

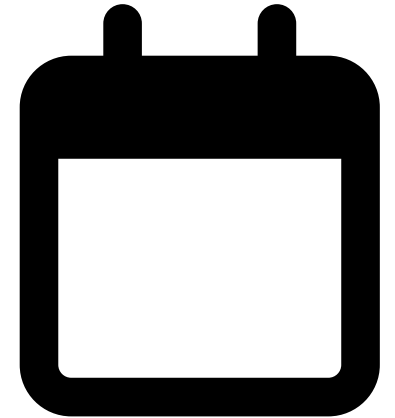
# Visualizing Kubernetes with Generated Diagrams

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# Agenda

- Kubernetes primer
- Exploring resources without diagrams
- k8sviz
- kubectl graph
- Advice



# About Me

- Principal Software Engineer at Red Hat
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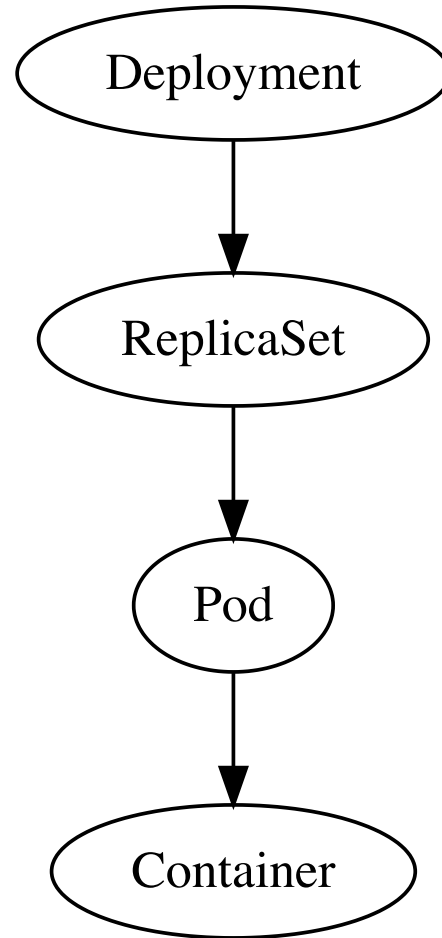


# Kubernetes Primer

- Declarative interface
- API resources
- Distributed workloads
- Container-centric



# Abstractions in Kubernetes



# Navigating Relationships - CLI

Get owner:

```
kubectl get $type/$name \  
  -o template \  
  --template \  
    '{{(index .metadata.ownerReferences 0).kind}}/' \  
    '{{(index .metadata.ownerReferences 0).name}}'
```

... and repeat

# Navigating Relationships - GUI

OpenShift Local cluster is for development and testing purposes. DON'T use it for production.

☰ okd 🔔 + ? kubeadmin ▾

Project: keycloak-system ▾

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**Annotations**  
4 annotations ✎

**Created at**  
🌐 Mar 9, 2024, 8:09 PM

**Owner**  
👤 example-kc

**PodDisruptionBudget**  
No PodDisruptionBudget

**Receiving Traffic**  
(0)

---

**Containers**

Name	Image	State
👤 keycloak	quay.io/keycloak/keycloak:24.0.1	Waiting

---

**Volumes**

Owner Links in OpenShift/OKD

# The Pattern for Diagrams

- Query Resources
- Draw a graph
  - k8s resources, relationships
  - as nodes and edges



# k8sviz

<https://github.com/mkimuram/k8sviz>

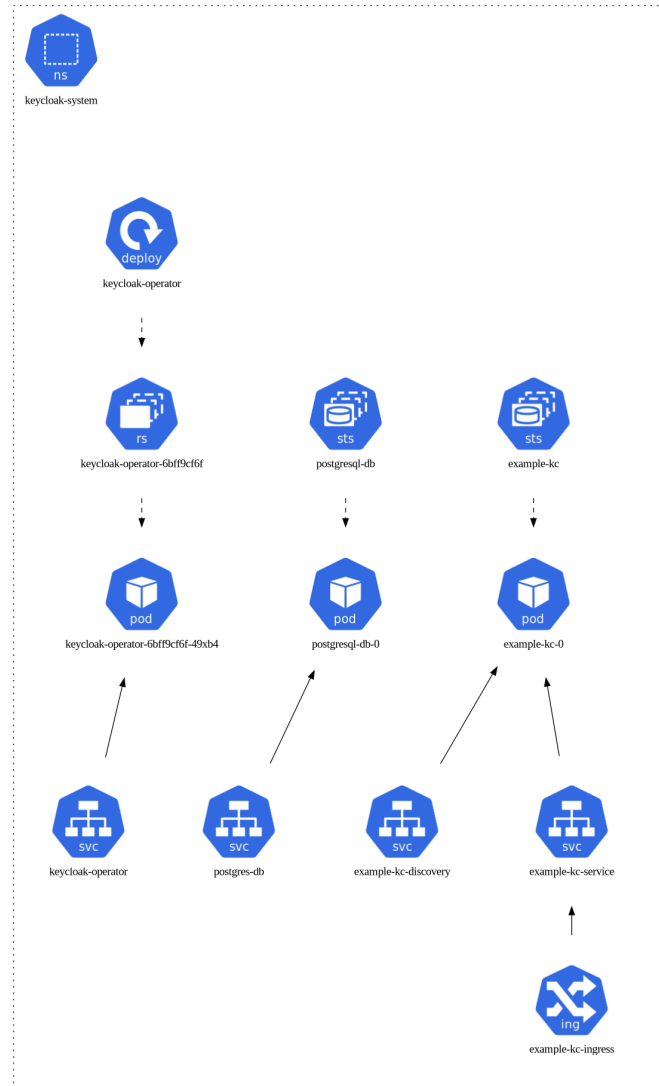
## Installation

```
git clone https://github.com/mkimuram/k8sviz
cd k8sviz
make build # requires go lang
cp -R icons bin/
```

## Usage

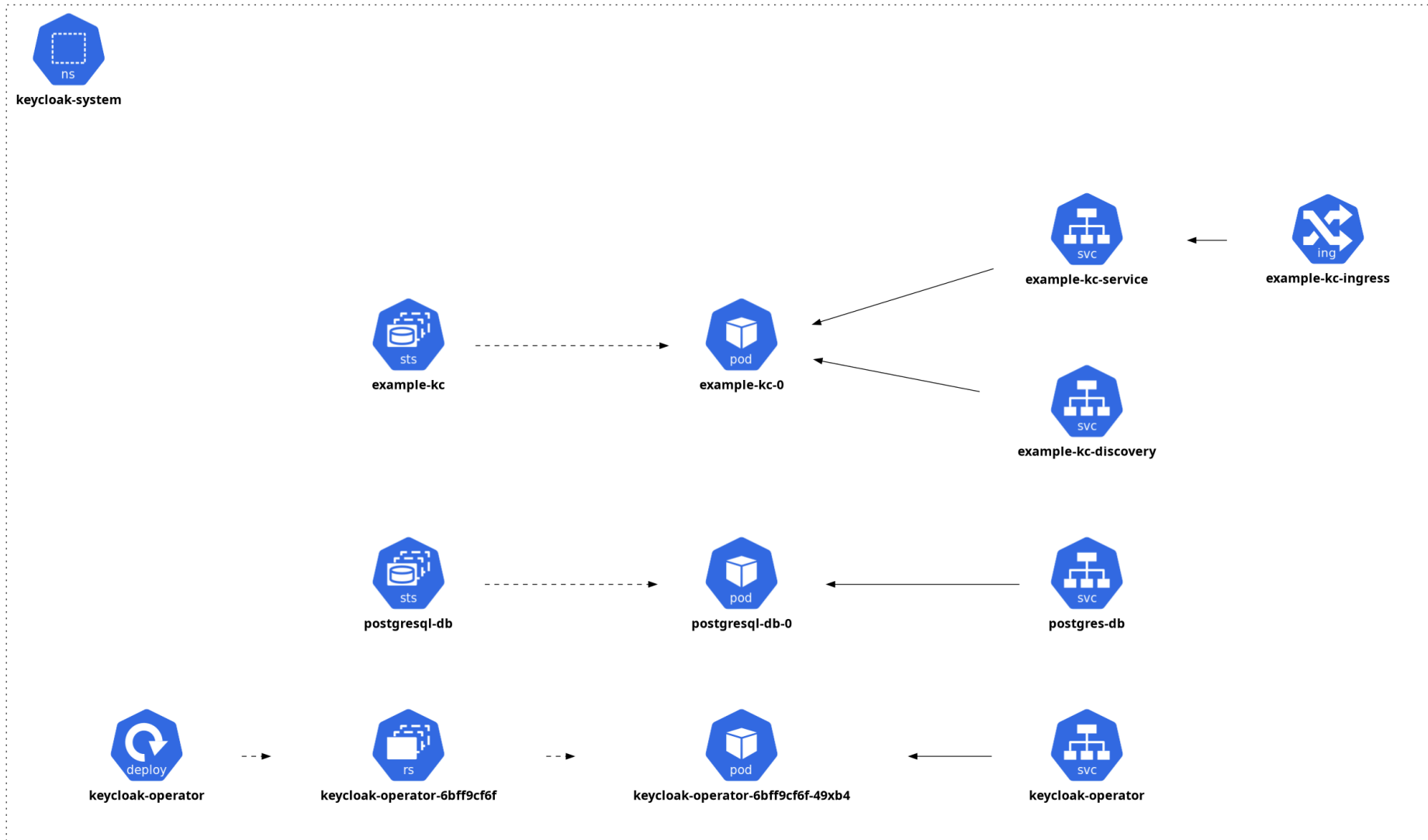
```
# output a graphviz source file
bin/k8sviz -n keycloak-system -t dot -o keycloak.dot
# generate a png image
bin/k8sviz -n keycloak-system -t png -o keycloak.png
```

# k8sviz - Results



keycloak diagram

# k8sviz - Results (edited)



keycloak diagram - edited for LR layout & bigger font

# k8sviz - Ideas for Improvement

- packaging
- layout, font options
- filters
- custom resource support
- offline support (helm charts, kustomize)

# kubectl-graph

<https://github.com/steveteuber/kubectl-graph>

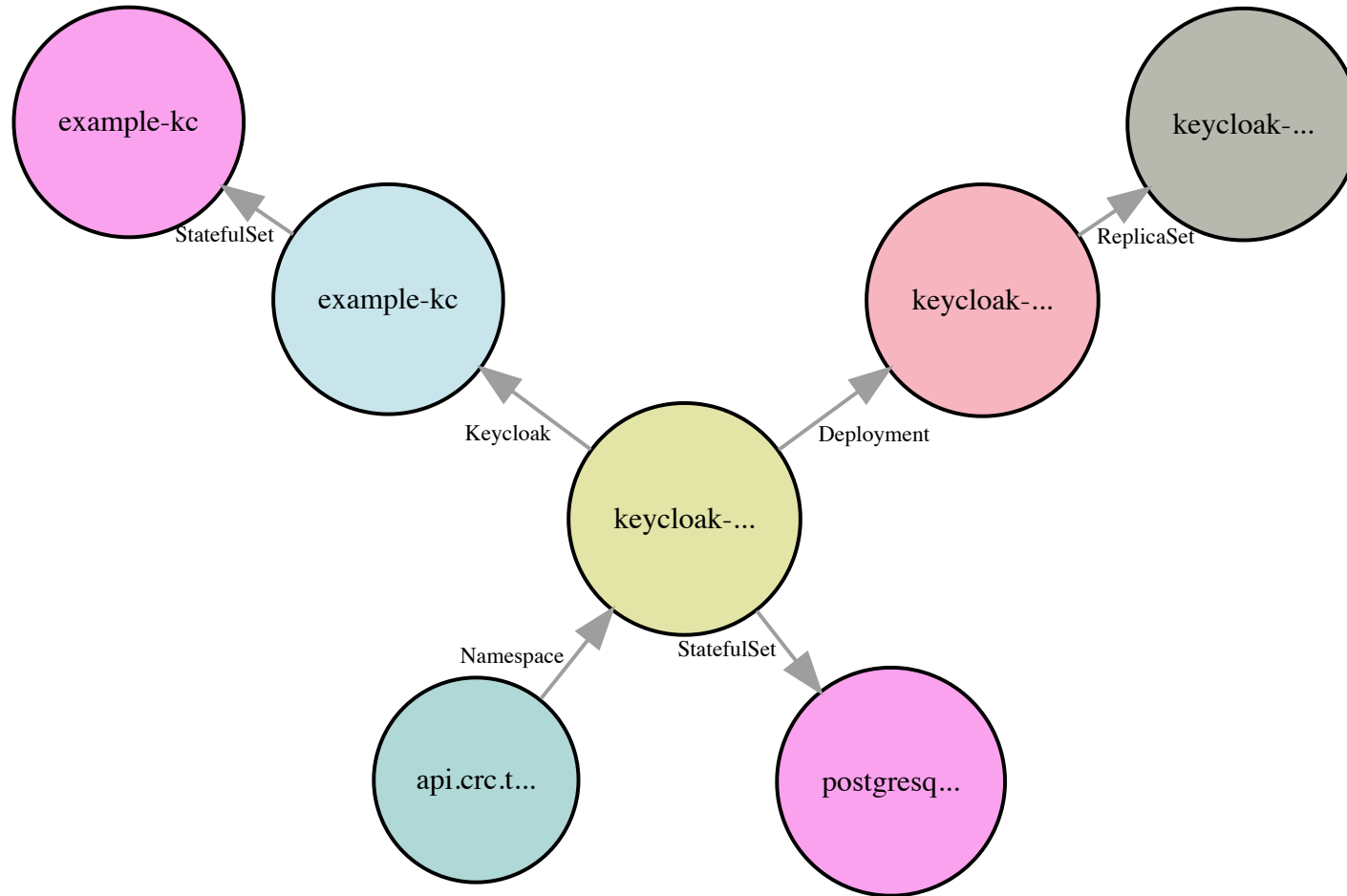
## Installation

```
# assumes krew already installed  
# https://krew.sigs.k8s.io/docs/user-guide/setup/install/  
kubectl krew install graph
```

## Usage

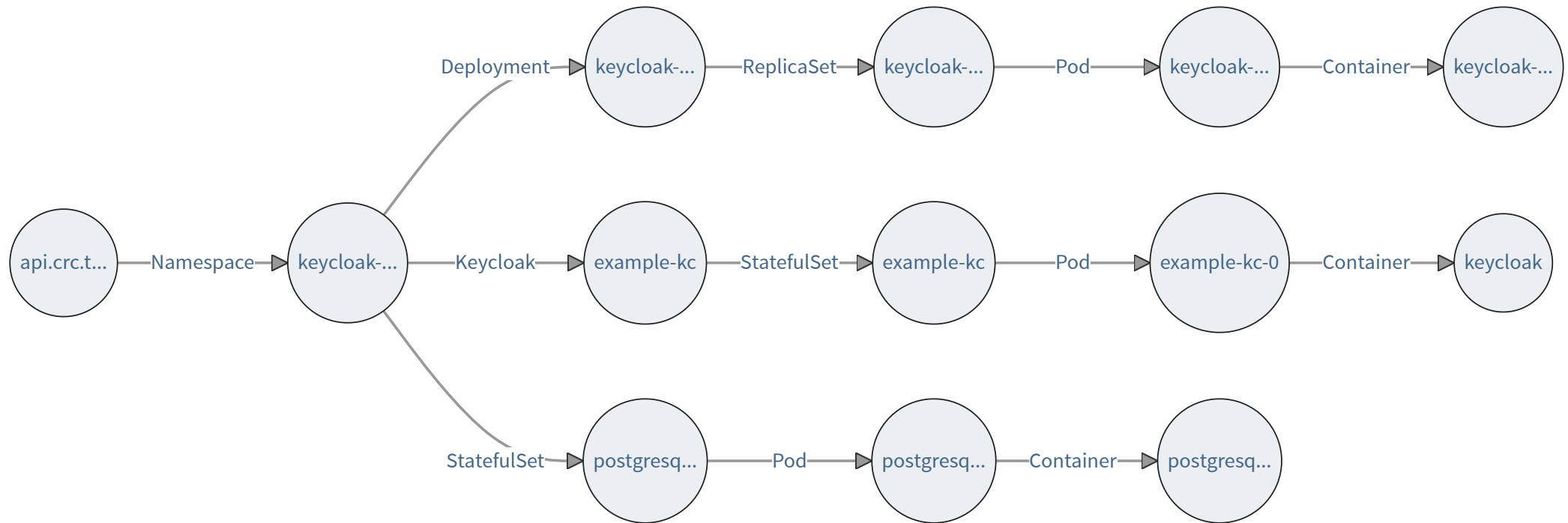
```
# kubectl graph $type0,$type1,...  
kubectl graph keycloak,deployments,replicasets,statefulsets
```

# kubectl-graph - Graphviz



kubectl graph rendering of keycloak resources.

# kubectl-graph - Mermaid (edited for LR layout)



# kubectl-graph - Ideas for Improvement

- alternative packaging (rpm, deb)
- icons
- layout, font options
- edge choices



# Advice

- Don't be afraid to edit diagrams
- Try multiple tools/formats

# Red Hat Developer

- no-cost subscription for individuals
- free sandbox environments
- <https://developers.redhat.com>

# Q&A

Thanks for attending!

- @kahowell@mastodon.social
- <https://kahowell.net>

 Note

Title slide Photo by [orbital media](#) on [Unsplash](#)



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