

# OpenAPI/AsyncAPI Support in Oxygen

Octavian Nadolu, Syncro Soft

octavian.nadolu@oxygenxml.com

@OctavianNadolu

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## Agenda

- OpenAPI/AsyncAPI Specification
- Create OpenAPI/AsyncAPI Documents
- Edit and Validate OpenAPI/AsyncAPI
- Edit OpenAPI/AsyncAPI in Author Mode
- Generate Documentation for OpenAPI
- Test OpenAPI Service



## 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](http://www.openapis.org)





## AsyncAPI Specification

- AsyncAPI started as an adaptation of the OpenAPI specification
- Used for describing asynchronous messaging APIs



AsyncAPI

[www.asyncapi.com](http://www.asyncapi.com)



## OpenAPI/AsyncAPI 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

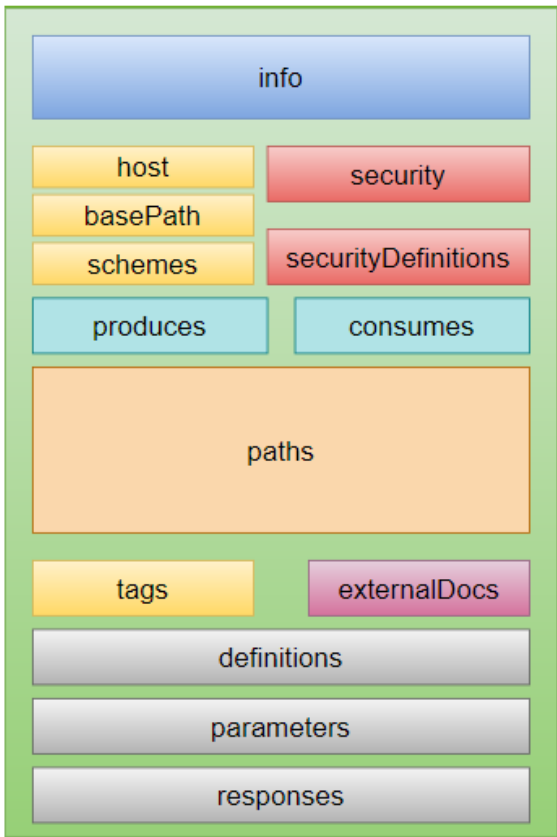


Swagger

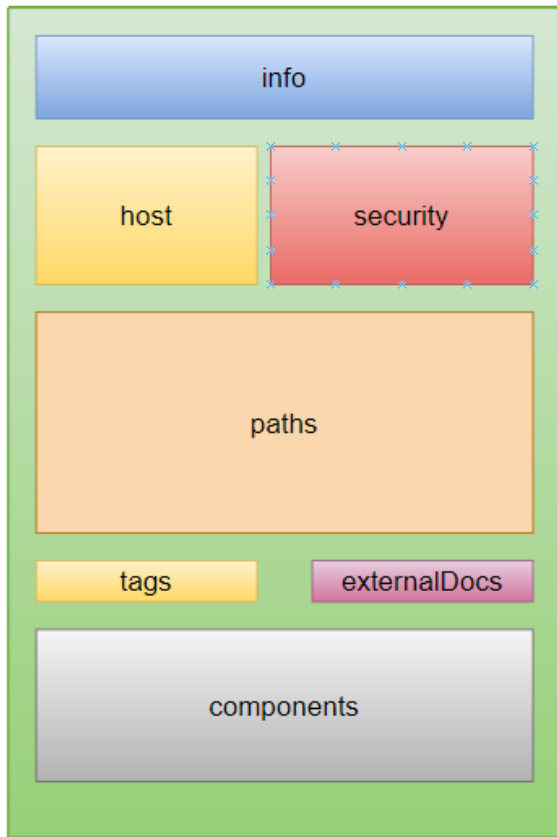


# OpenAPI 2.0 vs OpenAPI 3.0

### OpenAPI / Swagger 2.0

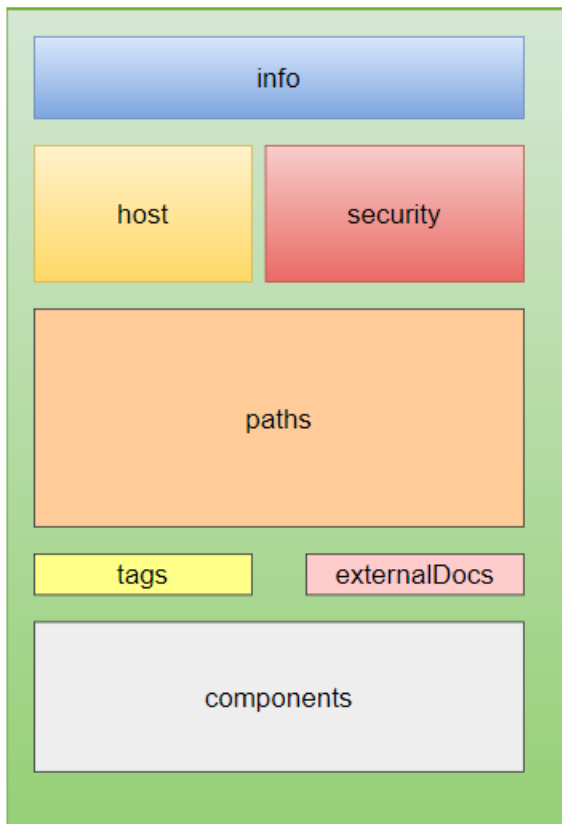


### OpenAPI 3.0

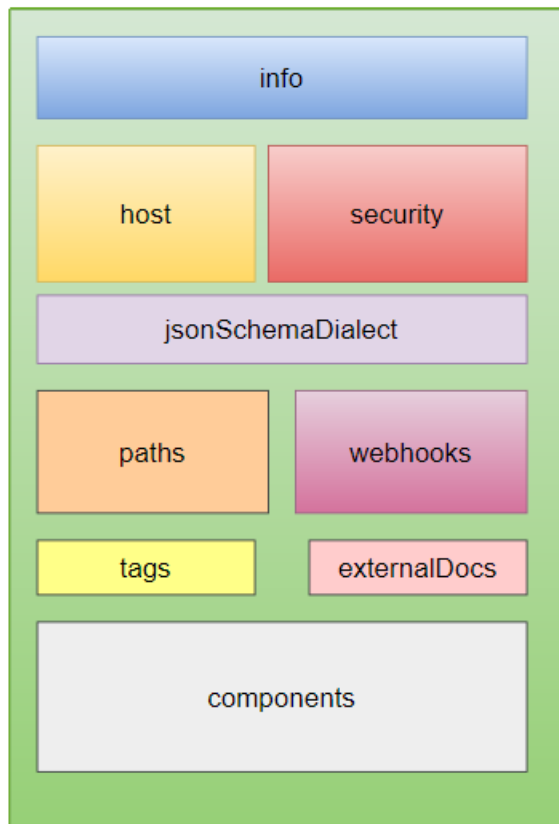


## OpenAPI 3.0 vs OpenAPI 3.1

OpenAPI 3.0



OpenAPI 3.1



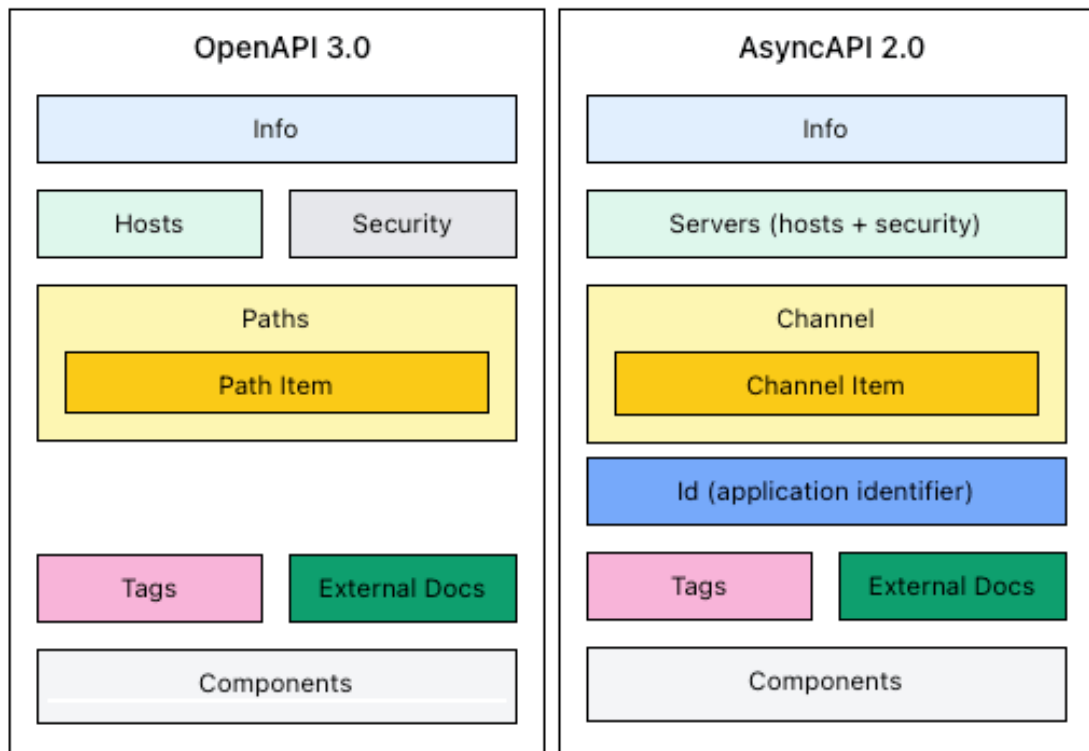
## AsyncAPI Versions

- AsyncAPI 1.x
- AsyncAPI 2.x
- AsyncAPI 3.x (pre-release)



[www.asyncapi.com/docs](http://www.asyncapi.com/docs)

## OpenAPI vs AsyncAPI



## Question: Do you use/intend to use OpenAPI or AsyncAPI?

- Yes. OpenAPI
- Yes. AsyncAPI
- No. I define APIs using other languages
- No. I do not define APIs





## Create OpenAPI/AsyncAPI

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



## OpenAPI Tools

- Generate Documentation
- Generate Server
- Generate Client

# OpenAPI/AsyncAPI Editor

- New file templates
- Syntax highlights
- Content completion based on the schema
- Validation conforms with 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    {
21      "url": "http://petstore.swagger.io/api"
22    }
23  ],
24  "paths": {
25    "/pets": {
26      "description": "Returns all pets from the system that the use
27      "operationId": "findPets",
28      "parameters": [
29        {
30          "name": "tags",
31          "in": "query",
32          "description": "tags to filter by",
33          "required": false,
```

externalDocs  
security  
servers  
tags

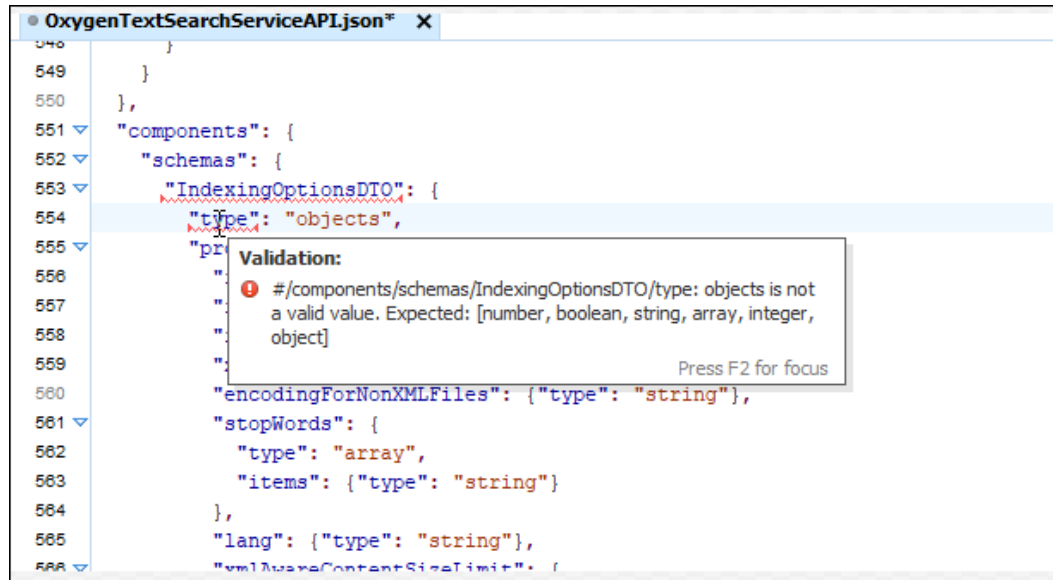
#/server: extraneous key [server] is not permitted

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



## Outline view

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



## JSON Schema in OpenAPI/AsyncAPI

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



JSON Schema

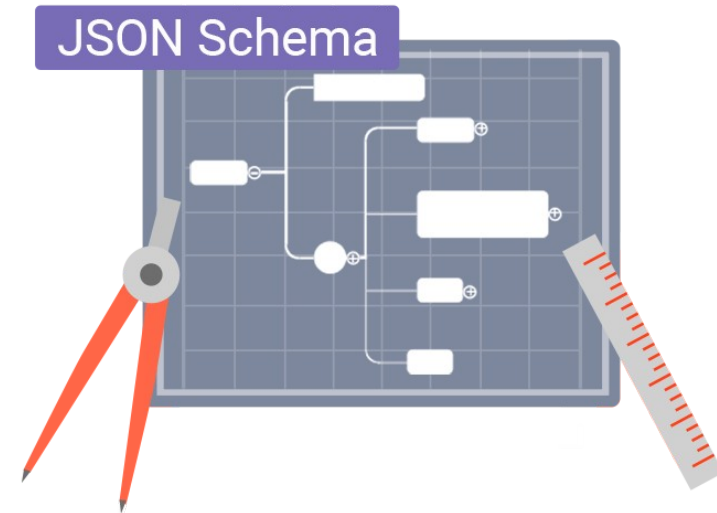
## JSON Schema in OpenAPI/AsyncAPI

- **OpenAPI** uses JSON Schema specification version 2020-12
- **AsyncAPI** uses a superset of the JSON Schema specification Draft 07



## 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 your API?

- Edit/Design API
- Generate API from code





# OpenAPI/AsyncAPI 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 petstore API. It features a table with columns for 'info' and 'description'. The 'description' column contains a sample API description and several sections: 'Terms of service' (with links for 'Swagger API Team' and 'Apache 2.0'), 'SERVERS' (with a dropdown menu showing a server URL 'http://petstore.openapi.io/api'), 'PATHS' (with a dropdown menu showing '/pets :' and '/pets/{id} :'), and a list of methods for each path. The methods are color-coded: 'get' (blue), 'post' (green), and 'delete' (red).

info	description
	<p>A sample API that uses a petstore as an example to demonstrate features in the OpenAPI 3.0 specification</p> <p><b>Terms of service</b></p> <p><a href="#">Swagger API Team</a></p> <p><a href="#">Apache 2.0</a></p> <p><b>SERVERS</b></p> <p>▾ [   url : <a href="http://petstore.openapi.io/api">http://petstore.openapi.io/api</a>   ]</p> <p><b>PATHS</b></p> <p>▾ /pets :   ▶ <b>get</b> : Returns all pets from the system that the user has access to   ▶ <b>post</b> : Creates a new pet in the store. Duplicates are allowed</p> <p>▾ /pets/{id} :   ▶ <b>get</b> : Returns a user based on a single ID, if the user does not have access to the pet   ▶ <b>delete</b> : deletes a single pet based on the ID supplied</p>

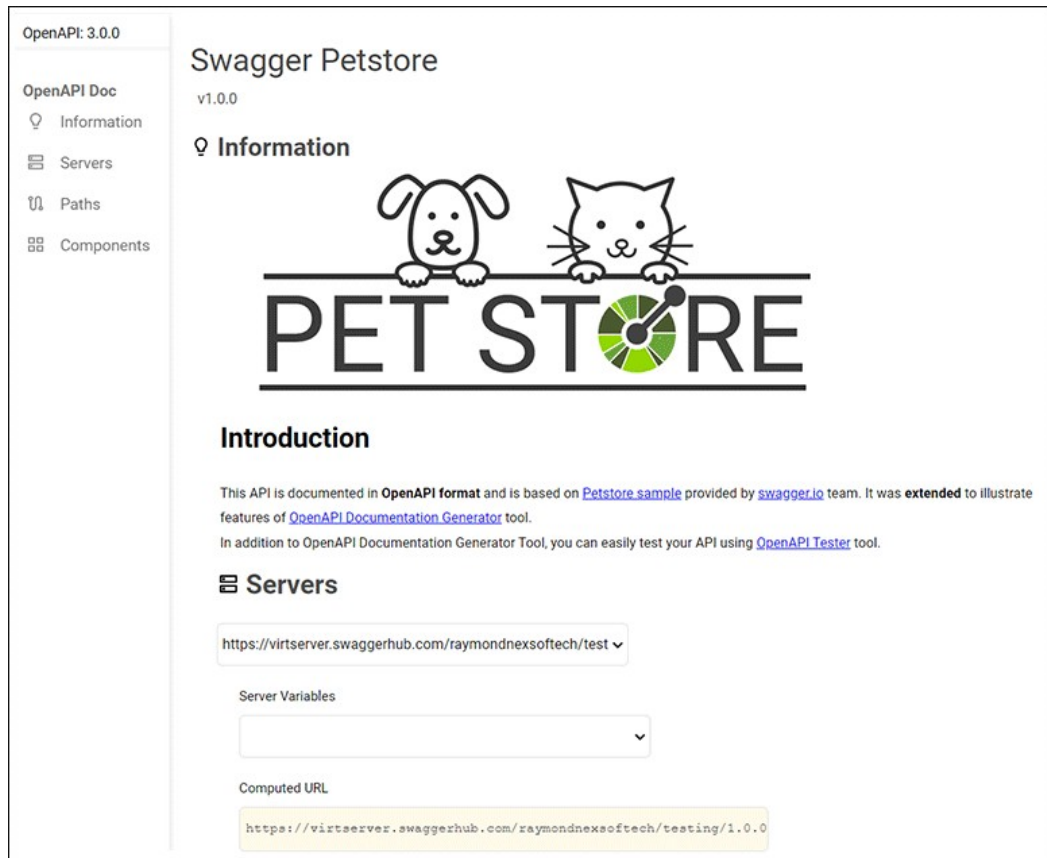
## OpenAPI Documentation

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



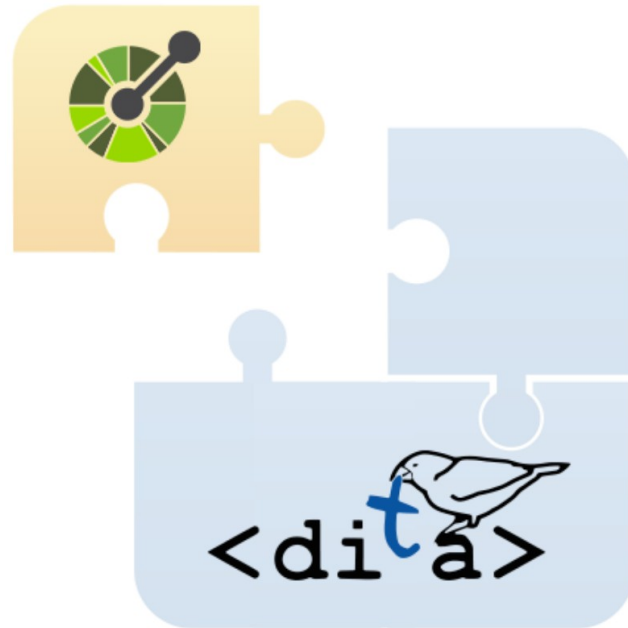
# OpenAPI Documentation

- New design for the OpenAPI documentation
- OpenAPI 3.1 Support
- Supports for YAML Files
- Generate documentation in one file or split into multiple files
- Display the diagram image for each component



The screenshot displays the Swagger Petstore OpenAPI documentation interface. On the left, a sidebar shows the navigation menu with options: OpenAPI: 3.0.0, OpenAPI Doc, Information, Servers, Paths, and Components. The main content area is titled "Swagger Petstore v1.0.0" and features a "Information" section. This section includes a logo with a dog and a cat above the text "PET STORE", where the letter 'O' is a green circular icon. Below the logo is an "Introduction" section with text explaining the API's documentation format and tools. A "Servers" section is also visible, showing a dropdown menu with the URL "https://virtserver.swaggerhub.com/raymondnexsofttech/test" and a "Server Variables" input field. At the bottom, the "Computed URL" is displayed as "https://virtserver.swaggerhub.com/raymondnexsofttech/testing/1.0.0".

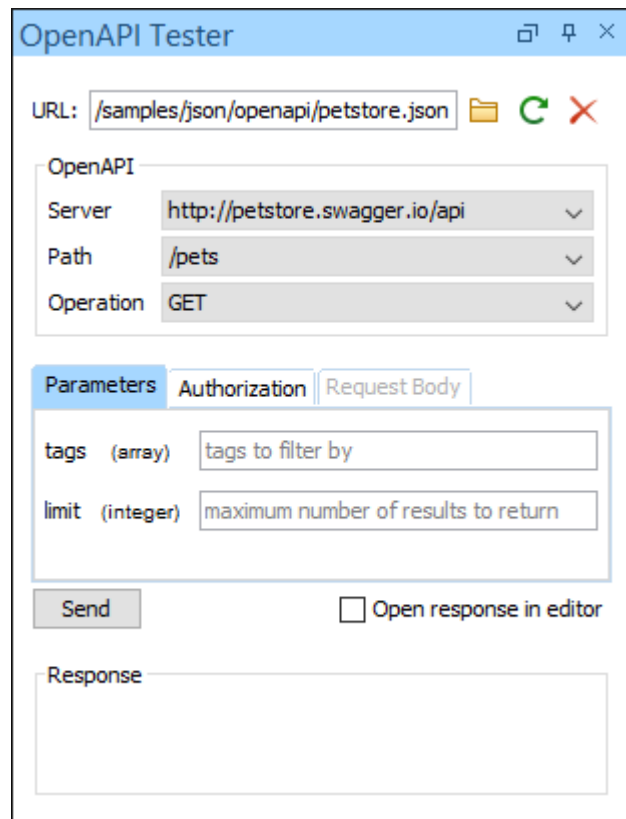
## OpenAPI Documentation in DITA



[oxygenxml.com/events/2022/webinar\\_integrating\\_various\\_document\\_formats.html](https://oxygenxml.com/events/2022/webinar_integrating_various_document_formats.html)

## 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 title bar reads "OpenAPI Tester". Below the title bar, there is a URL input field containing "/samples/json/openapi/petstore.json". To the right of the URL field are icons for a folder, a refresh button, and a close button. Below the URL field, there is a section labeled "OpenAPI" containing three dropdown menus: "Server" with the value "http://petstore.swagger.io/api", "Path" with the value "/pets", and "Operation" with the value "GET". Below this section, there are three tabs: "Parameters" (selected), "Authorization", and "Request Body". Under the "Parameters" tab, there are two input fields: "tags (array)" with the placeholder text "tags to filter by" and "limit (integer)" with the placeholder text "maximum number of results to return". Below the input fields, there is a "Send" button and a checkbox labeled "Open response in editor". At the bottom of the window, there is a large empty text area labeled "Response".

## Run OpenAPI Test Scenarios

- Tool to run test scenarios
- Specialized framework for editing and working with OpenAPI test scenario files

## Batch Validate OpenAPI/AsyncAPI

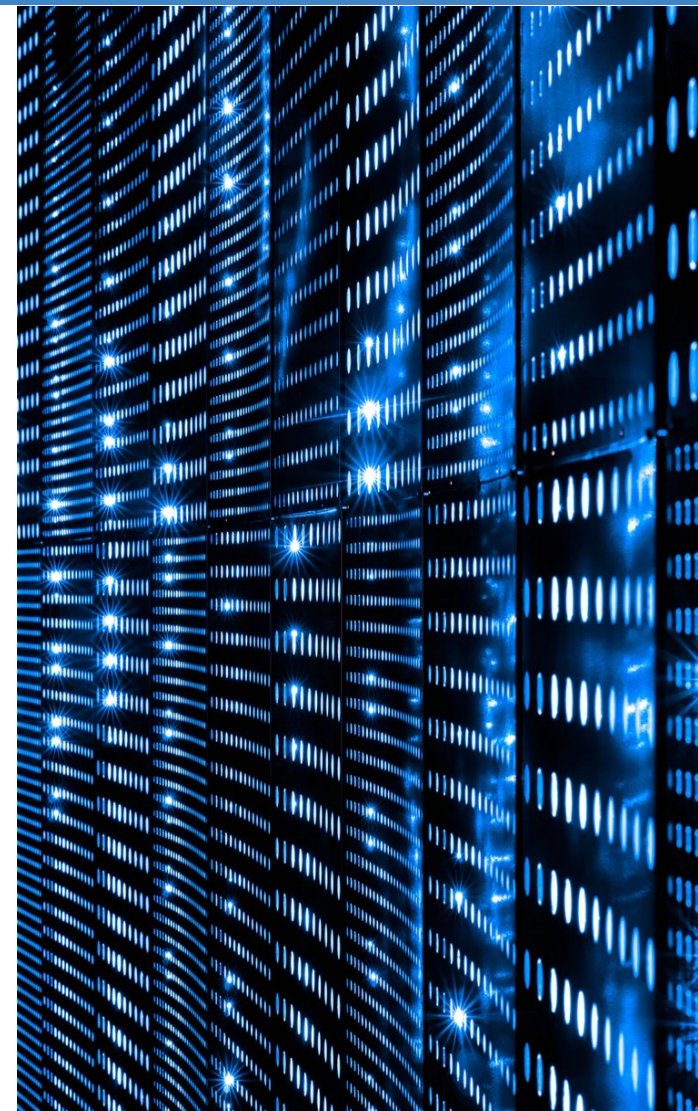
- Use the Validate action from project



- Use the **Oxygen Scripting** from CI/CD



[oxygenxml.com/doc/ug-editor/topics/scripting\\_oxygen\\_validate.html](https://oxygenxml.com/doc/ug-editor/topics/scripting_oxygen_validate.html)



## Conclusion

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





## Future Plans

- Validation for OpenAPI/AsyncAPI references
- Better Authoring support for OpenAPI/AsyncAPI
- Generate AsyncAPI documentation
- OpenAPI/AsyncAPI documentation from scripting
- Create AsyncAPI test tool
- OpenAPI/AsyncAPI test scenario from scripting



Question: What features are the most important for you?

- ❑ Validation for OpenAPI/AsyncAPI references
- ❑ Better Authoring support for OpenAPI/AsyncAPI
- ❑ Generate AsyncAPI documentation
- ❑ OpenAPI/AsyncAPI documentation from scripting



## Resources

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



## Video Demos

- [oxygenxml.com/demo/json\\_schema\\_palette.html](https://oxygenxml.com/demo/json_schema_palette.html)
- [oxygenxml.com/demo/introducing\\_the\\_json\\_schema\\_design.html](https://oxygenxml.com/demo/introducing_the_json_schema_design.html)
- [oxygenxml.com/demo/json\\_author.html](https://oxygenxml.com/demo/json_author.html)
- [oxygenxml.com/demo/json\\_tools.html](https://oxygenxml.com/demo/json_tools.html)
- [oxygenxml.com/demo/json\\_validation.html](https://oxygenxml.com/demo/json_validation.html)
- [oxygenxml.com/demo/json\\_editing.html](https://oxygenxml.com/demo/json_editing.html)
- [oxygenxml.com/demo/json\\_query.html](https://oxygenxml.com/demo/json_query.html)





Questions?

Octavian Nadolu  
Product Manager at Syncro Soft

[octavian.nadolu@oxygenxml.com](mailto:octavian.nadolu@oxygenxml.com)

Twitter: [@OctavianNadolu](https://twitter.com/OctavianNadolu)

LinkedIn: [octaviannadolu](https://www.linkedin.com/in/octaviannadolu)