

The wind of change

by @dschenkelman



Logins



Embrace risk

- Latency: 99th percentile at edge
(measured every 5 minutes) < 500 ms
- Reliability: 99.99% of requests succeed
(200-499 status code)

SLOs

<https://landing.google.com/sre/book/chapters/service-level-objectives.html>



Error Budgets

$$\frac{\text{duration[s]} * \text{requests impacted[%]} / 100}{(60*60*24*30)[s] * (\text{error budget[%]}/100[%]) * 100}$$

Consumption

Uniform/simplified model <https://goo.gl/7kWoX4>

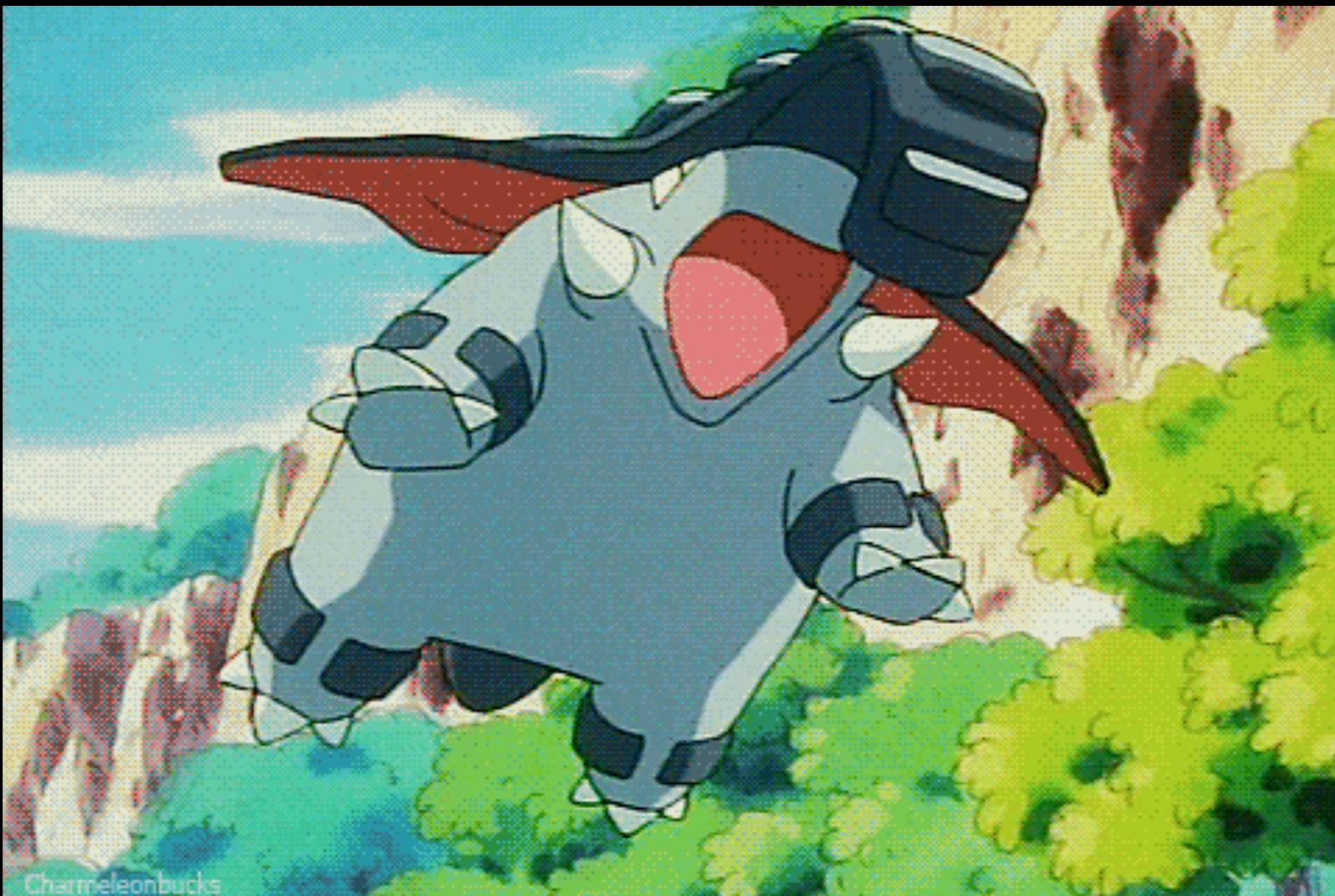
*Take me to the
magic of the moment*

On a glory night

*Where the children
of tomorrow dream
away (dream away)*

*In the wind of
change*



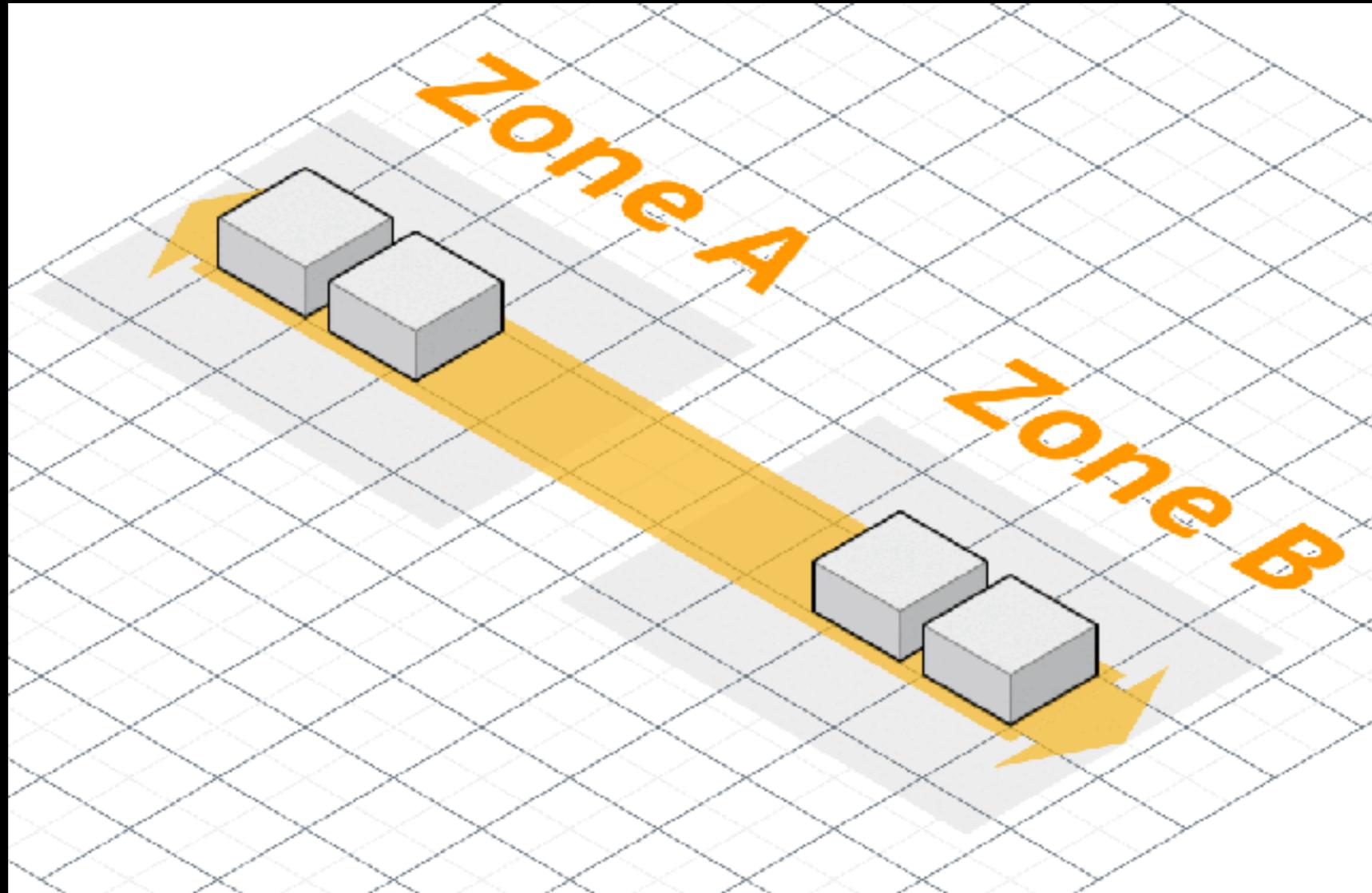


Chameleobucks

Rolling updates

duration[s] * requests impacted[%] / 100

(60*60*24*30)[s] * (error budget[%]/100[%]) * 100



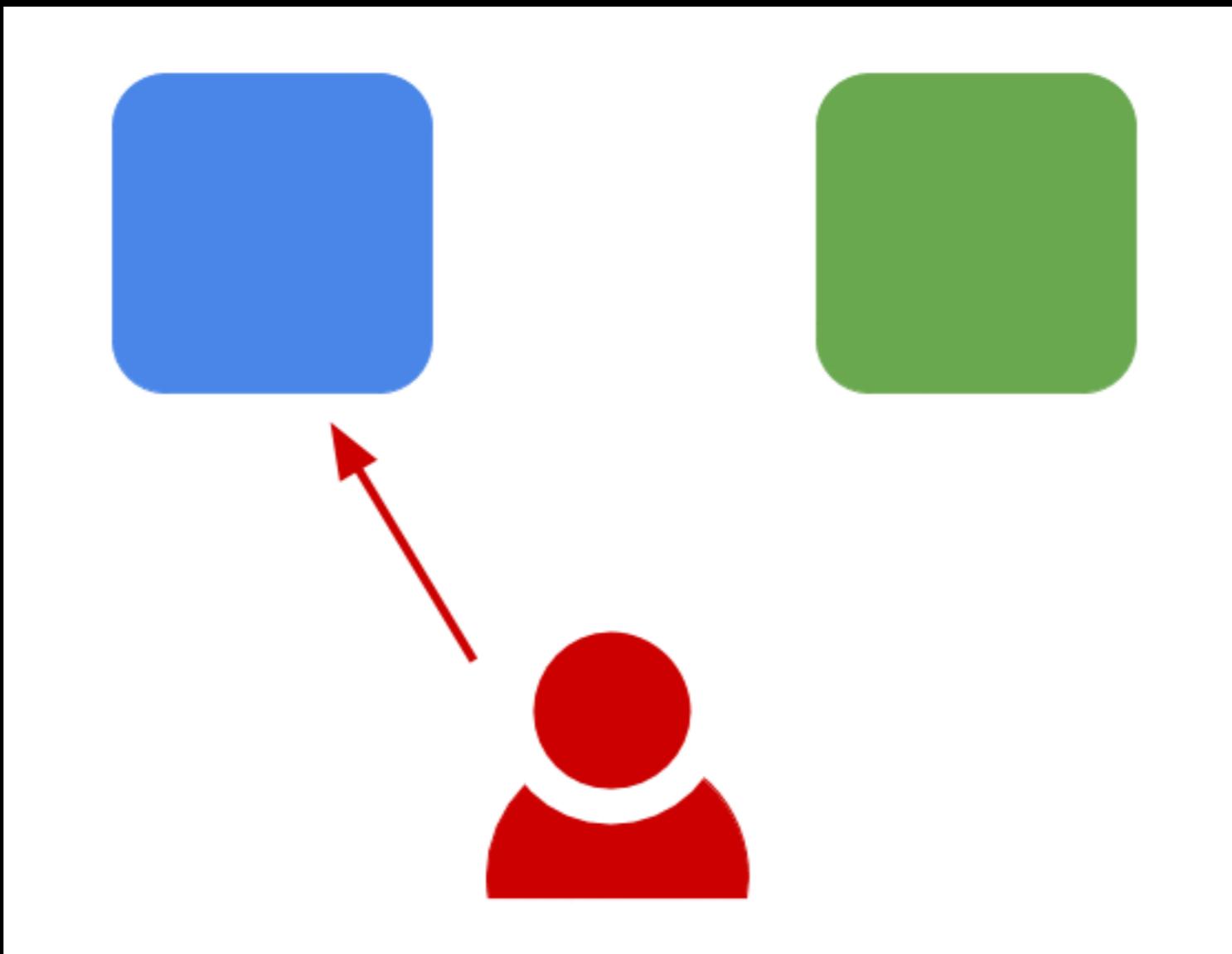
Instances



Environments



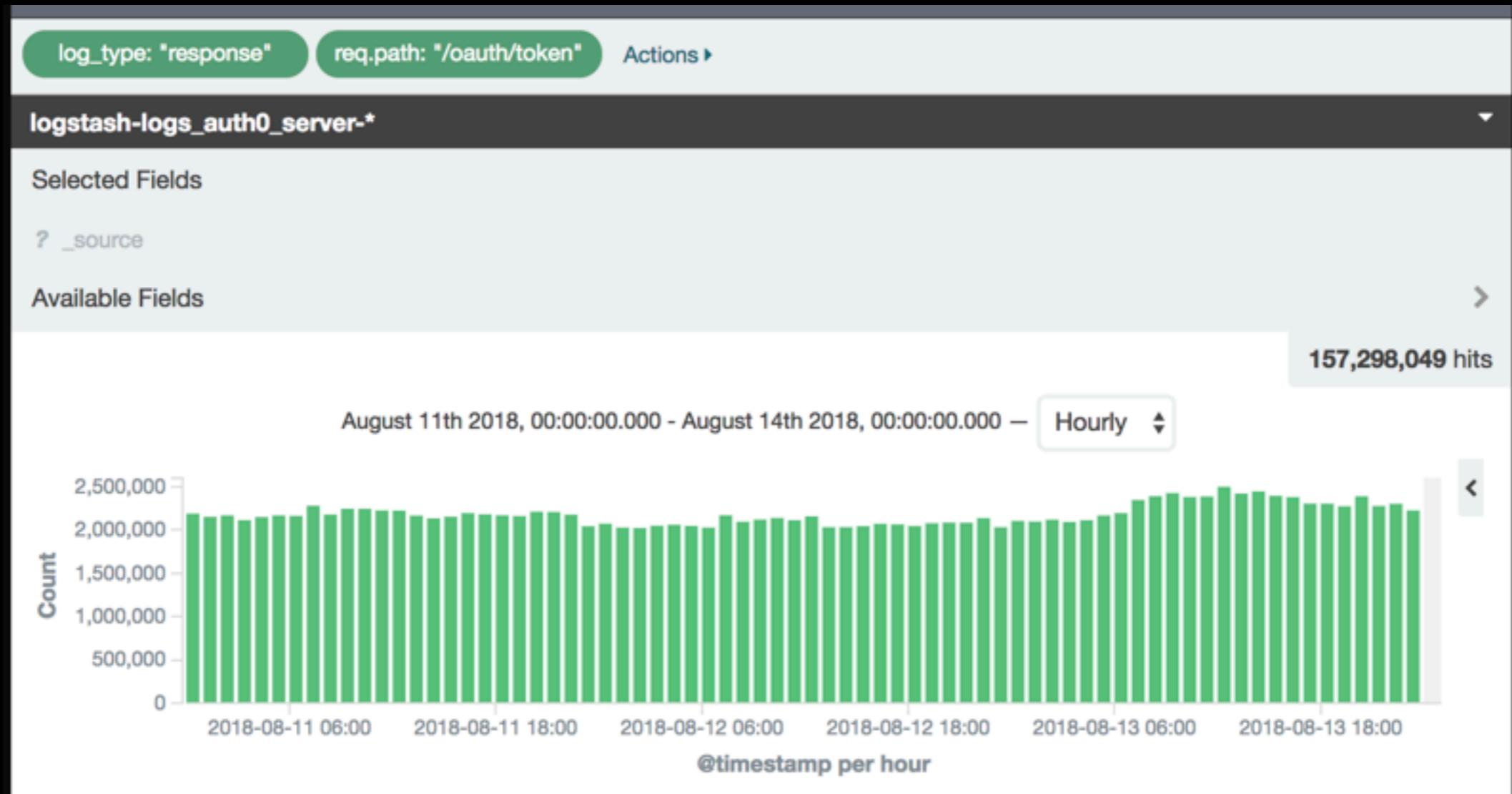
Canary



Blue/Green

duration[s] * requests impacted[%] / 100

(60*60*24*30)[s] * (error budget[%]/100[%]) * 100



Usage patterns

$$\frac{\text{duration[s]} * \text{requests impacted[%]} * (\text{period weight}) / 100}{(60*60*24*30)[\text{s}] * (\text{error budget[%]}/100[\%]) * 100}$$

$$\text{period weight} = \frac{\text{req during period length}}{\text{avg req period length during month}}$$

Consumption

Real Model

Region/Time	Start	End
US	12 AM UTC	10 AM UTC
EU	9 PM UTC	9 AM UTC
AU	11 AM UTC	9 PM UTC

Schedule



Feature flags



Belgrano

```
const belgrano = require('belgrano');
belgrano.init({ /* config */ });

const getFlag = belgrano.entities.getFlag;

if (await getFlag(entityId, flag)) {
  // enabled case
} else {
  // disabled case
}
```

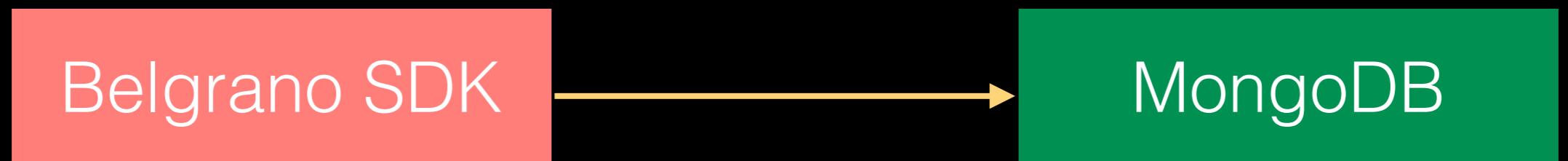
Usage

duration[s] * requests impacted[%] / 100

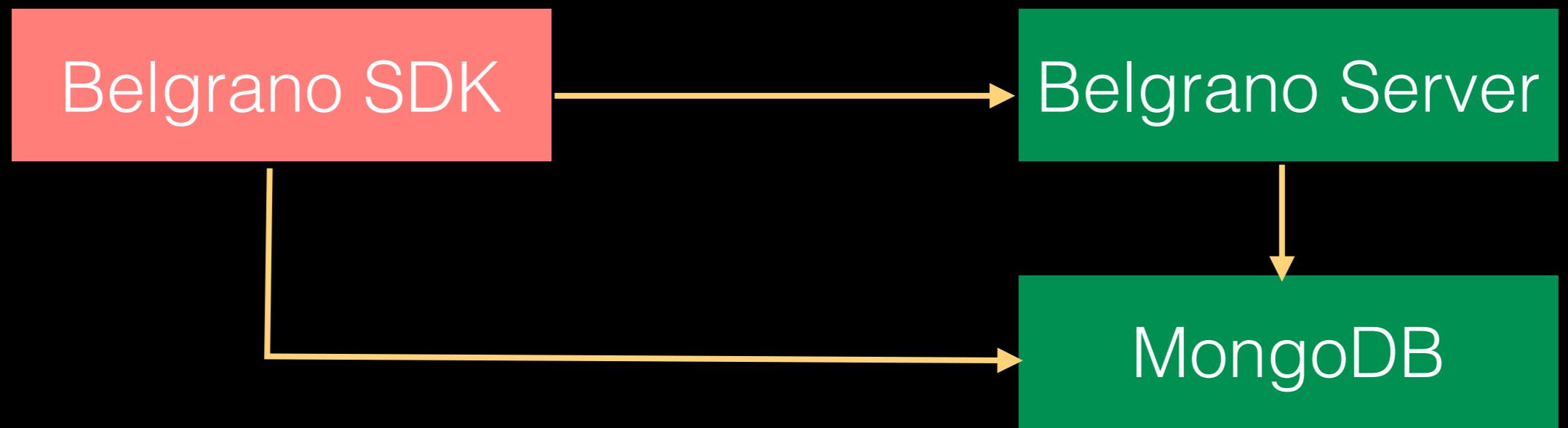
(60*60*24*30)[s] * (error budget[%]/100[%]) * 100



Topologies



DB only

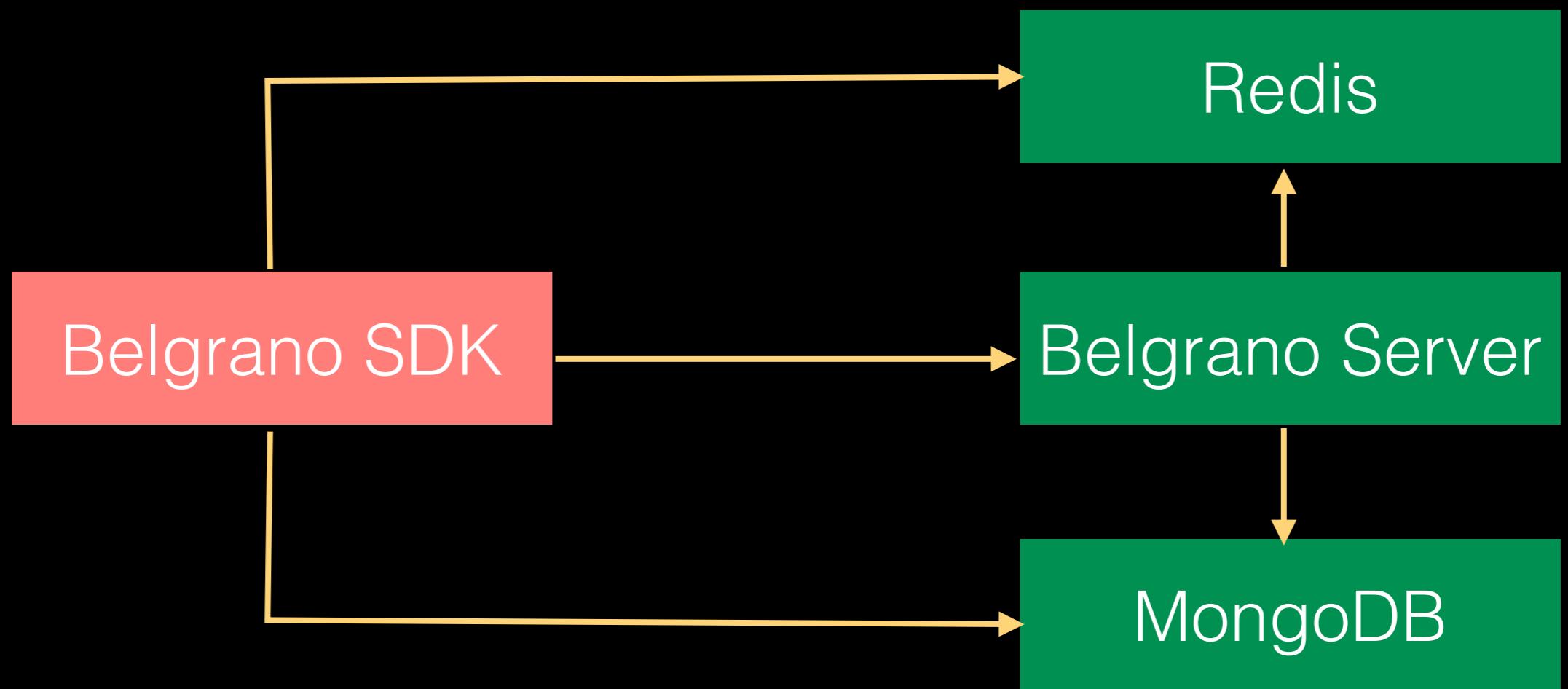


+ Abstraction

CACHE



Faster



+ Cache



Circuit Breakers

 **guerrilla.imp** 21:38
enable legacy-lock-api [REDACTED]@au
@**bishop-bot** enable legacy-lock-api [REDACTED]@au

 **bishop-bot** APP 21:38
Enabling legacy lock api...
Legacy Lock API enabled for tenant [REDACTED]@au.

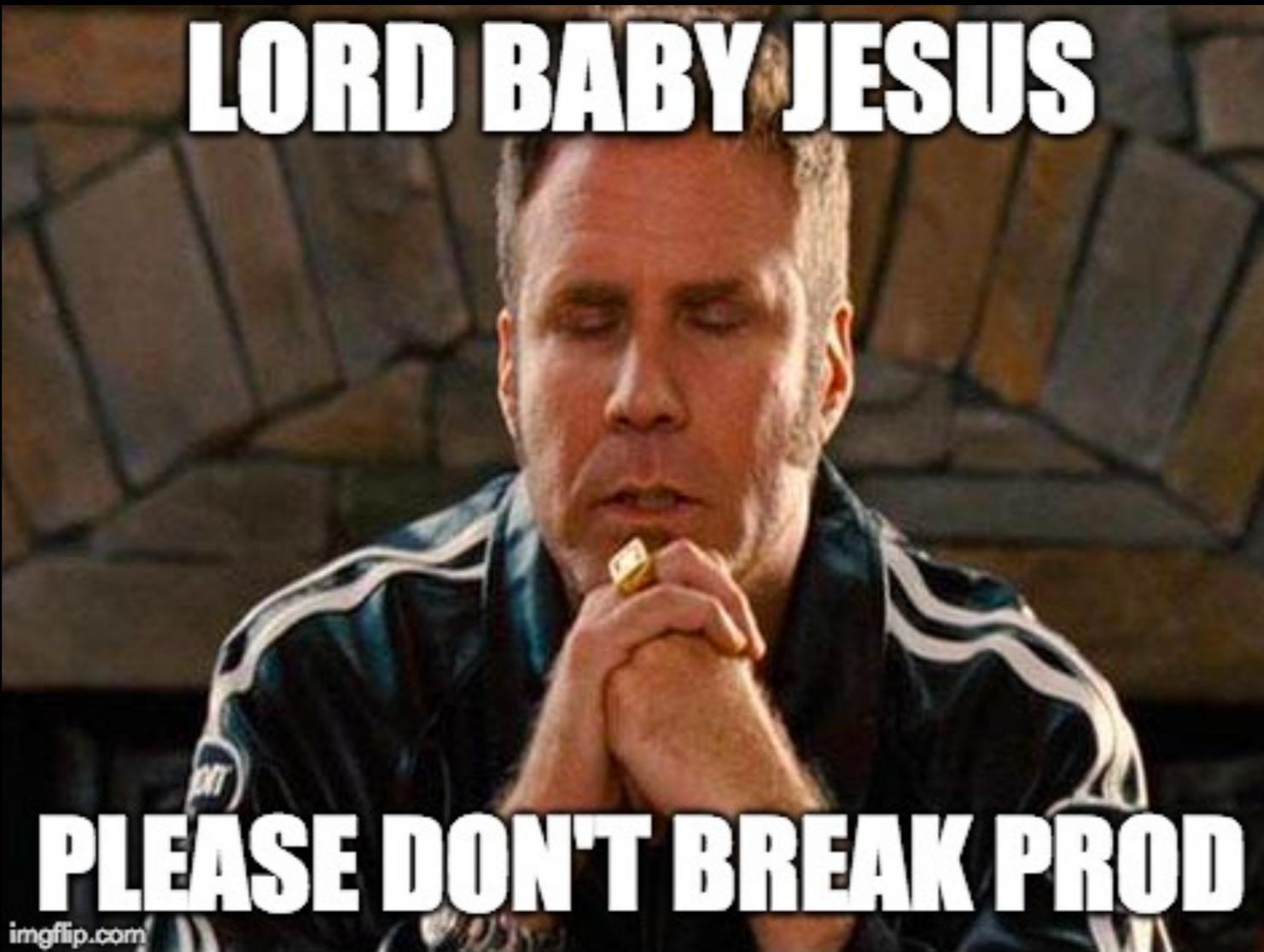
 **guerrilla.imp** 21:42
@**bishop-au** enable legacy-lock-api [REDACTED]@au

 **bishop-au** APP 21:42
Enabling legacy lock api...
Legacy Lock API enabled for tenant [REDACTED]@au.

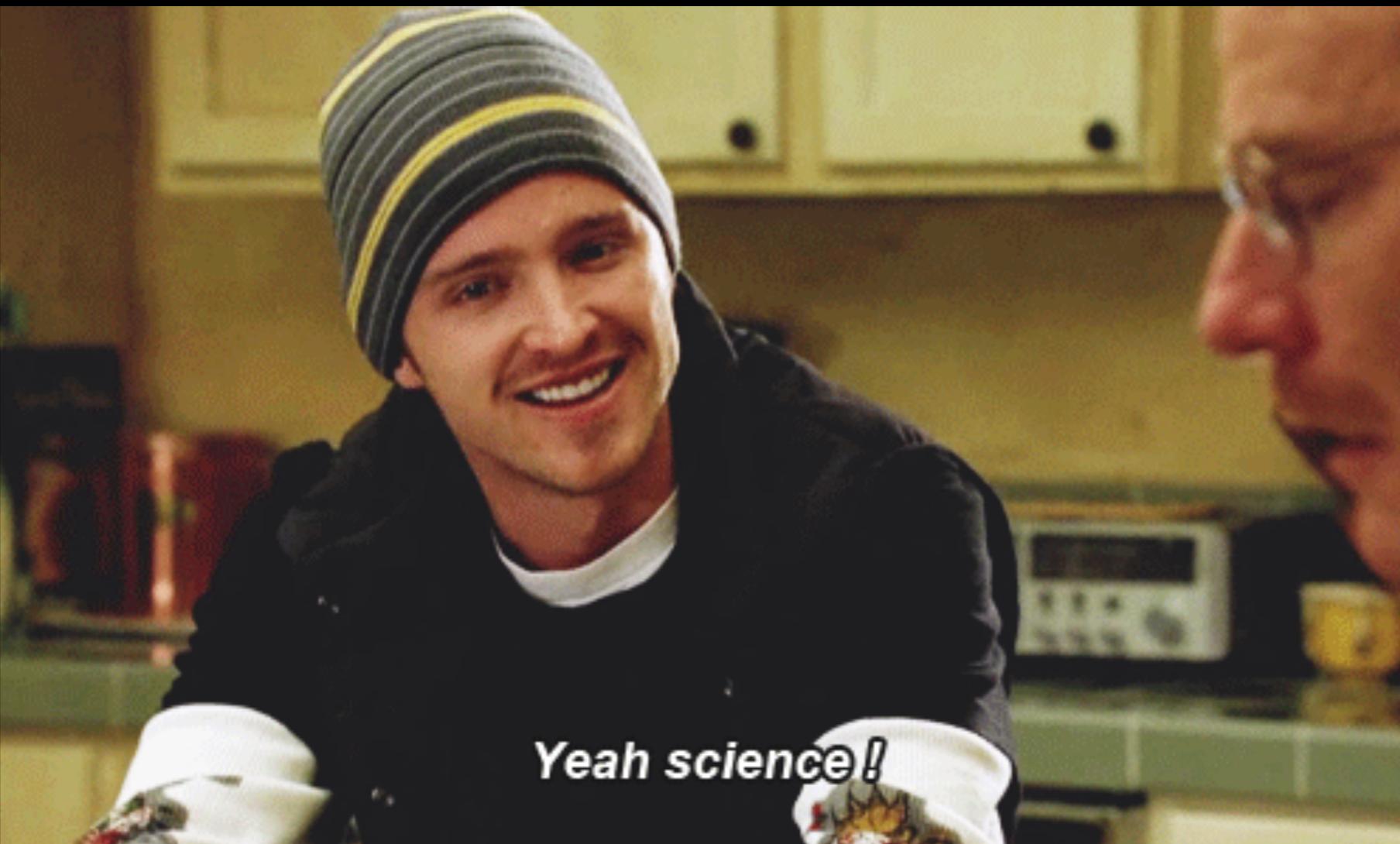
Manage



Go fast



Hope is not a strategy



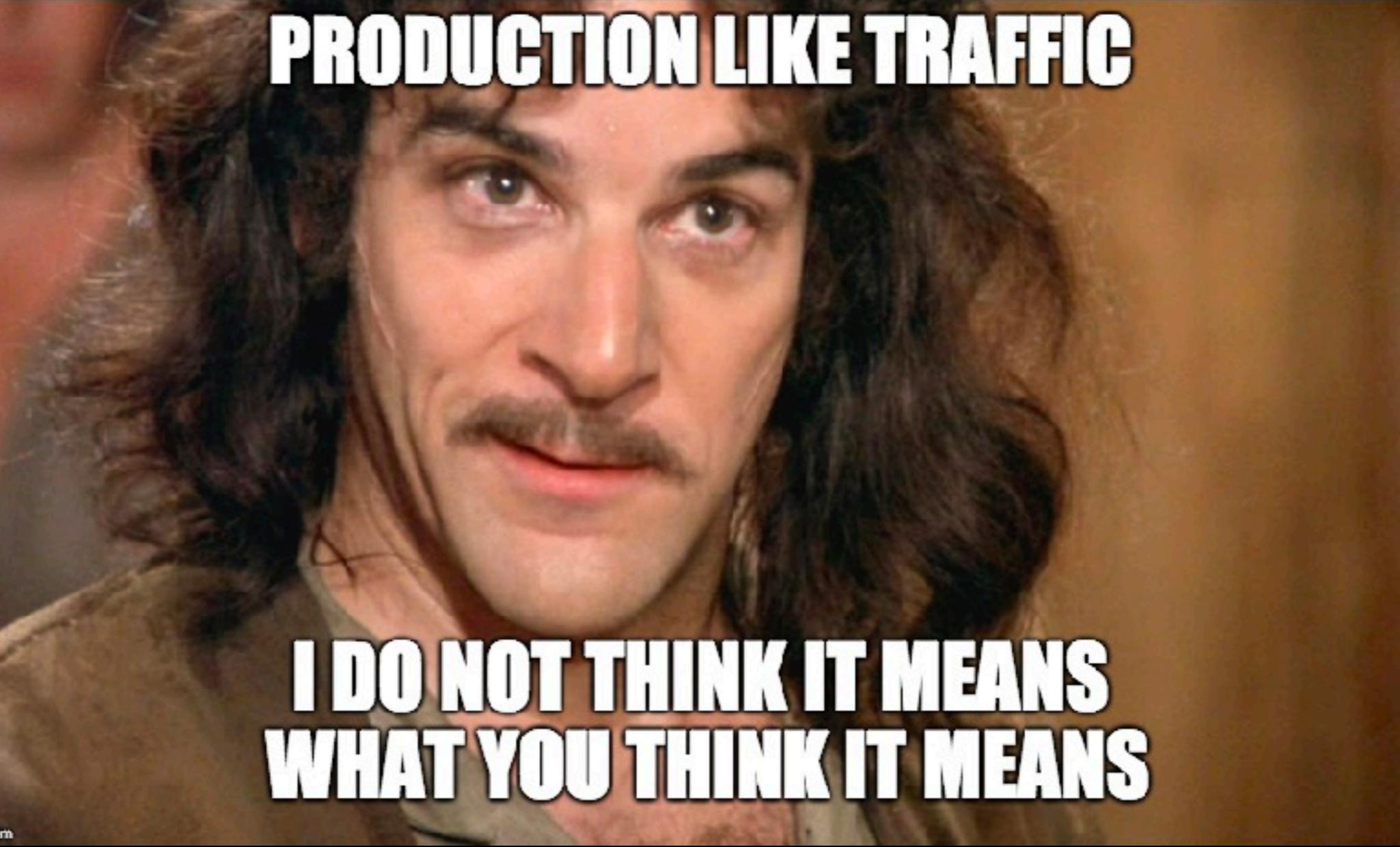
Yeah science!

Experiments



Shadowing

Fire and forget

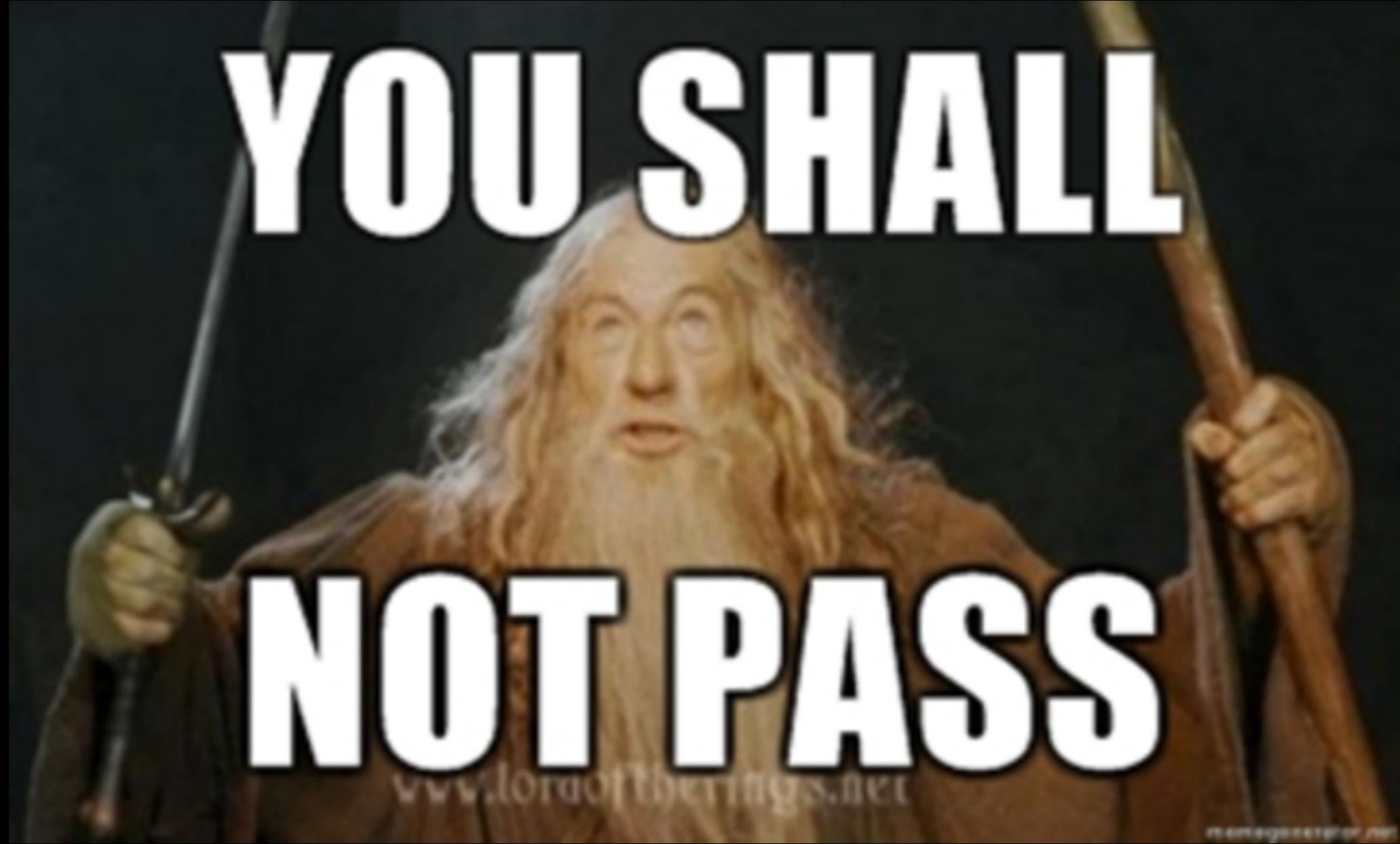


PRODUCTION LIKE TRAFFIC

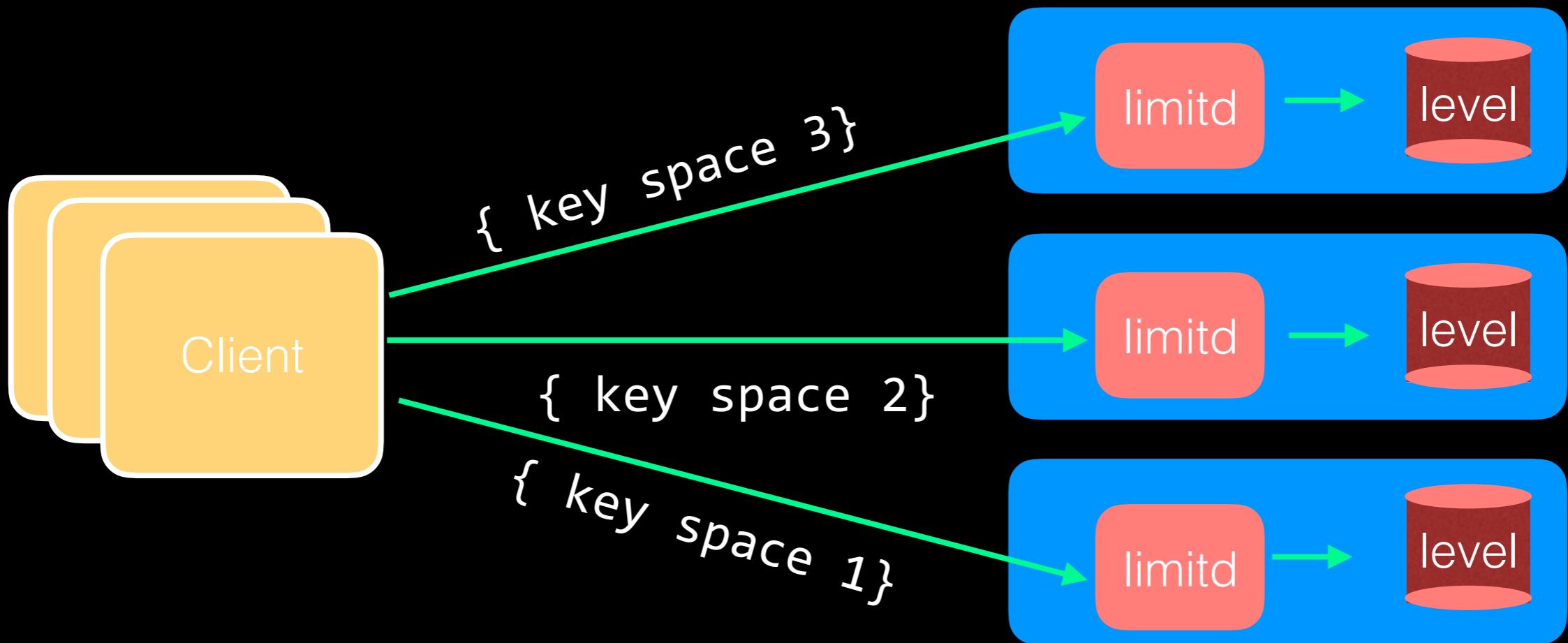
**I DO NOT THINK IT MEANS
WHAT YOU THINK IT MEANS**

Real

$$\frac{\text{duration[s]} * \text{requests impacted\%} / 100}{(60*60*24*30)[s] * (\text{error budget\%}/100\%) * 100}$$

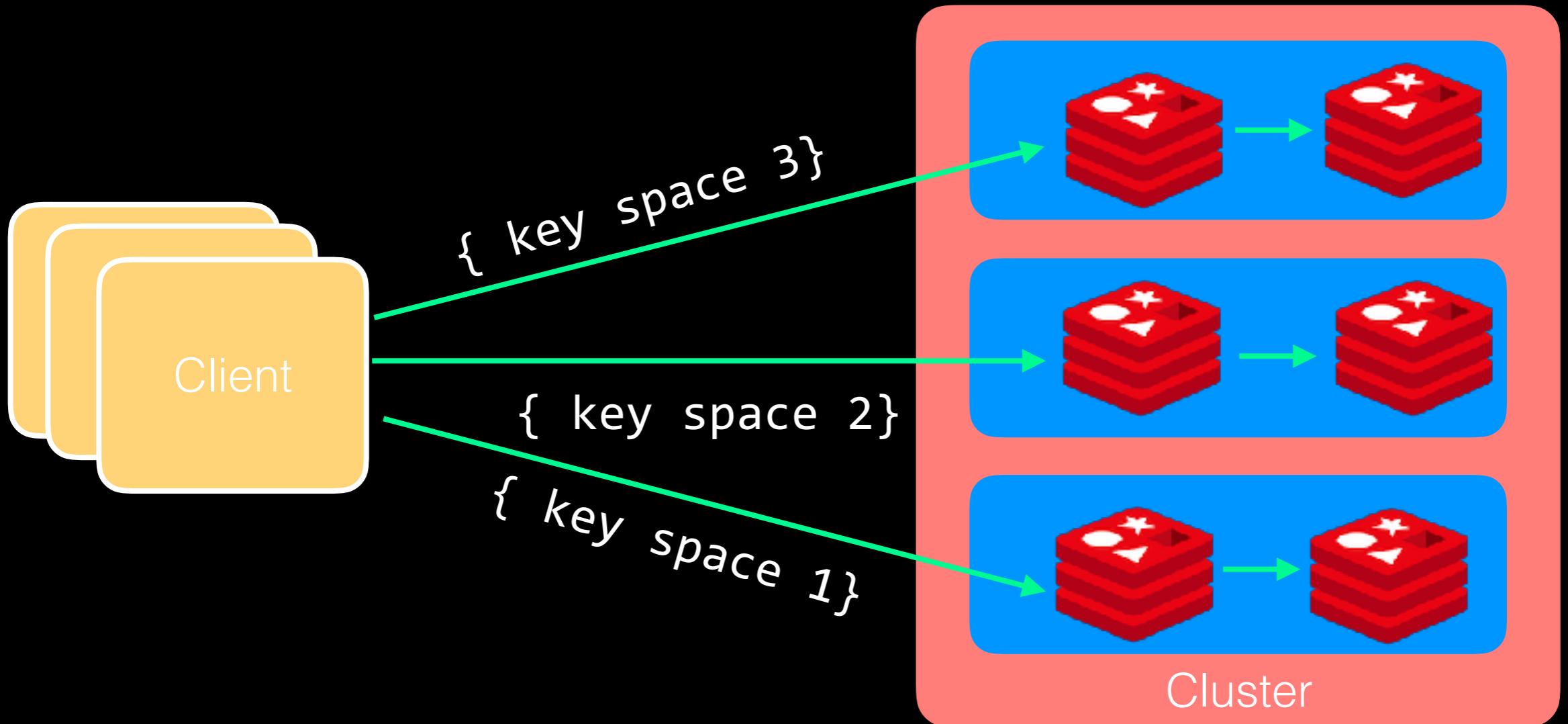


Rate limiting



Rate limiting

limitd-leveldb



Rate limiting

limitd-redis



Tap Compare

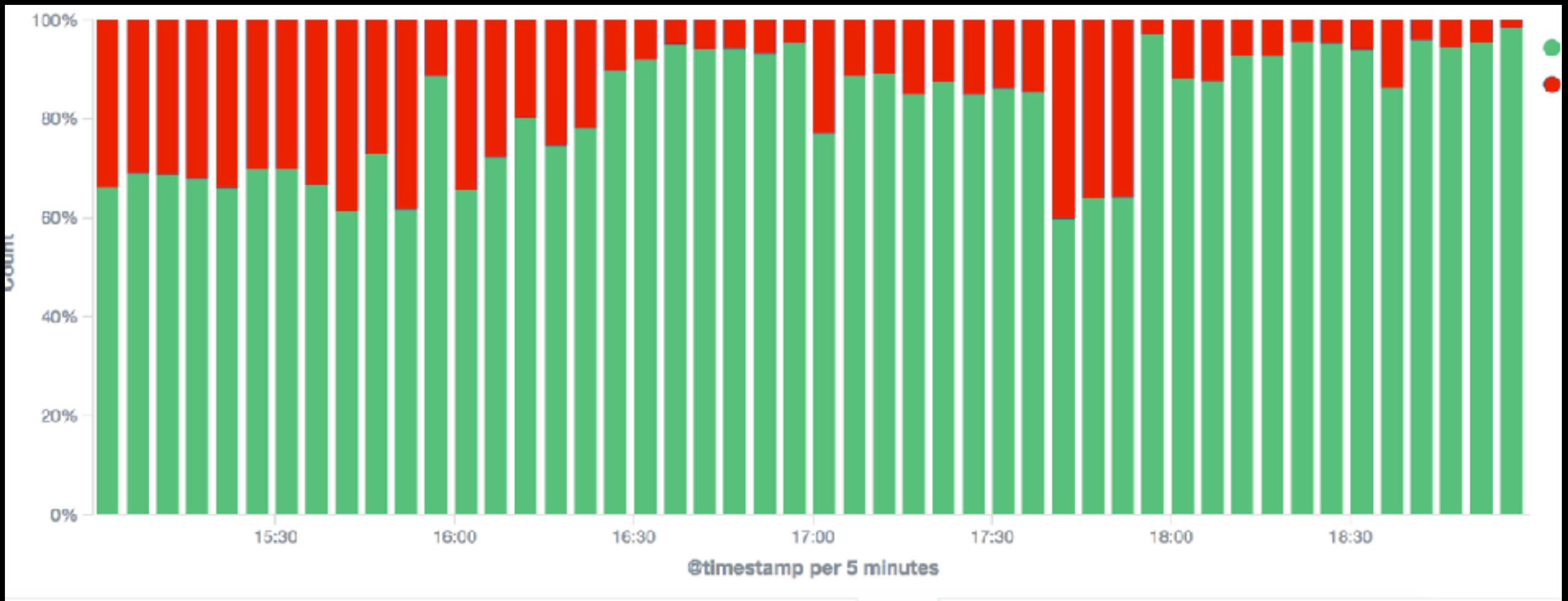
```
const feature_change = require('feature-change');

var options = {
  expected: function(cb){
    search_v2(query, cb);
  },
  actual: function(cb){
    search_v3(query, cb);
  },
  logAction: function(current_result, new_result){
    // invoked when there is a difference in the results
    // (useful for logging)
  }
};

feature_change(options, function(err, result){
  // this is the original callback you were using for search v2
  // err and result always come from search_v2
});
```

feature-change

$$\frac{\text{duration[s]} * \text{requests impacted\%} / 100}{(60*60*24*30)[s] * (\text{error budget\%}/100\%) * 100}$$



Iron out differences



Future

Platform

- Pick resources (CPU, memory, etc.)
- Pick deployment method
- Control routed traffic
- Spinnaker and automatic anomaly detection

Feature flags

- % based flags
- User Interface for managing
- New stores (not just mongodb)

Rate limiting

- Dynamic configuration
- Support for “concurrent requests”



We're hiring

<https://auth0.com/careers>

Links

- <https://medium.com/@copyconstruct/testing-in-production-the-safe-way-18ca102d0ef1>
- <https://landing.google.com/sre/book/index.html>
- <https://martinfowler.com/articles/feature-toggles.html>
- <https://redis.io/topics/cluster-tutorial>
- <https://stripe.com/blog/rate-limiters>

Links

- <http://zachholman.com/talk/move-fast-break-nothing/>
- <https://auth0.com/blog/2015/10/27/feature-changes-at-auth0/>
- <https://github.com/dschenkelman/feature-change>

Gracias!

<https://github.com/dschenkelman/wind-of-change-talk>

@dschenkelman