

V A R

Bash Operators
no Kubernetes



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TDC - 2019

Agenda

- Quem somos
- Nosso ambiente
- Problemas a resolver
- O que são os operators?
- VAR: nosso bash operator

Alexandre Mioranza



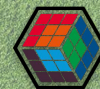
- Atuo na área de tecnologia desde 1999;
- Atualmente sou SRE na Zenvia Mobile;
- Curto muito Tecnologia e Música;
- Sou pai em turno integral;
- Leio de vez em quando e
- Faço maratona no Netflix;

Leonardo leggli



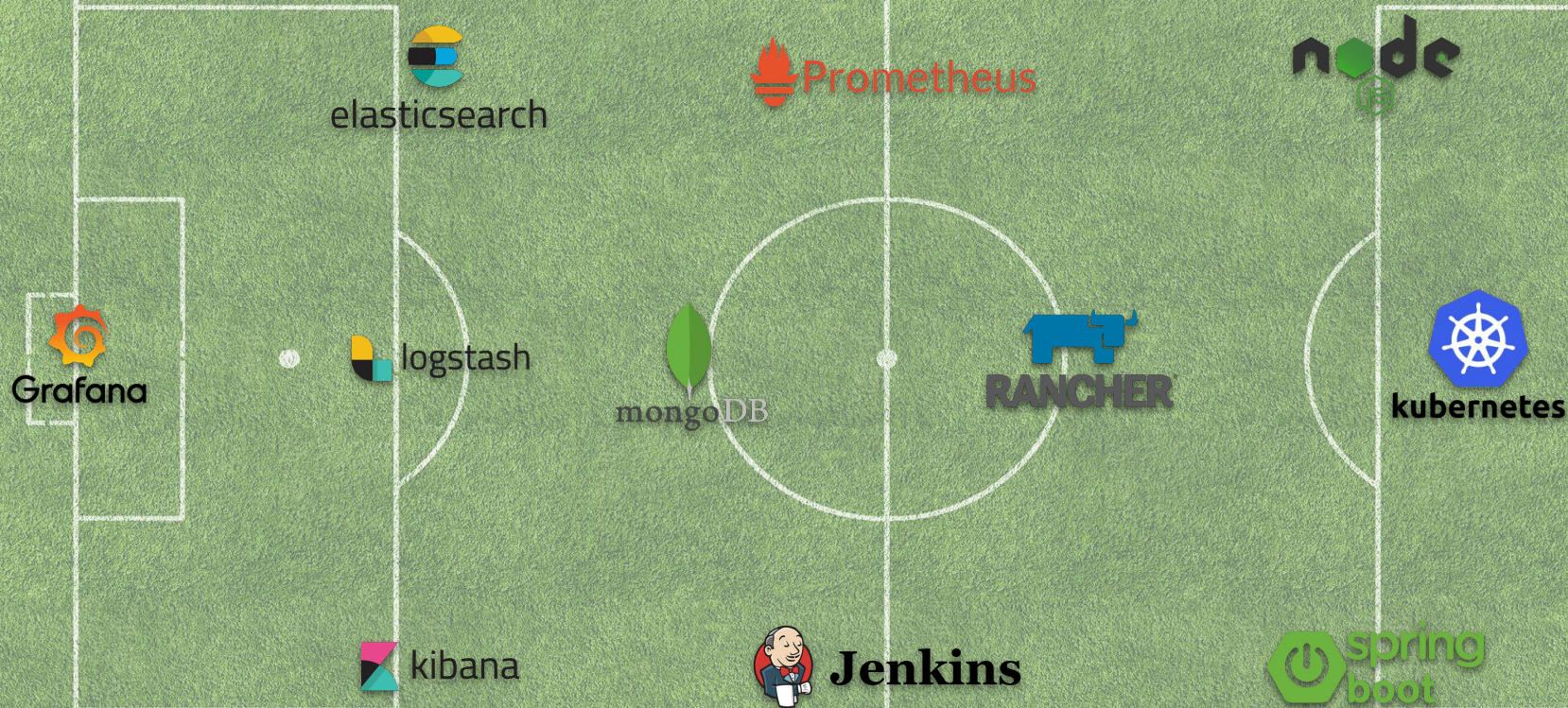
- Atuo na área de tecnologia desde 2005;
- Atualmente sou SRE na Zenvia Mobile;
- Sou pai 30 horas por dia
- Curto música e tecnologia
- Não explodo (fisicamente) coisas

Nosso ambiente

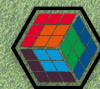


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Problemas a resolver



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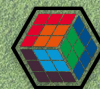
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- Deployments do RocketChat sem requests e limits
 - Deployment é criado automaticamente por ferramenta de terceiro, não podendo ser alterado
 - Grande quantidade de instâncias sendo criadas no mesmo nó
 - Problemas recorrentes devido a falta de recursos



Problemas a resolver

- Endpoint de GlusterFS (persistent storage) de tempos em tempos não estava disponível
 - Aplicação falhando devido a inexistência do endpoint
 - Remoção aleatória do endpoint por processo não identificado no cluster

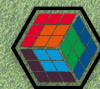


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O que são Operators?



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- Operators implementam e automatizam o ciclo de vida de atividades comuns de aplicações dentro de um cluster kubernetes
- São aplicações nativas kubernetes que manipulam os objetos através das APIs do cluster



O que são Operators?



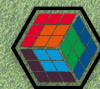
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- Suas principais funções são:
 - Instalação
 - Configuração
 - Update
 - Backup
 - Failover
 - Restore
- Monitora objetos do cluster e atua de acordo com os eventos detectados (create/delete/update)



VAR: o nosso bash operator



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- Usamos a ferramenta shell-operator, criado pela Flant
- É uma ferramenta para rodar scripts baseados nos eventos gerados por um cluster kubernetes



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```

└─ zenvia-var-operators
  └─ var-gluster-endpoint
    └─ hooks
      └─ endpoints-hooks.sh
      └─ Dockerfile
      └─ ! monitor-gluster-endpoint-rbac.yml
      └─ ! monitor-gluster-endpoint.yml
      └─ ! prepare.yml
      └─ ⓘ README.md
    └─ var-rocketchat
      └─ hooks
        └─ deploy-hooks.sh
        └─ Dockerfile
        └─ ! monitor-deploy.yml
        └─ ! monitor-rbac.yml
        └─ ⓘ README.md
```


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```
zenvia-var-operators > var-gluster-endpoint > Dockerfile
FROM flant/shell-operator:latest
ADD hooks /hooks
```

```
zenvia-var-operators > var-gluster-endpoint > ! monitor-gluster-endpoint.yml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: var-gluster-endpoint
  namespace: kube-system
spec:
  selector:
    matchLabels:
      app: var-gluster-endpoint
  replicas: 1
  template:
    metadata:
      labels:
        app: var-gluster-endpoint
    spec:
      containers:
        - name: shell-operator
          image: nexus-pull.zenvia.com/zcc/var-gluster-endpoint:1
          imagePullPolicy: Always
          imagePullSecrets:
            - name: regsecret
            - name: regnexuspull
          serviceAccountName: var-sre
```

```
Projects > zenvia > zenvia-var-operators > var-gluster-endpoint > hooks > endpoints-hooks.sh
1 #!/usr/bin/env bash
2
3 if [[ $1 == "--config" ]]; then
4   cat <<EOF
5   {"onKubernetesEvent": [
6     {"kind": "Endpoints",
7      "name": "prd-glusterfs-cluster",
8      "watchEvent": ["Deleted"]}
9   ]}
10 EOF
11 else
12   endpointName=$(jq -r '.[0].resourceName' $BINDING_CONTEXT_PATH)
13   namespace=$(jq -r '.[0].resourceNamespace' $BINDING_CONTEXT_PATH)
14   echo "Endpoint '${endpointName}' on '${namespace}' removed"
15   if [[ ${endpointName} == "prd-glusterfs-cluster" ]]; then
16     echo "Recreating ${endpointName} on ${namespace}..."
17     cat <<EOF | kubectl apply -n ${namespace} -f -
18   {
19     "apiVersion": "v1",
20     "kind": "Endpoints",
21     "metadata": {
22       "name": "prd-glusterfs-cluster"
23     },
24     "subsets": [
25       {
26         "addresses": [
27           {
28             "ip": "172.18.13.123"
29           },
30           {
31             "ip": "172.18.13.124"
32           }
33         ],
34         "ports": [
35           {
36             "port": 1,
37             "protocol": "TCP"
38           }
39         ]
40       }
41     ]
42   }
43 EOF
44   fi
45 fi
```


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```
zenvia-var-operators > var-rocketchat > Dockerfile
FROM flant/shell-operator:latest
ADD hooks /hooks
```

```
zenvia-var-operators > var-rocketchat > ! monitor-deploy.yml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: var-rocketchat
spec:
  selector:
    matchLabels:
      app: var-rocketchat
  replicas: 1
  template:
    metadata:
      labels:
        app: var-rocketchat
    spec:
      containers:
        - name: shell-operator
          image: nexus-pull.zenvia.com/zcc/var-rocketchat:1
          imagePullPolicy: Always
          imagePullSecrets:
            - name: regsecret
            - name: regnexuspull
          serviceAccountName: var
```


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Projects > zenvia > zenvia-var-operators > var-rocketchat > hooks > deploy-hooks.sh

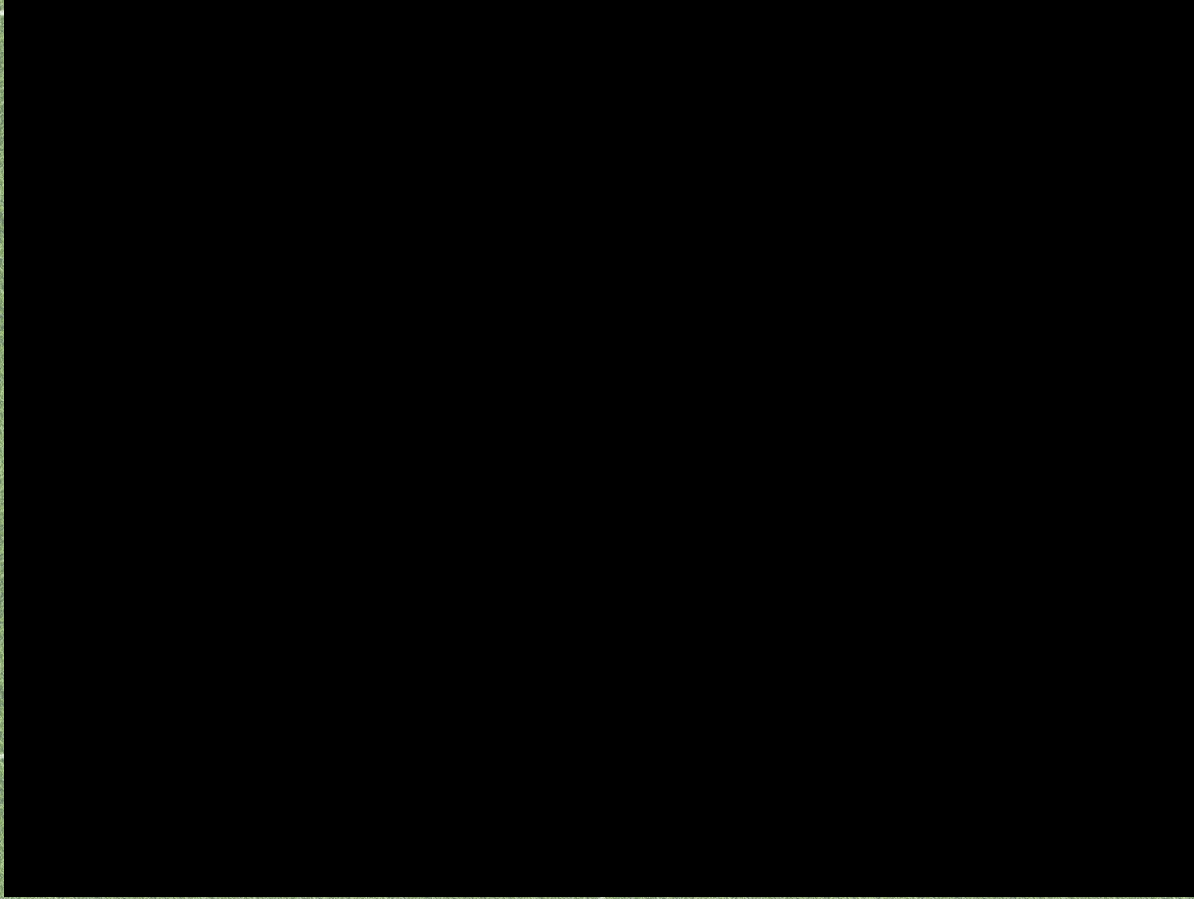
```
1  #!/usr/bin/env bash
2
3  if [[ $1 == "--config" ]] ; then
4      cat <<EOF
5      {"onKubernetesEvent":[
6          {"kind": "Deployment",
7            "namespace": "rocketchat",
8            "watchEvent":["Added"]}
9      ]}
10     EOF
11 else
12     deployName=$(jq -r '.[0].resourceName' $BINDING_CONTEXT_PATH)
13     echo "Deployment '${deployName}' added"
14     patch=$(cat <<EOF
15     {
16         "spec": {
17             "template": {
18                 "spec": {
19                     "nodeSelector": {
20                         "rocketchat": "true"
21                     }
22                 }
23             }
24         }
25     }
26     EOF
27 )
28
29     case "${deployName}" in
30         "fleetcommand"|var-rocketchat)
31             echo "Deployment: ${deployName}, nothing to do."
32             ;;
33         *)
34             kubectl patch deployment ${deployName} --patch "${patch}"
35             kubectl patch deployment ${deployName} --type json -p='[{"op": "add", "path": "/spec/template/spec/containers/0/resources/limits", "value": { "cpu" : "0.5", "memory" : "900Mi" } }]'
36             kubectl patch deployment ${deployName} --type json -p='[{"op": "add", "path": "/spec/template/spec/containers/0/resources/requests", "value": { "cpu" : "0.1", "memory" : "400Mi" } }]'
37             ;;
38         esac
39 fi
```


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A medium shot of a man with short, dark hair, wearing a blue suit, white shirt, and a patterned tie. He has a serious, questioning expression on his face. The background is dark with out-of-focus lights, including warm orange bokeh on the left and cooler blue and green bokeh on the right. A semi-transparent grey box with the word 'PERGUNTAS?' in white capital letters is positioned in the bottom right corner.

PERGUNTAS?



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Re-write Kubernetes in bash #83477

New issue



Closed

jdumars opened this issue on Oct 3 · 26 comments



jdumars commented on Oct 3

Member



- 1.) Improve readability of code
- 2.) Testing will be easier, since we can just skip them
- 3.) Will run everywhere using industry standard tools like grep and echo
- 4.) Who doesn't love bash??



63



1



49



32



24



5

Assignees



cblecker

Labels

priority/important-longterm

sig/architecture

sig/testing

🐞

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<https://thedevconf.com/tdc/2019/avaliacao>