Fastcampus

Frontend Dev SCHOOL

Network(1)

Web Programming

웹 개발 패턴의 변화

- 1991 ~ 1999: Sir Timothy John "Tim" Berners-Lee가 하이퍼텍스트 기반의 프로젝트를 제안한 이후 정적인 컨텐츠들을 중심으로 한 웹 기술이 발달
- 1999 ~ 2009: Linux, Apache, Mysql, Php 중심의 동적인 서버, 정적인 클라이언트 모델이 지속됨
- 2010 ~ 현재: javaScript!! (Dynamic Web Client)

웹 개발 패턴의 변화

```
<html>
<head></head>
<body>
<h1>Static Header</h1>
<div>Static Contents</div>
</body>
</html>
```

- 1991 ~ 1999: Sir Timothy John "Tim" Berners-Lee가 하이퍼텍스트 기반의 프로젝트를 제안한 이후 정적인 컨텐츠들을 중심으로 한 웹 기술이 발달

웹 개발 패턴의 변화

```
<html>
<head></head>
<body>
<h1>{% Dynamic Header %}</h1>
<div>{% Dynamic Contents %}</div>
</body>
</html>
```

- 1999 ~ 2009: Linux, Apache, Mysql, Php 중심의 동적인 서버, 정적인 클라이언트 모델이 지속됨

웹 개발 패턴의 변화

```
<html>
<head>
<script src="https://unpkg.com/vue"></script>
</head>
<body>
<h1>{{ header }}</h1>
<div id="app">
  {{ message }}
</div>
<script>
var app = new Vue({
  el: '#app',
  data: {
    message: '안녕하세요 Vue!'
  }
})
</script>
</body>
</html>
```

- 2010 ~ 현재: javaScript!! (Dynamic Web Client)

Web Browser

Mosaic(1993)

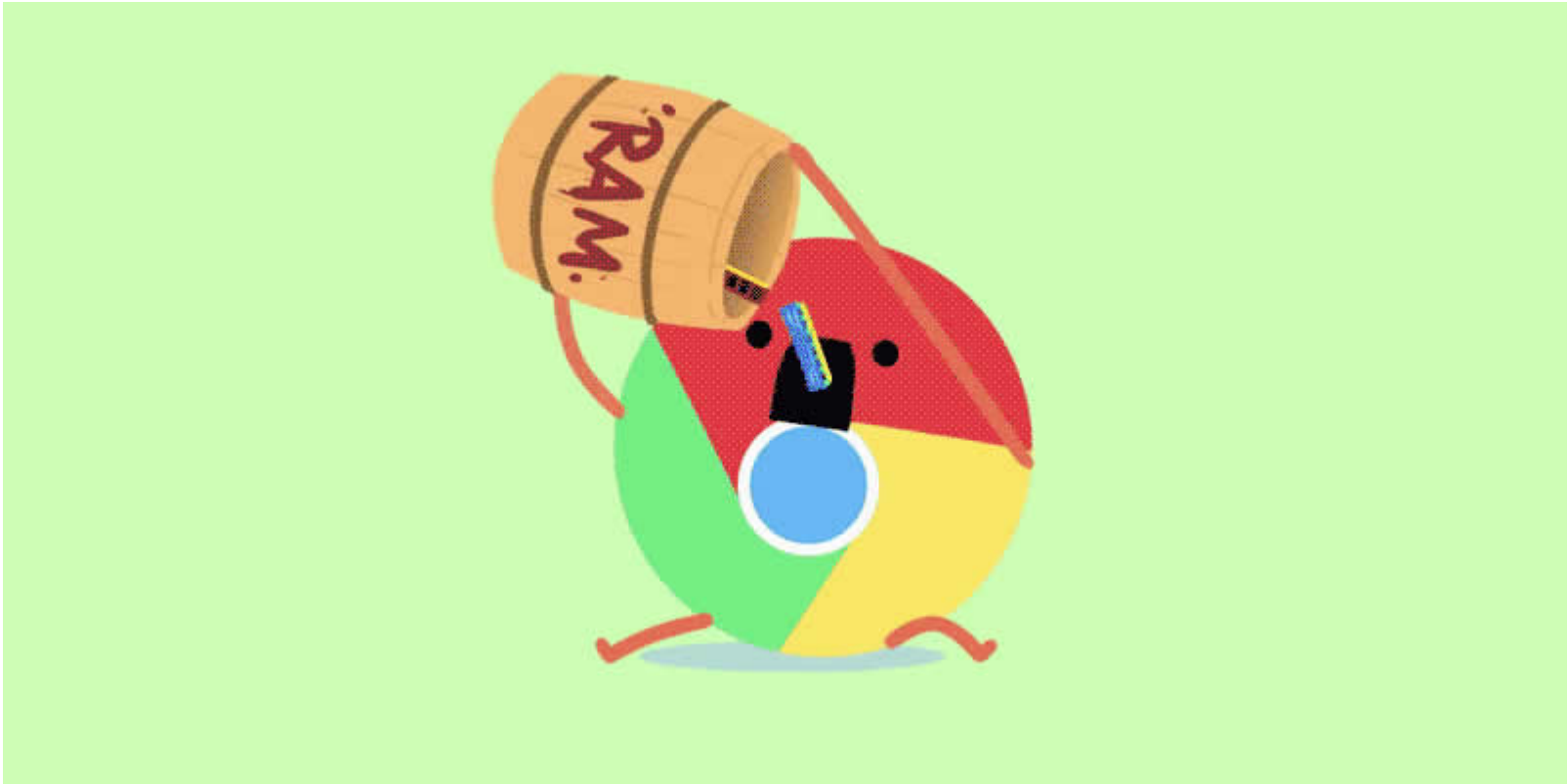
Netscape(1994)

Internet Explorer(1995)

페이지를 찾을 수 없습니다.

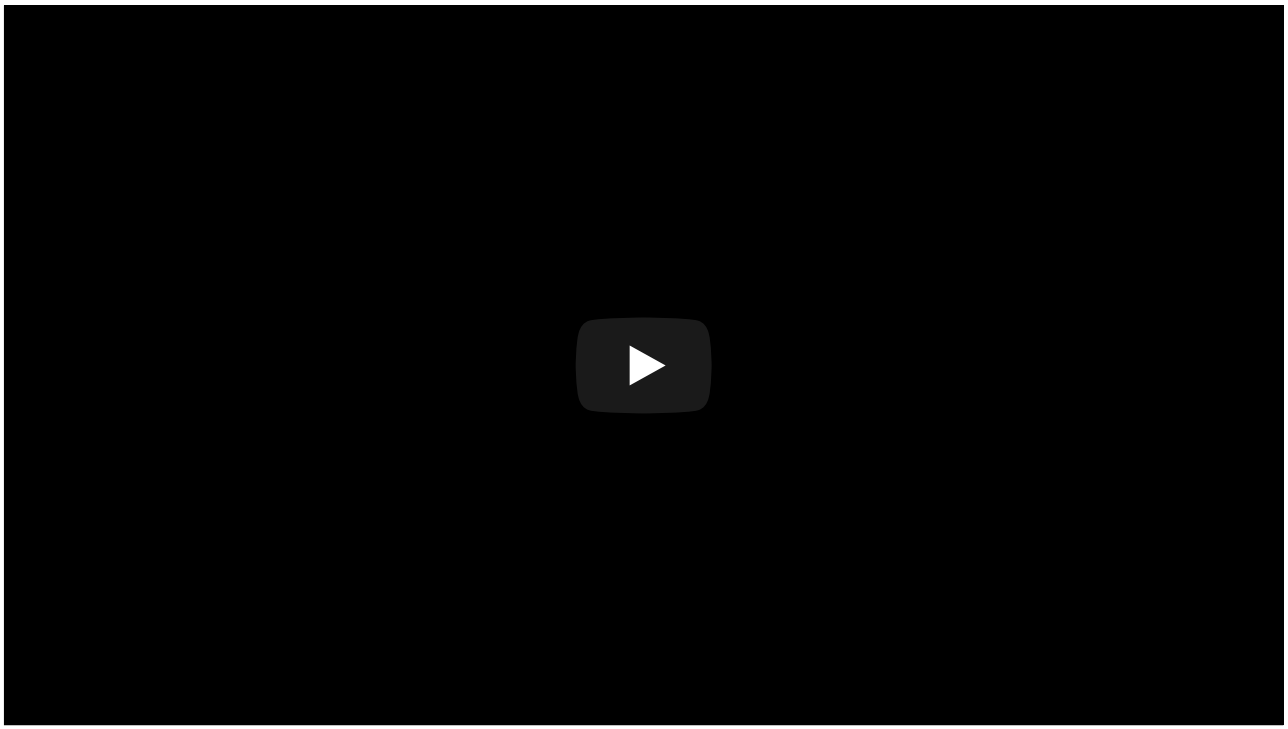
FireFox(2004)

Chrome(2008)

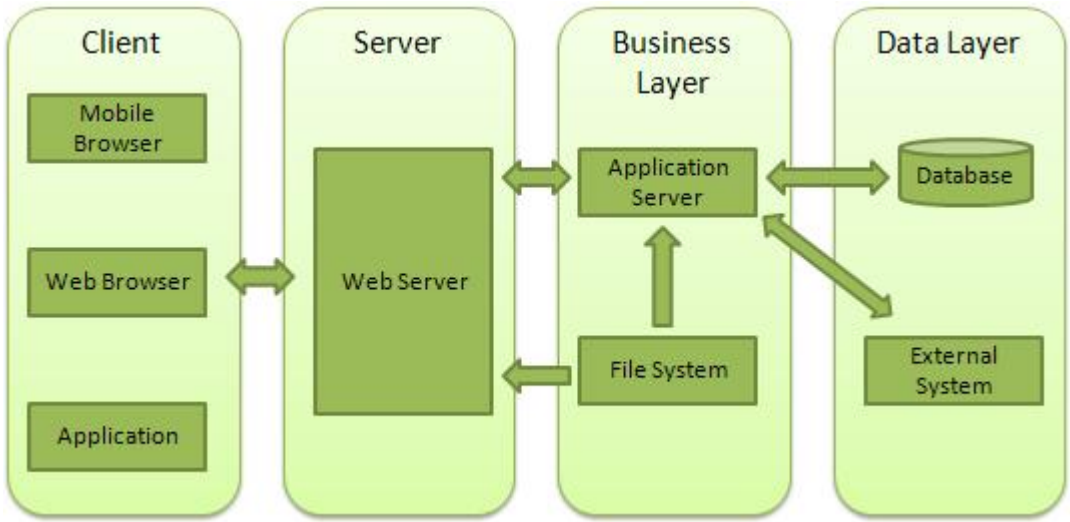


PWA in Chrome Dev Summit 2017

schedule



Web architecture



웹 개발의 현재

javaScript

Client-side

- HTML/CSS, javaScript
- jQuery, AJAX
- Front-end Web Framework
  - AngularJS
  - React.js
  - Vue.js
- CSS Framework
  - Bootstrap
  - Foundation

Server-side

- Depends on Language
  - PHP: Laravel
  - javaScript: Node.js(Express.js)
  - Java: Spring
  - C++, C#: ASP.net
  - Python: Django, Flask
  - Golang: itself
  - Ruby: Ruby on Rails

Database

- RDBMS
  - MySQL
  - PostgreSQL
  - MariaDB
- noSQL
  - MongoDB
  - CouchDB
  - Redis

etc

- celery (for Distributed Task Queue)
- github, Bitbucket, gitlab (for SCM)
- travis CI or jenkins (for Continuous Integration)
- slack, trello

URI, URL, URN

URI

- Uniform Resource Information
- `https://www.example.com/post/how-to-make-url`

URL

- Uniform Resource Locator
- `https://www.example.com/post/`

URN

- Uniform Resource Name
- `www.example.com/post/how-to-make-url`

API

API

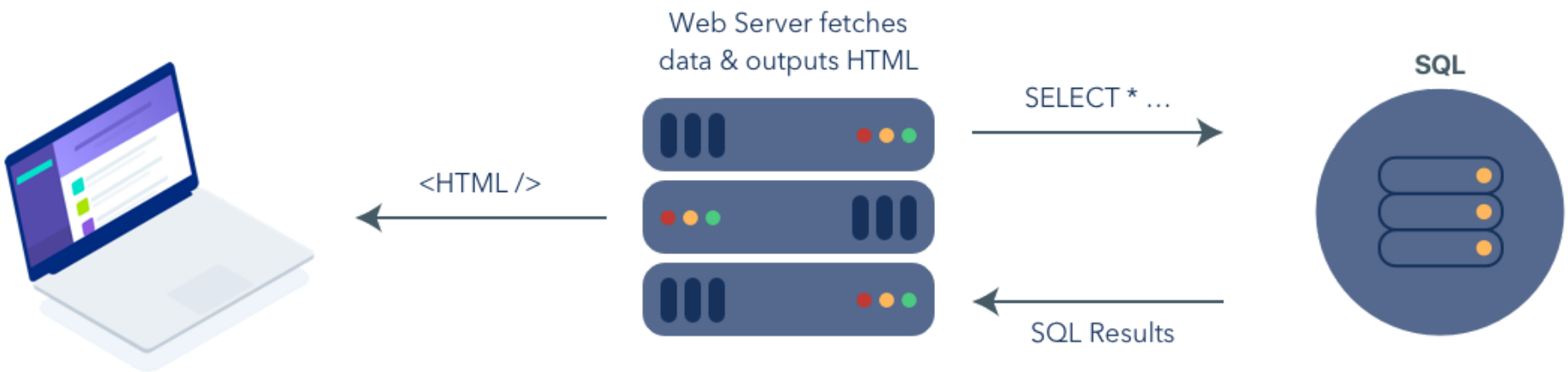
> Application Program Interface

- 응용프로그램에서 사용할 수 있도록 운영체제나 프로그래밍 언어가 제공하는 기능을 제어할 수 있게 만든 인터페이스
- Windows API
- python/C API

Web API

> 웹서버 혹은 웹브라우저를 위한 API

Before REST

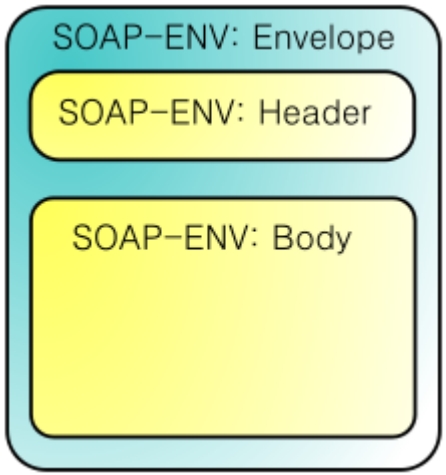

Web Server fetches
data & outputs HTML
SELECT * ...
SQL
<HTML />
SQL Results

Before REST

SOAP

> Simple Object Access Protocol
> XML 파일 포맷을 활용해 데이터를 주고 받기 위한 시도

xml architecture



xml

```xml
<?xml version="1.0" encoding="UTF-8"?>
<breakfast_menu>
<food>
    <name>Belgian Waffles</name>
    <price>$5.95</price>
    <description>
   Two of our famous Belgian Waffles with plenty of real maple s
   </description>
    <calories>650</calories>
</food>
<food>
</food>
</breakfast_menu>
```

REST API

`RE` presentational `S` tate `T` ransfer
`A` pplication `P` rogramming `I` nterface

`Resource` - URI
`Verb` - HTTP method
`Representations` - 표현

So, REST is

> HTTP URI + HTTP method

Yahoo Finance

json api

Roy Fielding

- 2000년 UC Irvine의 박사 학위 논문 "Architectural Styles and the Design of Network-based Software Architectures" 발표

Characteristics of REST

- 범용성(HTTP가 가능하면 OK)
- 리소스 중심 API 명세(URI를 읽는 것으로 이해 가능)
- Stateless(클라이언트의 상태를 신경쓰지 않음)

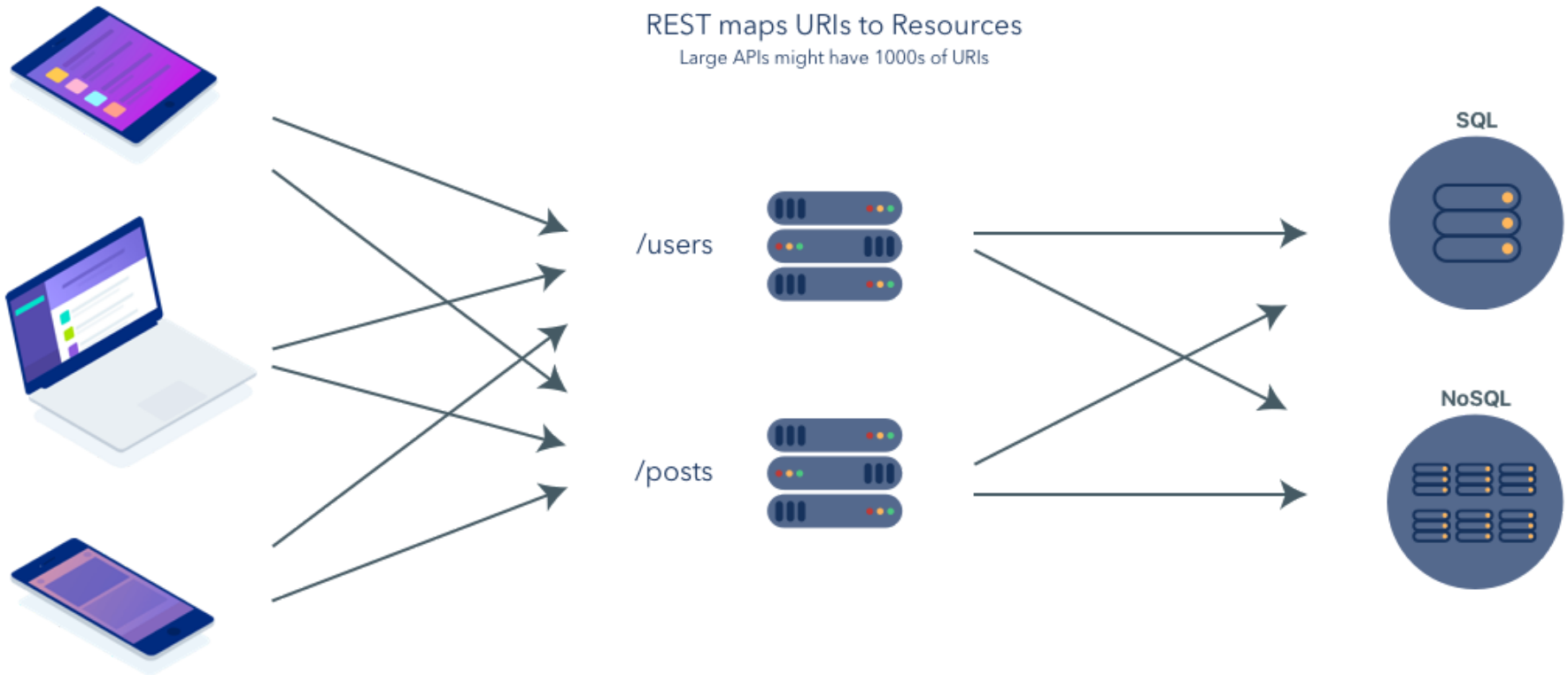
pros and cons of REST

pros:

- 스펙없이 기존의 HTTP를 이용해 요청을 처리할 수 있다.

cons:

- 사용할 수 있는 메소드가 4개다
- 표준이 없다


REST maps URIs to Resources
Large APIs might have 1000s of URIs
/users
/posts
SQL
NoSQL

CRUD

Create

Read

Update

Delete

HTTP Response code

200, 201 - Success

400, 404 - Not found

403 - Forbidden

500 - Server error

HTTP		REST	Status Code
GET		read	200 OK
POST		create	201 CREATED
PUT		update	200 OK
DELETE		delete	200 OK

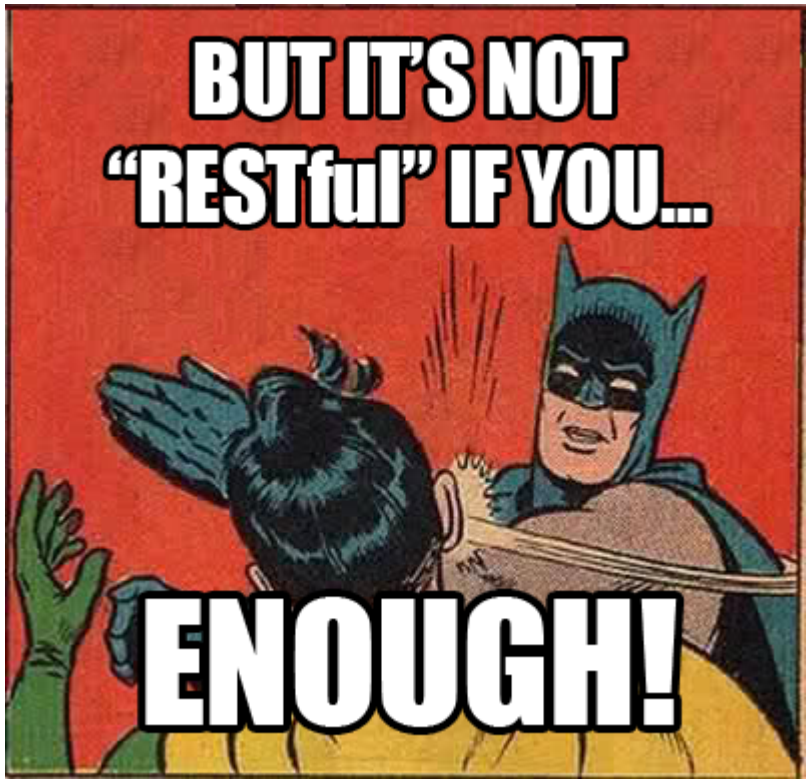
404 Not Found

500 Internal Server Error

```
app.get('/users', (req,res)=>{
        res.json(db.users);
});

app.get('/users/:id', (req,res)=>{
        let user = db.users.find(user => user.id == req.params.i
        if (user) {
                res.json(user);
        } else {
                res.status(404).end();
        }
});

app.put('/users', ...);

app.post('/users', ...);

app.delete('/users/:id', ...);
```

REST API **설계시 주의할 점**

- 버전관리 https://api.foo.com/v1/bar
- 명사형 사용 https://foo.com/showid/ --> https://foo.com/user/
- 반응형 https://foo.com/m/user/, https://m.foo.com/user/ (x)
- 언어코드 https://foo.com/kr/, https://kr.foo.com/ (x)
- 응답상태 코드 (200, 400, 500)


BUT IT'S NOT
"RESTful" IF YOU...
ENOUGH!

RESTful API Documentation

- 기존의 정의된 메소드를 사용하세요(200, 403, ..)
- 사용자가 정의하는 방식으로 작성하세요
- URI를 너무 강조하지 마세요
- 문서화도구(swagger 등)을 너무 믿지 마세요

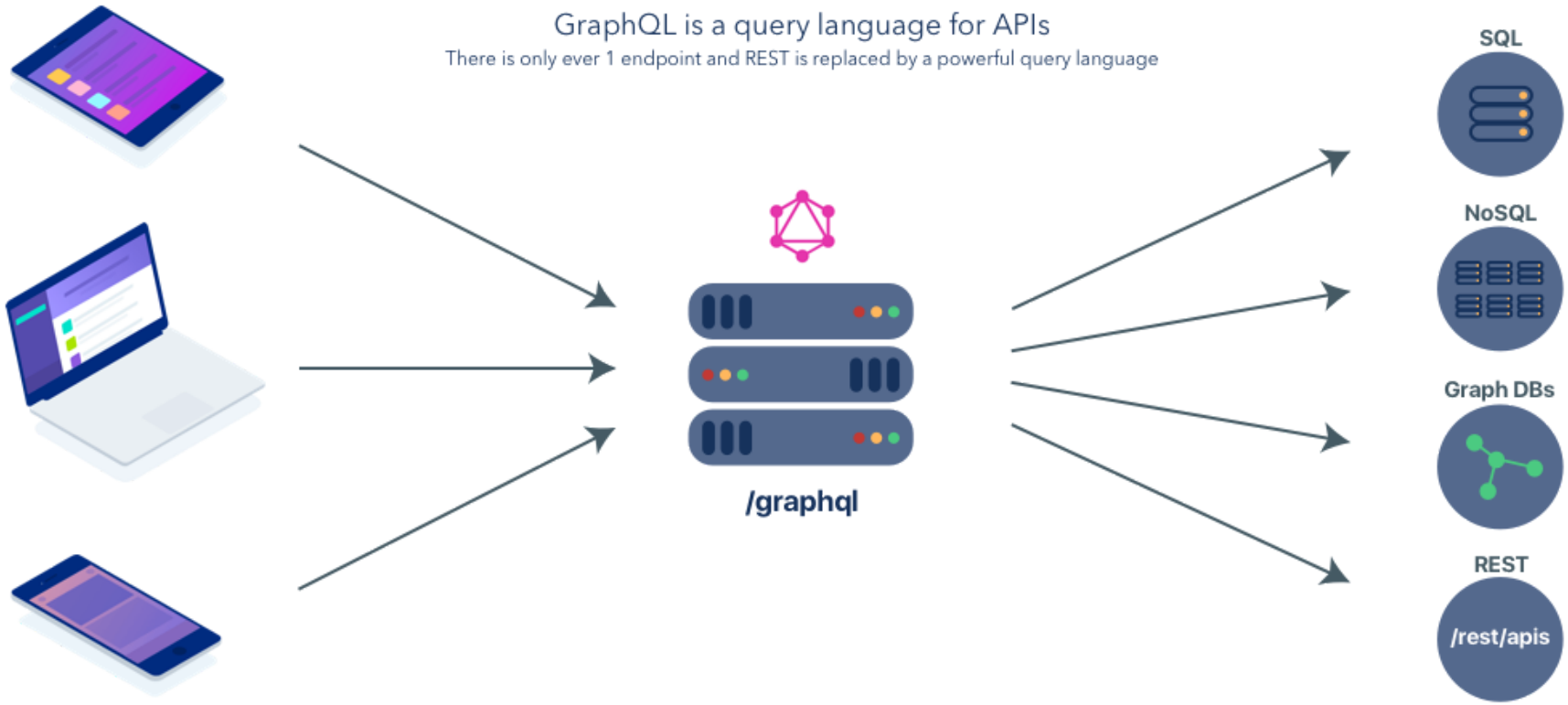
ex) https://www.vmware.com/support/developer/vas/rest-api-1.1.0.RELEASE/index.html#4

After REST API

GraphQL

- Open-sourced by Facebook
- Alternative to REST for building APIs
- create strong contract between Client and Server

GraphQL


GraphQL is a query language for APIs
There is only ever 1 endpoint and REST is replaced by a powerful query language
/graphql
SQL
NoSQL
Graph DBs
REST
/rest/apis

Querying with GraphQL

```
query MoviesAndActors {
  movies {
    title
    image
    actors {
      image
      name
    }
  }
}
```

schema of GraphQL

```
schema {
    query: Query
}

type Query {
    movies: [Movie]
    actors: [Actor]
    movie(id: Int!): Movie
    actor(id: Int!): Actor
    searchMovies(term: String): [Movie]
    searchActors(term: String): [Actor]
}
```

```
type Movie {
    id: Int
    title: String
    image: String
    release_year: Int
    tags: [String]
    rating: Float
    actors: [Actor]
}

type Actor {
    id: Int
    name: String
    image: String
    dob: String
    num_credits: Int
    movies: [Movie]
}
```