



# Google Cloud Platform

## CI/CD - Low cost at scale

Jeferson Pereira – Site Reliability Engineer



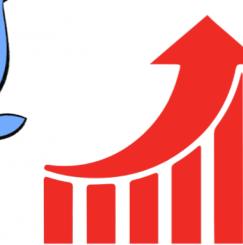
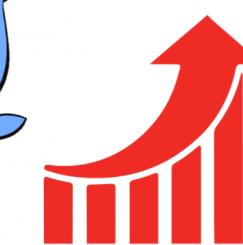
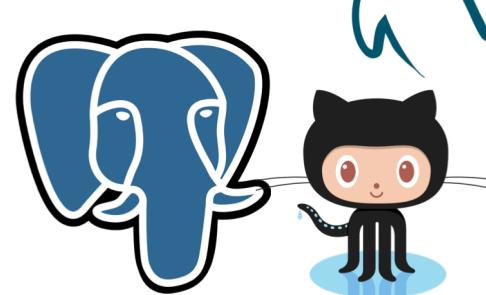
\$whoami

- SRE - Site Reliability Engineer
- Currently Cloud Infrastructure Engineer
- TDC BH 2019 - Microservices track Coordinator
- [https://git\\*\\*\\*b.com/Jeskz0rd](https://git***b.com/Jeskz0rd)
- <https://linkedin.com/in/pereira-jeferson-it/>

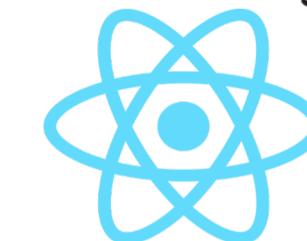
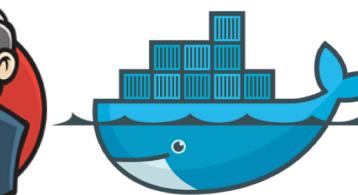
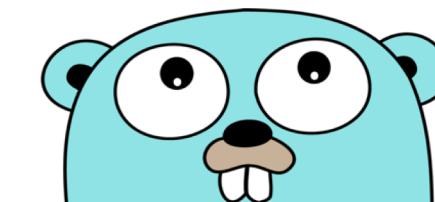
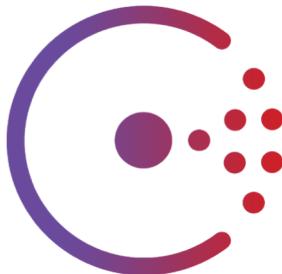
# Technologies



Prometheus



Google Cloud Platform

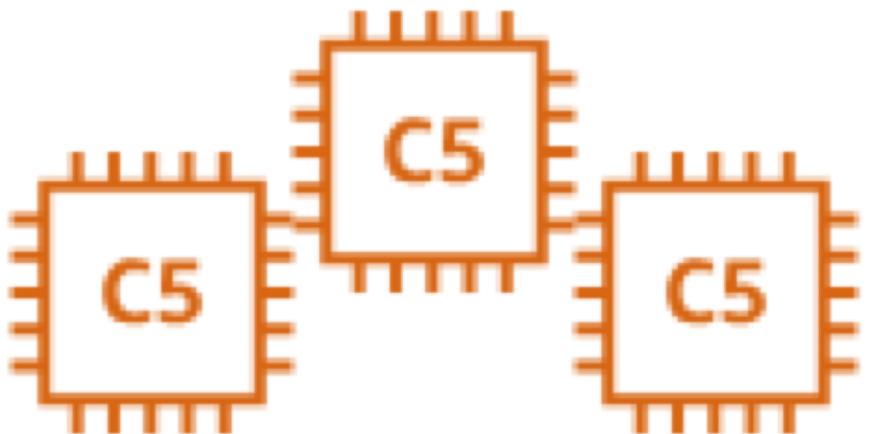




Motivation



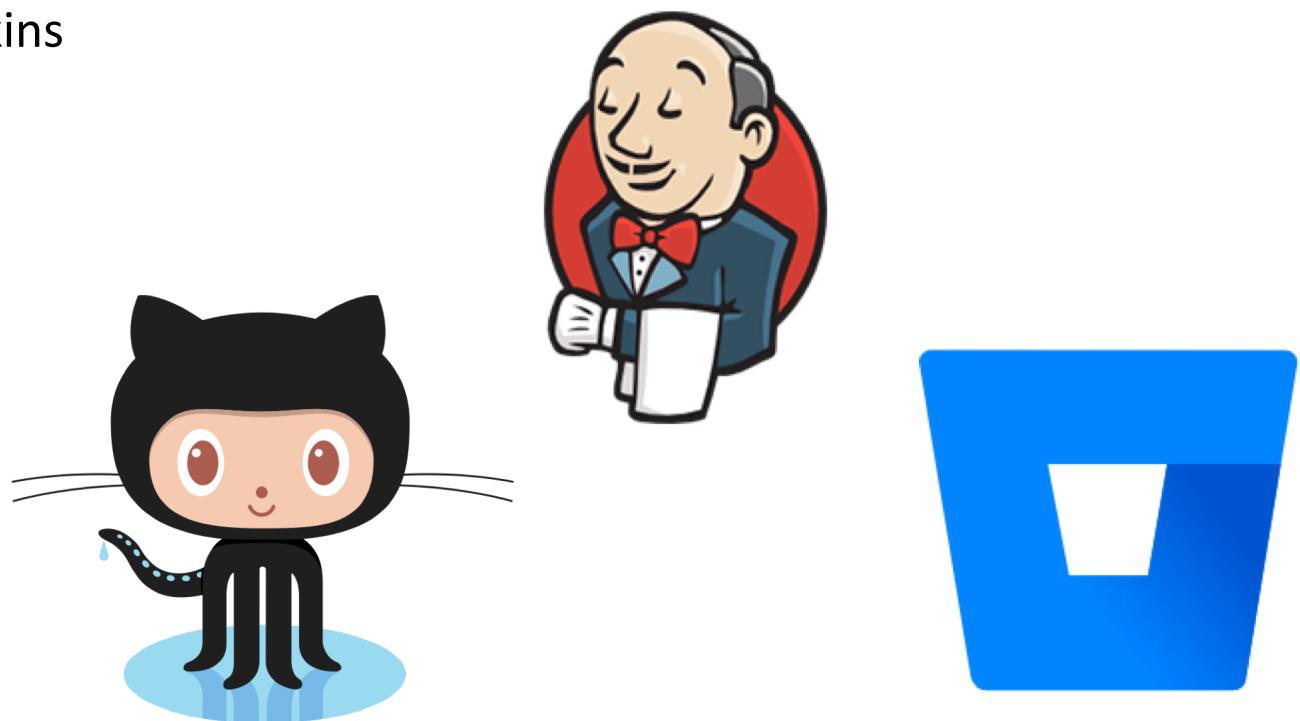
PHASE - 1



## Scenario

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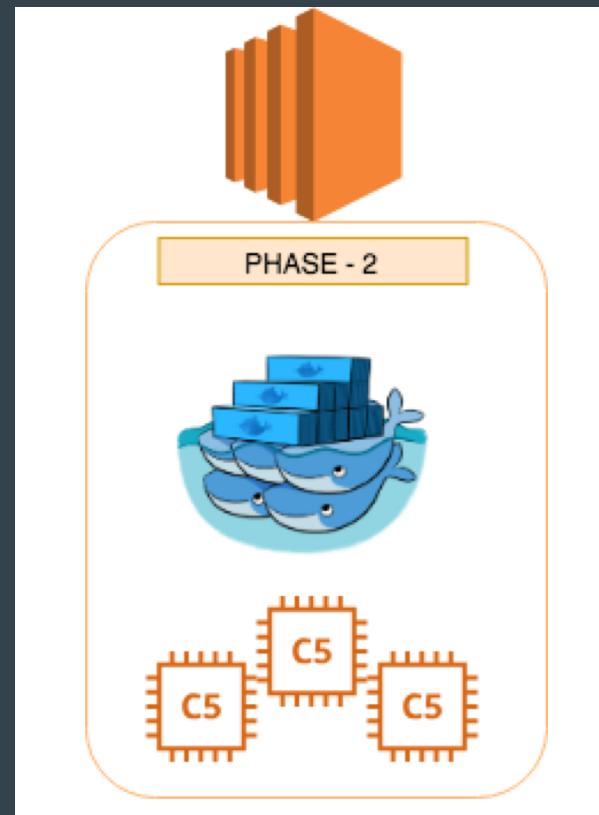
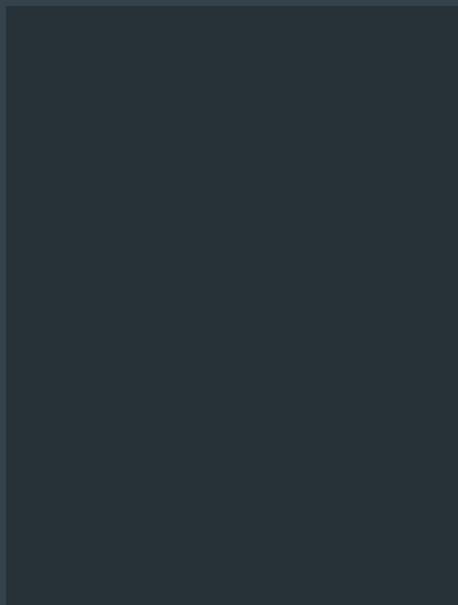
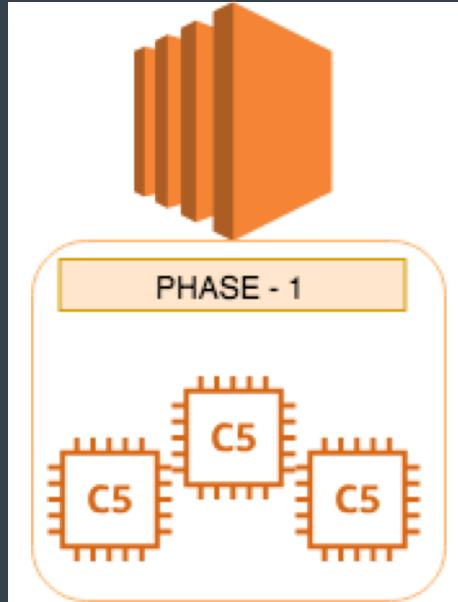
- Docker & Stand alone
- Containerised applications
- Jenkins



# Docker Swarm Cluster

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- Availability
- Swarm auto scale – Manual setup
- Reliability increasing



# Cost comparison

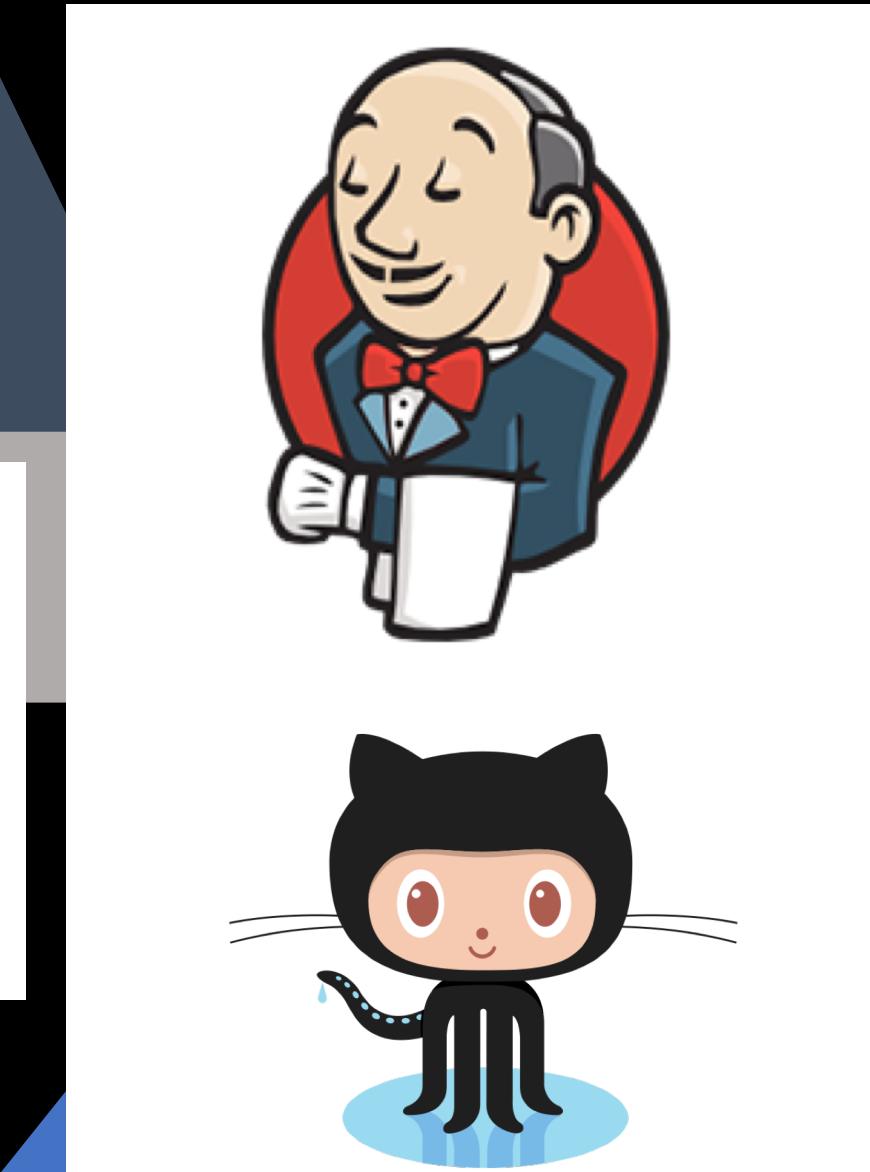
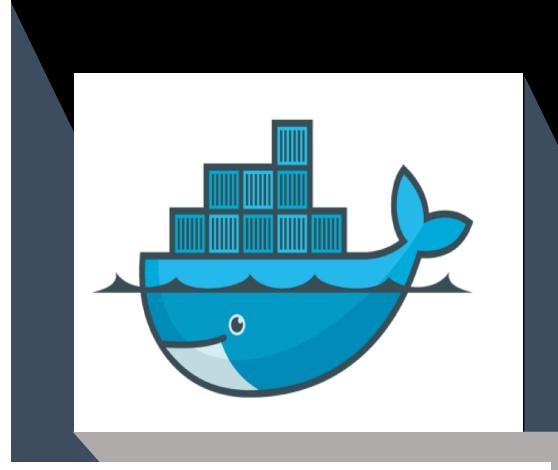
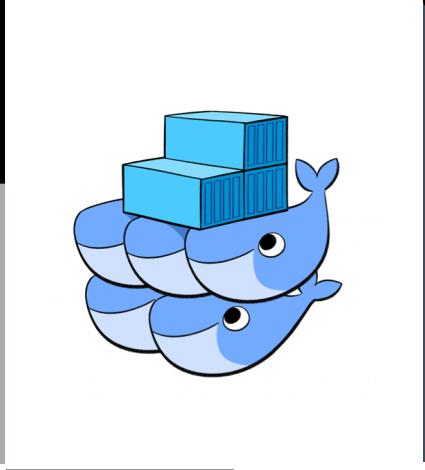
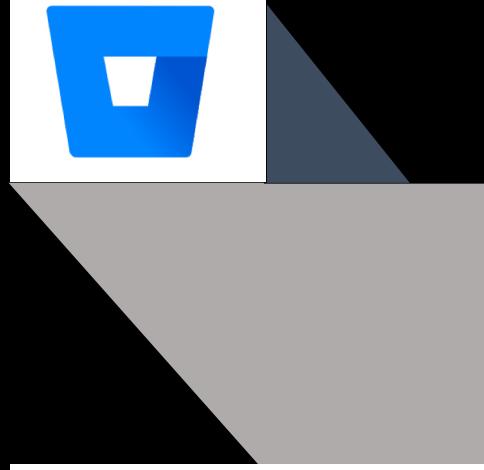
- C5.2x Large* - AWS – MONTHLY	GCP* – MONTHLY	- C5.2x Large* - AWS – 1 Year all upfront reserved
2 - \$ 497,76	3 - \$ 515.90	1 x \$ 1.751,00 / Year
1 - \$ 248,88	1 - \$ 171.96	1x \$ 145,92 / Month

\*8 vCPU / 16GB RAM

# Cost comparison

- 3 x C5.2x Large* - AWS – MONTHLY –	3 x CUSTOM* GCP – MONTHLY	- 2 x C5.2x Large* - AWS – MONTHLY – 1 x Upfront COST	3 x CUSTOM* GCP – MONTHLY
\$ 746,64	\$ 515.90	\$ 643,68	\$ 515.90
Reduction: 30%		Reduction: 20%	

\*8 vCPU / 16GB RAM





code  
pushed  
to GitLab



GitLab  
trigger  
GitLab Runner



install  
dependencies,  
run tests job

## Pipeline definition

---



GitLab





Motivation



**Google Kubernetes Engine**

# Cluster's cost per month

Prices last update: 04-April-2019

Estimate 1

Kubernetes Engine

3 x Gitlab



2,190 total hours per month

Instance type: n1-standard-1

Region: Iowa

GCE Instance Cost: USD 72.82

Kubernetes Engine Cost: USD 0.00

Sustained Use Discount: 30% 

Effective Hourly Rate: USD 0.033

Estimated Component Cost: USD 72.82 per 1 month

**Total Estimated Cost: USD 72.82 per 1 month**

Estimate Currency

USD - US Dollars 

Adjust Estimate Timeframe

1 day 1 week 1 month 1 quarter 1 year 3 years

## Estimate 1

Kubernetes Engine

3 x Gitlab



2,190 total hours per month

Instance type: n1-standard-1

Region: Iowa

GCE Instance Cost: USD 873.81

Kubernetes Engine Cost: USD 0.00

Sustained Use Discount: 30%



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Estimated Component Cost: USD 873.81 per 1 year

**Total Estimated Cost: USD 873.81 per 1 year**

Estimate Currency

USD - US Dollars

Adjust Estimate Timeframe

1 day 1 week 1 month 1 quarter 1 year 3 years

# Cluster's cost per year

Prices last update: 04-April-2019

## Fixed cost

- 3 x C5.2x Large* - AWS – MONTHLY	3 x CUSTOM* GCP – MONTHLY	3 x n1-standard-1** GCP – MONTHLY
\$ 643,68	\$ 515.90	\$ 72,82
Reduction: 20%		Reduction of 86% from Compute Engine.  Reduction of 88% from initial scenario.

## Fixed

3 x n1-standard-1\*  
GCP – MONTHLY

\$ 72,82

Reduction of **86%** from  
Compute Engine.

Reduction of **88%** from  
initial scenario.

\*1 vCPU / 3.75GB RAM

**\$330,32**

## Variable

3 x CUSTOM\*\*  
GCP – MONTHLY

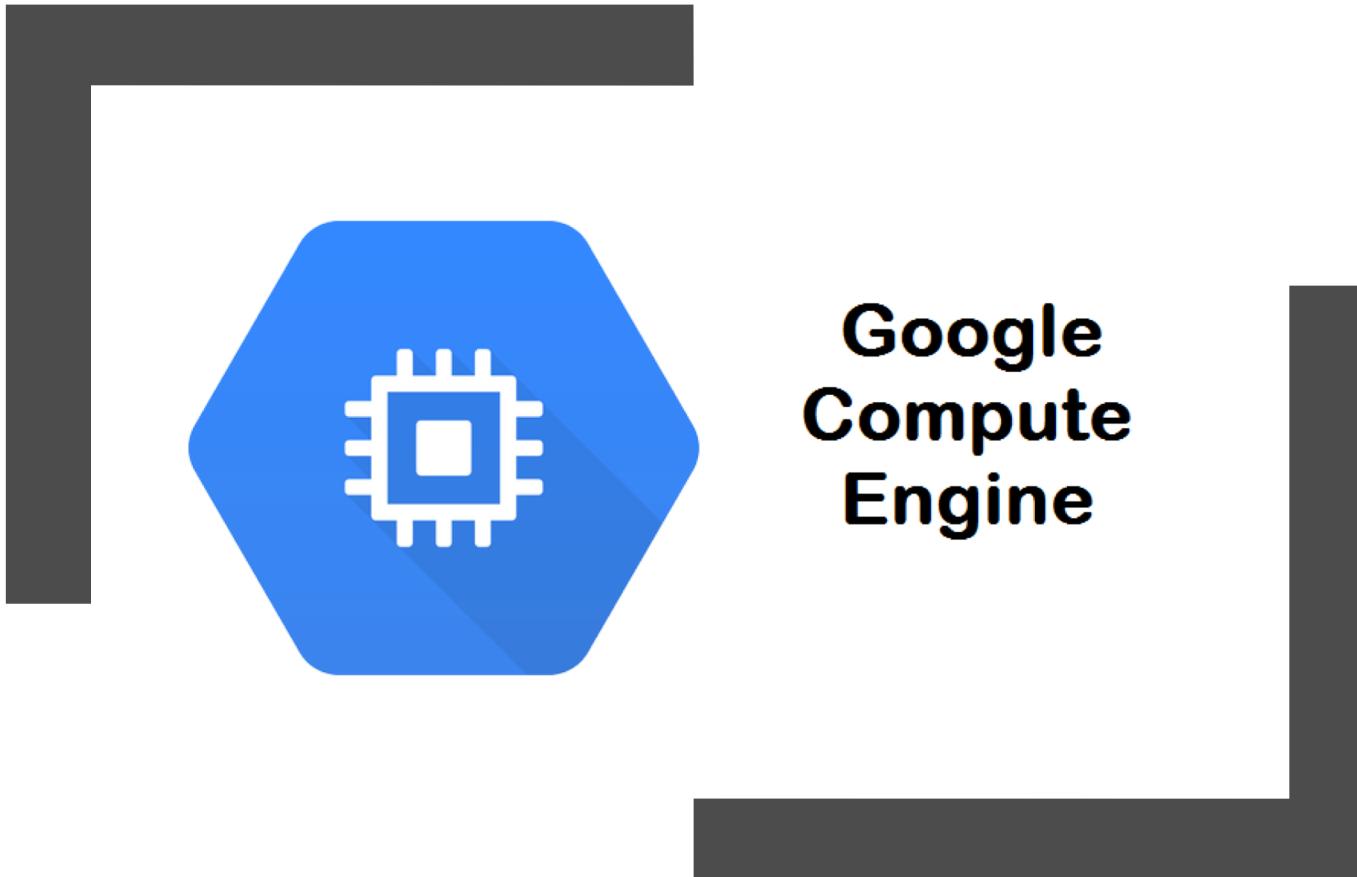
\$ 257,50

Reduction of **50%** from  
Compute Engine.

Reduction of **60%** from  
initial scenario.

\*\*8 vCPU / 16GB RAM

# Preemptible instances



- Run at a much lower price than normal instances - **Up to 80% off.**
- It **won't work** for any application
- Might be **terminated at any time** due to system events.
- Always terminates instances after they run for **24 hours**.
- Not covered by any Service Level Agreement (SLA)

# Preemptible cluster's cost per month

Estimate 1

Compute Engine

3 x Gitlab



2,190 total hours per month

VM class: preemptible

Instance type: n1-standard-1

Region: Iowa

**Estimated Component Cost: USD 21.90 per 1 month**

**Total Estimated Cost: USD 21.90 per 1 month**

Estimate Currency

USD - US Dollars

Adjust Estimate Timeframe



## Estimate 1

Compute Engine

3 x Gitlab



2,190 total hours per month

VM class: preemptible

Instance type: n1-standard-1

Region: Iowa

**Estimated Component Cost: USD 262.80 per 1 year**

**Total Estimated Cost: USD 262.80 per 1 year**

Estimate Currency

USD - US Dollars

Adjust Estimate Timeframe



# Preemptible cluster's cost per year

Prices last update: 04-April-2019

## Fixed

3 x n1-standard-1\*  
GCP – MONTHLY

\$ 21,90

Reduction of **95%** from  
Compute Engine.

Reduction of **96%** from  
initial scenario.

## Preemptible

\*1 vCPU / 3.75GB RAM

**\$169,75**

\*\*8 vCPU / 16GB RAM

## Variable

3 x CUSTOM\*\*  
GCP – MONTHLY

\$ 147,85

Reduction of **71%** from  
regular Compute Engine.

Reduction of **77%** from  
initial scenario.

# Trade offs

- Increases pipeline's complexity
- Increases Investigation's time - Troubleshooting
- Pipeline prone to errors
- Random failures
- Warm time
- Life is too short – Make it faster



IS ALL OF THESE  
OPTIMISATIONS  
REALLY NEEDED?

```
jeferson.pereira@MacBook-Pro-de-Jeferson-2 ~ ➔ kubectl top pod -n gitlab  
NAME                                CPU(cores)   MEMORY(bytes)  
gitlab-runner-gitlab-runner-85b65ffd88-hlqxn   3m          14Mi
```

GITLAB RUNNER ENDPOINT

## Fixed

## Preemptible

## Variable

standard-1\*  
GCP – MONTHLY

\$147,85

Reduced  
Cost Scenario.

90%  
Reduction

3.75

\*\*8 vCPU / 16GB RAM

3 x CUSTOM\*\*  
GCP – MONTHLY

\$ 147,85

Reduction of **71%** from  
regular Compute Engine.

Reduction of **77%** from  
initial scenario.

# Lessons

1. Complexity hurts
2. Once it is done means exactly what is says
3. Know the app as much as possible
4. Break the pipeline as much as possible
5. Quality first of all
6. Preemptible FTW!



# Thanks!

- [https://git\\*\\*b.com/Jeskz0rd/talks](https://git**b.com/Jeskz0rd/talks)
- <https://linkedin.com/in/pereira-jeferson-it>