

# EIN RUNDFLUG DURCH DAS KUBERNETES ÖKOSYSTEM

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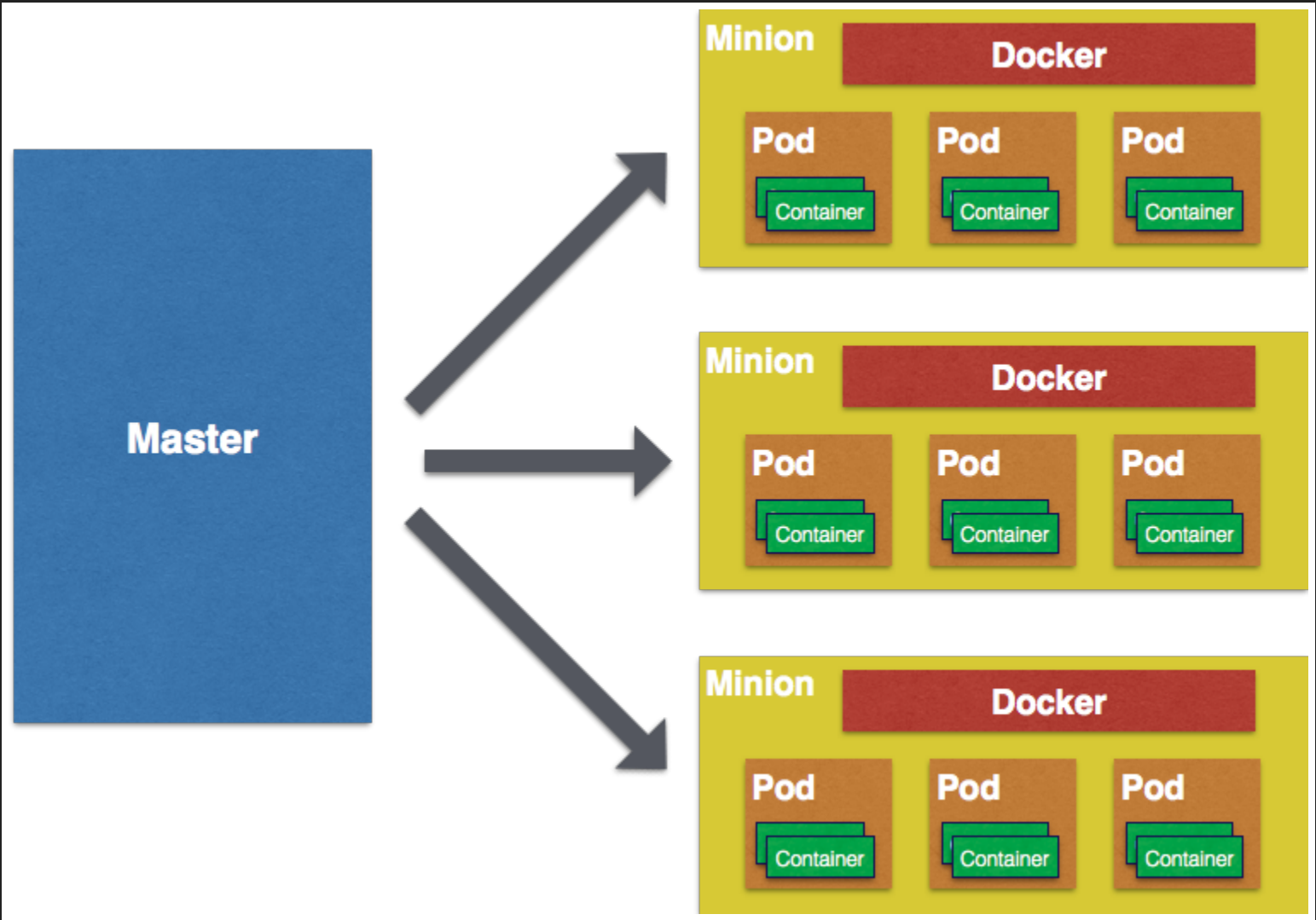


# KUBERNETES

"Kubernetes is an open-source platform for automating deployment, scaling, and operations of application containers across clusters of hosts, providing container-centric infrastructure."

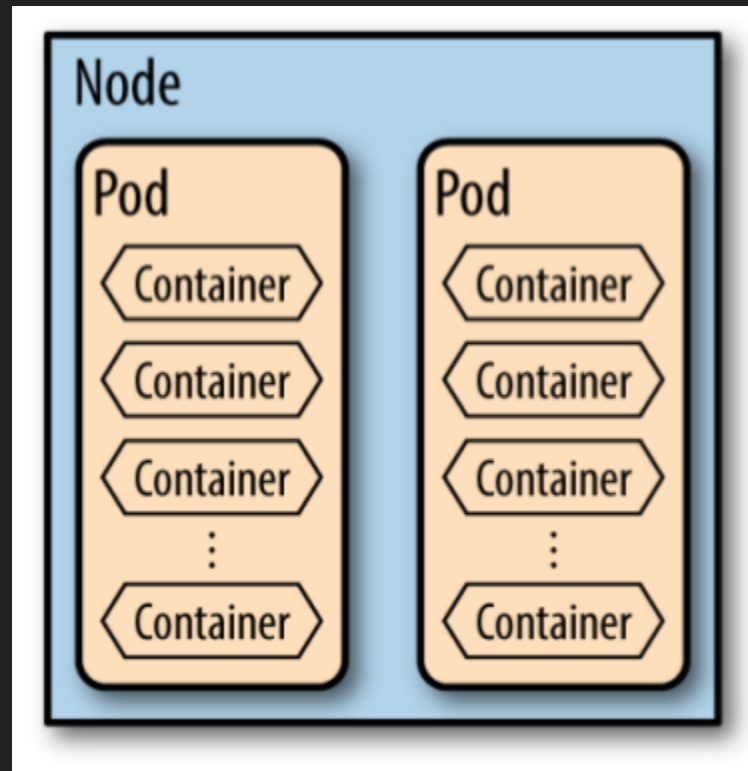


- **portable:** public, private, hybrid, multi-cloud
- **extensible:** modular, pluggable, hookable, composable
- **self-healing:** auto-placement, auto-restart, auto-replication, auto-scaling



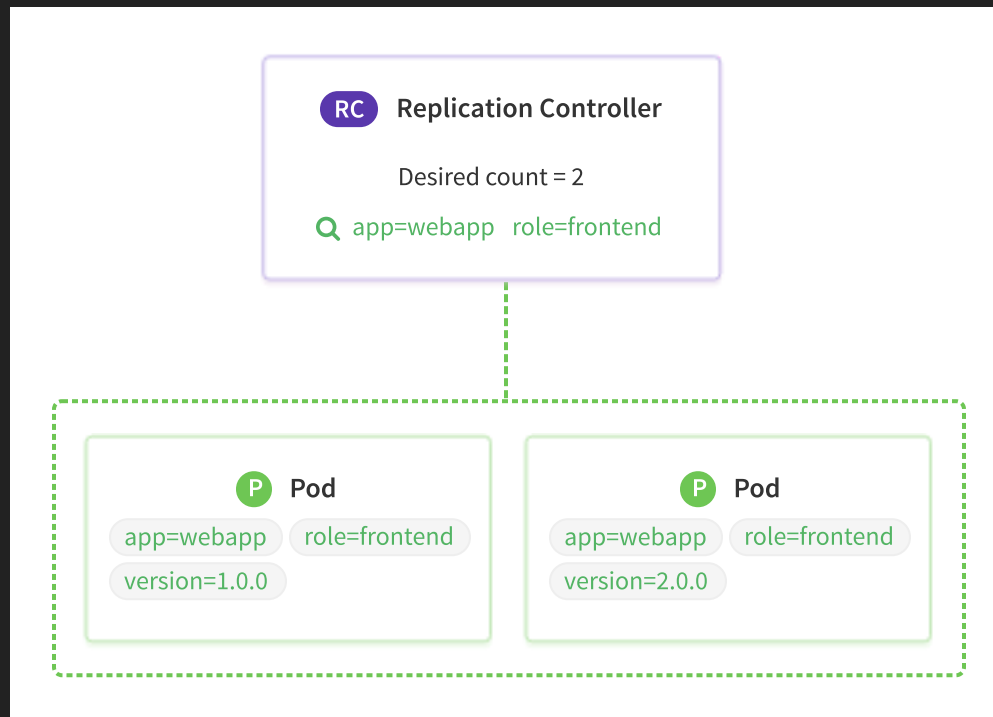
# Pods & Co.

# Pods





# Replication Controller



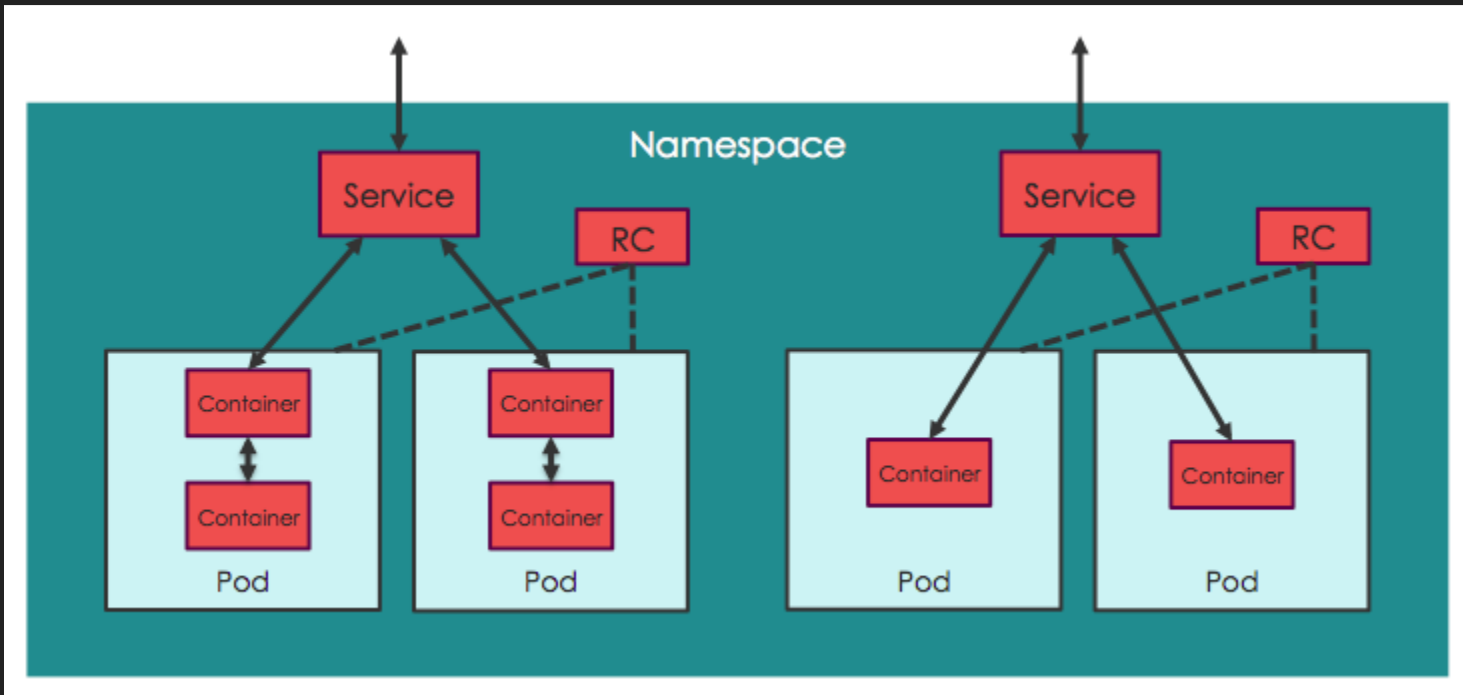
# Deployment

- combination of pod & replication controller
- edited as a unit

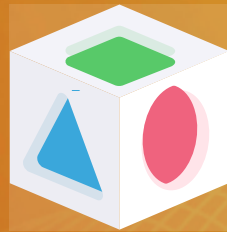
```
apiVersion: extensions/v1beta1
kind: Deployment
metadata:
  name: frontend
spec:
  replicas: 3
  template:
    metadata:
      labels:
        app: guestbook
        tier: frontend
    spec:
      containers:
      - name: php-redis
        image: gcr.io/google-samples/gb-frontend:v4
      resources:
```

# Services

- endpoint for
  - a set of pods
  - an external endpoint
- can be resolved using
  - DNS
  - environment variables



# DEIS WORKFLOW



Layer 7

Workflow



Layer 6

Orchestration

Layer 5

Scheduling



Layer 4

Container Engine

Layer 3

Compute Operating System

Layer 2

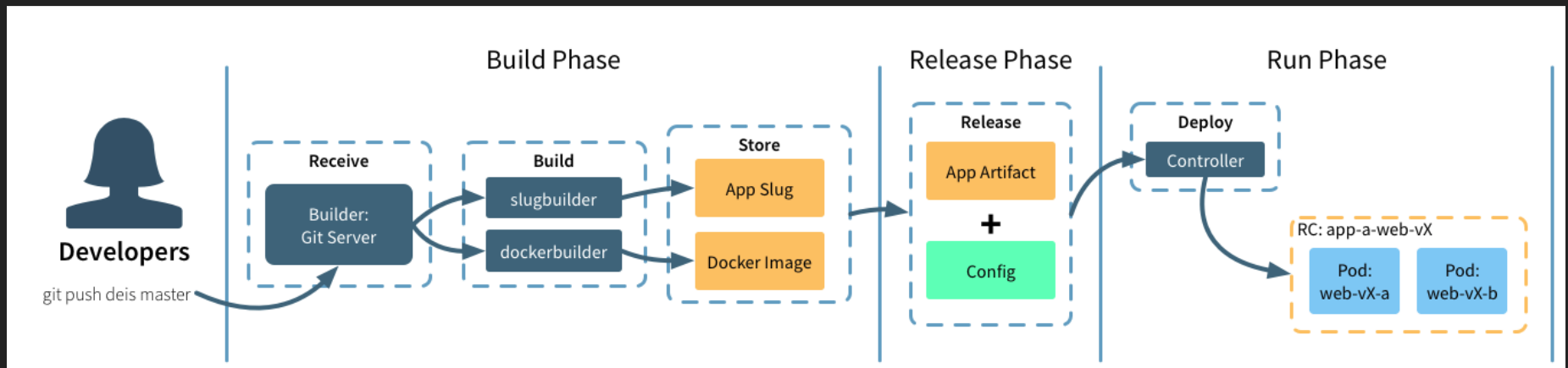
Virtual Infrastructure

Layer 1

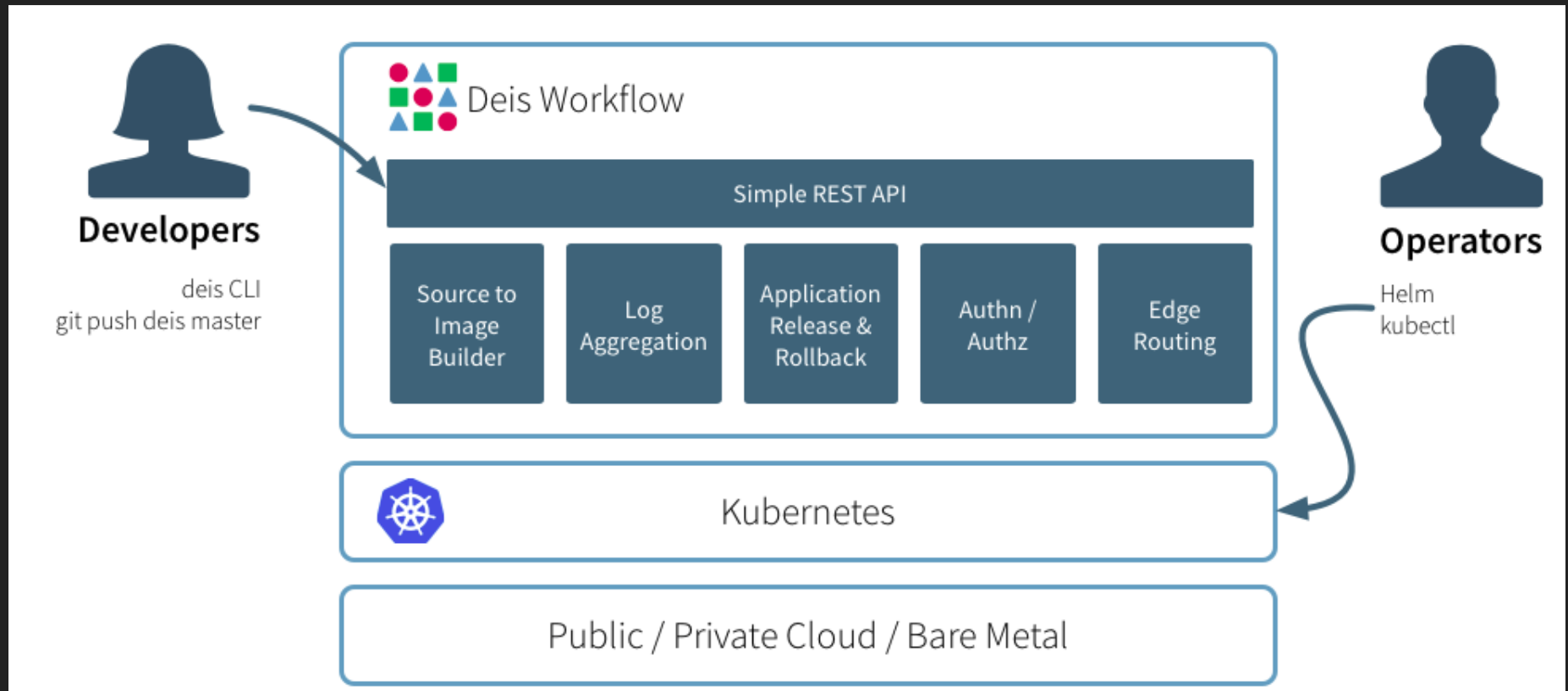
Physical Infrastructure



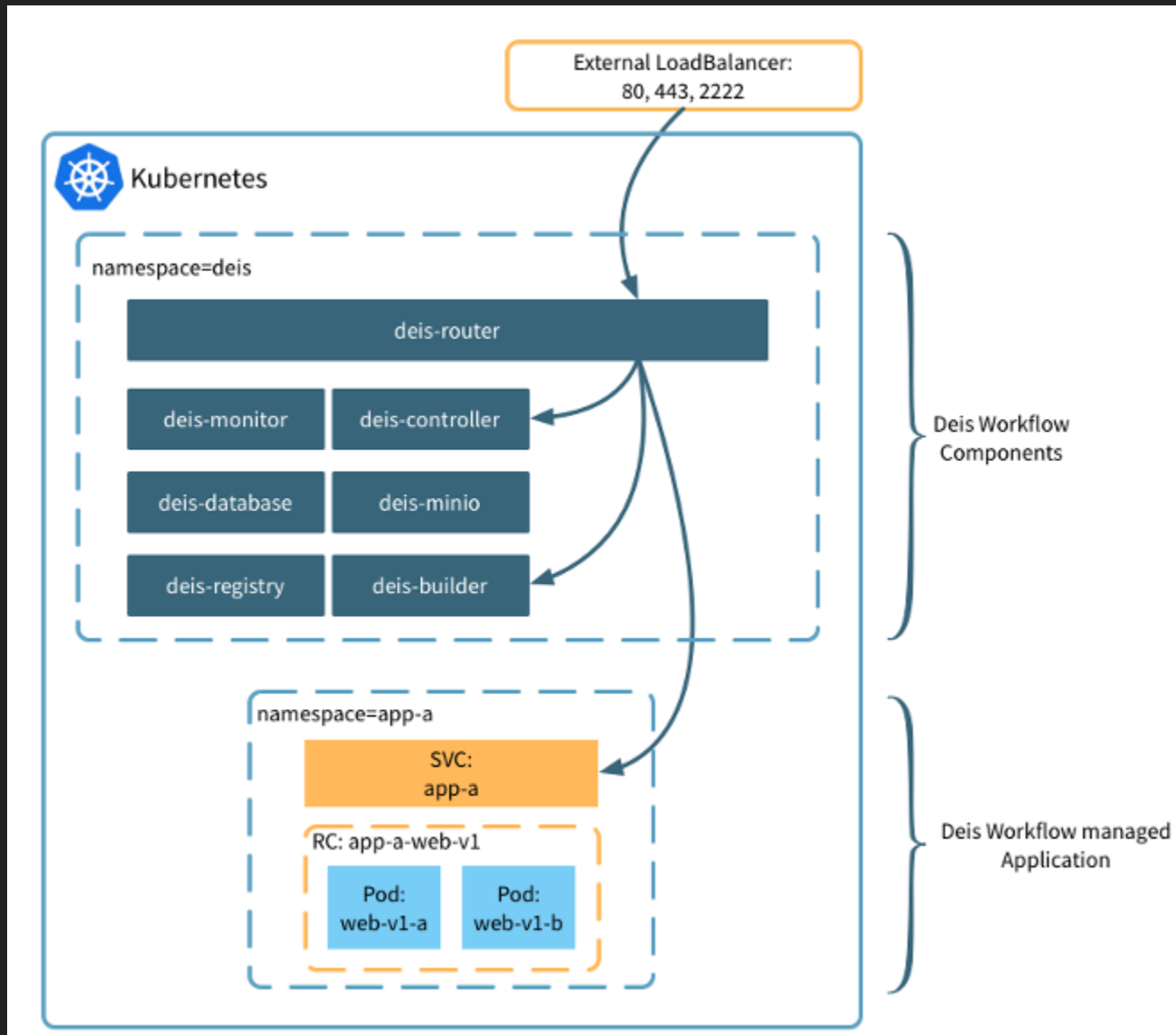
# Workflow



# Architecture



# Application Structure



# Application Access

- Application is reachable at `<application>.<cluster-base>`, e.g.  
`logmon.apps.codecentric.de`
- Deis Controller Interface is available at `deis.<cluster-base>`

# Scaling

```
deis scale web=5 worker=2
```

# Updating Applications

- Deploy application
- New Pods will be rolled out using Kubernetes Rolling-Upgrade Feature

# HELM



- package manager
- installation description using charts
- dependency management for charts
- deployment history
- rollbacks



# Demo: Wordpress

# LOGGING



fluentd



# components

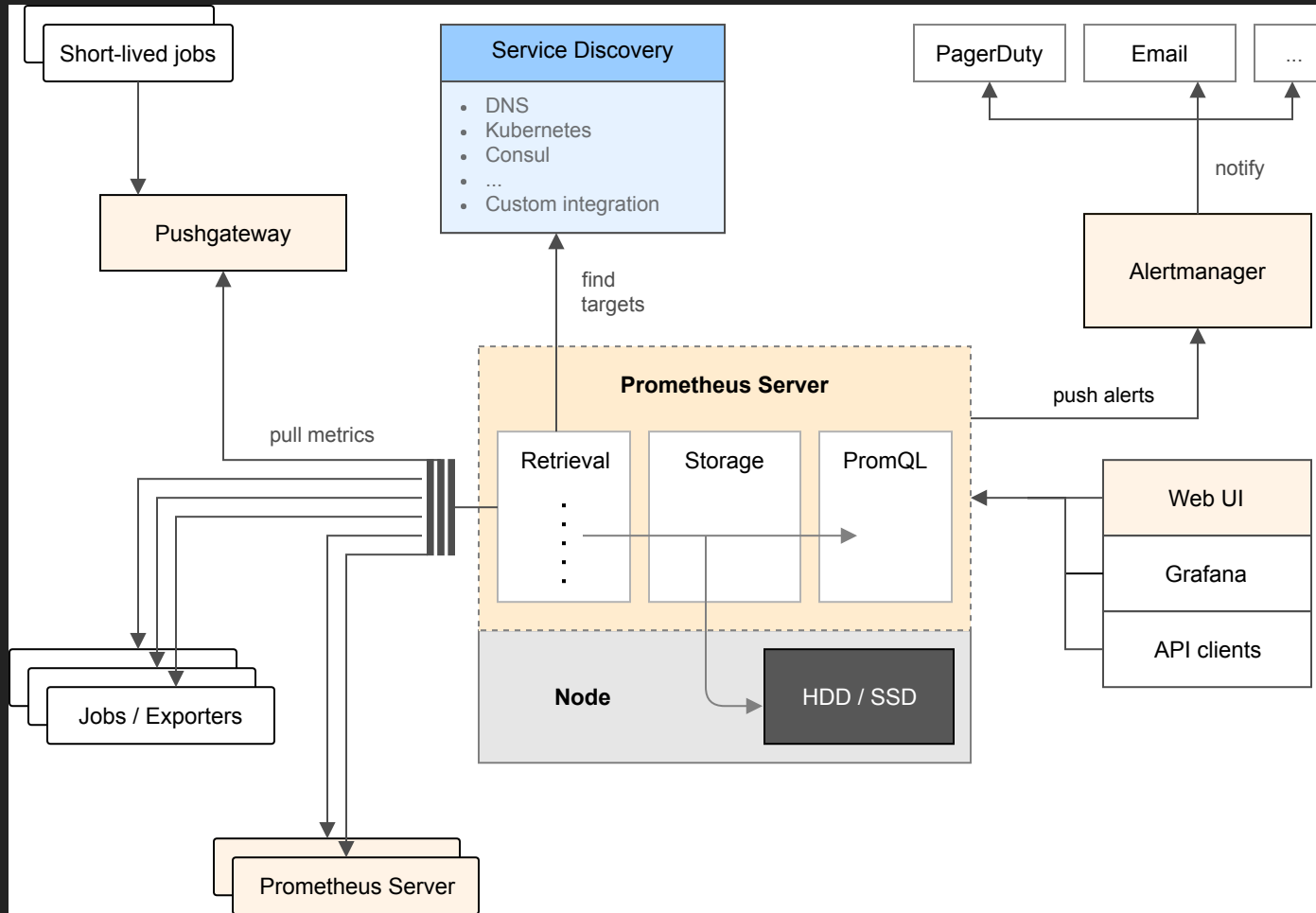
- fluentd:
  - unified data collector
  - log routing
  - multiple in- and output plugis
- elasticsearch:
  - NoSQL datastore
  - search and analysis
- kibana
  - flexible analysis for elasticsearch data
  - custom dashboards

# Demo: Kibana

# MONITORING



- monitoring of multi-dimensional time series data
- very powerful query language
- data ingestion via HTTP pull
- targets can be found using service discovery



# Demo



# WRAPPING UP

# The End

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