

OpenAPI Editing, Testing, and Documenting

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Agenda

- OpenAPI Specification
- Editing OpenAPI documents
- OpenAPI Tester Tool
- OpenAPI Documentation

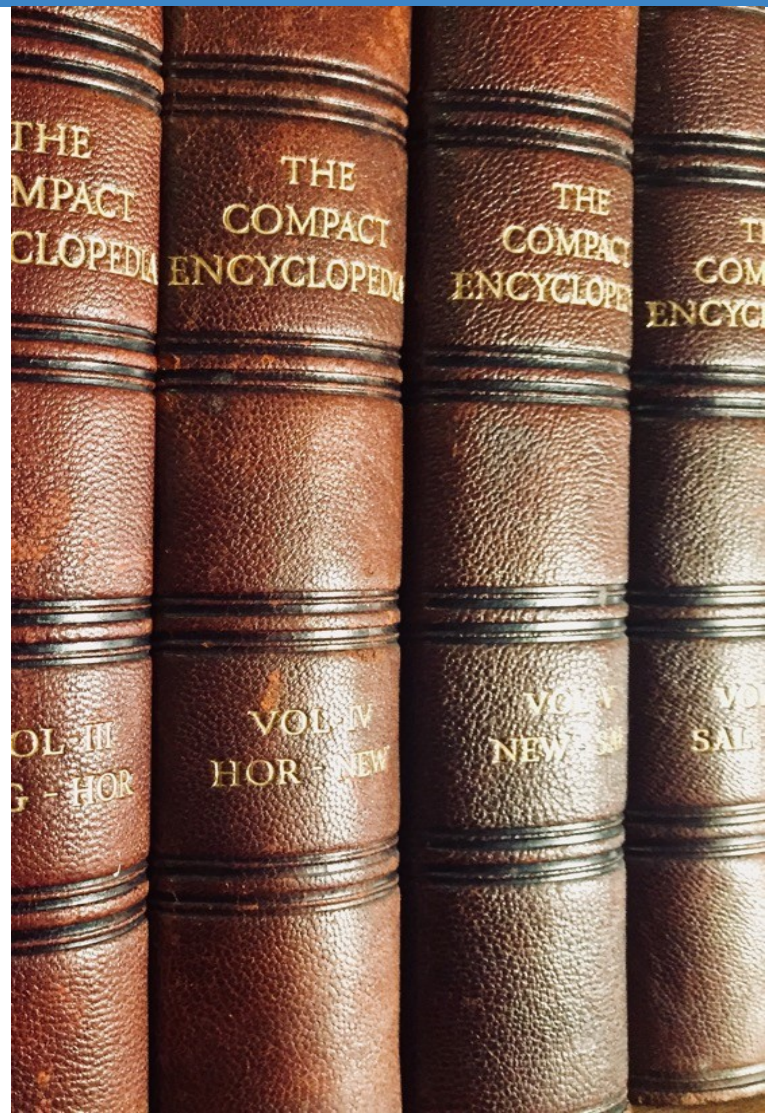


OpenAPI Specification(OAS)

- Is a format for describing and documenting APIs
- Allows both humans and computers to discover and understand the capabilities of a service



www.openapis.org



OpenAPI Documents

- Can be written in JSON or YAML
- Describes the inputs and outputs of an API
- Include information such as:
 - where the API is hosted
 - what authorization is required to access it
 - details for consumers and producers

OpenAPI Example

JSON

```
"openapi": "3.1.0",  
"info": {  
  "title": "Dog API",  
  "version": "1.0.0"  
},  
"servers": [  
  {"url": "https://dog.ceo/api"}  
],  
"paths": {}
```

YAML

```
openapi: 3.1.0  
info:  
  title: Dog API  
  version: 1.0.0  
servers:  
- url: https://dog.ceo/api  
paths:
```

OpenAPI Example

JSON

```
"paths": {  
  "/breed/{breedName}/images": {  
    "get": {  
      "description": "Get images",  
      "parameters": [],  
      "responses": {  
        "200": {  
          "description": "A list of images",  
          "content": {}  
        }  
      }  
    }  
  }  
}
```

YAML

```
paths:  
  /breed/{breedName}/images:  
    get:  
      description: Get images  
      parameters:  
      responses:  
        "200":  
          description: A list of dog  
          content:
```

OpenAPI Versions

- OpenAPI 3.1
- OpenAPI 3.0
- OpenAPI/Swagger 2.0



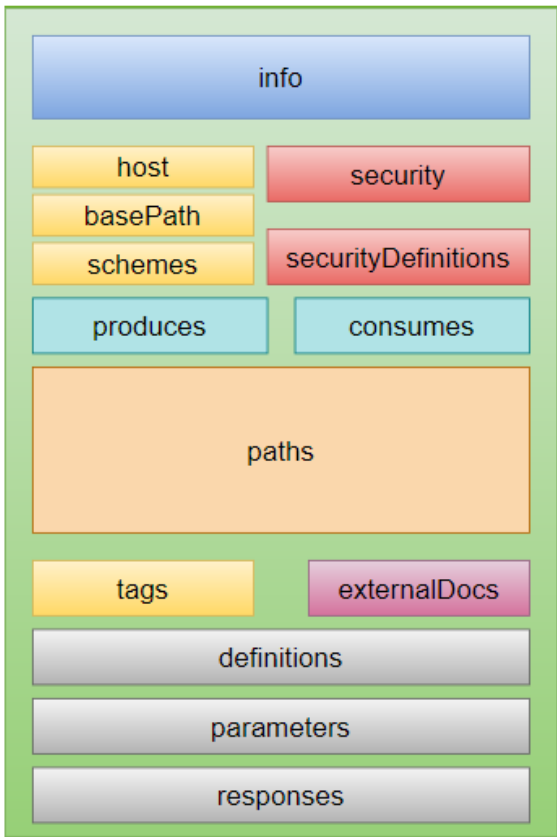
Open API
Specification



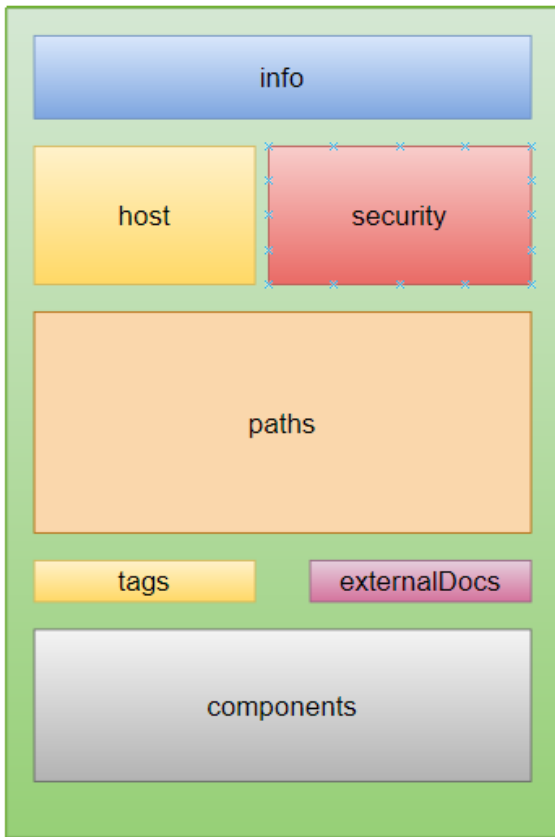
Swagger

OpenAPI 2.0 vs OpenAPI 3.0

OpenAPI / Swagger 2.0

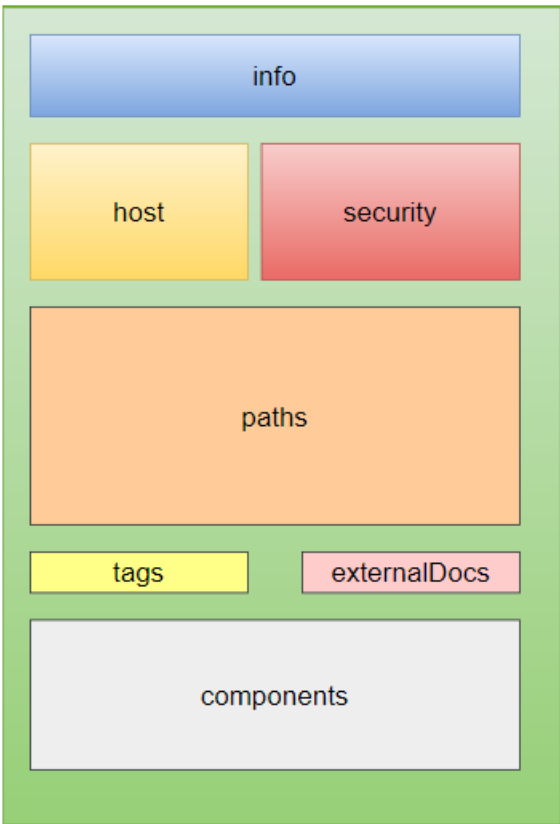


OpenAPI 3.0

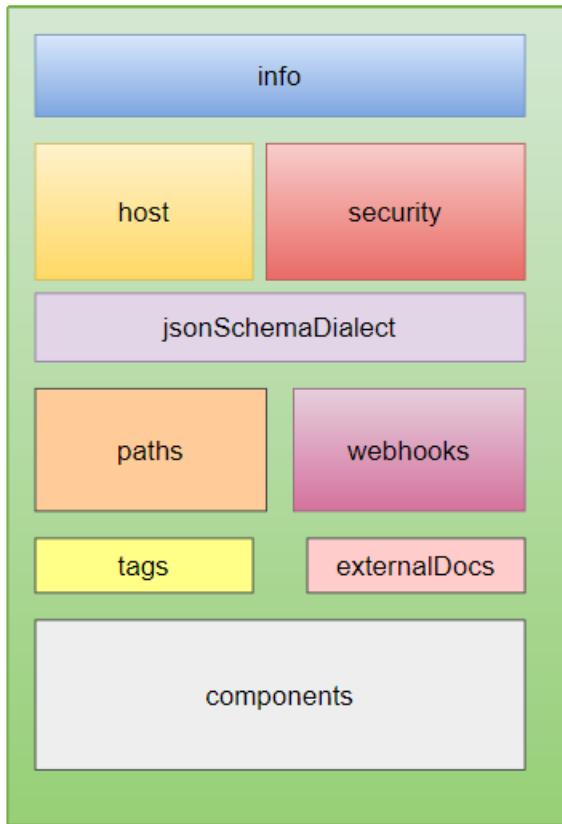


OpenAPI 3.0 vs OpenAPI 3.1

OpenAPI 3.0



OpenAPI 3.1



Question: Do you use OpenAPI, what versions?

- No
- Yes. OpenAPI 3.1
- Yes. OpenAPI 3.0
- Yes. OpenAPI/Swagger 2.0 or other



Create OpenAPI

- Design/Create API using an editor
- Generate API from code



OpenAPI Tools

- Generate Documentation
- Generate Server
- Generate Client

OpenAPI Editor

- Syntax highlights
- Validation conforms with the schema
- Content completion based on the schema
- Outline view
- Search and replace



```
1 {
2   "openapi": "3.0.0",
3   "info": {
4     "version": "1.0.0",
5     "title": "Petstore",
6     "description": "A sample API that uses a petstore as an example to de
7     "termsOfService": "http://swagger.io/terms/",
8     "contact": {
9       "name": "Swagger API Team",
10      "email": "apiteam@swagger.io",
11      "url": "http://swagger.io"
12    },
13    "license": {
14      "name": "Apache 2.0",
15      "url": "https://www.apache.org/licenses/LICENSE-2.0.html"
16    },
17    "$comment": "This sample file's original source is available at OpenA
18  },
19  "server": [
20    { "url": "http://petstore.swagger.io/api" }
21  ],
22  "paths": {
23    "/pets": {
24      "get": {
25        "description": "Returns all pets from the system that the use
26        "operationId": "findPets",
27        "parameters": [
28          {
29            "name": "tags",
30            "in": "query",
31            "description": "tags to filter by",
32            "required": false,
```

#/server: extraneous key [server] is not permitted

Text Grid Author

Validation

- Validation based on the JSON Schema
- Create validation scenarios for each version
- Errors highlighted in editor



```
OxygenTextSearchServiceAPI.json x
548 }
549 }
550 },
551 "components": {
552   "schemas": {
553     "IndexingOptionsDTO": {
554       "type": "objects",
555     }
556   }
557 }
558 }
559 }
560 "encodingForNonXMLFiles": {"type": "string"},
561 "stopWords": {
562   "type": "array",
563   "items": {"type": "string"}
564 },
565 "lang": {"type": "string"},
566 "xmlMaxContentSizeLimit": {
```

Validation:

❗ #/components/schemas/IndexingOptionsDTO/type: objects is not a valid value. Expected: [number, boolean, string, array, integer, object]

Press F2 for focus

Content completion

- Properties and values presented in the content completion window
- Annotations for properties

```

8  "servers": [
9    {
10     "url": "http://localhost:8080",
11     "description": "Generated server url"
12   }
13 ],
14
15 "p
16
17
18
19
20 "operationId": "re
21 "parameters": [
22   {
23     "name": "id",
24     "in": "path",
25     "description": "The index ID",
26     "required": true,

```

- externalDocs
- **security**
- tags

A declaration of which security mechanisms can be used across the API. The list of values includes alternative security requirement objects that can be used. Only one of the security requirement objects need to be satisfied to authorize a request. Individual operations can override this definition. To make security optional, an empty security requirement ({}) can be included in the array.

Outline view

- Visualize the structure of the document
- Search for properties
- Synchronized with editor



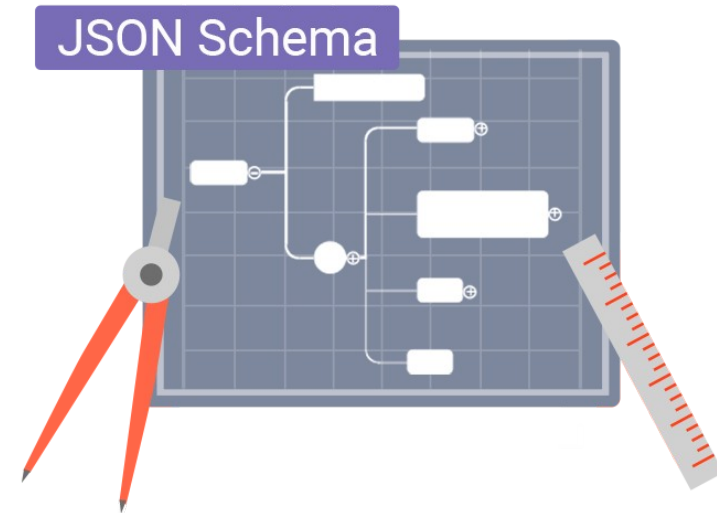
JSON Schema in OpenAPI

- You can use JSON Schema to describe data objects for both requests and responses



JSON Schema Support in Oxygen

- **JSON Schema Editor** - specialized editor with various editing features
- **Validation** against JSON Schema
- **Editing** based on JSON Schema
- **Tools**
 - Generate **JSON Schema Documentation**
 - **Generate Sample JSON** Files from a JSON Schema
 - **Generate JSON Schema** from a JSON File
 - **XSD to JSON Schema Converter**




Question: How do you create/intend to create OpenAPI?

- Edit/Design API
- Generate API from code



OpenAPI Visual Editor

- Edit documentation
- Form controls to change values
- Collapsible sections
- Customize interface with CSS



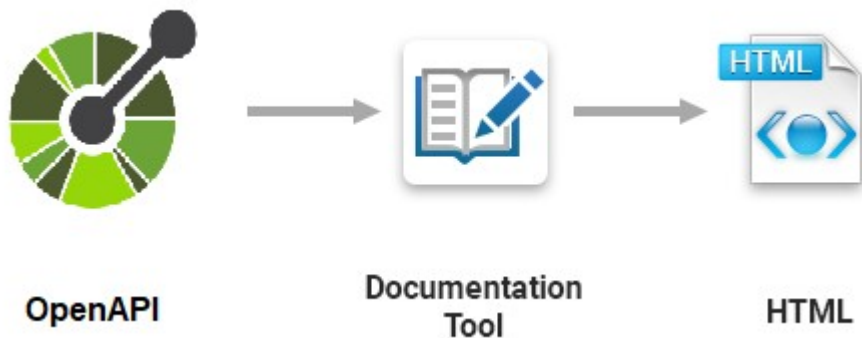
The screenshot displays the OpenAPI Visual Editor interface for a sample API. The interface is organized into several sections:

- info description**: A light blue header section containing the text: "A sample API that uses a petstore as an example to demonstrate features in the OpenAPI 3.0 specification".
- Terms of service**: A section with three links: "Terms of service", "Swagger API Team", and "Apache 2.0".
- SERVERS**: A section containing a single server configuration:

```
{ url : http://petstore.openapi.io/api }
```
- PATHS**: A section containing two path definitions:
 - /pets :** Contains two methods:
 - get**: Returns all pets from the system that the user has access to (blue background).
 - post**: Creates a new pet in the store. Duplicates are allowed (green background).
 - /pets/{id} :** Contains two methods:
 - get**: Returns a user based on a single ID, if the user does not have access to the pet (blue background).
 - delete**: deletes a single pet based on the ID supplied (red background).

OpenAPI Documentation

- Tool for generating detailed documentation for a OpenAPI documents in HTML format



OpenAPI Documentation

- Generate documentation in one file or split into multiple files
- Option to include components details
- Display the diagram image for each component

OpenAPI Elements

- API_Version
- Info
- Servers
- Paths
- Components
- Tags

OpenAPI: 3.0.2

Info

Title	1Password Connect
Description	REST API interface for 1Password Connect.
Contact	Name 1Password Integrations Email support@1password.com URL https://support.1password.com/
Version	1.3.0

Servers

Type	array
Server	URL http://1password.local
Server	URL http://localhost:8080/v1

Showing:

OpenAPI Elements:

- Servers
- Paths
- Components
- Tags

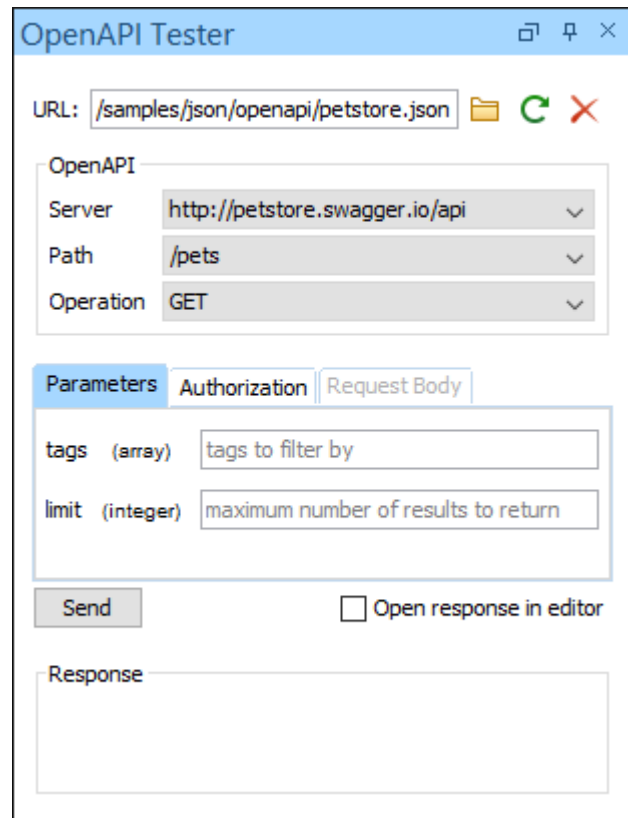
JSON Schema:

- Annotations
- Diagram
- Properties
- Constraints
- Enumerations
- Compositions
- Used By
- Source

Close

OpenAPI Tester Tool

- GUI interface testing tool for OpenAPI files
- Execute API requests and validate responses on the fly
- OpenAPI files in JSON or YAML format



The screenshot shows the OpenAPI Tester application window. At the top, the URL is set to `/samples/json/openapi/petstore.json`. Below this, the OpenAPI configuration is shown with a Server dropdown set to `http://petstore.swagger.io/api`, a Path dropdown set to `/pets`, and an Operation dropdown set to `GET`. There are three tabs: Parameters (selected), Authorization, and Request Body. Under the Parameters tab, there are two input fields: 'tags (array)' with the value 'tags to filter by' and 'limit (integer)' with the value 'maximum number of results to return'. A 'Send' button is located below the input fields, and a checkbox labeled 'Open response in editor' is to its right. At the bottom, there is a large text area labeled 'Response'.

Other APIs

- AsyncAPI - defines the interfaces of asynchronous APIs
- JSON-LD - is a lightweight Linked Data format



Conclusion

- Edit/Design OpenAPI documents
- Edit/Design JSON Schema documents
- Edit documentation
- Generate Documentation for OpenAPI
- Test your OpenAPI



Future Plans

- Improve Editing and Validation for OpenAPI 3.1, 3.0, 2.0
- Better Authoring support for OpenAPI
- Integrate OpenAPI documentation with DITA
- Test Scenario for OpenAPI
- JSON Schema 2020-12



Question: What features are the most important for you?

- ❑ Improve Editing and Validation for OpenAPI 3.1, 3.0, 2.0
- ❑ OpenAPI Documentation
- ❑ Test Scenario for OpenAPI
- ❑ JSON Schema 2020-12



Resources

- oxygenxml.com/xml_editor/openapi.html
- oxygenxml.com/doc/ug-editor/topics/openapi-tester.html
- oxygenxml.com/doc/ug-editor/topics/openapi-documentation-generator.html
- <https://www.openapis.org>
- <https://json-schema.org/>
- <https://www.asyncapi.com>
- [w3.org/TR/json-ld11/](https://www.w3.org/TR/json-ld11/)



Video Demos

- oxygenxml.com/demo/json_schema_palette.html
- oxygenxml.com/demo/introducing_the_json_schema_design.html
- oxygenxml.com/demo/json_author.html
- oxygenxml.com/demo/json_tools.html
- oxygenxml.com/demo/json_validation.html
- oxygenxml.com/demo/json_editing.html
- oxygenxml.com/demo/json_query.html



Questions?

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