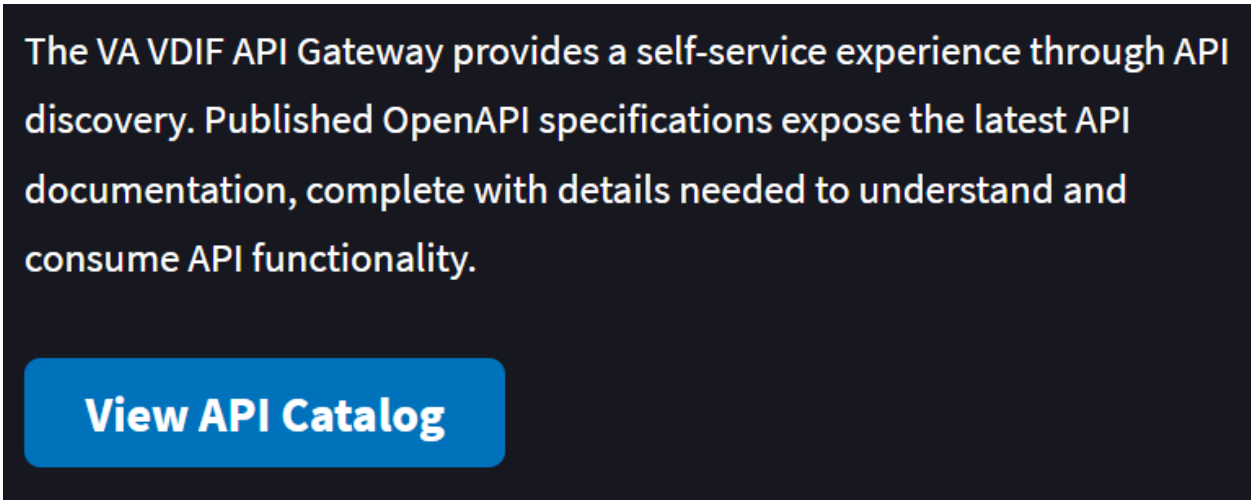
The "**Catalog**" link is located at the top of the Developers' portal page, to the right of the banner (title), as shown in Figure 3:

Figure 3: Catalog Link



The "**View API Catalog**" blue button is located under the API gateway description, as shown in Figure 4:

Figure 4: "View API Catalog" Button



To return to the main Developers' portal page, select the "**VA | VDIF Application Programming Interface (API) Gateway**" title link at the top of the screen (Figure 5) or use the browser's built-in feature to go to a previous page.

Figure 5: Title Link

4.3 API Specification

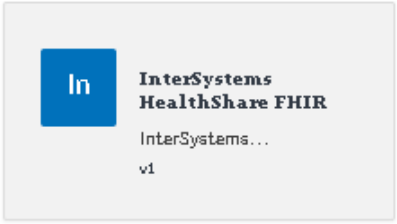
Once the Catalog displays, drill down to view API specifications.

4.3.1 Specification Access

To view an API specification, select the button next to the API name. For example, InterSystems HealthShare FHIR (Figure 6).

NOTE: At this time, there is only one API specification available for viewing (i.e., **InterSystems HealthShare FHIR**). More API specifications will be available in the future.

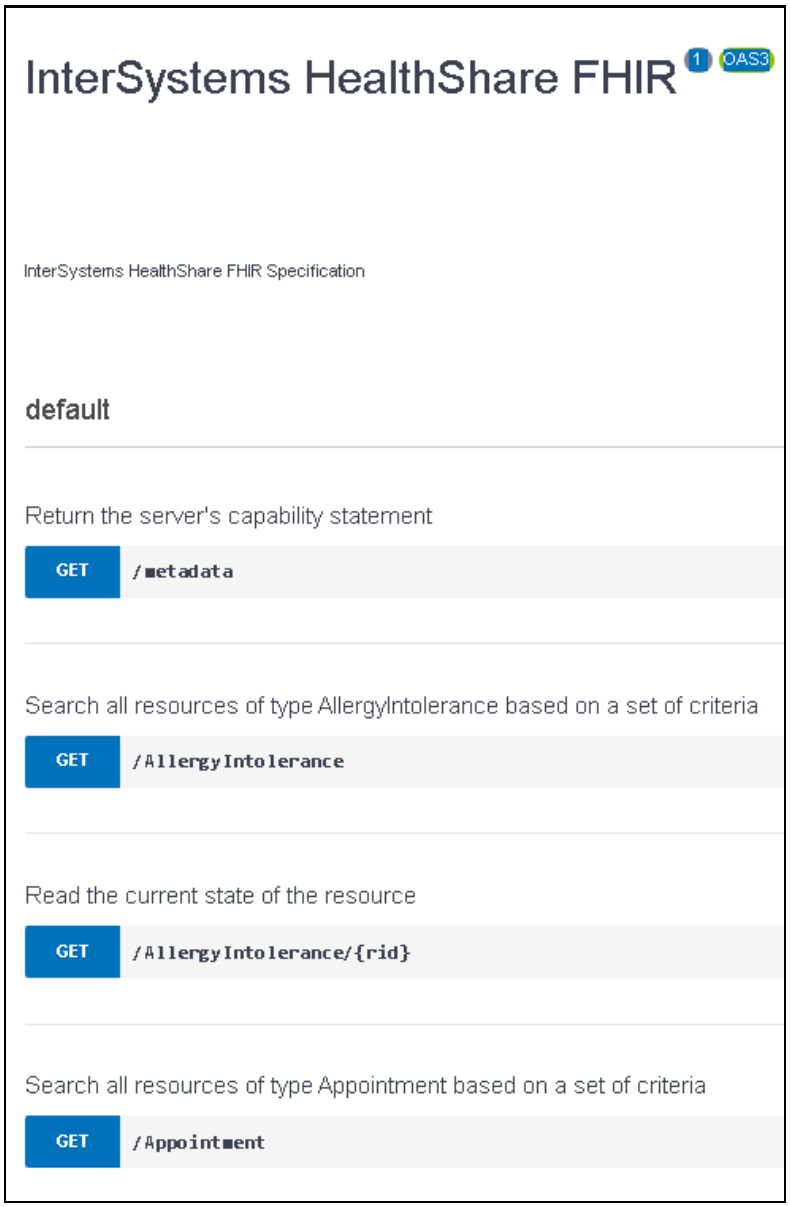
Figure 6: API Specification Button



4.3.2 Specification Features

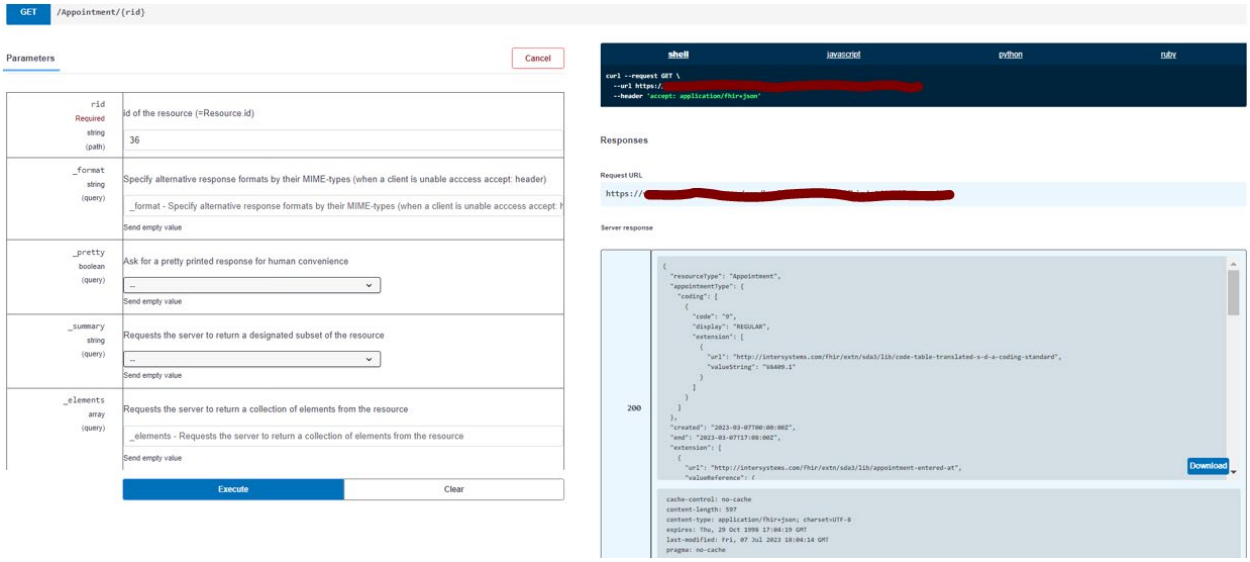
To view details for a specific resource, select the "**GET / *<method name>***" button to expand.

Figure 7: API Methods



As shown in Figure 8, all supported parameters display, as well as an example response on the right. All details needed to code against an API are displayed. Specifications are written in OpenAPI[1].

Figure 8: Sample API Method Detail with Get Parameters and Responses



To close the detailed view, select the same button.

[1] For a definition of OpenAPI, see the Wikipedia OpenAPI entry.

4.4 Try API

4.4.1 "Try It Out" Feature

To try a request to the API Manager sandbox, select the "**Try it out**" button (Figure 9). After selection, the button changes to a "**Cancel**" button (Figure 10), which cancels the feature allowing input into parameter fields.

Figure 9: "Try it out" Button

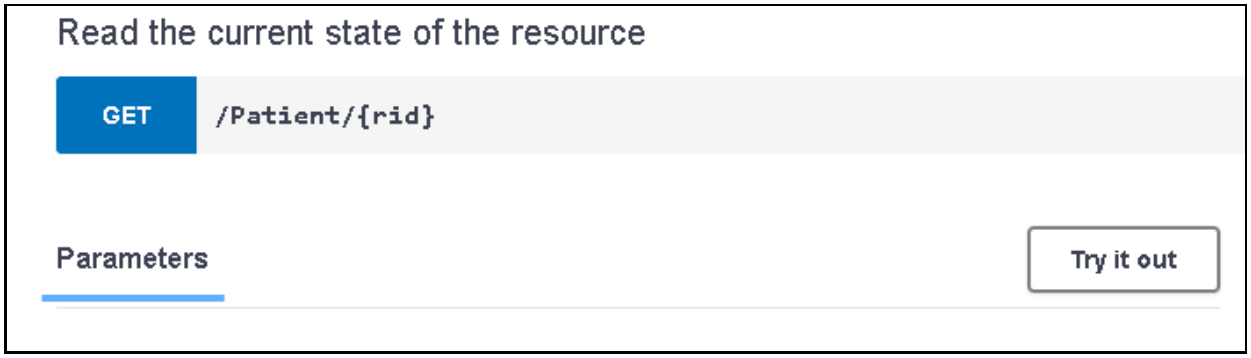
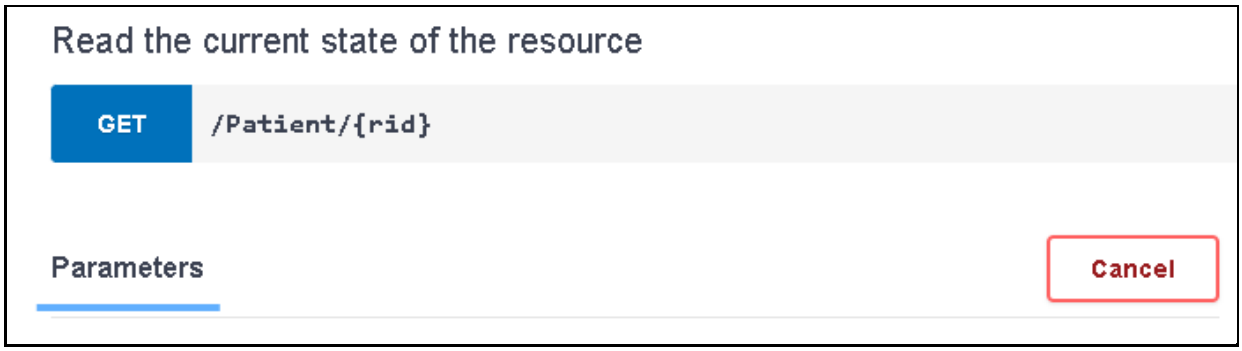
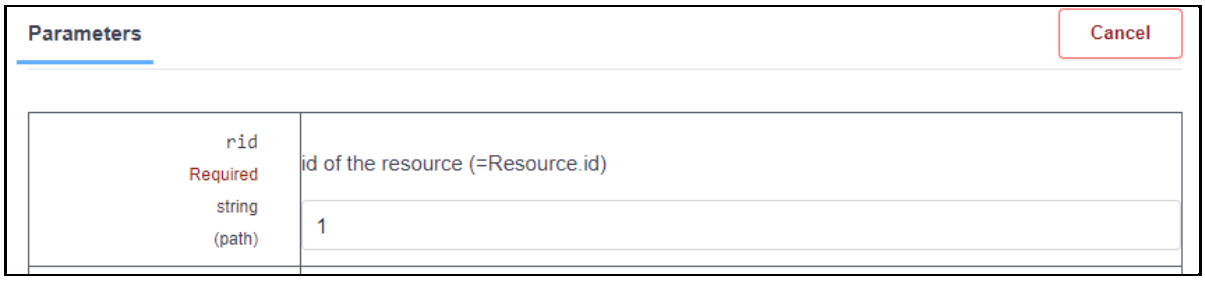


Figure 10: Cancel Button



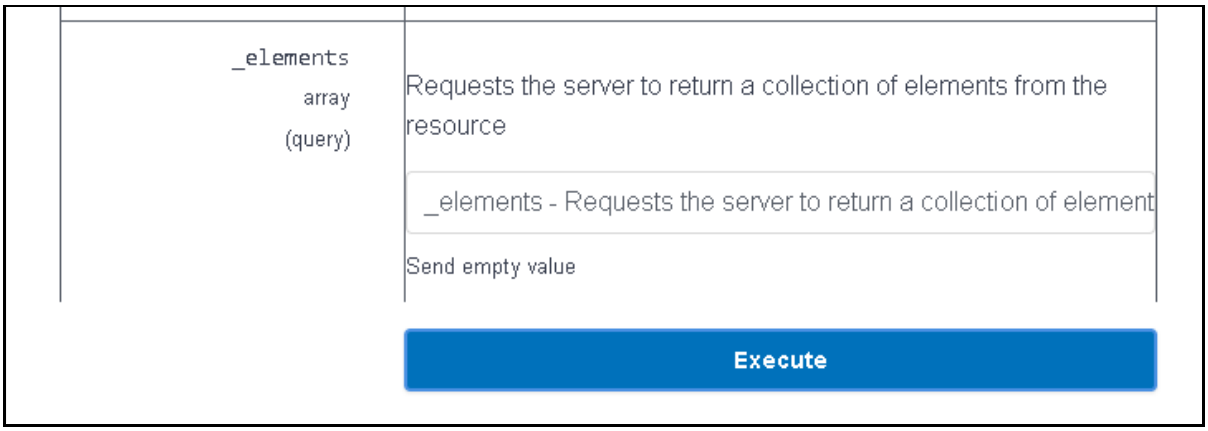
Fill in parameter values to include in the request (Figure 11). The fields are available to edit once the "**Try it out**" button is selected. If the "**Cancel**" button is selected, the parameter values are no longer available to edit.

Figure 11: Parameters—Editing



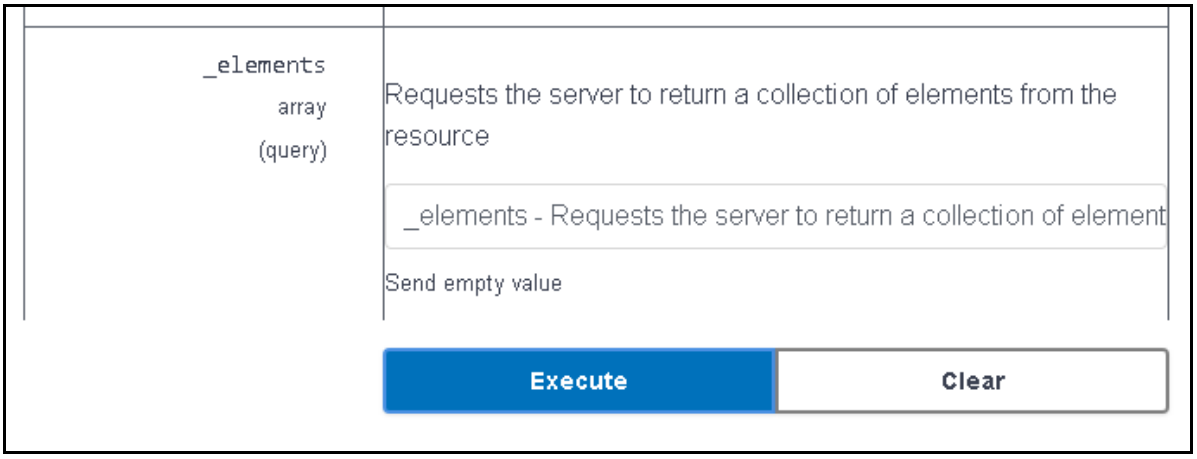
Press the "**Execute**" button (Figure 12) at the bottom of the parameters to trigger the request message to the sandbox.

Figure 12: Parameters—Execute



After pressing the "**Execute**" button (Figure 12), the user has the option to execute an additional request or clear the response (Figure 13).

Figure 13: Parameters—Execute and Clear

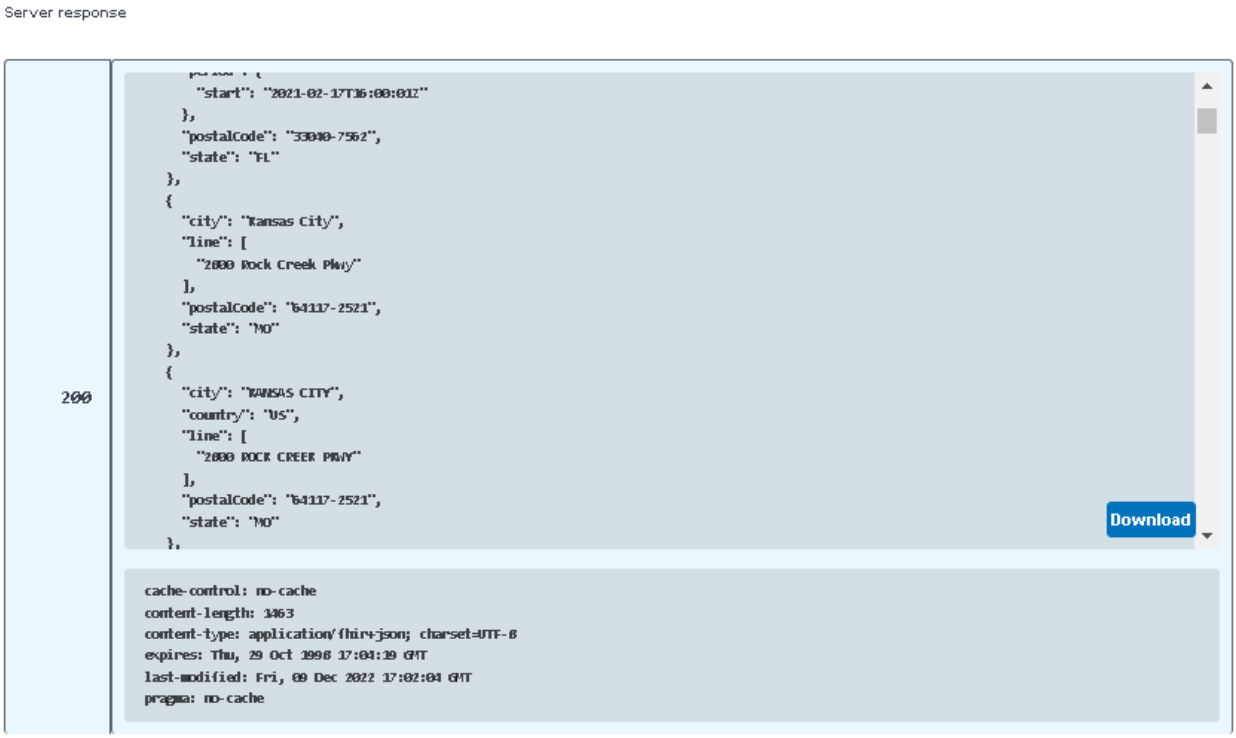


Once a request is executed, the right side of the screen displays details. The request code shows in multiple formats, such as shell or javascript (Figure 14). Select the format to display.

Figure 14: Request Format

The server response also displays and is available for download (Figure 15).

Figure 15: Server Response



4.4.2 Data Discovery

Data exists so a developer can execute a request against a mapped API and receive a real response from that API.

To discover data examples, first query for all patients:

1. Use the "**Try It Out**" feature.
2. Select **FHIR R4 Patient** resource.
3. Execute *without* specifying any parameters.

Synthea[2] data models were used to model patient data and the data model name is contained in the patient name. Select a patient to explore and note the value of "**id**", which is near the end of a patient's information (Figure 16).

Figure 16: Example "id" with Value of "7402"

```
        "meta": {
          "versionId": "1",
          "lastUpdated": "2023-05-05T18:52:42Z"
        },
        "id": "7402"
      },
      "search": {
        "mode": "match"
      }
    },
```

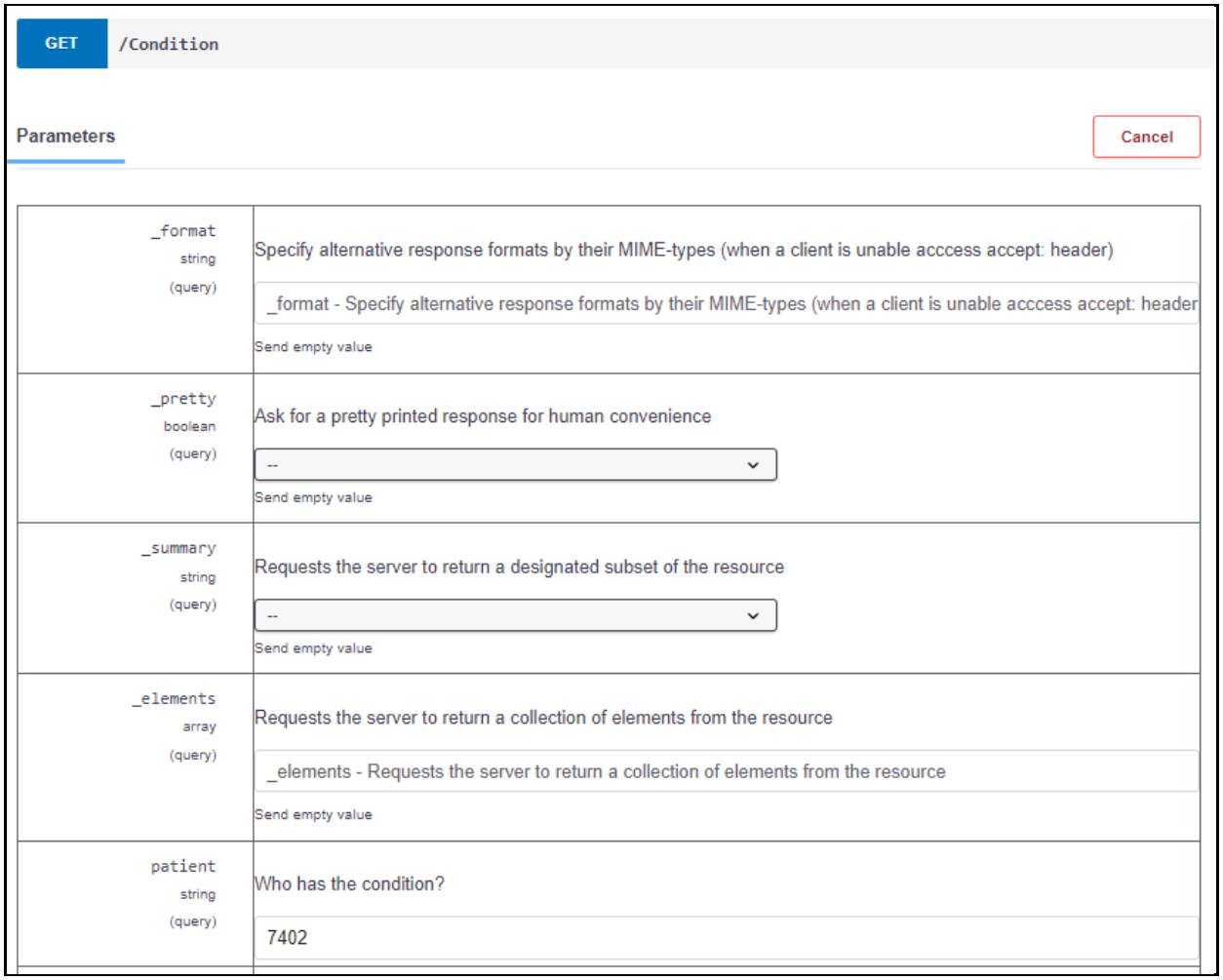
Use the patient **id** to search for associated data. For example, select **FHIR R4 Condition** resource and put in a value for "**patient**" to see all entries for that patient.

Figure 17 is an example of the FHIR Condition Resource. FHIR is a standard that is related to the HL7 standard. FHIR connections are called "resources" or "endpoints". A resource or endpoint is made up of parameters.

[2] Synthea is an open-source, fully synthetic set of electronic health record data developed by the MITRE Corporation that can be used to model a vast array of disease states and populations. For more information, see the https://synthetichealth.github.io/synthea/ site.

Figure 17 shows the details of the condition resource.

Figure 17: FHIR Condition Resource Example



This request returns all conditions for the selected patient. Figure 18 shows the response returned when a request is executed based on the endpoint definition in Figure 17. In this example (Figure 18), **nine** conditions are returned.

Figure 18: FHIR Condition Resource Response


```
{
  "resourceType": "Bundle",
  "id": "3036478a-0947-11ee-8f0d-025e399e25d2",
  "type": "searchset",
  "timestamp": "2023-06-12T17:33:05Z",
  "total": 9,
```

Some FHIR resources (e.g., **Location**, **Organization**, **Medication**, and **Practitioner**) are *not* associated with a specific patient. By inspecting other resource responses, it is possible to discover these resources too.

For example, a practitioner (Figure 19) and an organization (Figure 20) are referenced in one of the **Condition** resource responses.

Figure 19: Example for Practitioner 7415

```
"resource": {
  "resourceType": "Condition",
  "asserter": {
    "reference": "Practitioner/7415"
  },
```

Figure 20: Example for Organization 7453

```
"valueReference": {
  "reference": "Organization/7453"
}
```

NOTE: To search a response for a specific resource reference, click inside of the response box and type **<Control>F**. In the search pop-up box, type the search word and press **Enter**.

4.4.2.1 Data Use Cases

API Manager data models are based on a VA representation of specific Synthea Modules, which outline care for an illness. For example, the following are links to specific models:

- **Osteoarthritis**
- **Hypertension**
- **Lung Cancer**

The condition is contained in the name of the patient that models the condition. For example, the patient diagnosed and treated for **hypertension** will have a last name of "**HYPERTENSION**".

In addition, all **FHIR R4** resources have data for one patient with "**ALL-RESOURCES**" in the name.

4.4.2.2 Osteoarthritis

The patient diagnosed with **osteoarthritis** has data for the following resources:

- **Appointment**
- **Condition**
- **Encounter**
- **MedicationStatement**
- **ServiceRequest**

Table 1 lists the resources that are *not* directly related to the patient but can be discovered using other resources:

- **Location**
- **Medication**
- **Organization**
- **Practitioner**

Table 1: Osteoarthritis Resource References

Resource	Referenced By
Location	Appointment
Medication	MedicationStatement
Organization	All resources except Medication, Practitioner
Patient	Appointment, Condition, Encounter, MedicationStatement, ServiceRequest
Practitioner	Encounter, Appointment, Condition, MedicationStatement, ServiceRequest

4.4.2.3 Hypertension

The patient diagnosed with **hypertension** has data for the following resources:

- **Appointment**
- **Condition**
- **Encounter**
- **MedicationStatement**
- **Procedure**
- **ServiceRequest**

Table 2 lists the resources that are *not* directly related to the patient but can be discovered using other resources:

- **Location**
- **Medication**
- **Organization**
- **Practitioner**

Table 2: Hypertension Resource References

Resource	Referenced By
Location	Appointment
Medication	MedicationStatement
Organization	All resources except Medication, Practitioner
Patient	Appointment, Condition, Encounter, MedicationStatement, Procedure ServiceRequest
Practitioner	Encounter, Appointment, Condition, MedicationStatement, ServiceRequest

4.4.2.4 Lung Cancer

The patient diagnosed with **lung cancer** has data for the following resources.

- **AllergyIntolerance**
- **Appointment**
- **Condition**
- **DocumentReference**
- **Encounter**
- **MedicationStatement**
- **Procedure**
- **ServiceRequest**

Table 3 lists the resources that are *not* directly related to the patient but can be discovered using other resources:

- **Location**
- **Medication**
- **Organization**
- **Practitioner**

Table 3: Lung Cancer Resource References

Resource	Referenced By
Location	Appointment
Medication	MedicationStatement
Organization	All resources except Medication, Practitioner
Patient	AllergyIntolerance, Appointment, Condition, DocumentReference, Encounter, MedicationStatement, Procedure, ServiceRequest
Practitioner	AllergyIntolerance, Appointment, Condition, DocumentReference, Encounter, MedicationStatement, Procedure, ServiceRequest

5 Troubleshooting

This section is a placeholder for future troubleshooting details as needed.

6 Acronyms and Abbreviations

Table 4: Acronyms and Abbreviations

Term	Definition
API	Application Programming Interface
AWS	Amazon Web Service
CD2	Critical Decision Point #2
COTS	Commercial-Off-the-Shelf
FHIR	Fast Healthcare Interoperability Resources
HL7	Health Level Seven
OIT	Office of Information and Technology
SSOi	Single Sign On internal
VA	Department of Veterans Affairs
VDIF-EP	Veterans Data Integration and Federation Enterprise Platform
VIP	Veteran-focused Integrated Process