QUALYS SECURITY CONFERENCE 2020

API Security

The New Frontier

Dave Ferguson
Director of Product Management, Qualys, Inc.

Agenda

The Rise of APIs

A Different Top 10 List from OWASP

Swagger / OpenAPI

Qualys API Security

The Rise of APIs

REST APIs are everywhere

- 83% of all web traffic is API traffic

Web & mobile apps, IoT devices

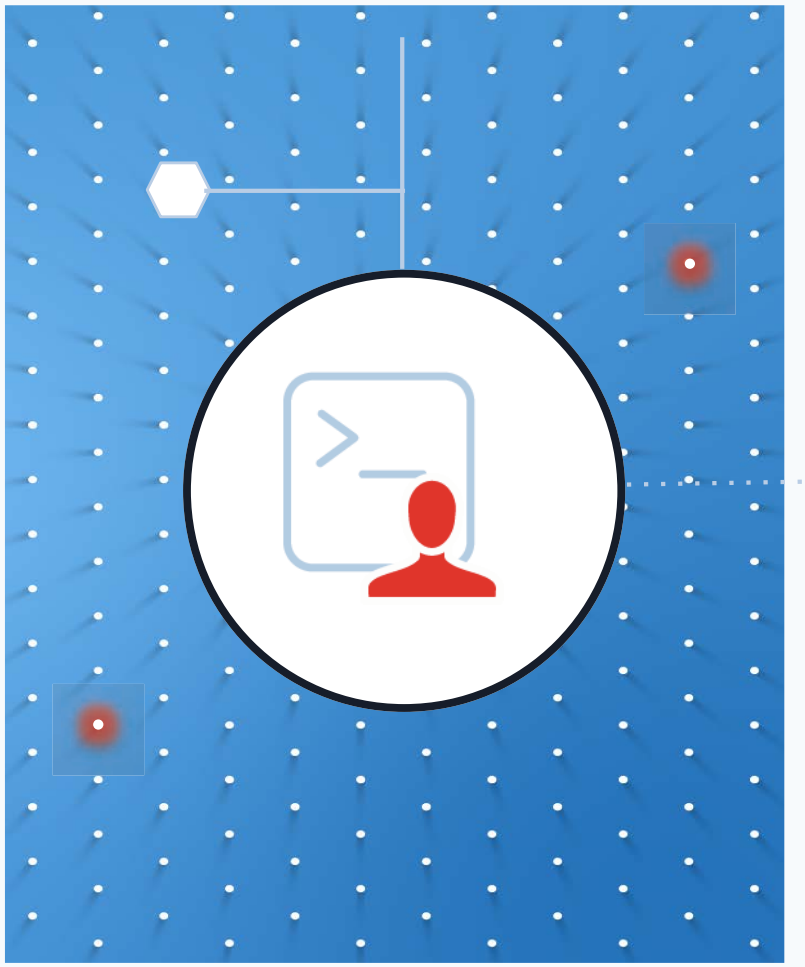
Popularity of microservice architectures

- Better resiliency, scalability, reusability

Public APIs

- Unlock data for new revenue streams

Vendor/product APIs



Qualys.

API Security Top 10

1	Broken Object Level Authorization (BOLA)
2	Broken User Authentication
3	Excessive Data Exposure
4	Lack of Resources & Rate Limiting
5	Broken Function Level Authorization
6	Mass Assignment
7	Security Misconfiguration
8	Injection
9	Improper Assets Management
10	Insufficient Logging & Monitoring

Swagger / OpenAPI

Swagger is a specification to describe an API

Name changed to **OpenAPI** starting with version 3

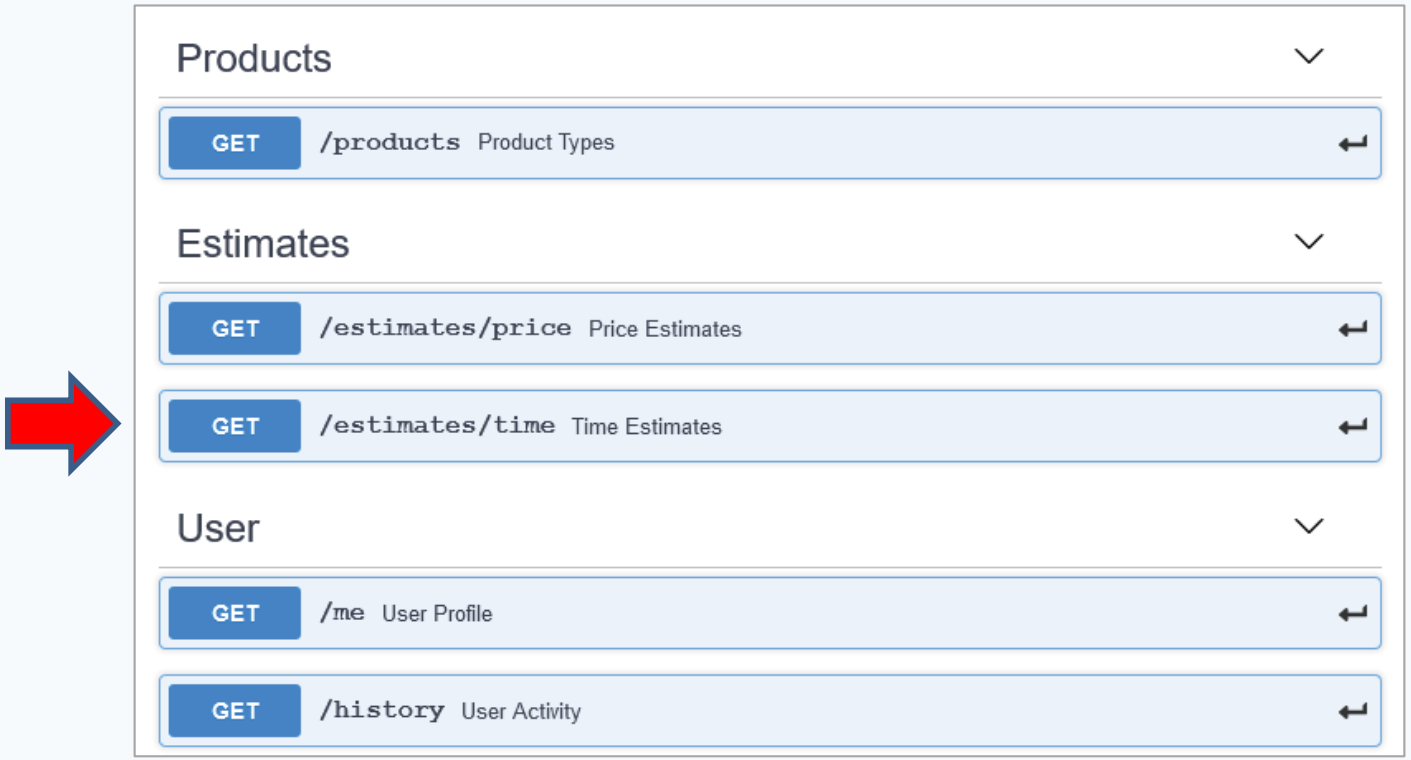
- OAS = OpenAPI Specification

About Swagger/OAS files:

- Either JSON or YAML format
- Typically available from dev teams
- Often auto-generated by tools

Qualys.

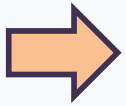
Example: Uber API



Qualys.

Swagger File

```
"/estimates/time": {
      "get": {
        "summary": "Time Estimates",
        "description": "Get trip time estimate",
        "parameters": [
          {
            "name": "start_latitude",
            "in": "query",
            "required": true,
            "type": "number",
            "format": "double"
          },
          {
            "name": "start_longitude",
            "in": "query",
            "required": true,
            "type": "number",
            "format": "double"
          },
            {
            "name": "product_id",
            "in": "query",
            "type": "string",
          }
```



```
"/estimates/time": {
      "get": {
        "summary": "Time Estimates",
        "description": "Get trip time estimate",
        "parameters": [
          {
            "name": "start_latitude",
            "in": "query",
            "required": true,
            "type": "number",
            "format": "double",
            "minimum": -90.0,
            "maximum": 90.0
          },
          {
            "name": "start_longitude",
            "in": "query",
            "required": true,
            "type": "number",
            "format": "double",
            "minimum": -180.0,
            "maximum": 180.0
          },
            {
            "name": "product_id",
            "in": "query",
            "type": "string",
            "maxLength": 30,
            "pattern": "[0-9a-zA-Z', ]"
          }
```


Qualys.

Swagger Global Security Directives

```
"schemes": [
  "http",
  "https"
],
```

```
"security": [
  {
    "myBasicAuth": []
  }
],
```

```
"securityDefinitions": {
  "myBasicAuth": {
    "type": "basic"
  },
  "myApiKey": {
    "type": "apiKey",
    "name": "api_key",
    "in": "header"
  },
  "myOAuth2": {
    "type": "oauth2",
    "authorizationUrl": "https://auth.petstore.com/oauth/form",
    "flow": "implicit",
    "scopes": {
      "write:pets": "create or modify pet data",
      "read:pets": "read pet data"
    }
  }
},
```

Qualys API Security

Static Assessment of your Swagger / OpenAPI file

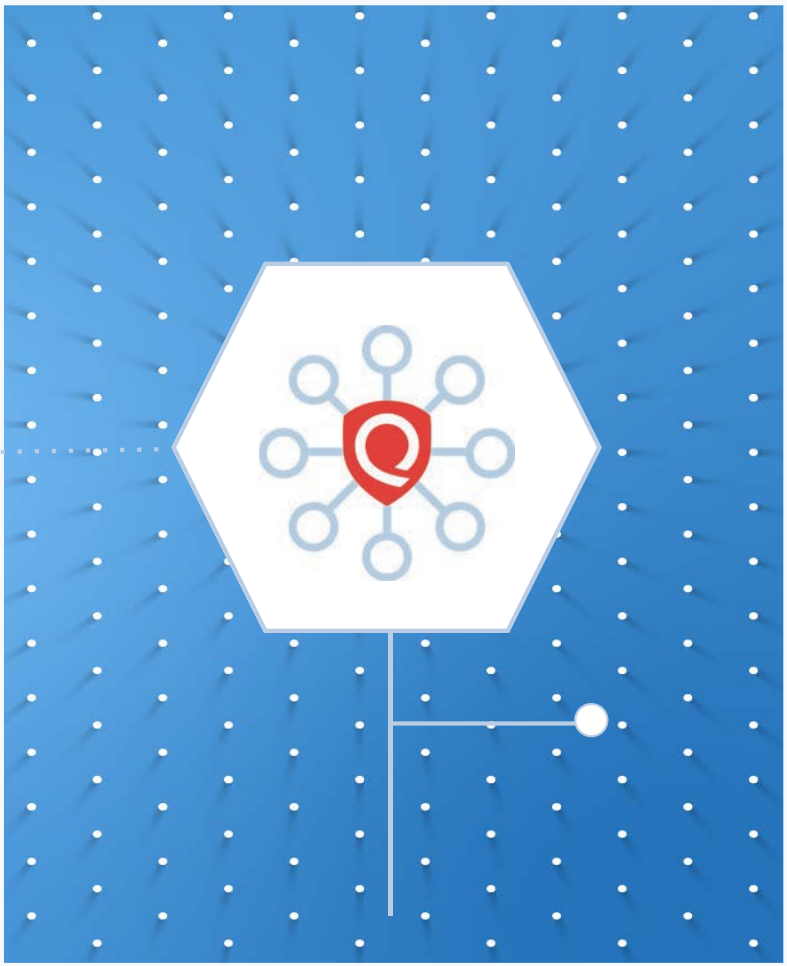
- Get a score and recommended changes

Conformance Scan

- Test the API endpoints for behaviors that violate the Swagger file "contract"

Vulnerability Scan

- This is a current feature of Qualys Web Application Scanning (WAS)



Qualys.

DEMO:
Qualys API Security

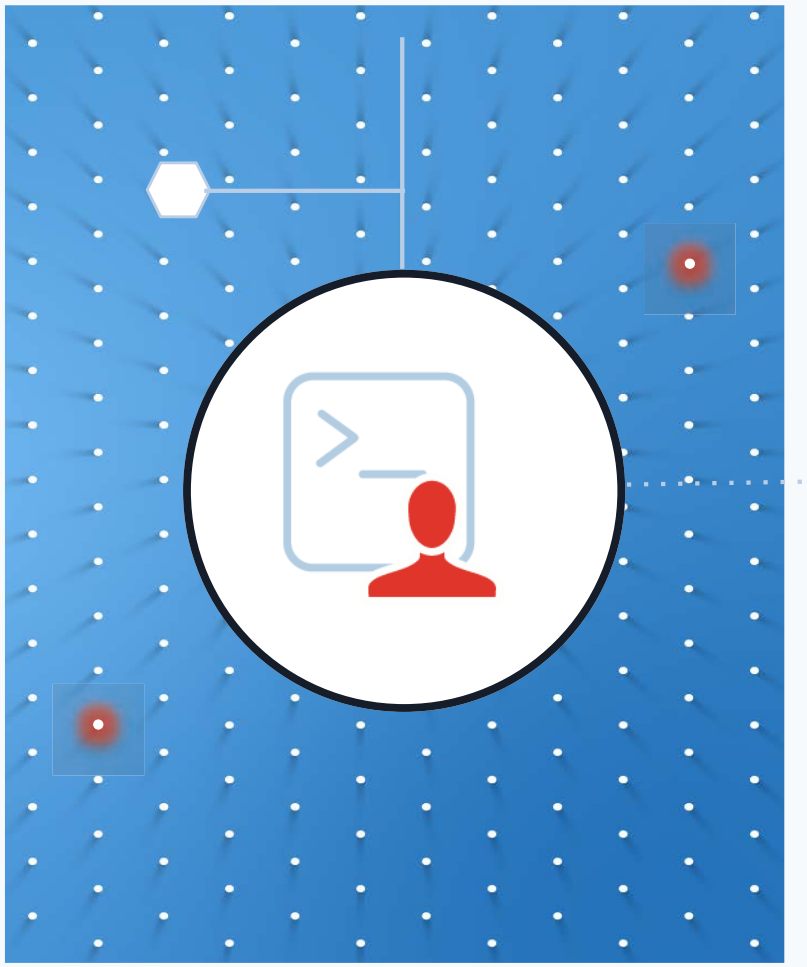
Final Thoughts

The use of APIs will continue to expand

Insecure APIs are a growing threat

API security requires a different approach compared to web applications

Qualys API Security will help developers secure APIs from design to development to production



Qualys.

Thank You

Dave Ferguson
dferguson@qualys.com