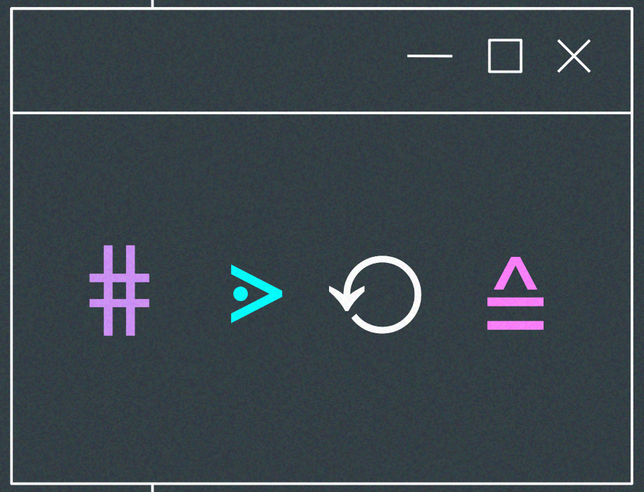
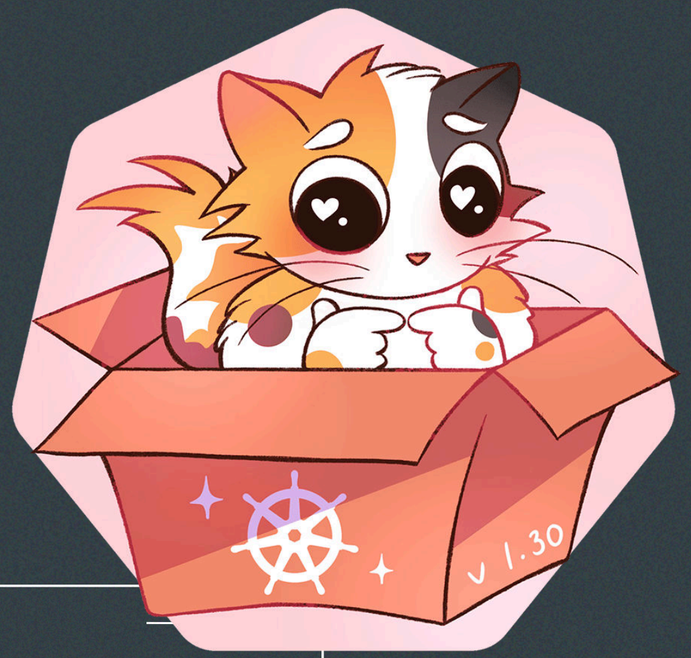
Oi 👋 eu sou a Natália Granato
Há mais de dois anos realizei uma transição de carreira, saindo das operações de telemarketing para DevOps, hoje atuo com Cloud Native e as premissas da CNCF.

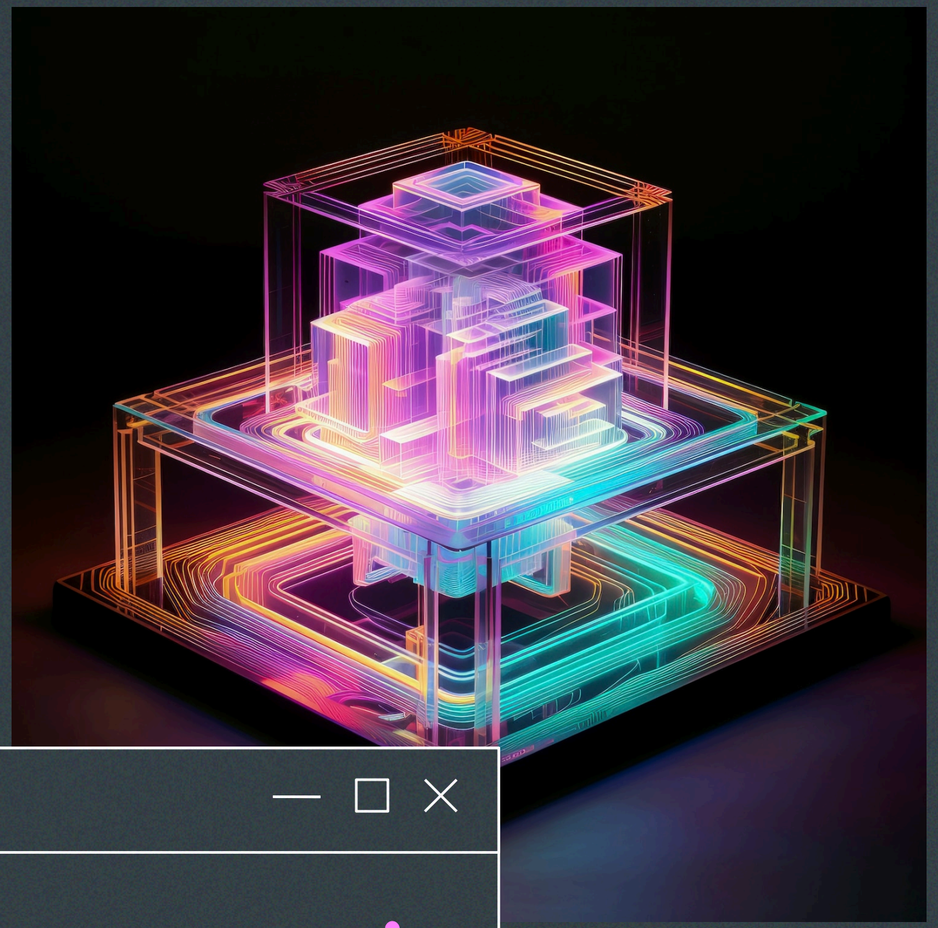


Assessement e boas práticas em Kubernetes

Tópicos da palestra

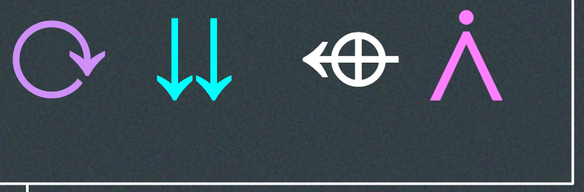


- Amazon Elastic Kubernetes
- Kubernetes Vanilla
- Assessement
- Hands-on
- Vamos conversar?



Visão Geral do Kubernetes

O **Kubernetes** é uma plataforma de código aberto para automatizar a implantação, o dimensionamento e a gestão de aplicações em contêineres.



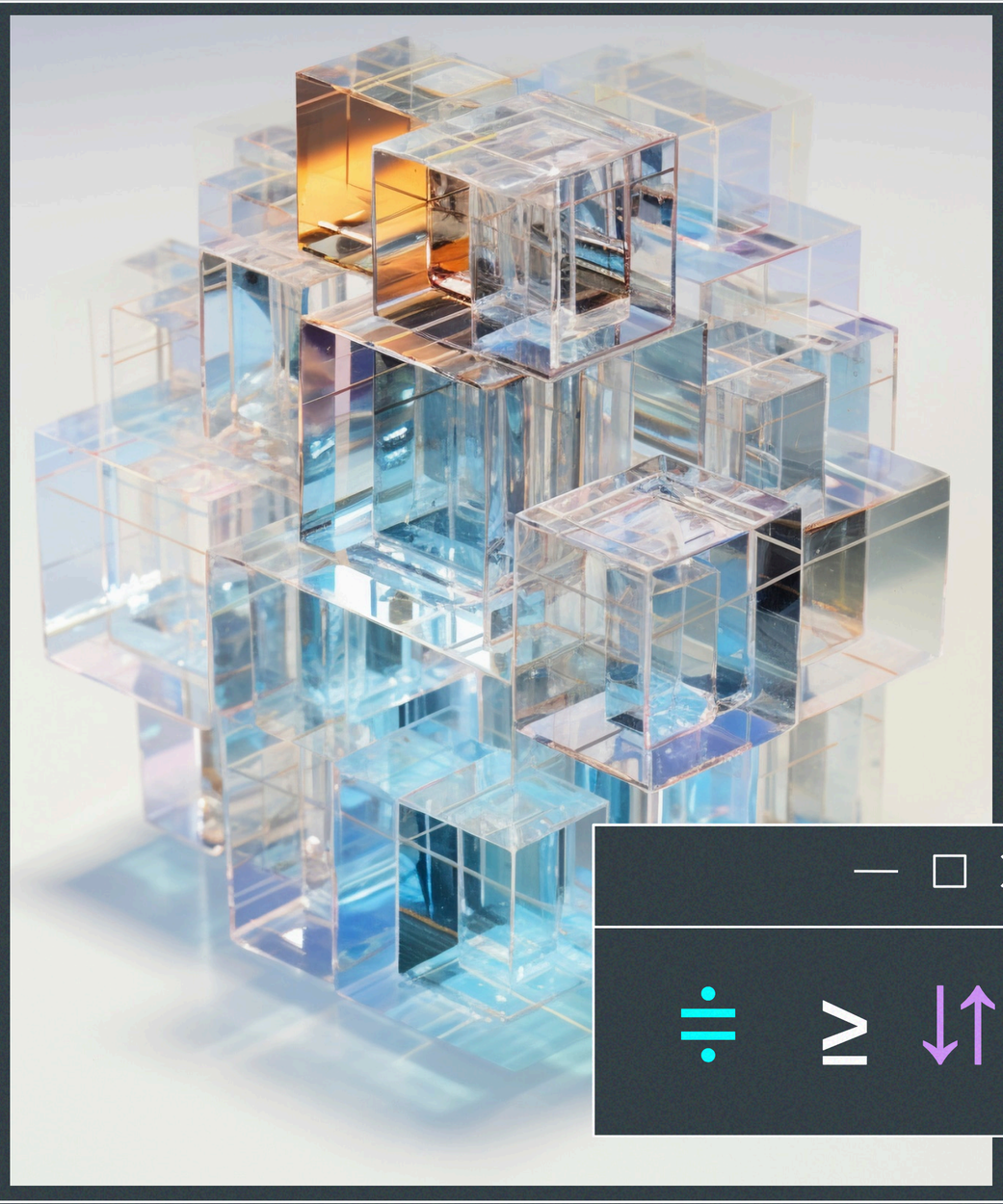
O Kubernetes oferece a você

Implementação e gerenciamento de contêineres, descoberta de serviço e balanceamento de carga, armazenamento, uma API expansível, gerenciamento de secrets e de configuração e muito mais.

E o Amazon EKS, quais as suas vantagens?

O Amazon Elastic Kubernetes Service (Amazon EKS) é um serviço gerenciado que elimina a necessidade de instalar, operar e manter o seu próprio ambiente de gerenciamento do Kubernetes.

- Control Plane Gerenciado
- Rede e autenticação seguras
- Autoscaling
- Node Groups Gerenciados
- Auditoria



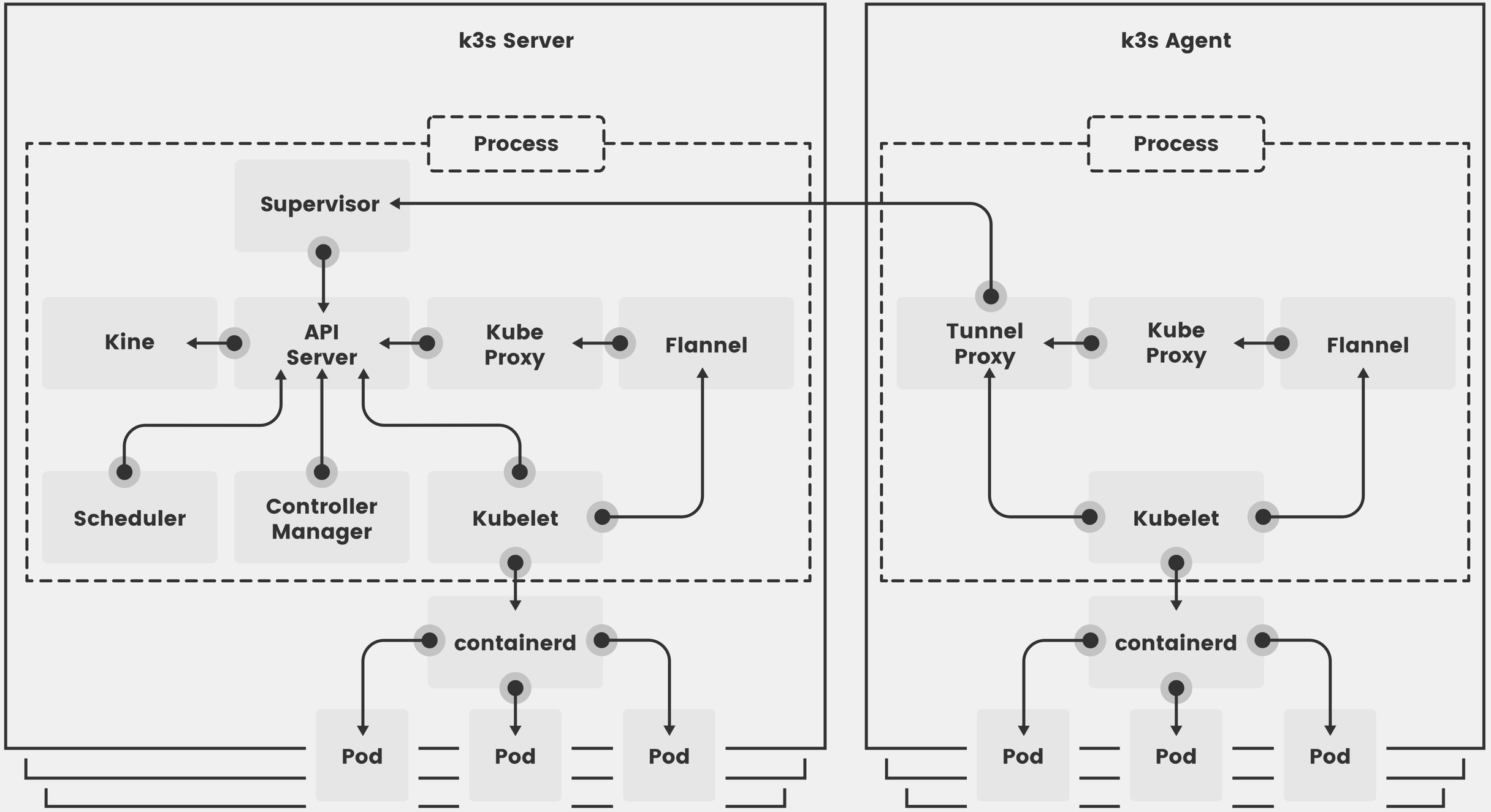
```
❯ k get nodes
NAME                                           STATUS   ROLES    AGE   VERSION
ip-172-31-16-172.us-east-2.compute.internal    Ready    <none>   96m   v1.29.0-eks-5e0fc
ip-172-31-44-251.us-east-2.compute.internal    Ready    <none>   96m   v1.29.0-eks-5e0fc
❯ popeye
```

STATEFULSETS (2 SCANNED) 0 2 0 0 0%

· kube-prometheus-stack/alertmanager-kube-prometheus-stack-alertmanager.....
  alertmanager
    [POP-107] No resource limits defined.
  config-reloader
    [POP-106] No resources requests/limits defined.
  init-config-reloader
    [POP-106] No resources requests/limits defined.
· kube-prometheus-stack/prometheus-kube-prometheus-stack-prometheus.....
  config-reloader
    [POP-106] No resources requests/limits defined.
  init-config-reloader
    [POP-106] No resources requests/limits defined.
  prometheus
    [POP-106] No resources requests/limits defined.

SUMMARY

Your cluster score: 79 -- C


k3s Server
Process
Supervisor
Kine
API Server
Kube Proxy
Flannel
Scheduler
Controller Manager
Kubelet
containerd
Pod
Pod
Pod
k3s Agent
Process
Tunnel Proxy
Kube Proxy
Flannel
Kubelet
containerd
Pod
Pod
Pod

STATEFULSETS (5 SCANNED) 0 3 0 2 40%

· cattle-monitoring-system/alertmanager-rancher-monitoring-alertmanager.....
· cattle-monitoring-system/prometheus-rancher-monitoring-prometheus.....
  prometheus-proxy
    [POP-106] No resources requests/limits defined.
· gitops/argo-cd-argocd-application-controller.....
  application-controller
    [POP-106] No resources requests/limits defined.
· my-zabbix/zbx-zabbix-postgresql.....
· wordpress/wordpress-mariadb.....
  [POP-500] Zero scale detected.
  mariadb
    [POP-106] No resources requests/limits defined.

SUMMARY

Your cluster score: 70 -- C

O EKS é a prova de má configuração?

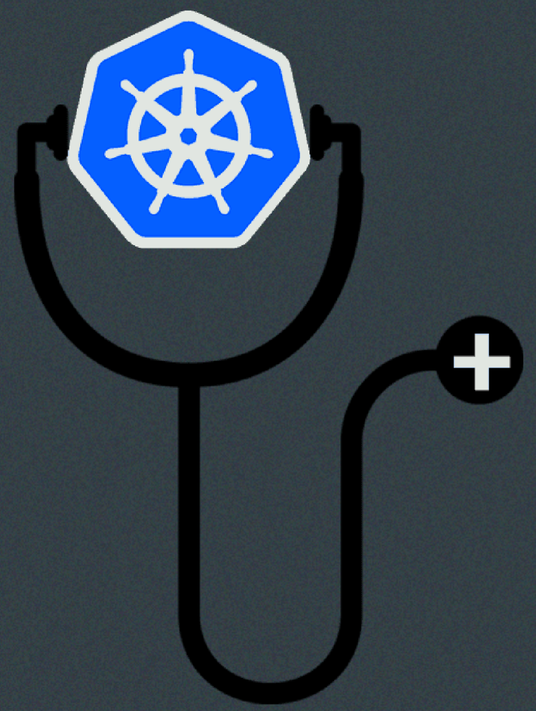
- Validação de Configuração
- Segurança
- Monitoramento e Logging
- Resiliência e Backup
- Revisão de Configuração

DEVOPS - Melhoria contínua

A melhoria contínua é um dos príncipios da cultura devops, melhorar constantemente o desenvolvimento, integração, entrega e operações de software.

Por isso a avalição de implementação de clusters kubernetes existentes, pode pavimentar o caminho para a adoção de boas práticas no EKS.

Assessement - Avaliação de implementação Kubernetes



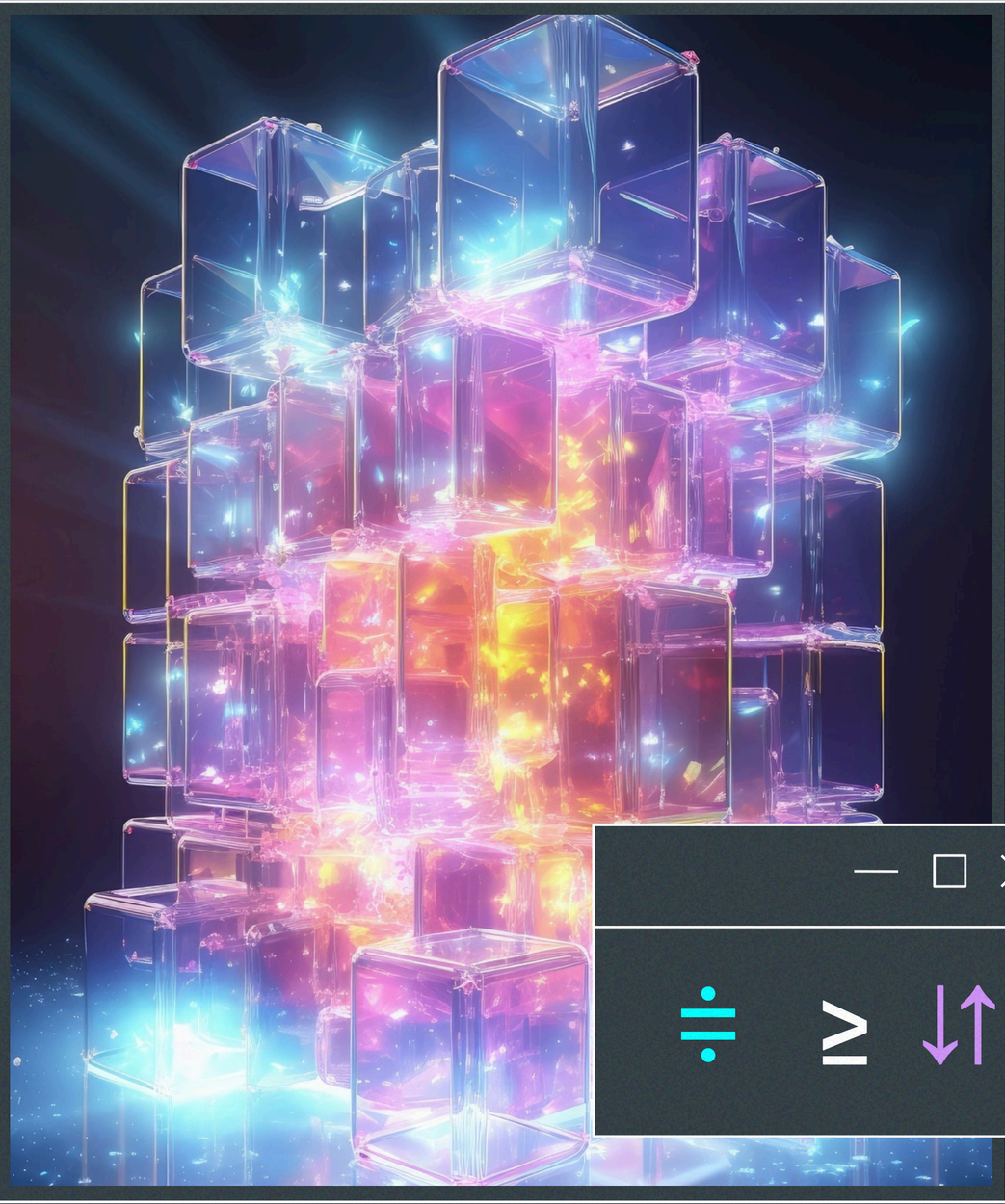
Analisar a configuração e saúde de uma implementação existente
Identificar áreas de melhoria com boas práticas na arquitetura, definição de aplicações, segurança e custo.

O EKS é a prova de má configuração?

- Validação de Configuração
- Segurança
- Monitoramento e Logging
- Resiliência e Backup
- Revisão de Configuração

Ferramentas

- Popeye
- Polaris
- Kubent
- mapkubeapis plugin
- Robusta KRR
- Kube-scan



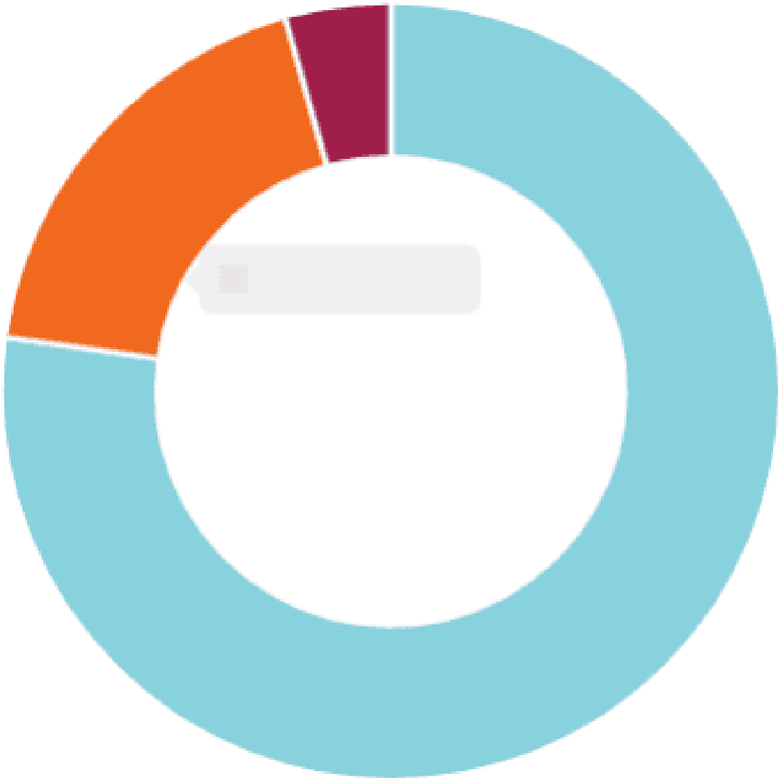
Cluster Overview: https://rancher.129.213.55.99.sslip.io/k8s/clusters/local

Smooth sailing within sight

Grade: **C**

Score: **74%**

Score is the percentage of passing checks. Warnings get half the weight of dangerous checks.



16 passing checks

11 warning checks

0 dangerous checks

! Some checks were skipped based on configured exemptions. Click here to view the report with these checks included.

Kubernetes Version: **1.27** Nodes: **1** Namespaces: **40** Controllers: **21** Pods: **0**

Deployment: **nginx-ingress-controller**

Spec:

- ! Label app.kubernetes.io/instance must match metadata.name
- ! Should have a PodDisruptionBudget
- ! Only one replica is scheduled

Pod Spec:

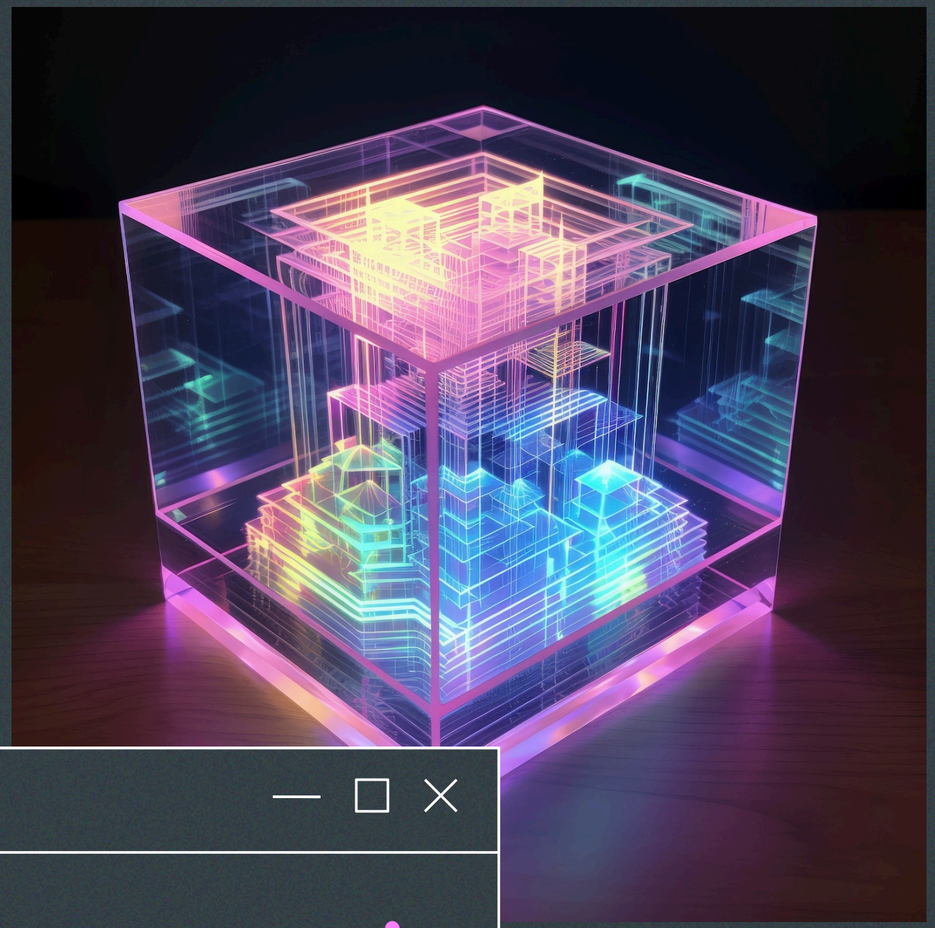
- ! Priority class should be set
- ! Pod should be configured with a valid topology spread constraint
- ! The ServiceAccount will be automounted
- ! A NetworkPolicy should match pod labels and contain applied egress and ingress rules
- ✓ Host IPC is not configured
- ✓ Host network is not configured
- ✓ Host PID is not configured

Container nginx-ingress:

- ! CPU limits should be set
- ! Image pull policy should be "Always"
- ! Liveness probe should be configured

Container nginx-ingress:

- ! CPU limits should be set
- ! Image pull policy should be "Always"
- ! Liveness probe should be configured
- ! Memory limits should be set
- ✓ The container does not set potentially sensitive environment variables
- ✓ Image tag is specified
- ✓ Host port is not configured
- ✓ One of AppArmor, Seccomp, SELinux, or dropping Linux Capabilities are used to restrict containers using privileges
- ✓ Readiness probe is configured
- ✓ Not running as privileged
- ✓ CPU requests are set
- ✓ Container does not have any dangerous capabilities
- ✓ Memory requests are set



Boas práticas

- Mantenha seu cluster atualizado.
- Utilize o Kubernetes Cluster Autoscaler.
- Atualize APIs depreciadas.
- Defina requests e limits.
- Garanta a alta disponibilidade das aplicações.
- Realize scan de segurança em suas imagens e elimine vulnerabilidades.

Thanks!

Você tem alguma pergunta?