# API SPECIFICATIONS & CONTRACTS

# WHO HAS EVER READ AN API DOC?

# WHO HAS EVER WRITTEN AN API DOC?

# WHO HAS EVER LOVED WRITING AN API DOC?

# Sébastien Charrier

🐦 @scharrier

https://bump.sh

IN A PERFECT WORLD
WE SHOULDN’T HAVE TO
READ API DOCS,

# WE SHOULDN’T HAVE TO WRITE CODE TO CONSUME APIS.

# BUT TODAY, APIS ARE STILL USED BY HUMANS 🙋‍♀️

# REMEMBER WHEN WE CHALLENGED THE VALUE OF WRITING TESTS?

## AND HOW MUCH TIME IT TAKES?

# THE FIRST TIME I ASKED MY CEO TO TAKE TIME FOR TESTS ✋

# TODAY, FOR MOST OF US, TESTING CODE IS JUST PART OF THE JOB.

# FOR APIS DOCS, THE STORY IS A BIT DIFFERENT

# PUBLIC APIS DOCS ARE A MARKETING TOOL

# AND MARKETING IS RICH 💰

# MARKETING PEOPLE INVEST IN IT WITH TECHNICAL WRITERS, GREATS DESIGNS AND CUSTOM TOOLS

# PRIVATE APIS DOCS AREN'T A MARKETING TOOL, BUT A DEV TOOL.

# WHO CARES?

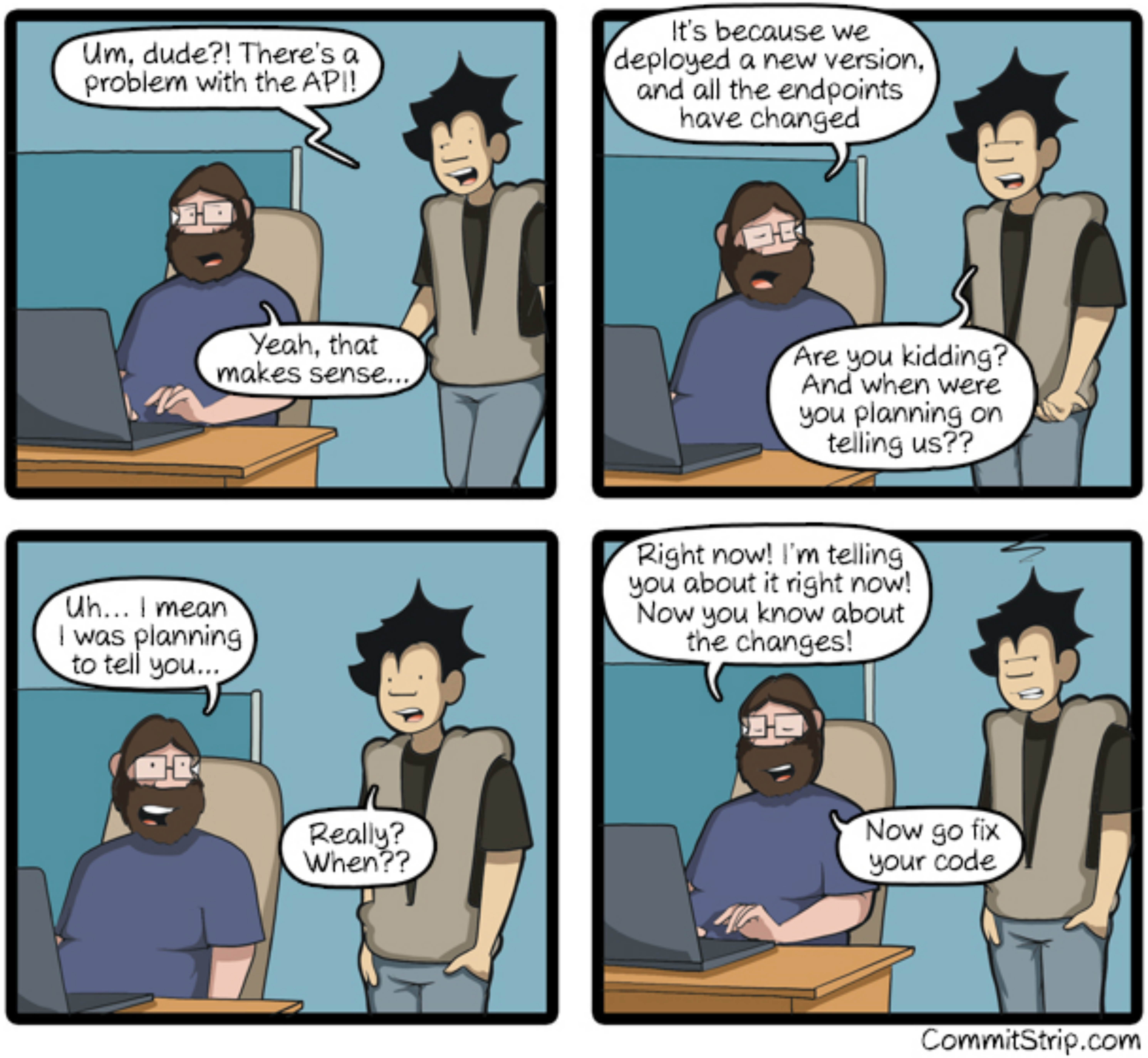
OUTDATED DOCS,
HARD TO FIND,
MISSING PARTS,
BROKEN EXAMPLES...

# AND SOMETIMES, NO DOC AT ALL.

# AND IT’S NOT THE ONLY PROBLEM 😬

# INSTEAD OF HAVING ONLY 1 API TO DEAL WITH, WE INVENTED MICRO SERVICES™ 😎

WE ARE DOOMED


Um, dude?! There's a problem with the API!
Yeah, that makes sense...
It's because we deployed a new version, and all the endpoints have changed
Are you kidding? And when were you planning on telling us??
Uh... I mean I was planning to tell you...
Really? When??
Right now! I'm telling you about it right now! Now you know about the changes!
Now go fix your code
CommitStrip.com

# PRS, WIKIS, SLACK, MEETINGS, AT THE COFFEE MACHINE...

# WHY DO WE ALWAYS FAIL?

# BECAUSE IT’S NOT ONLY ABOUT DOCS.

# IT’S ABOUT
# DESIGN

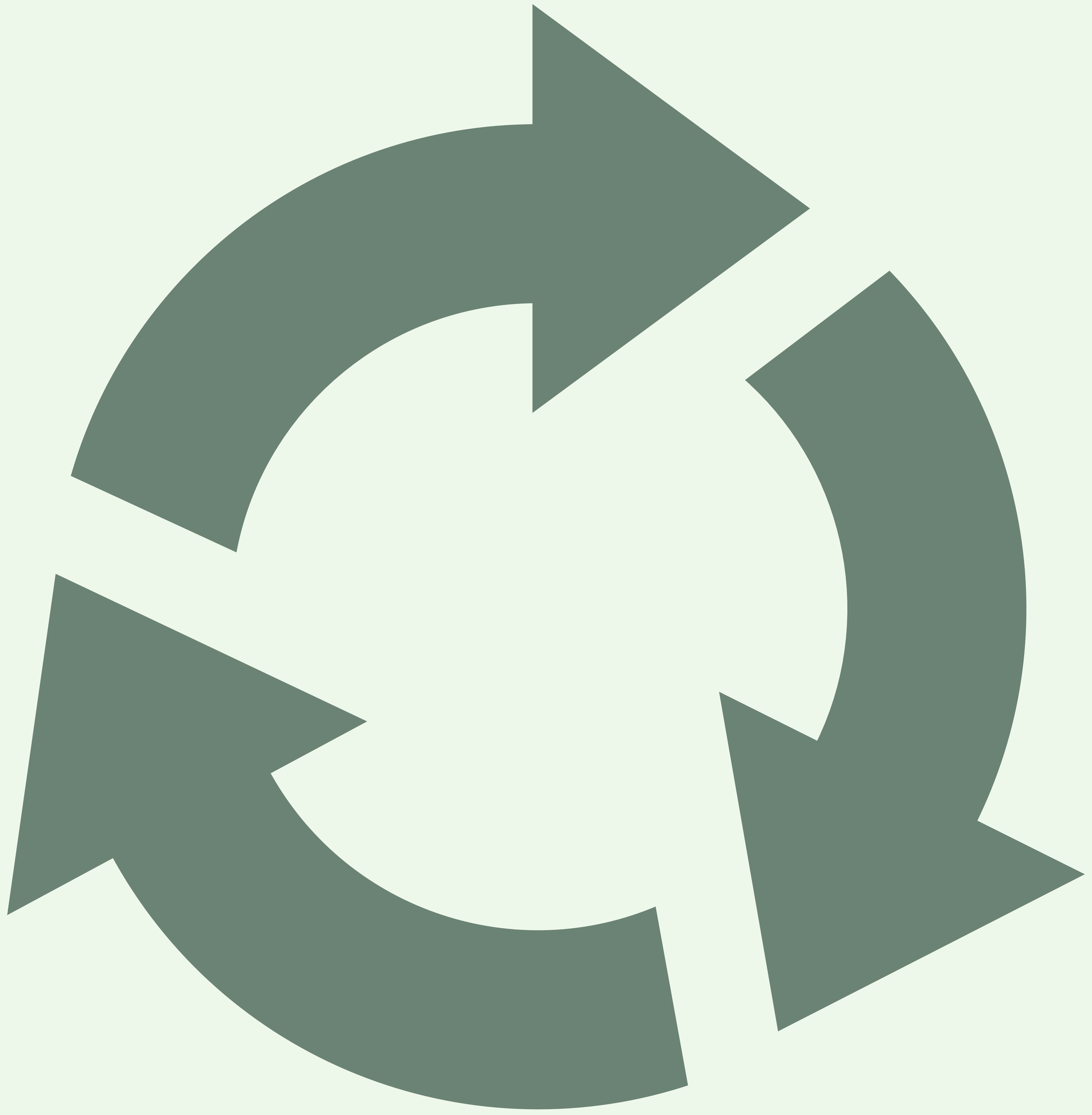
# IT'S ABOUT
# KNOWLEDGE

# IT’S ABOUT
# CHANGES COMMUNICATION AND PROPAGATION

# IT’S ABOUT CONTINUOUS TEST AND VALIDATION

IT’S ABOUT

# SYNCHRONIZING A WHOLE ECOSYSTEM AROUND THE API.



# API SPECIFICATIONS FTW ✌️

« AN API SPECIFICATION PROVIDES A BROAD UNDERSTANDING OF HOW AN API BEHAVES AND HOW THE API LINKS WITH OTHER APIS. IT EXPLAINS HOW THE API FUNCTIONS AND THE RESULTS TO EXPECT WHEN USING THE API »

https://swagger.io/resources/articles/difference-between-api-documentation-specification/

definition

« AN API ~~SPECIFICATION~~ PROVIDES A BROAD UNDERSTANDING OF HOW AN API BEHAVES AND HOW THE API LINKS WITH OTHER APIS. IT EXPLAINS HOW THE API FUNCTIONS AND THE RESULTS TO EXPECT WHEN USING THE API »

https://swagger.io/resources/articles/difference-between-api-documentation-specification/

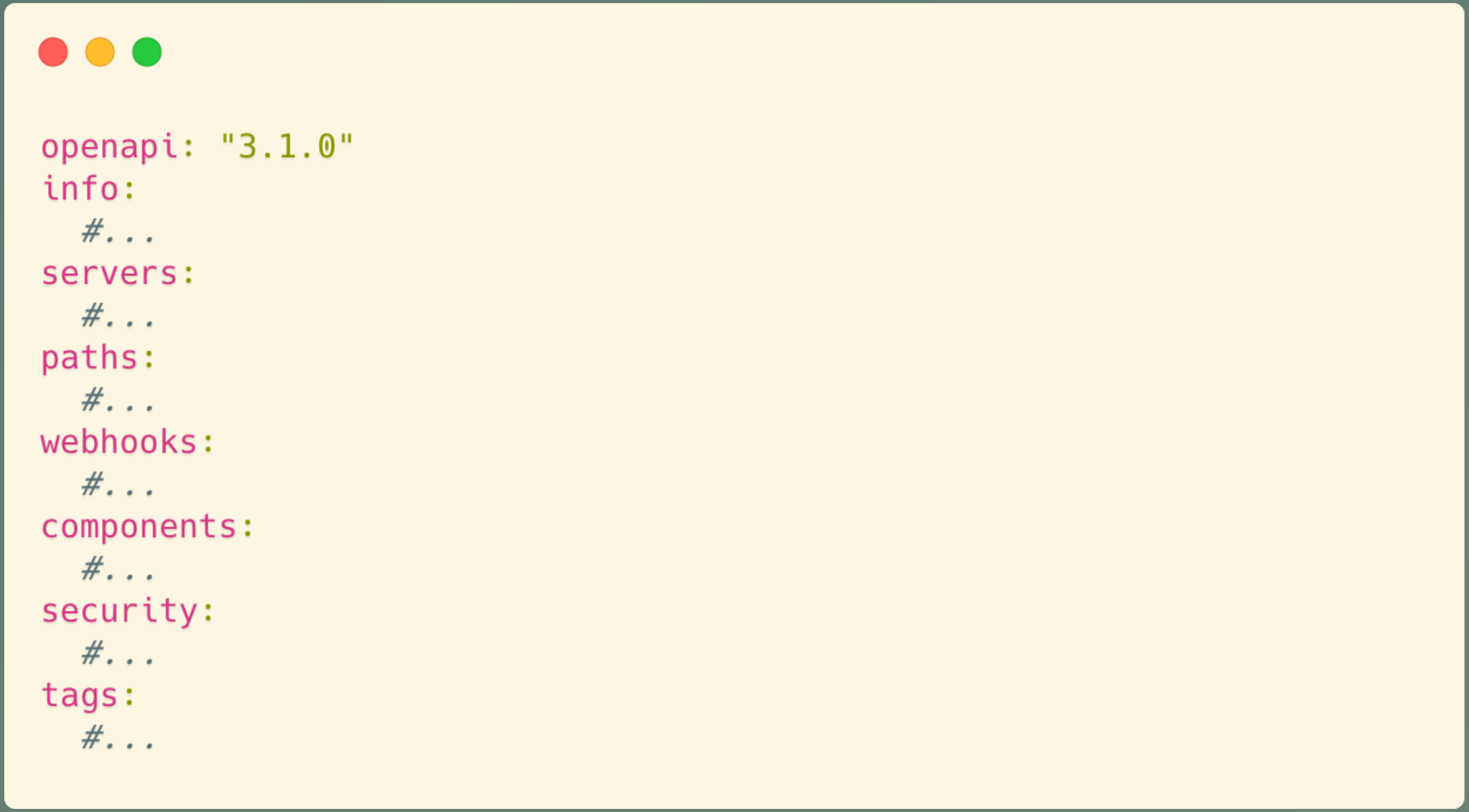
# THE REST API SPECIFICATIONS BATTLE

BLUEPRINT ⚡ RAML⚡ OPENAPI

# OPENAPI 💪

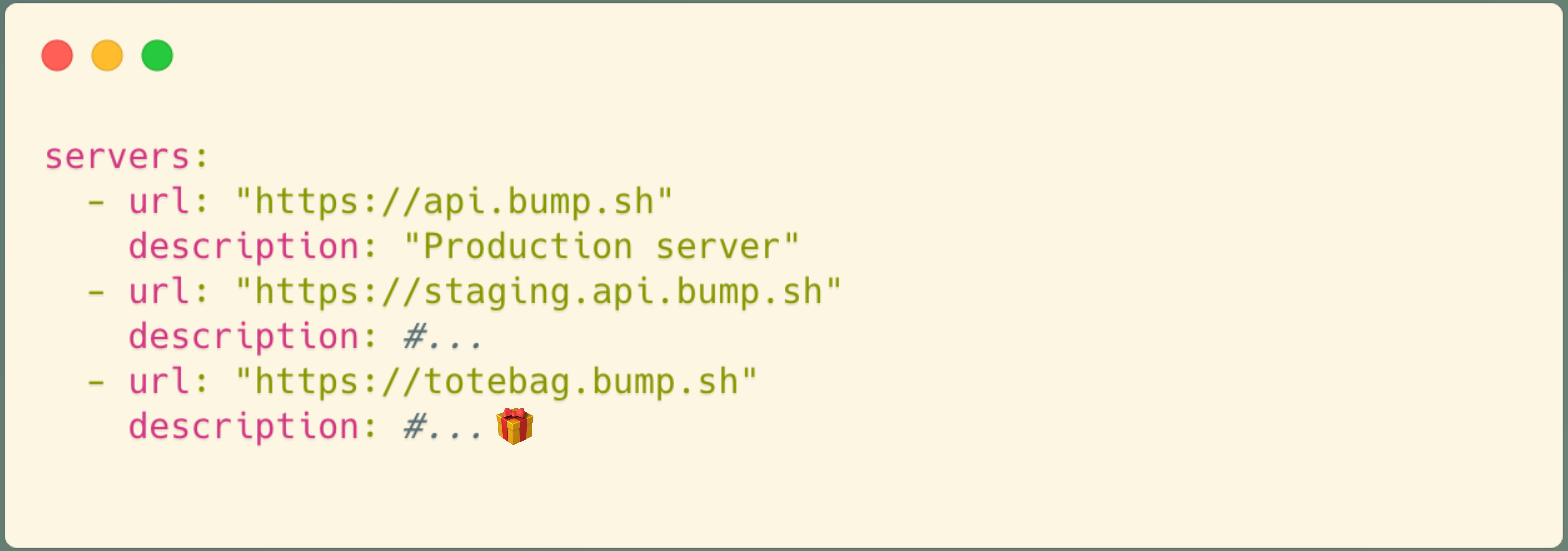
## PREVIOUSLY KNOWN AS SWAGGER

https://spec.openapis.org/oas/v3.1.0.html

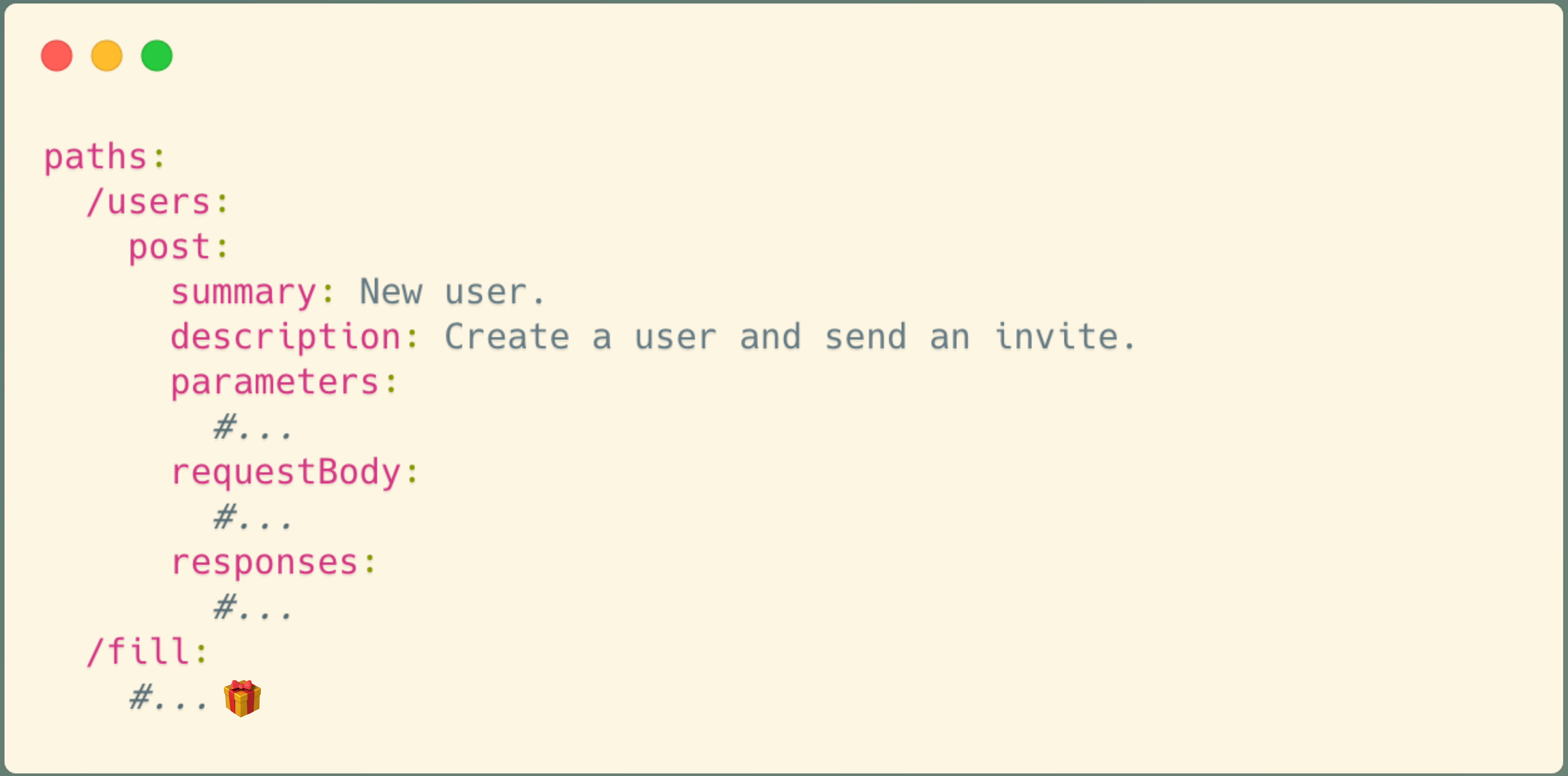


```yaml
openapi: "3.1.0"
info:
  #...
servers:
  #...
paths:
  #...
webhooks:
  #...
components:
  #...
security:
  #...
tags:
  #...
```

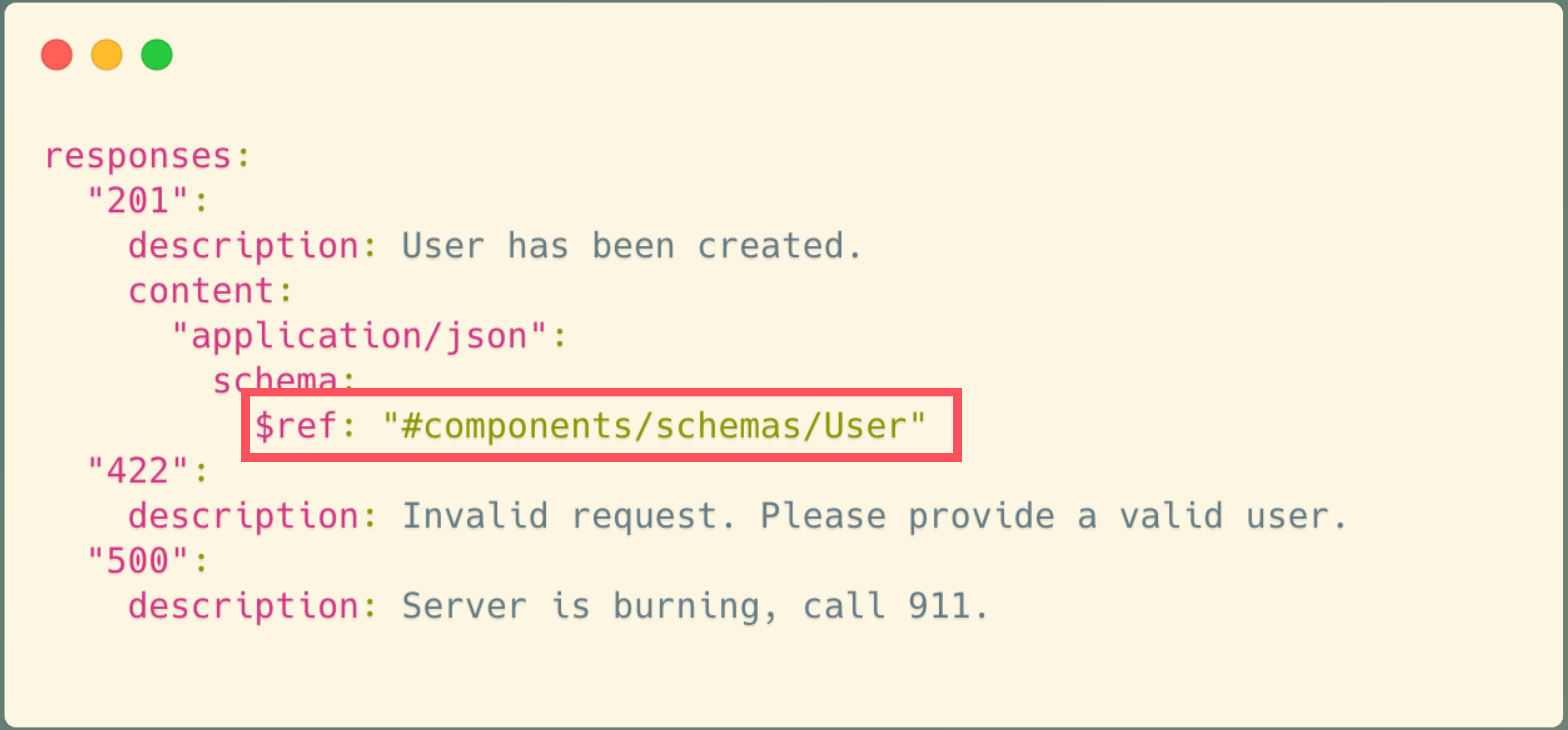
JSON / YAML



```yaml
servers:
  - url: "https://api.bump.sh"
    description: "Production server"
  - url: "https://staging.api.bump.sh"
    description: #...
  - url: "https://totebag.bump.sh"
    description: #... 🎁
```



```yaml
paths:
  /users:
    post:
      summary: New user.
      description: Create a user and send an invite.
      parameters:
        #...
      requestBody:
        #...
      responses:
        #...
  /fill:
    #... 🎁
```



```yaml
responses:
  "201":
    description: User has been created.
    content:
      "application/json":
        schema:
          $ref: "#components/schemas/User"
  "422":
    description: Invalid request. Please provide a valid user.
  "500":
    description: Server is burning, call 911.
```

# HOW DO WE WRITE IT?

# CODE FIRST
# VS
# DESIGN FIRST

# GENERATORS FROM CODE

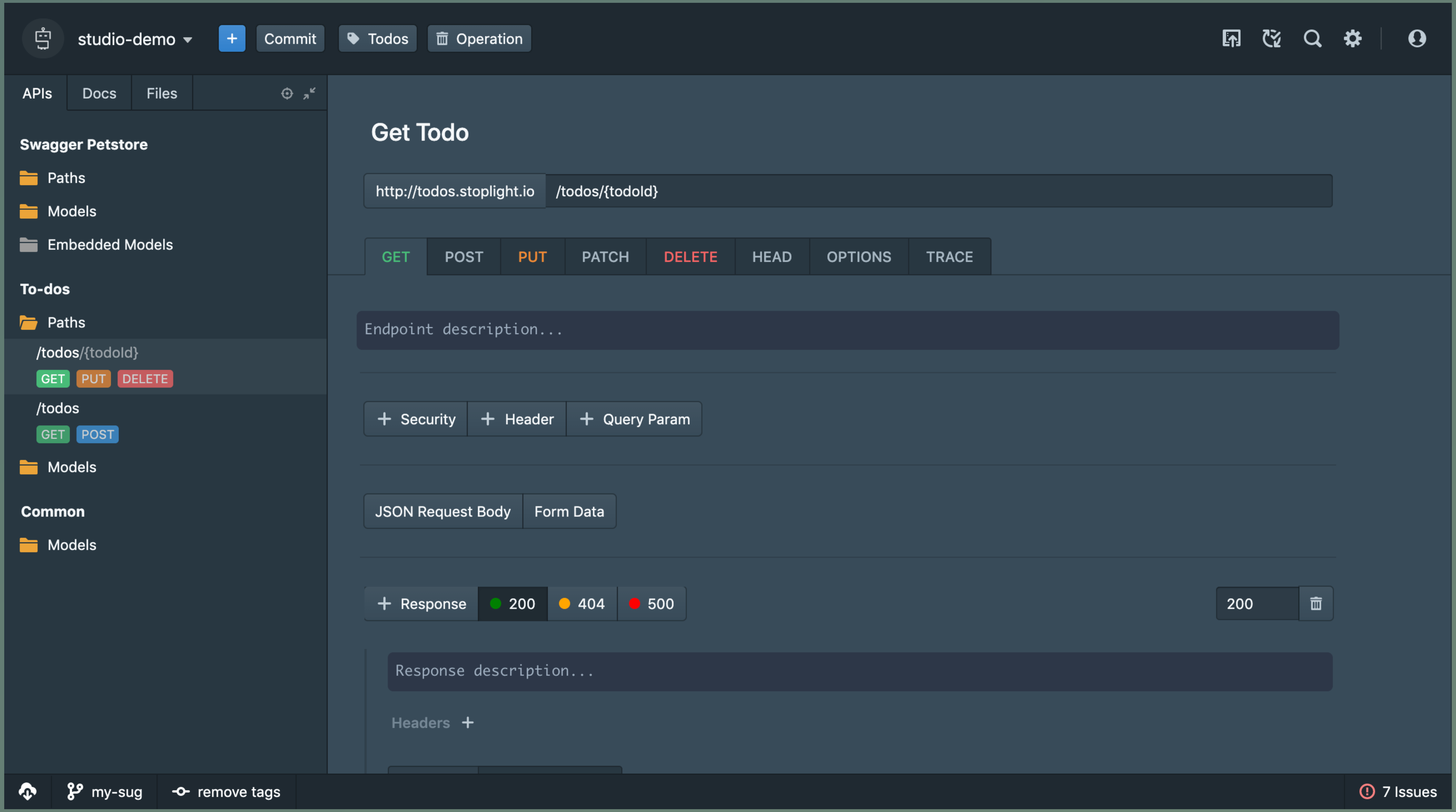
Exist for all languages,  all frameworks.

# EDITORS

Vim, VSCode, Atom, <your favorite one> extensions for validation, linting, intellisense, ...

Specific editors, like Stoplight Studio or Insomnia.

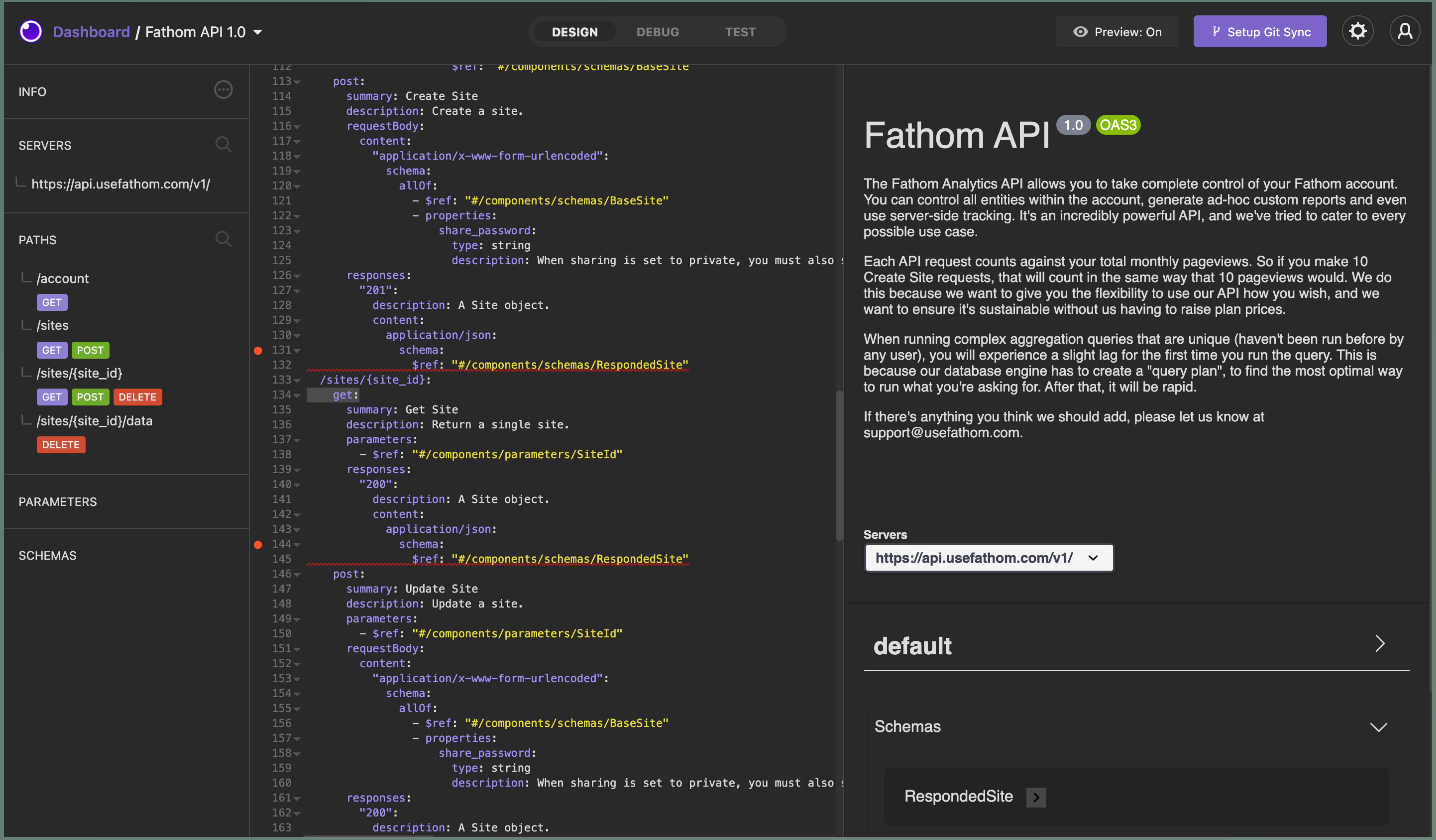
# STOPLIGHT STUDIO ❤️



Get Todo

http://todos.stoplight.io /todos/{todoId}

# INSOMNIA



```yaml
                      $ref: "#/components/schemas/BaseSite"
    post:
      summary: Create Site
      description: Create a site.
      requestBody:
        content:
          "application/x-www-form-urlencoded":
            schema:
              allOf:
                - $ref: "#/components/schemas/BaseSite"
                - properties:
                    share_password:
                      type: string
                      description: When sharing is set to private, you must also s
      responses:
        "201":
          description: A Site object.
          content:
            application/json:
              schema:
                $ref: "#/components/schemas/RespondedSite"
  /sites/{site_id}:
    get:
      summary: Get Site
      description: Return a single site.
      parameters:
        - $ref: "#/components/parameters/SiteId"
      responses:
        "200":
          description: A Site object.
          content:
            application/json:
              schema:
                $ref: "#/components/schemas/RespondedSite"
    post:
      summary: Update Site
      description: Update a site.
      parameters:
        - $ref: "#/components/parameters/SiteId"
      requestBody:
        content:
          "application/x-www-form-urlencoded":
            schema:
              allOf:
                - $ref: "#/components/schemas/BaseSite"
                - properties:
                    share_password:
                      type: string
                      description: When sharing is set to private, you must also s
      responses:
        "200":
          description: A Site object.
```

## Fathom API 1.0 OAS3

The Fathom Analytics API allows you to take complete control of your Fathom account. You can control all entities within the account, generate ad-hoc custom reports and even use server-side tracking. It's an incredibly powerful API, and we've tried to cater to every possible use case.

Each API request counts against your total monthly pageviews. So if you make 10 Create Site requests, that will count in the same way that 10 pageviews would. We do this because we want to give you the flexibility to use our API how you wish, and we want to ensure it's sustainable without us having to raise plan prices.

When running complex aggregation queries that are unique (haven't been run before by any user), you will experience a slight lag for the first time you run the query. This is because our database engine has to create a "query plan", to find the most optimal way to run what you're asking for. After that, it will be rapid.

If there's anything you think we should add, please let us know at support@usefathom.com.

Servers

https://api.usefathom.com/v1/

# A LOT OF TOOLS

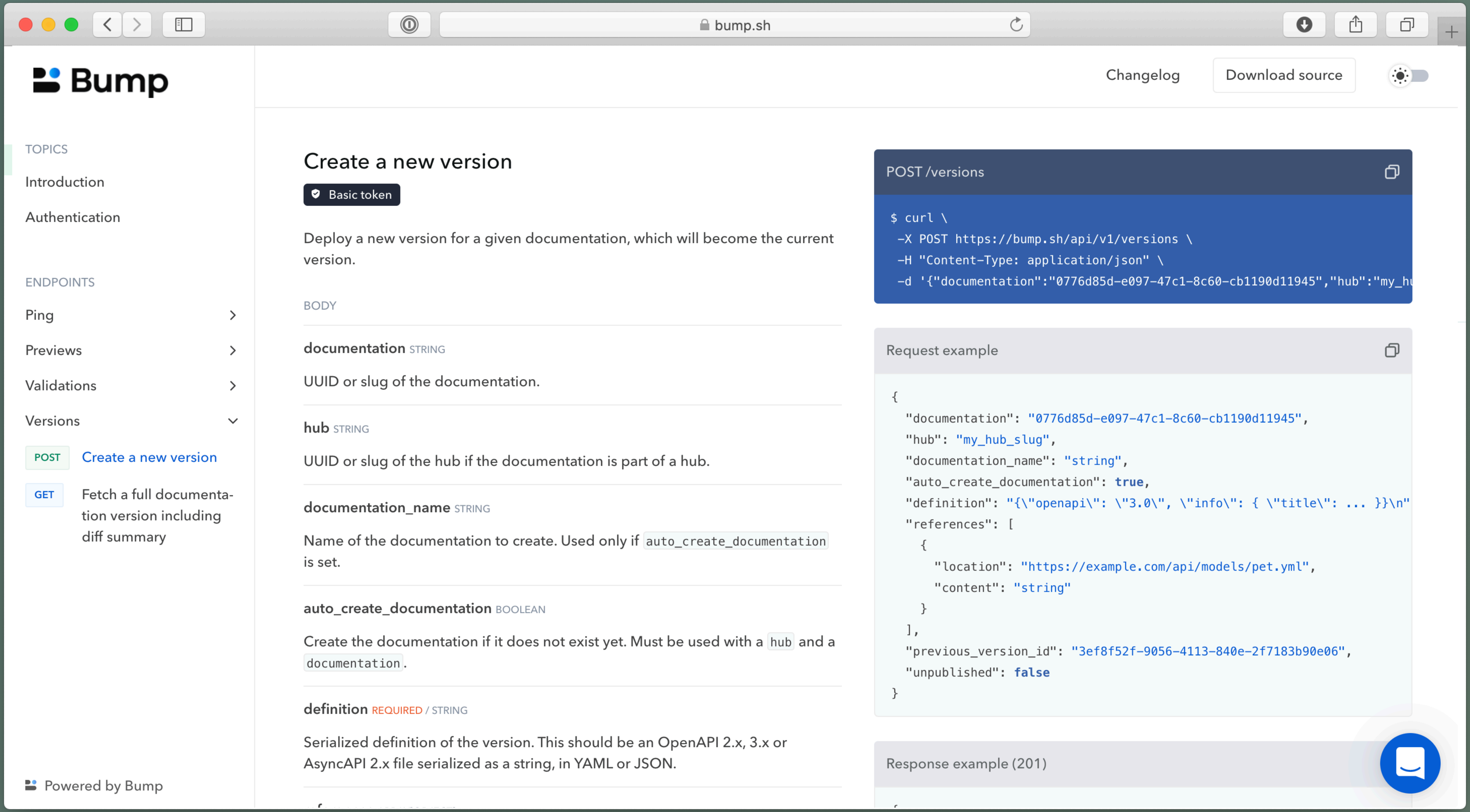
# DOCS

ReDoc

Swagger UI

Widdershins + Slate or Shins.js

SaaS tools like Stoplight, Readme or Bump.sh



TOPICS

Introduction

Authentication

ENDPOINTS

Ping

Previews

Validations

Versions

POST Create a new version

GET Fetch a full documentation version including diff summary

Powered by Bump

## Create a new version

Basic token

Deploy a new version for a given documentation, which will become the current version.

BODY

**documentation** STRING

UUID or slug of the documentation.

**hub** STRING

UUID or slug of the hub if the documentation is part of a hub.

**documentation_name** STRING

Name of the documentation to create. Used only if `auto_create_documentation` is set.

**auto_create_documentation** BOOLEAN

Create the documentation if it does not exist yet. Must be used with a `hub` and a `documentation`.

**definition** REQUIRED / STRING

Serialized definition of the version. This should be an OpenAPI 2.x, 3.x or AsyncAPI 2.x file serialized as a string, in YAML or JSON.

POST /versions

```
$ curl \
 -X POST https://bump.sh/api/v1/versions \
 -H "Content-Type: application/json" \
 -d '{"documentation":"0776d85d-e097-47c1-8c60-cb1190d11945","hub":"my_hu
```

Request example

```
{
  "documentation": "0776d85d-e097-47c1-8c60-cb1190d11945",
  "hub": "my_hub_slug",
  "documentation_name": "string",
  "auto_create_documentation": true,
  "definition": "{\"openapi\": \"3.0\", \"info\": { \"title\": ... }}\n"
  "references": [
    {
      "location": "https://example.com/api/models/pet.yml",
      "content": "string"
    }
  ],
  "previous_version_id": "3ef8f52f-9056-4113-840e-2f7183b90e06",
  "unpublished": false
}
```

Response example (201)

# LINTERS

more than just
a linter

Spectral, github.com/stoplightio/spectral

OpenAPI validator, https://github.com/IBM/openapi-validator

# MOCKING

Microcks, https://microcks.io/

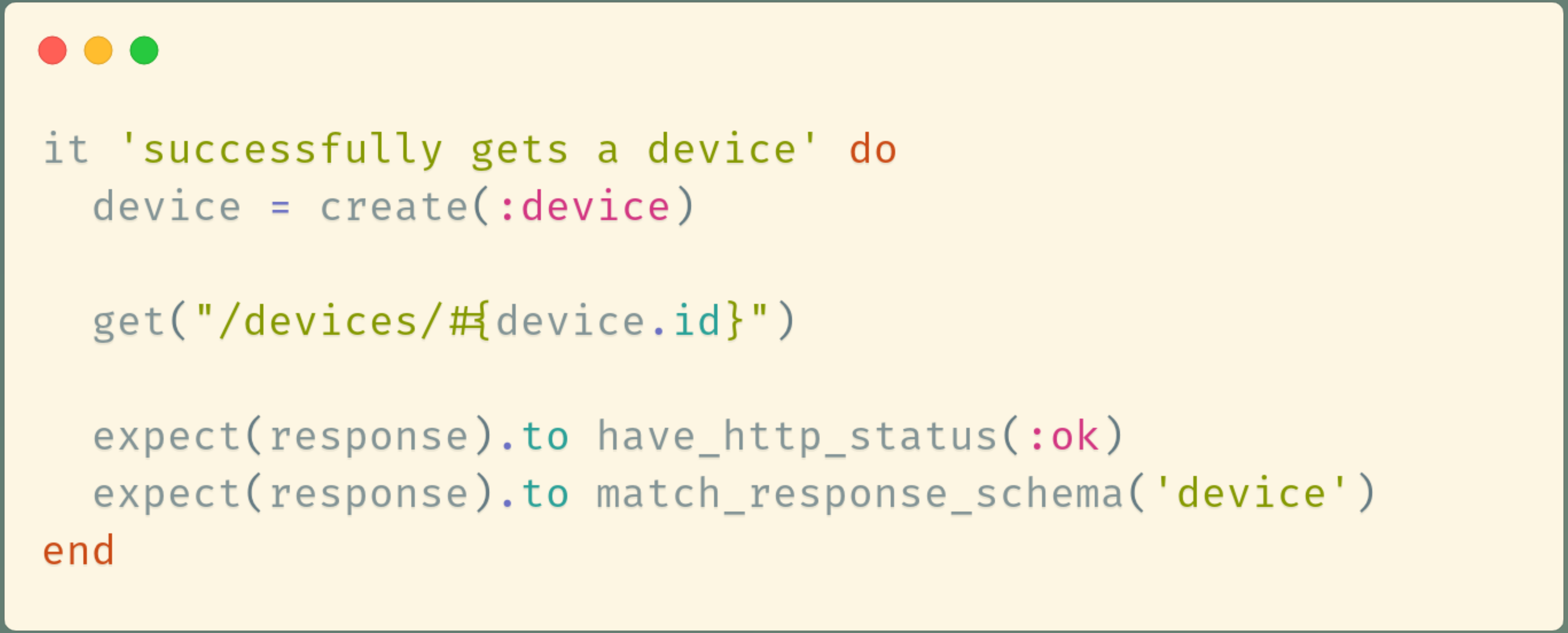
Prism, github.com/stoplightio/prism

# TESTING

Microcks (again) ❤️

Postman

Your unit/integration tests



```ruby
it 'successfully gets a device' do
  device = create(:device)

  get("/devices/#{device.id}")

  expect(response).to have_http_status(:ok)
  expect(response).to match_response_schema('device')
end
```

# CLIENTS GENERATION

OpenAPI Generator

# CHANGE MANAGEMENT

OpenAPI-diff

Akita

Optic

Bump.sh

# 🎁 OPENAPI.TOOLS

200+ curated tools thanks to
Phil Sturgeon and Matthew Trask

# WHAT ABOUT NON RESTFUL APIS?

# GRAPHQL
# GRPC
# SOAP ?

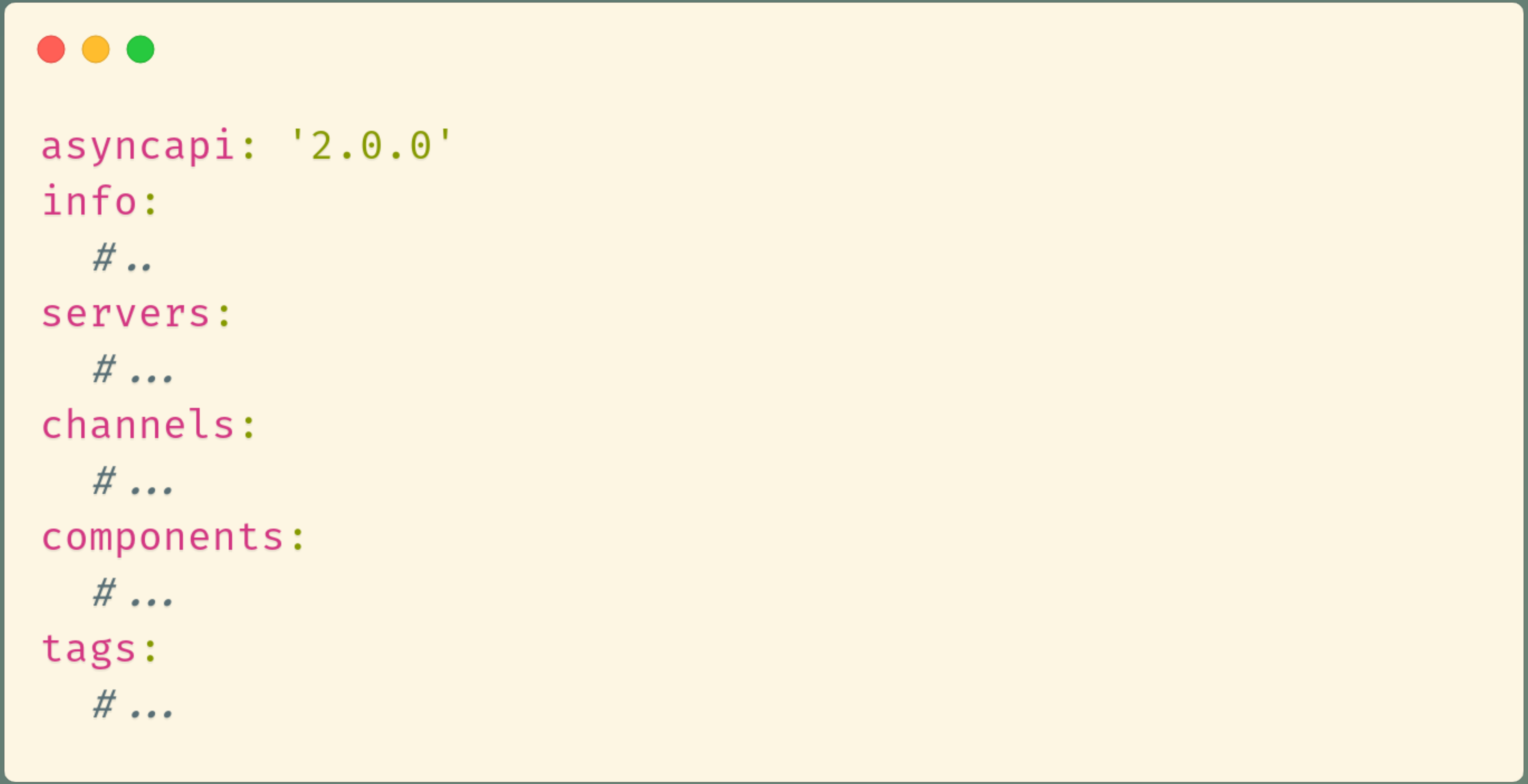
# EVENT DRIVEN APIS

## Websockets, AMQP, Kafka, MQTT, etc...

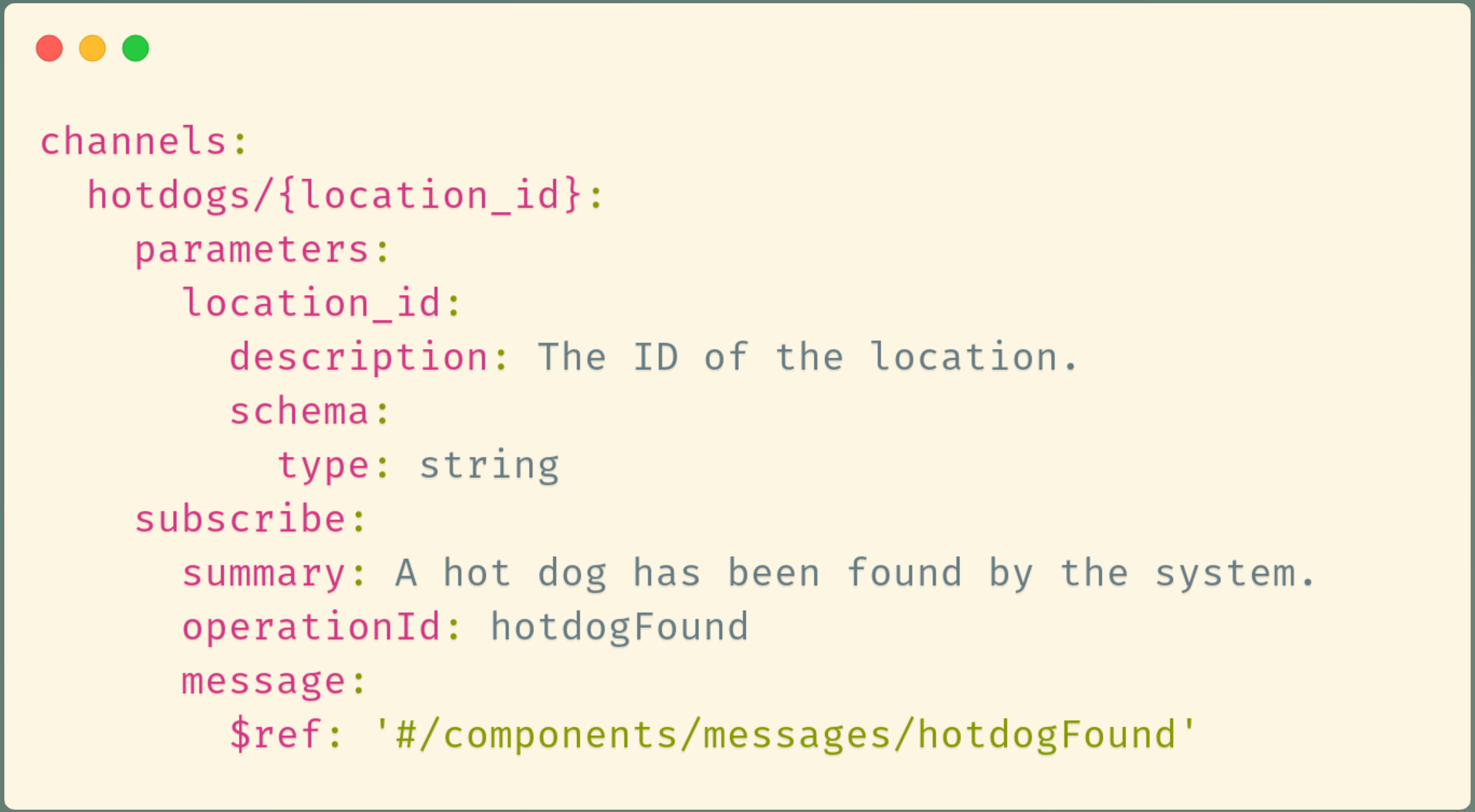
# ASYNCAPI TO THE RESCUE*

*2016

# BASED ON OPENAPI IDEAS, BUT FOR EVENT-BASED APIS



```yaml
asyncapi: '2.0.0'
info:
  #..
servers:
  #...
channels:
  #...
components:
  #...
tags:
  #...
```



```yaml
channels:
  hotdogs/{location_id}:
    parameters:
      location_id:
        description: The ID of the location.
        schema:
          type: string
    subscribe:
      summary: A hot dog has been found by the system.
      operationId: hotdogFound
      message:
        $ref: '#/components/messages/hotdogFound'
```

# YOU WILL GLOBALLY FIND THE SAME KIND OF TOOLS AS FOR OPENAPI

ASYNCAPI.COM/DOCS/COMMUNITY/TOOLING

# THAT’S NICE, NOW HOW TO MAKE IT EVEN NICER?

definitions

# ~~SPECIFICATIONS~~ AS CONTRACTS

🤝

# A DESIGN FIRST WORKFLOW

# 1. DISCUSS THE DESIGN

# (PLEASE USE DESIGN GUIDELINES)

# 2. EDIT THE CONTRACT

## COMMIT AND PUSH

CI
ALL THE THINGS

# 3. CI RUNS

VALIDATE THE CONTRACT (NO BREAKING CHANGES?), GENERATE A DIFF SUMMARY, CREATE A TEMPORARY MOCK SERVER

4. REFINE THE SPEC UNTIL THE CHANGE IS APPROVED ✅

# 5. WRITE THE ACTUAL CODE AND TESTS

## PUSH, REVIEW, AND MERGE EVERYTHING

# 6. CI RUNS AND DEPLOYS

DEPLOYS THE CODE, UPDATE DOCS, UPDATE CLIENTS AND NOTIFY ABOUT THE CHANGES

GOTO 1.

NOW, YOU HAVE A SINGLE SOURCE OF TRUTH,

DOCUMENTATION, TESTS AND CLIENTS ARE ALWAYS UP TO DATE, AND YOU GET BETTER WORKFLOWS BETWEEN ALL THE HUMANS INVOLVED 🤗

# THANKS 😗

# Get some swag by contributing to our user research / sebastien@bump.sh

Totebag API

This bag has been gifted to you by Bump with love. ♥

Fill with stuff

Body

stickers REQUIRED / GOODIES
beer DRINK
lunch FOOD
cheese FOOD / DEPRECATED
rubber_duck GOODIES

Response

● 202
Stuff has been accepted.

● 418
I'm not a totebag.
I'm a teapot.

● 507
Insufficient storage.

Post totebag.bump.sh/fill

```
$ curl \
  -X POST
  https://totebag.bump.sh/fill
```

Request payload example

```
{
  "beer": "",
  "lunch" ""
}
```

{REST:I
TROPICAL WHE
Brasserie du SLALOM
5,4% vol
33cl
Ingrédients : eau, malts bio, houblons bio, levure
Brassée et embouteillée à la Brasserie du Slalom Avenue des Sources 26420 La Chapelle-en-Vercors