DATIVERY

fnxio

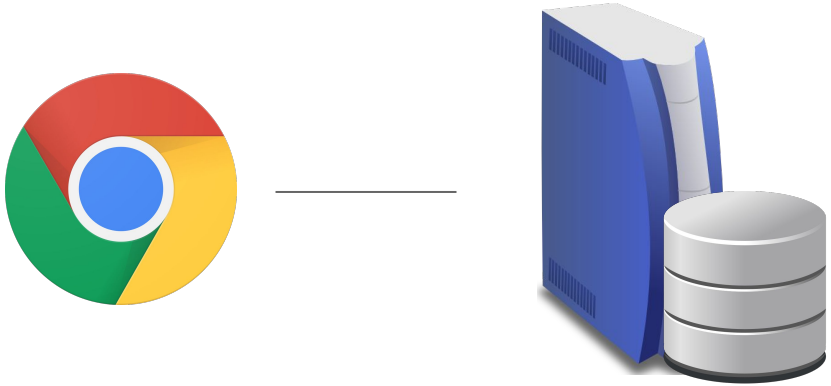
REMOVE YOUR SERVER
WITH LAMBDA

PETR FERSCHMANN

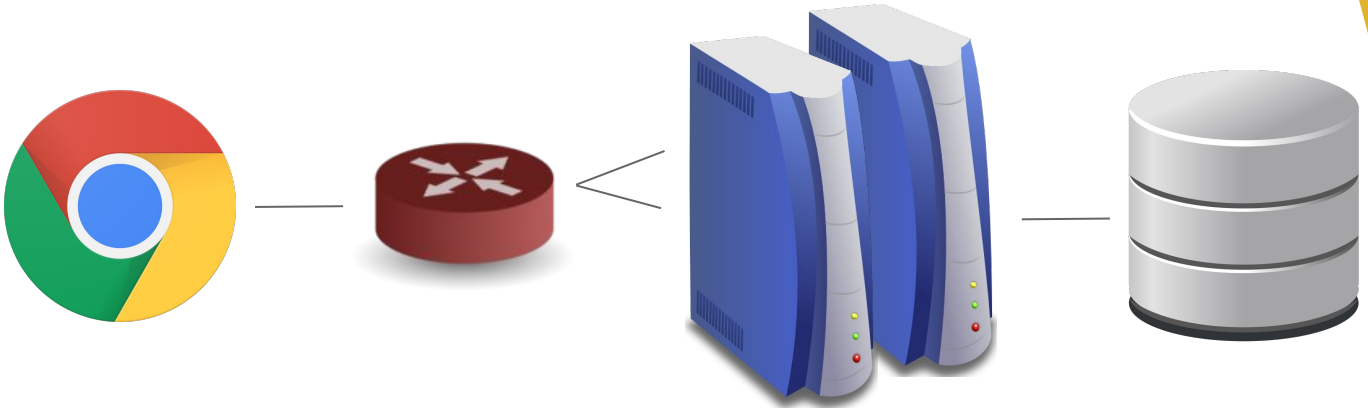
VIDEOPODCAST

not only for
developers

Three layer architecture



Scaling



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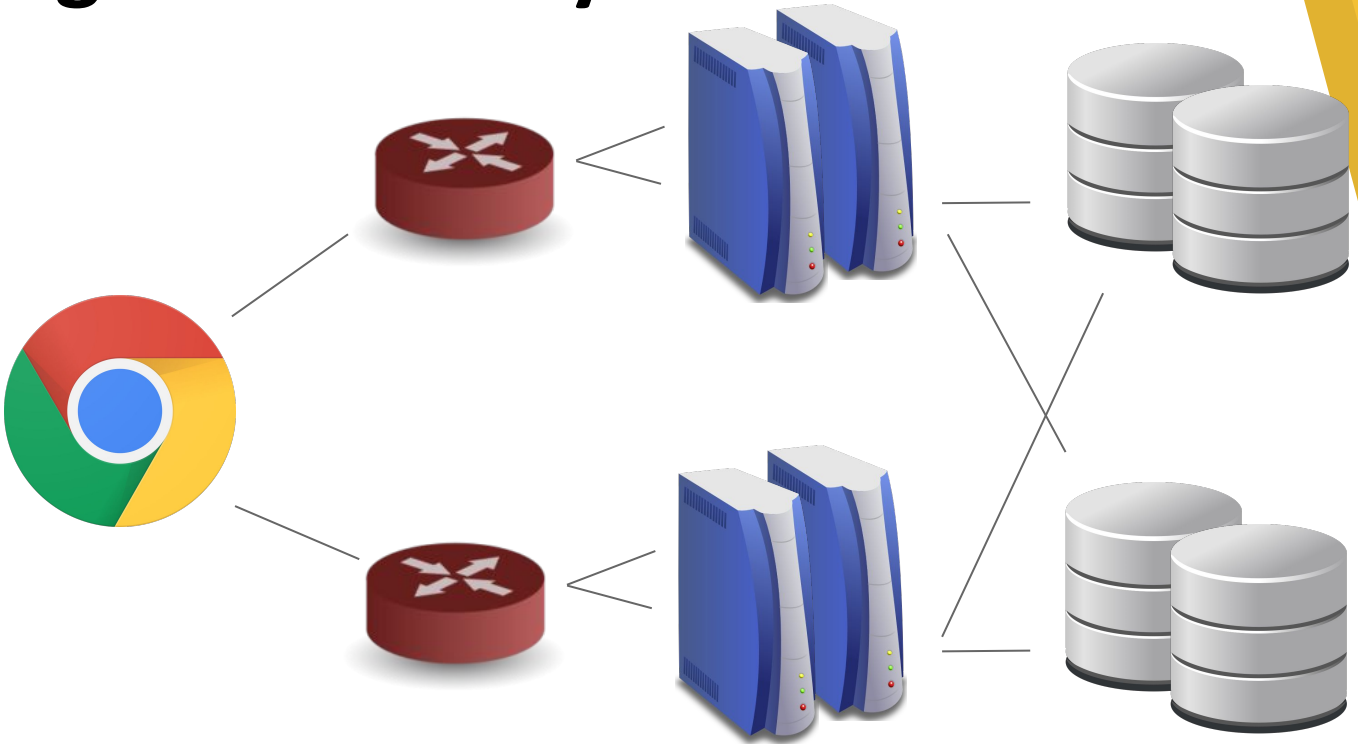
Kidding ourselves
it will not fail

High availability



DevOps

How to decrease costs of servers and operations?

a) Ignore problem

b) Use PaaS

Parts of PaaS:

- Virtual servers (Linux, …),
- FaaS (Lambda),
- Store (bloby - S3),
- CDN
- Managed database (SQL + NoSQL)
- Load balancer
- AI
- ...

PaaS converts all problems

to money

Use case: secret customer

1x server 8 CPU / 64 GiB RAM

100 000,- = 4 years lifetime

Housing = 2 000,- Kč

65 000 visits

8 000 000 request/month

8 TB / traffic

8 GiB DB

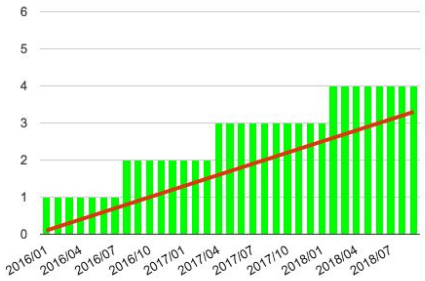
300 request/s

800 GiB static content

	Price	per unit	Total
Lambda 256 MB	$0,000000417	/ 100 ms	$17
Traffic - lambda	$0,09	/ GB	$35
RDS MySQL	$0,137	/ hour	$102
			$155
CDN (CloudFront)	$0,085	/ GB	$628
S3 storage	$0,0245	/ GB	$20
			$663
Total			**$818**

Total costs of servers

89



Total costs of servers

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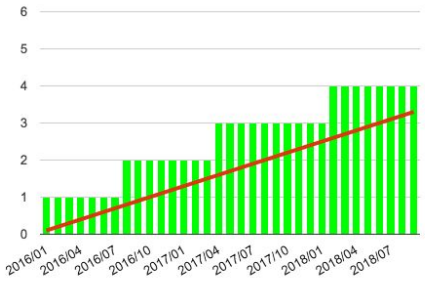

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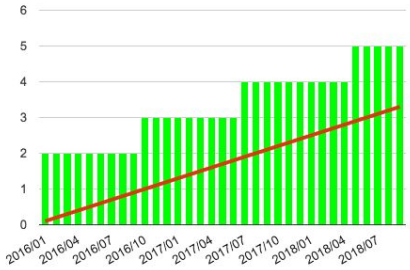
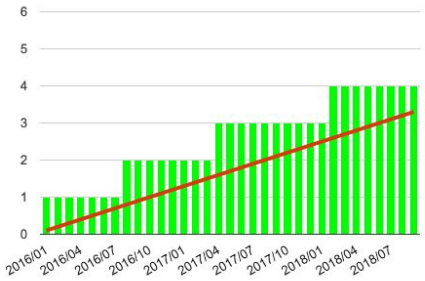


Total costs of servers

89



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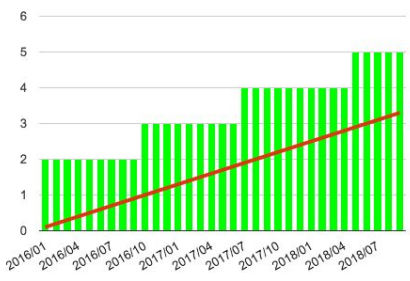

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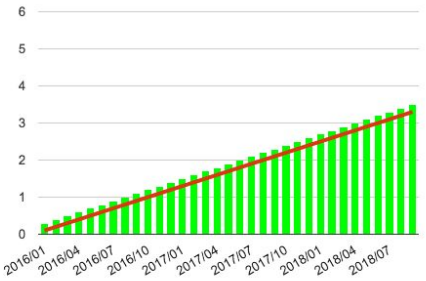


Function as a Service (FaaS)

	Virtual	Container	FaaS
OS management	✓		
Local storage	✓	✓	
Stateless			✓
Runtime	long	long	short (< 5 minutes)
Autoscaling	manual and slow	✓	✓
Autoscaling - reaction time	minutes	tens of seconds	seconds
Memory	per instance	per instance	per request
Failure impact	whole instance and all requests	whole instance and all requests	one request

Providers

- Amazon Web Services (AWS),
- Google Cloud Platform (GCP),
- Bluemix (IBM),
- Microsoft Azure,
- Heroku

AWS Lambda

```
export default function (event, context, callback) {
    console.log(event);
    const response = {
        statusCode: 200,
        headers: {
            "x-custom-header":"My Header Value”
        },
        body: JSON.stringify({"message":"Hello World!"})
    };
    callback(null, response);
};
```

Price

- $0.20 per 1 mil. invocations

- 1000 ms x 1 GiB = $0.00001667
  60 * 60 * 24 s x 1 GiB = $1,44

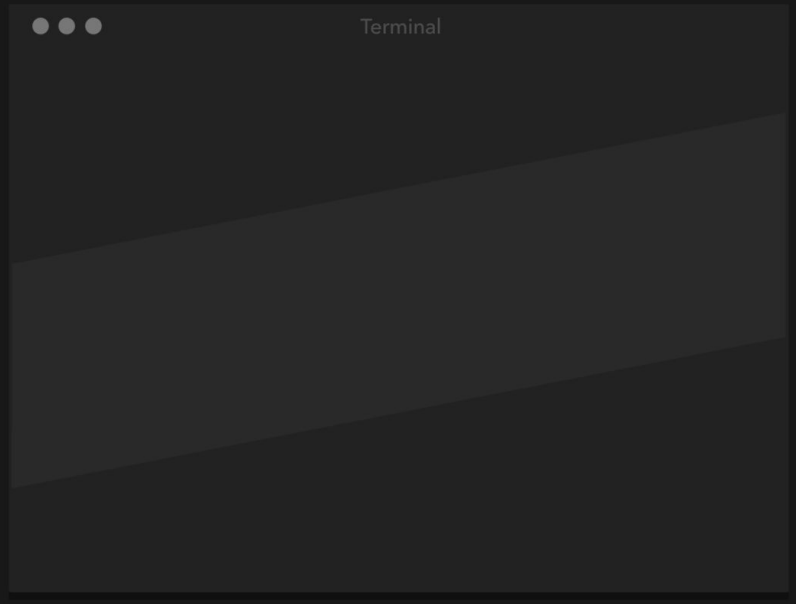
Event types for Lambda invocation

1. HTTP Request / API Gateway
2. Direct call
3. Platform event

SERVERLESS FRAMEWORK
VERSION 1

Powered by amazon web services

Install the Serverless Framework with NPM



EC2 vs Lambda

Small web:

10 000 request/day

200 ms / 256 MiB RAM

=> 432 000 requests / month

=> 2160 GiB / seconds

$ 0,31 / month

EC2 vs Lambda

Cron

Every hour 1GiB RAM / 2 minutes

=> 720 requests / month

=> 86 400 GiB / seconds

$ 1,44 / month

EC2 vs Lambda

Function Execution Memory & Time	Requests per Hour Required for Lambda Cost to Equal EC2 Cost	Requests per Second
100 ms @ 128 MB	295,000	81.9
200 ms @ 512 MB	64,000	17.8
200 ms @ 1 GB	34,000	9.4
1 sec @ 1 GB	7,100	2.0

AWS Lambda technical details

Authorizer

- auth0

Security

- separate accounts (AWS Organisation)
- audit logs (S3 Logs, CloudWatch)
- AWS shared security responsibility

Hledáme lidi

Google Cloud Platform
AWS
Java nebo Node.JS

fnx io

leave backend to us

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