



THE DEVELOPER'S
CONFERENCE

Indexando Resultados de Testes com Elasticsearch

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Sobre nós

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- Engenharia Elétrica (UFRGS), MBA em Gestão e Liderança (Unisinus)
- Mestrando INF/UFRGS
- Na Datacom desde 2007. Nestes 11 anos:
 - Desenvolvedor C/C++, Python
 - Scrum Master; Product Owner
 - Gerente Técnico
 - DevOps



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- Engenharia de Computação (IPA), Especialização em Engenharia de Software (UFRGS)
- Na Datacom desde 2009. Nestes 9 anos:
 - Desenvolvedor Ruby, Python
 - Scrum Master
 - DevOps

Bem-vindos ao nosso mundo

- Switches, roteadores, ...
- Maior P&D de Telecom da América Latina
- Hardware e Software feitos integralmente no Brasil
- Principais clientes: operadoras, provedores, governo e redes corporativas

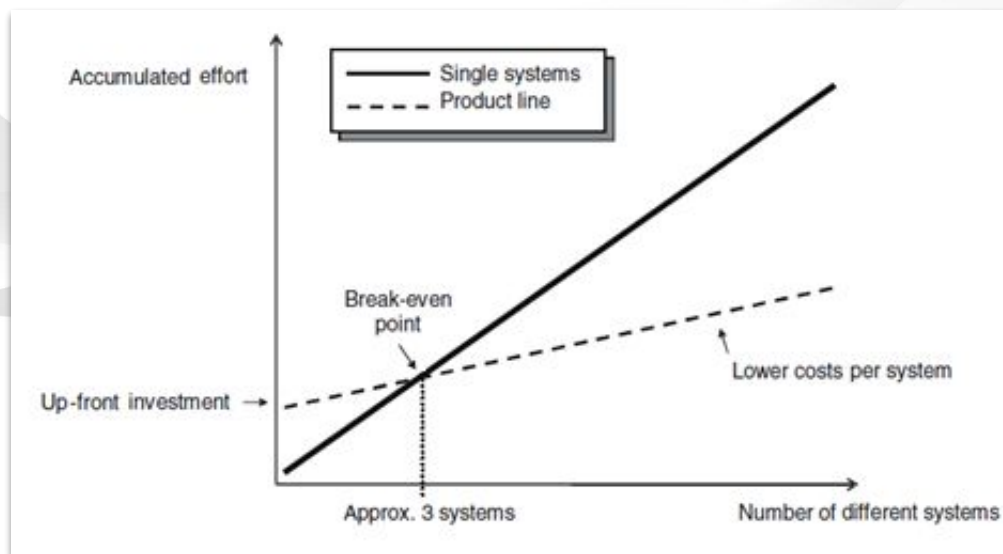


Como é o software?

- Linha de Produtos de Software, muito modular. Diversos benefícios, mas tem um custo
- O mesmo OS em todos os equipamentos
- Objetivos: plataforma para novos produtos por décadas.

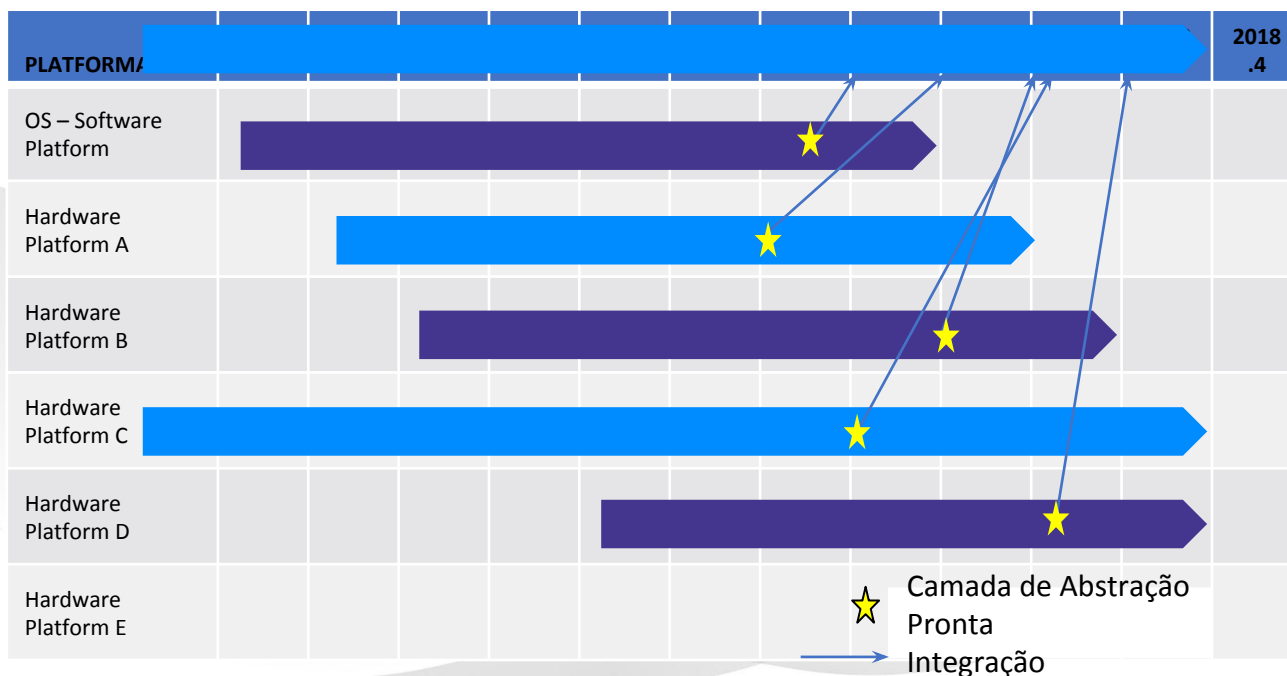
Crescer não pode significar o colapso

- **~100 pessoas no projeto**
- **Desenvolvimento em 4 cidades**

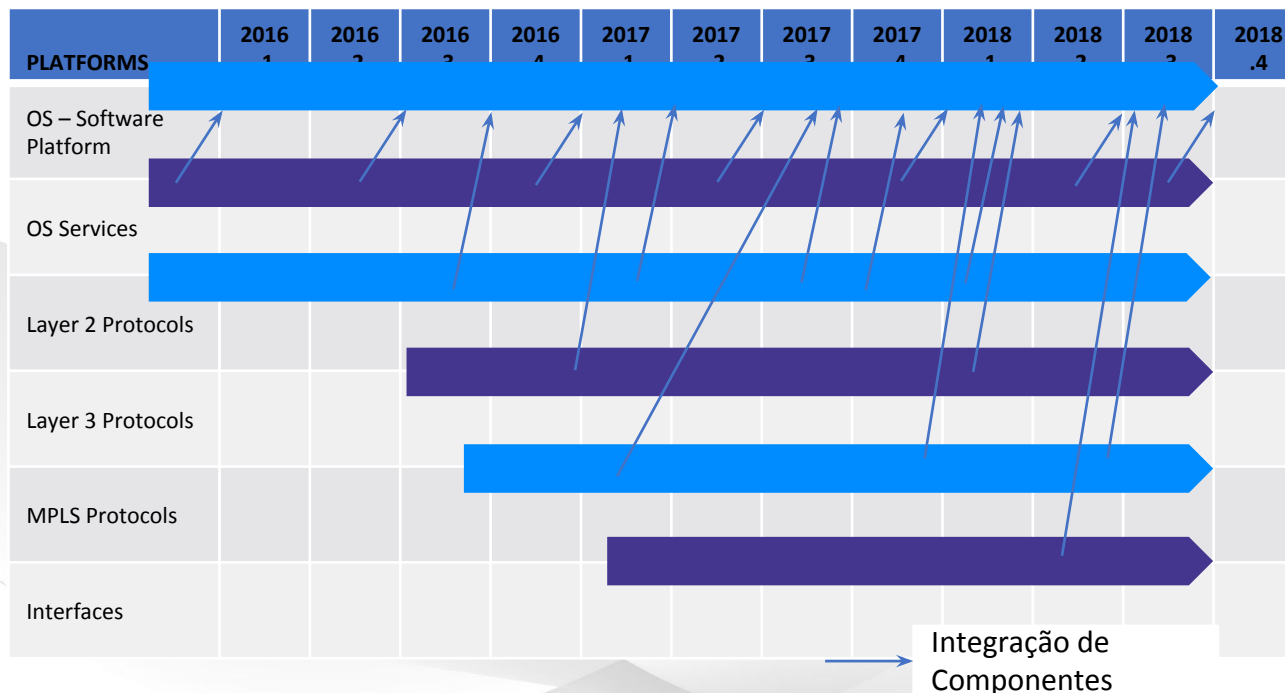


Entrega Contínua e Testes

Sincronização de Plataformas



Integração de Funcionalidades



integration queue

1: build



buildroot

farm de builders:
*10-40 minutos por build
*23 builds em paralelo
*sem virtualização
*muito I/O



2: provision



ANSIBLE
VAGRANT

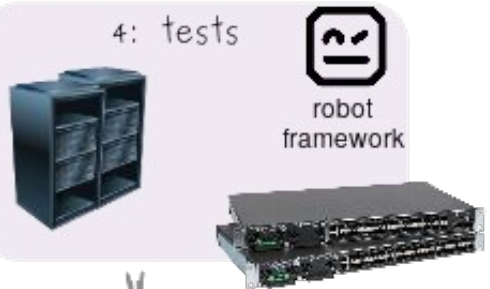
16 execuções paralelas

3: sanitize



firmware images

4: tests



robot framework

ambientes heterogêneos:
*hardware físico
*simuladores (virtual)
*outros fabricantes
*produtos legados Datacom

tempo:
1 hora (hard limit)
testes: cobertura x tempo
testes confiáveis

5: finalize



git

integrado:

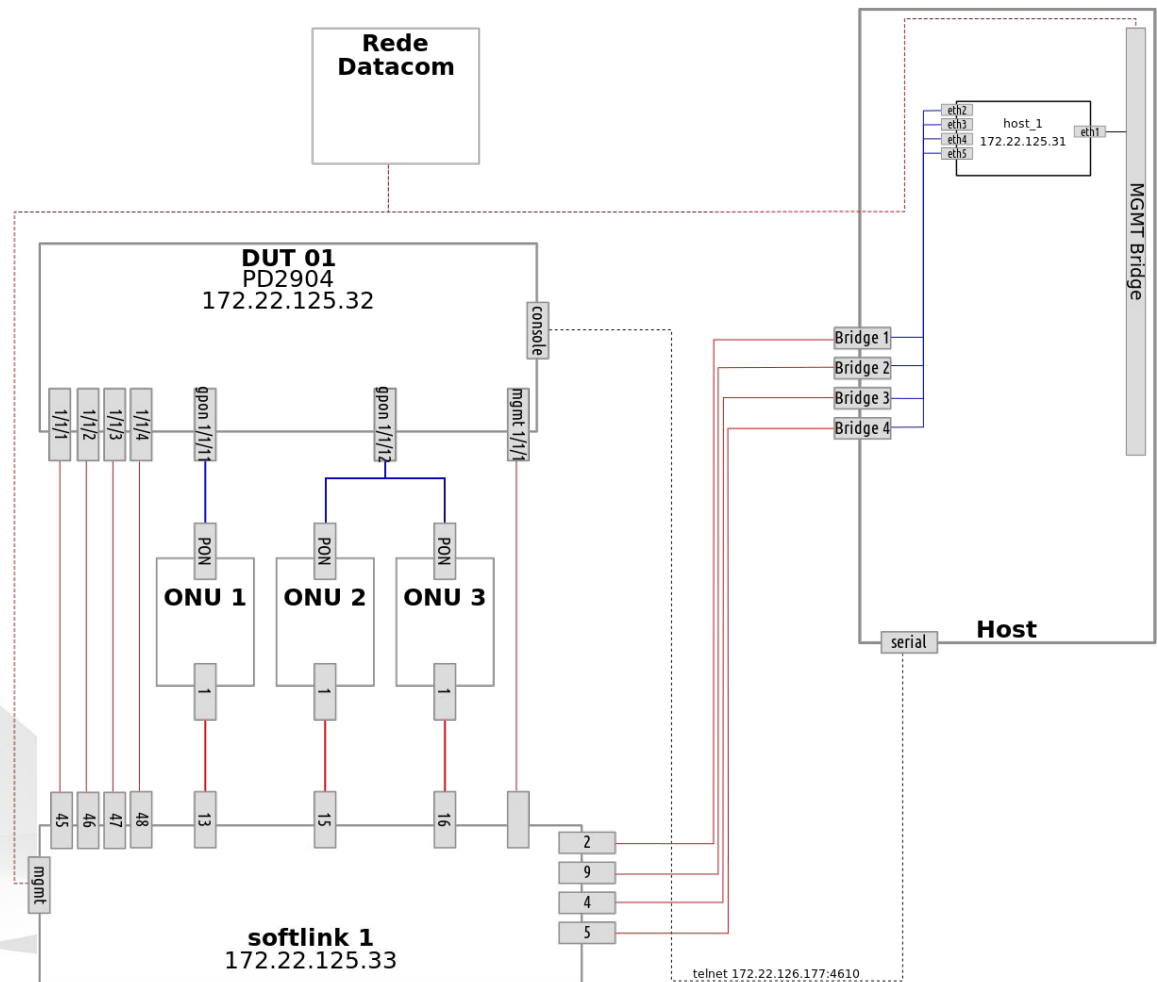


2 horas (+-20 minutos), 7x24



Como é um ambiente de testes na integração?

- **DUT** – Device Under Test
- **Host** – PC que dispara o sequenciamento de testes
- **Softlink** – equipamento de apoio, responsável por eventuais conexões entre os elementos



Como se parece um teste?

```
*** Test Cases ***
```

Generate Remote MEP RDI Alarm

```
[Documentation] Create MEP 1 on switch_dmos1 to communicate with MEP 2 on switch_dmos2.  
... After that destroy MEP 1 on switch_dmos1 and create MEP 3 to communicate  
... with MEP 2 on switch_dmos1. The Remote RDI alarm must be detected on  
... switch_dmos1 for MEP 3.
```

```
Given I have "eth_port1" and "eth_port2" from "switch_dmos1" on VLANs 10,15,20  
And I have "eth_port2" and "eth_port1" from "switch_dmos2" on VLANs 10,15,20  
And data flows from "vm_port1" to "vm_port2" from "host1" on VLAN 20  
And MD "Domain" level 5 is created with MA "Association" with ccm-interval 1s, remote-meps 2, vlan  
And I have MEP 1 "down" attached to "eth_port2" with CCI enabled on vlan 20 from MA "Association"  
And MD "Domain" level 5 is created with MA "Association" with ccm-interval 1s, remote-meps 1,3, v  
And I have MEP 2 "down" attached to "eth_port2" with CCI enabled on vlan 20 from MA "Association"  
And the state of remote MEP 2 in MA "Association" in MD "Domain" on "switch_dmos1" is "Ok"  
And the state of remote MEP 1 in MA "Association" in MD "Domain" on "switch_dmos2" is "Ok"
```

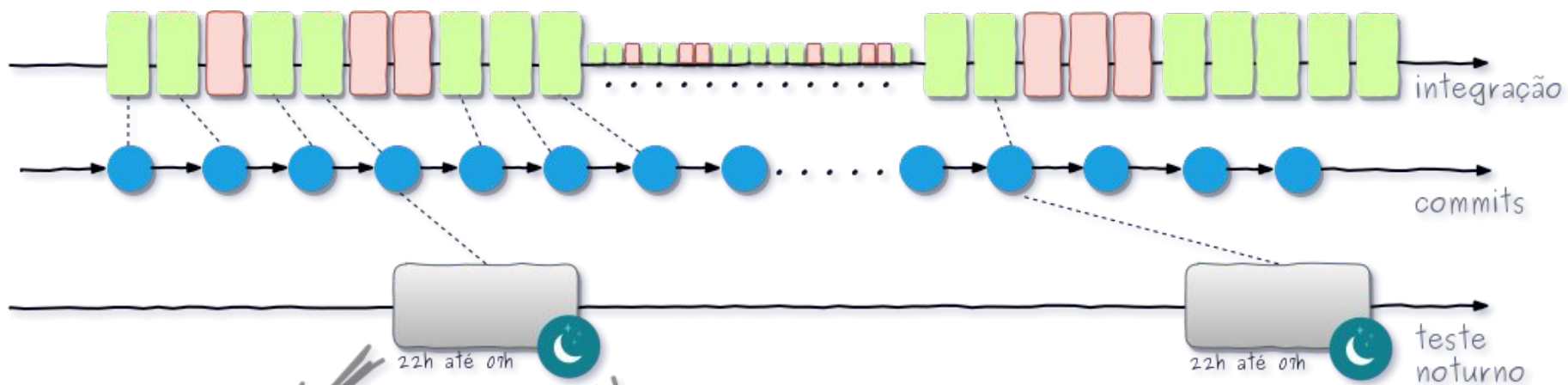
```
When I enter the configuration mode on "switch_dmos1"  
And I destroy MEP 1 from MA "Association" in MD "Domain" on "switch_dmos1"  
And I create a MEP with id 3, direction "down", attached to interface "eth_port2" and primary-vlan  
And I enable CCM generation in MEP 3 in MA "Association" in MD "Domain" on "switch_dmos1"  
And I set MEP 3 lowest fault priority defect to "remote-rdi" in MA "Association" in MD "Domain" on  
And I commit the configuration on "switch_dmos1"
```

```
Then the state of remote MEP 2 in MA "Association" in MD "Domain" on "switch_dmos1" is "Ok"  
And the state of remote MEP 3 in MA "Association" in MD "Domain" on "switch_dmos2" is "Ok"  
And the state of remote MEP 1 in MA "Association" in MD "Domain" on "switch_dmos2" is "Failed"  
And alarm "CFM_RMEP_RDI" is detected in MEP 3 from MA "Association" within 10 seconds on "switch_...  
And alarm "CFM_RMEP_CCM" is detected in MEP 2 from MA "Association" within 10 seconds on "switch_...
```

```
Generate Remote MEP with interface Error Alarm
```

Idioma
Gherkin:
*given...
*when...
*then...





Durante o dia, os desenvolvedores usam o ambiente



~8h úteis de teste (sanitize + outros procedimentos)

falhas aqui abrem bugs de forma automática



Porém os ambientes de integração são exclusivos! Usados só durante 1 a 2 turnos por semana para manutenção programada. Foco: estabilidade, redução de falsas falhas



0 Problema

81

testbeds

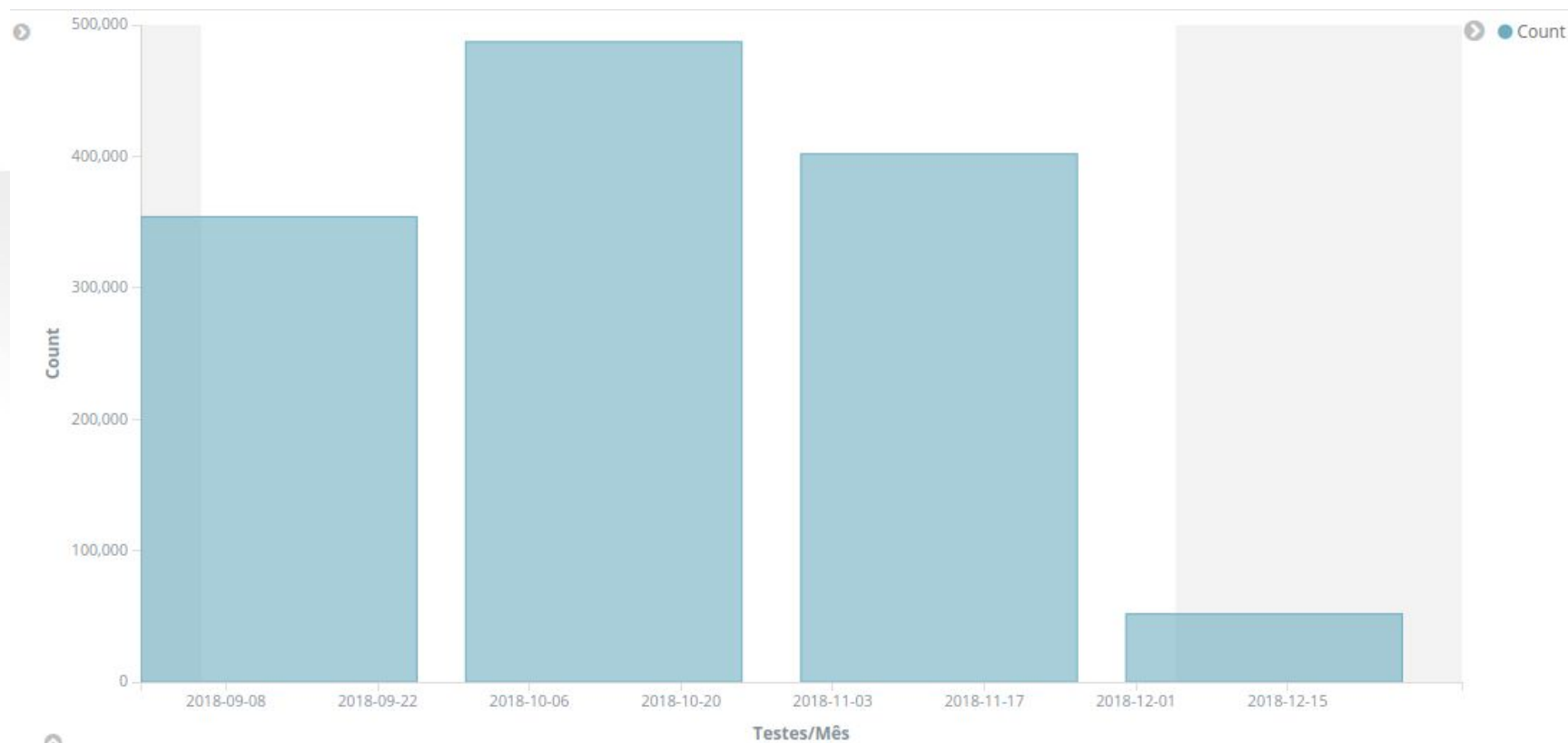
4951

tests

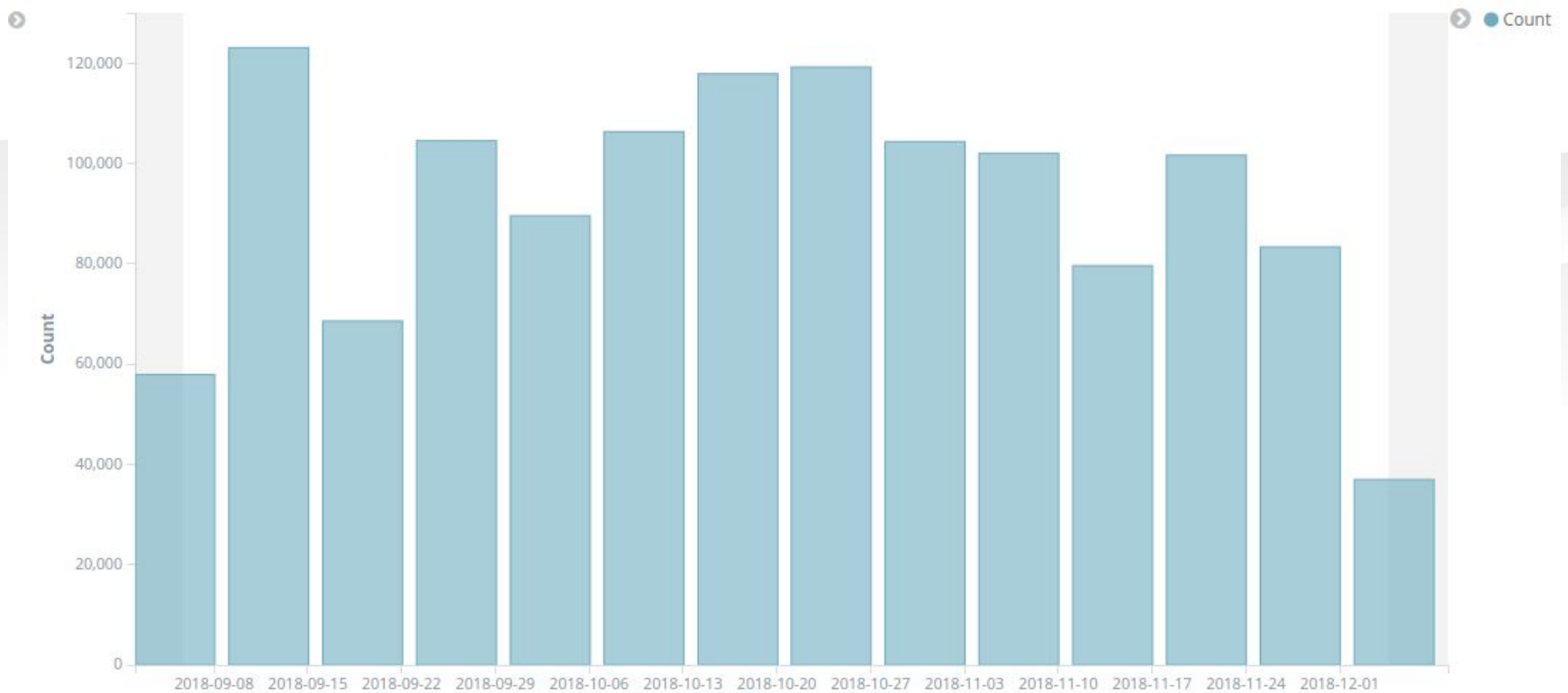
**... E crescendo, afinal é um S.O. para uma
linha de produtos**

**Mas não podemos e não queremos mudar a
duração do pipeline**

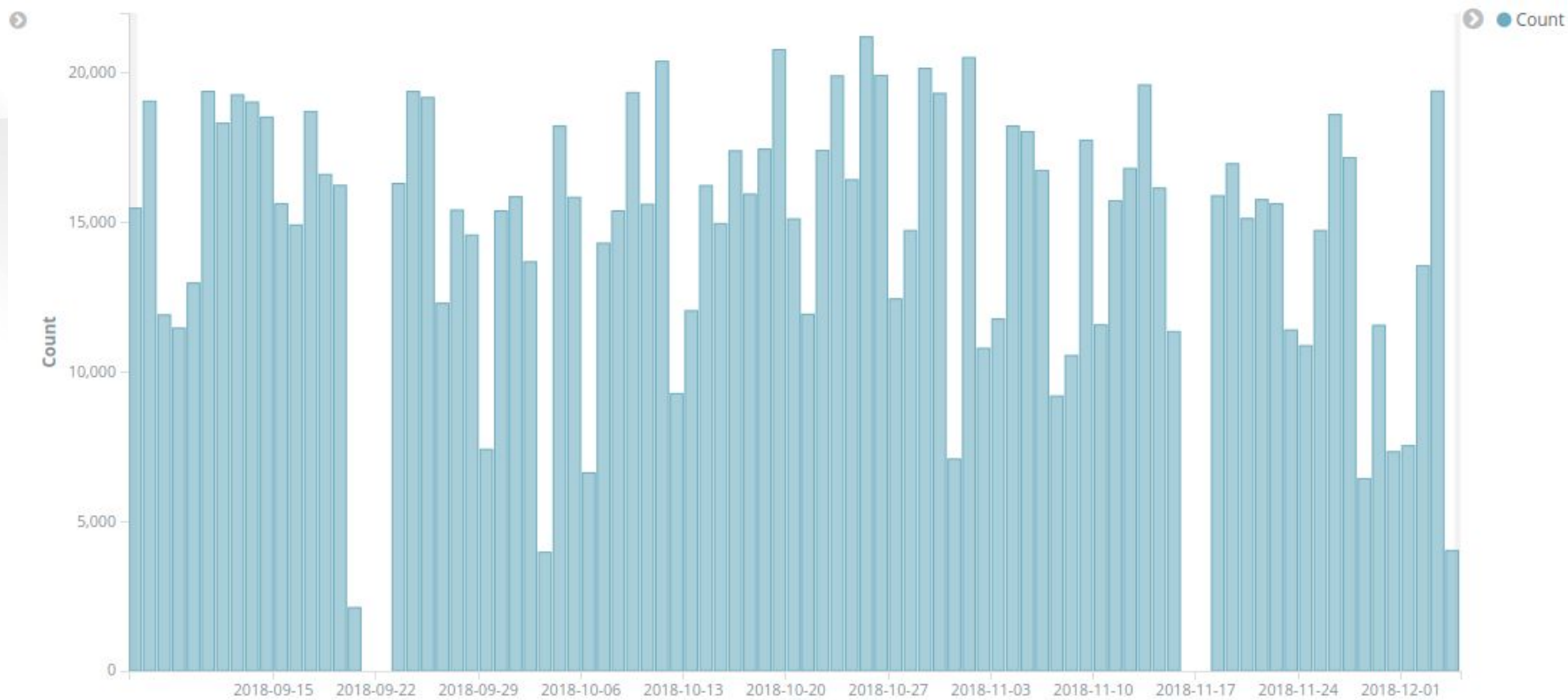
Testes por mês



Testes por semana

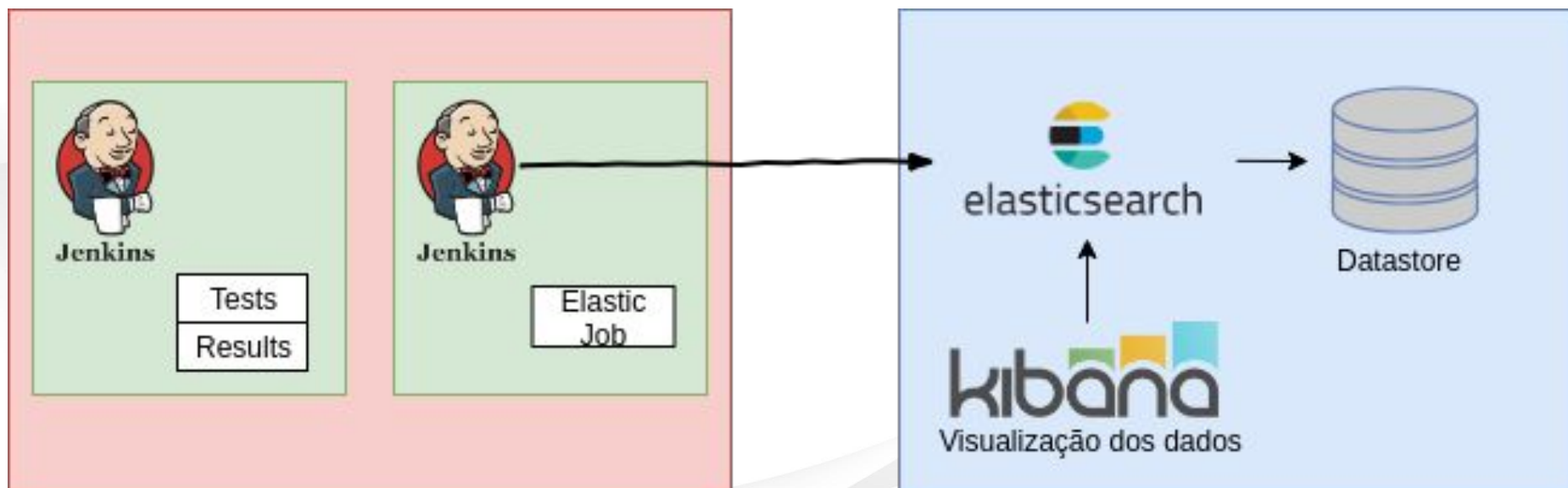


Testes por dia



Solução

Indexar resultados no Elasticsearch



O que é o Elasticsearch?

- Servidor de buscas distribuído
- Permite indexar dados de forma não relacional
- RESTful
- Documentos
 - Json
- Index
 - Agrupa documentos

Índices

```
diego@PEDELD004835:~$ curl -XGET "http://elastic.com/_cat/indices?v"
health index docs.count store.size pri.store.size
green integration_report 4370 26.1mb 13mb
green integration_build 72331 26mb 13mb
green weekly_testbed 2927 3.5mb 1.7mb
green integration_testbed 148701 103.9mb 51.9mb
green sanity_report 588 2.5mb 1.2mb
green integration_new_build 49018 18mb 9mb
green weekly_testbed_tmp 1649 1.9mb 1003.3kb
green weekly_report 34 806kb 403kb
green factory_test_test_run 29031 26.8mb 13.5mb
green .kibana 325 1.1mb 583.8kb
green weekly_test_run 245543 244.2mb 122.7mb
green integration_test_run 2128390 1.7gb 915.6mb
green factory_test_report 127 1.4mb 762.6kb
green sanity_test_run 4198779 3.5gb 1.7gb
green factory_test_testbed 1213 1.9mb 1002.3kb
green sanity_testbed 61445 46.6mb 23.3mb
```

Documento

```
{
  "tags" : [
    "sanity",
    "usb"
  ],
  "timestamp" : 1532221800715,
  "test_manager" : "fulano",
  "testname" : "All test name",
  "dmos_version_major" : "x.x.x",
  "jobname" : "+sanity_test+dmos-testbed-4050-7",
  "elapsedtime" : 623,
  "manager" : "fulano",
  "result" : "PASS",
  "testbed" : "dmos-testbed-4050-7",
  "build_id" : "S28",
  "testselection" : true,
  "url" : "job/+factory_test+dmos-testbed-4050-7/14/",
  "fail_msg" : "",
  "critical" : true,
  "build" : 28
}
```

Indexando Resultados

<https://robot-framework.readthedocs.io/en/v3.0.4/>

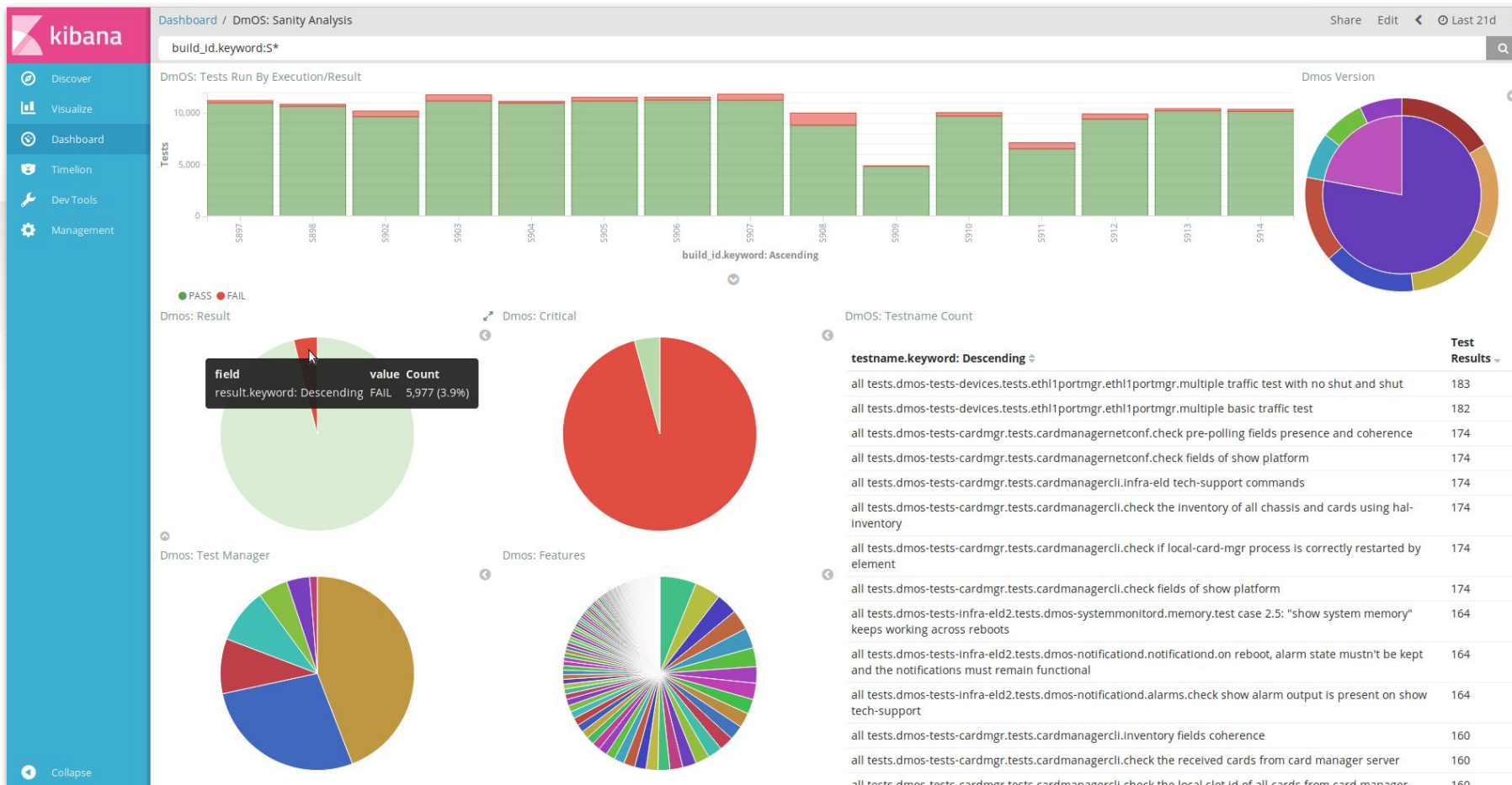
```
from robot.api import ExecutionResult

result = ExecutionResult('output.xml')
result.configure(stat_config={'suite_stat_level': 2,
                             'tag_stat_combine': 'tagANDanother'})

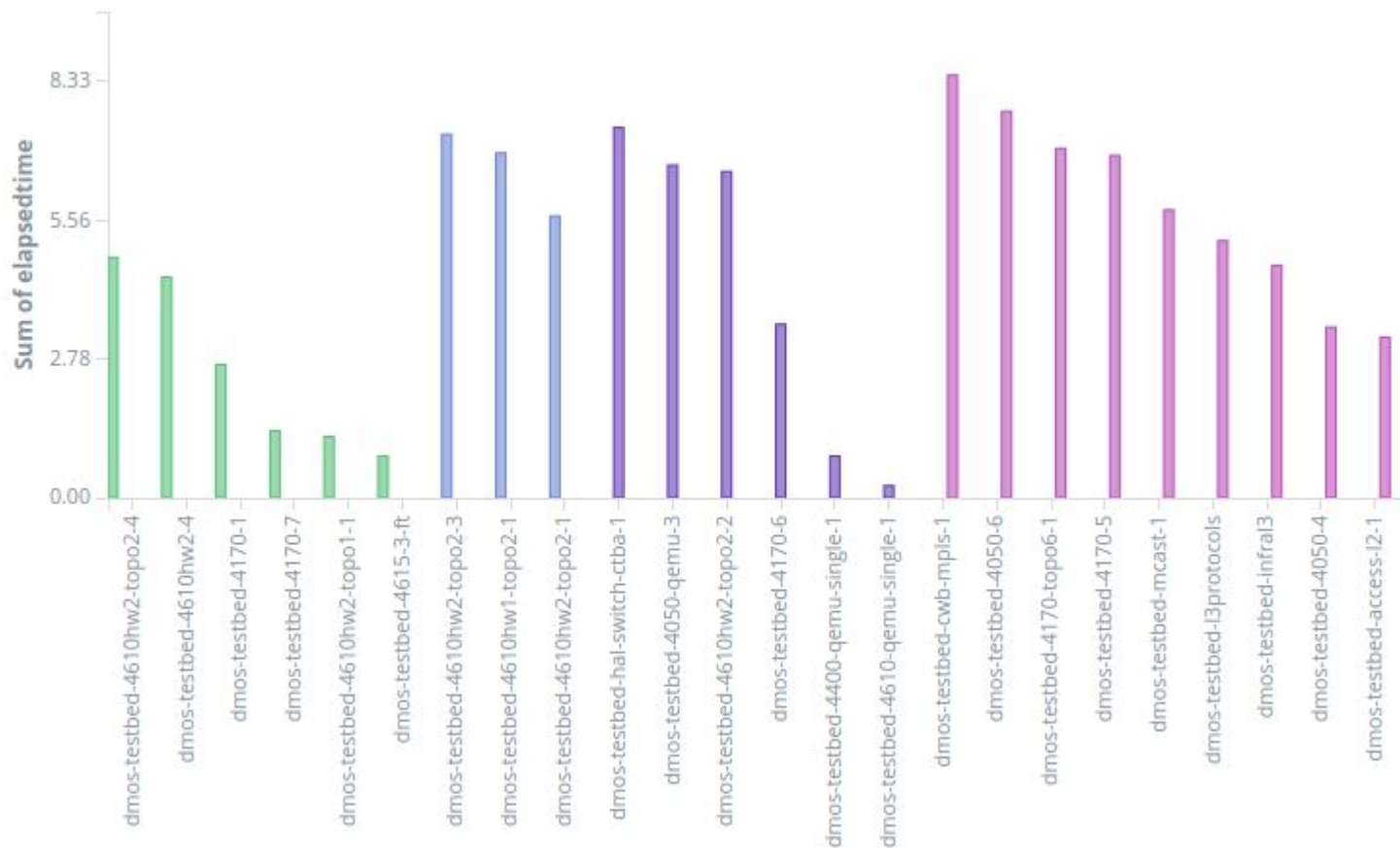
stats = result.statistics
print stats.total.critical.failed
print stats.total.critical.passed
print stats.tags.combined[0].total
```

Gráficos

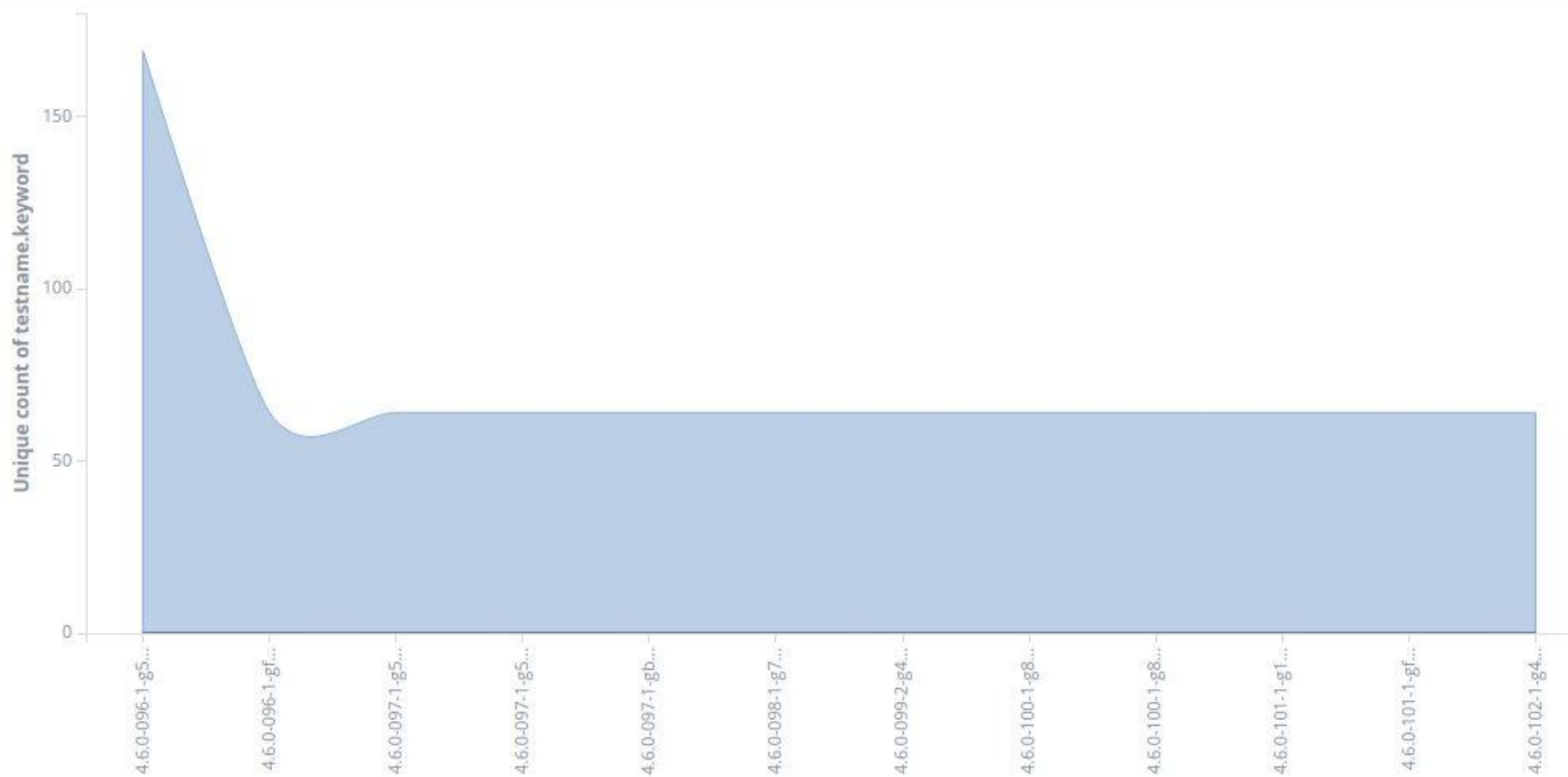
Kibana



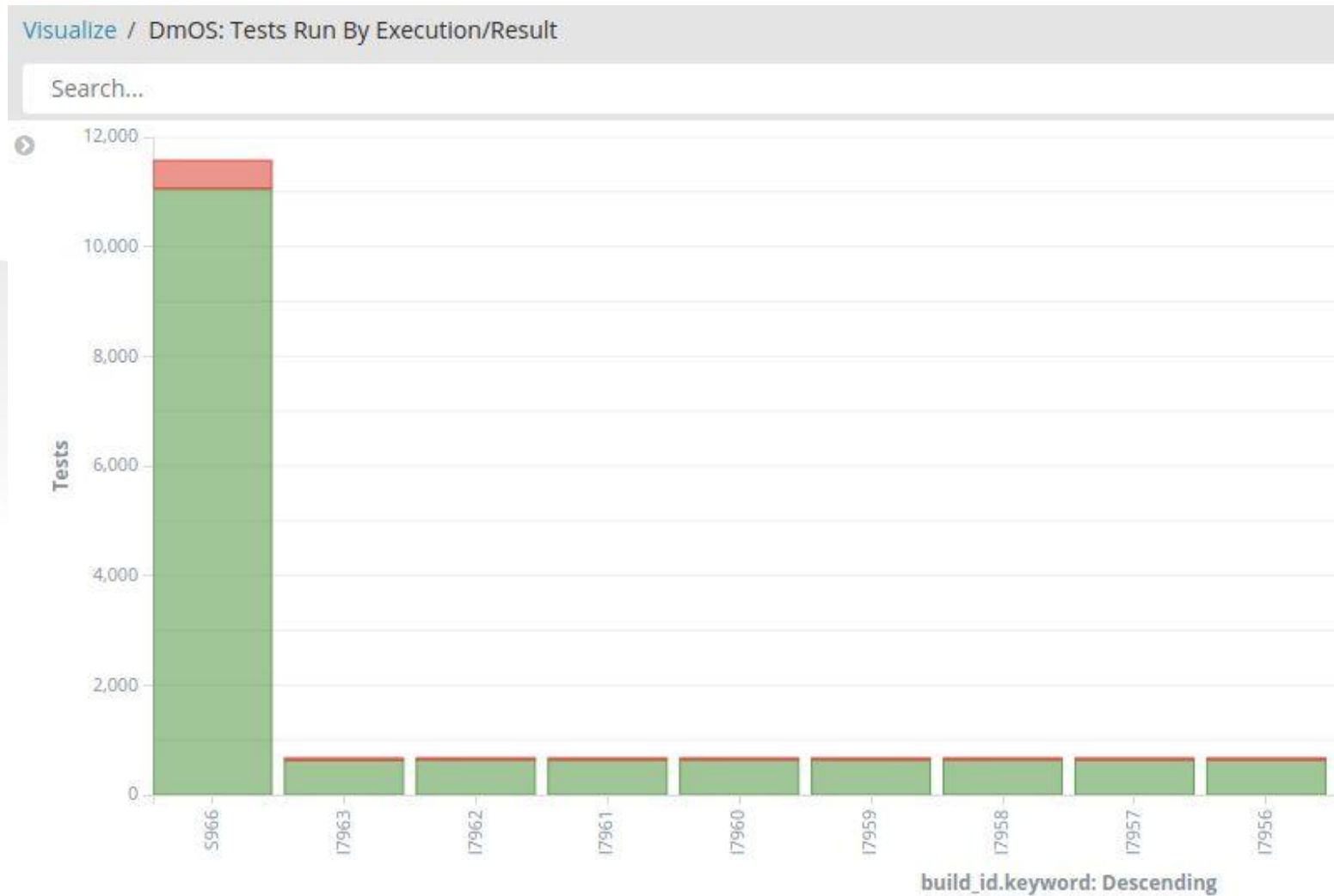
Tempo de teste por plataforma



Evolução de uma plataforma



Testes por tier



Obrigado! Dúvidas?



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