STORAGEOS

How to migrate databases into Kubernetes

Alex Chircop & Ferran Castell

About US

Alex Chircop

- Founder & CEO of StorageOS/Co-chair CNCF Storage SIG
- Building a software defined, cloud native storage platform
- 25 years of engineering infrastructure platforms before embarking on the startup adventure
- Previously Goldman Sachs and Nomura
- Twitter: @chira001

Ferran Arau Castell

- Product Reliability Engineer at StorageOS
- Building and running 24/7 platforms for over 10 years
- Twitter: @FerranArau

STORAGEOS

StorageOS is cloud native, software-defined storage for running containerized applications in production, running in the cloud, on-prem and in hybrid/multi-cloud environments.

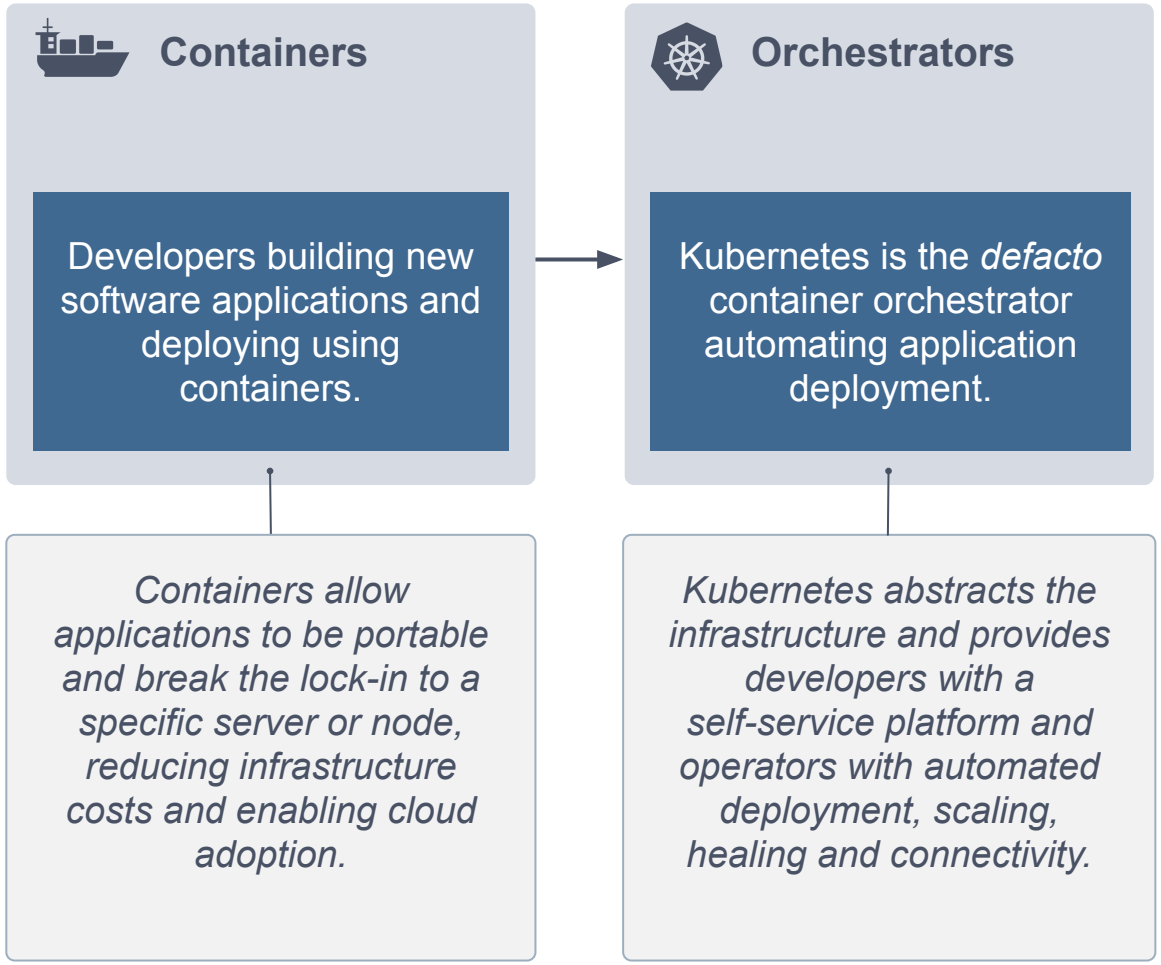
The Journey to Cloud Native

Containers

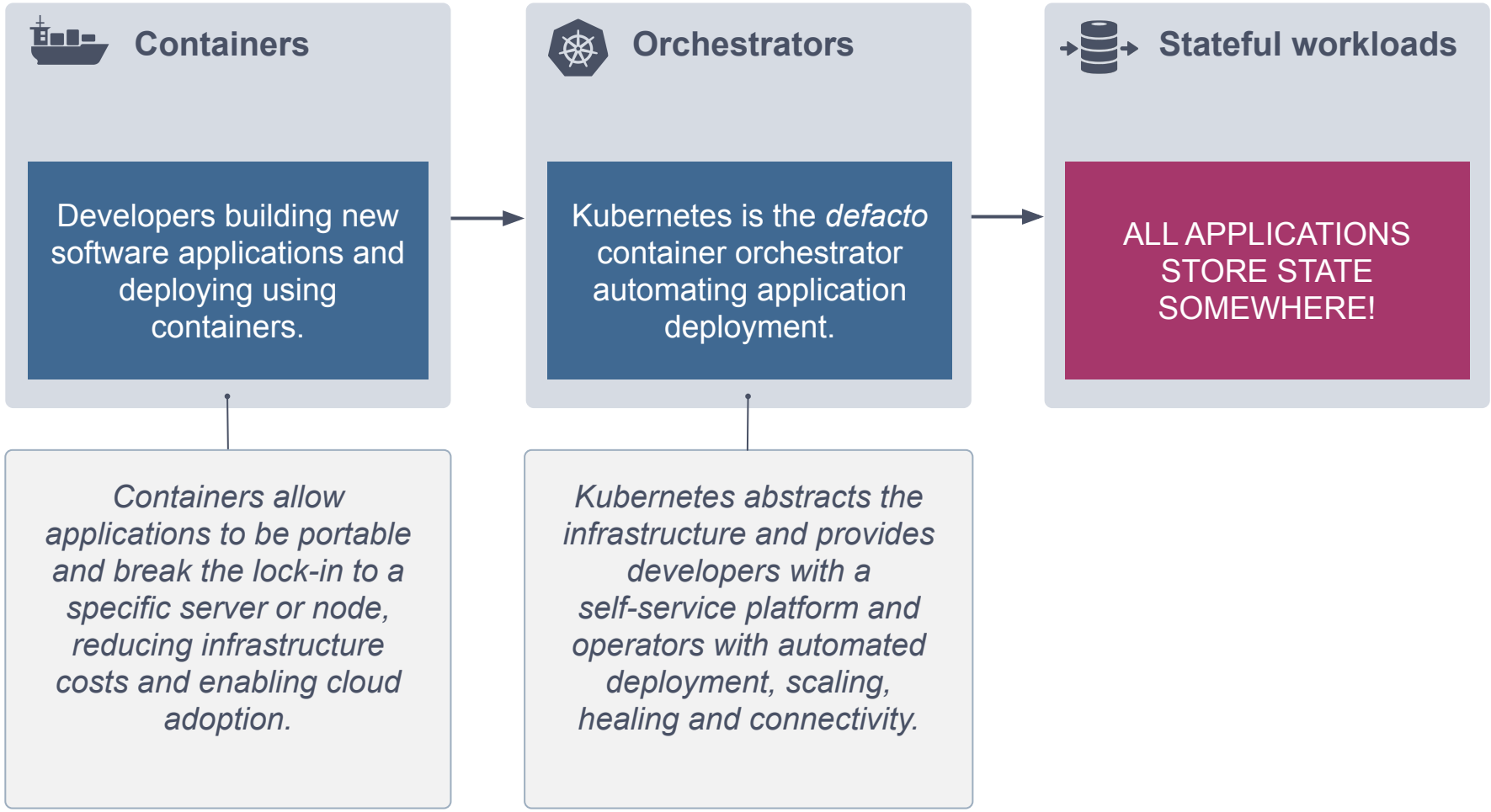
Developers building new software applications and deploying using containers.

Containers allow applications to be portable and break the lock-in to a specific server or node, reducing infrastructure costs and enabling cloud adoption.

The Journey to Cloud Native



The Journey to Cloud Native



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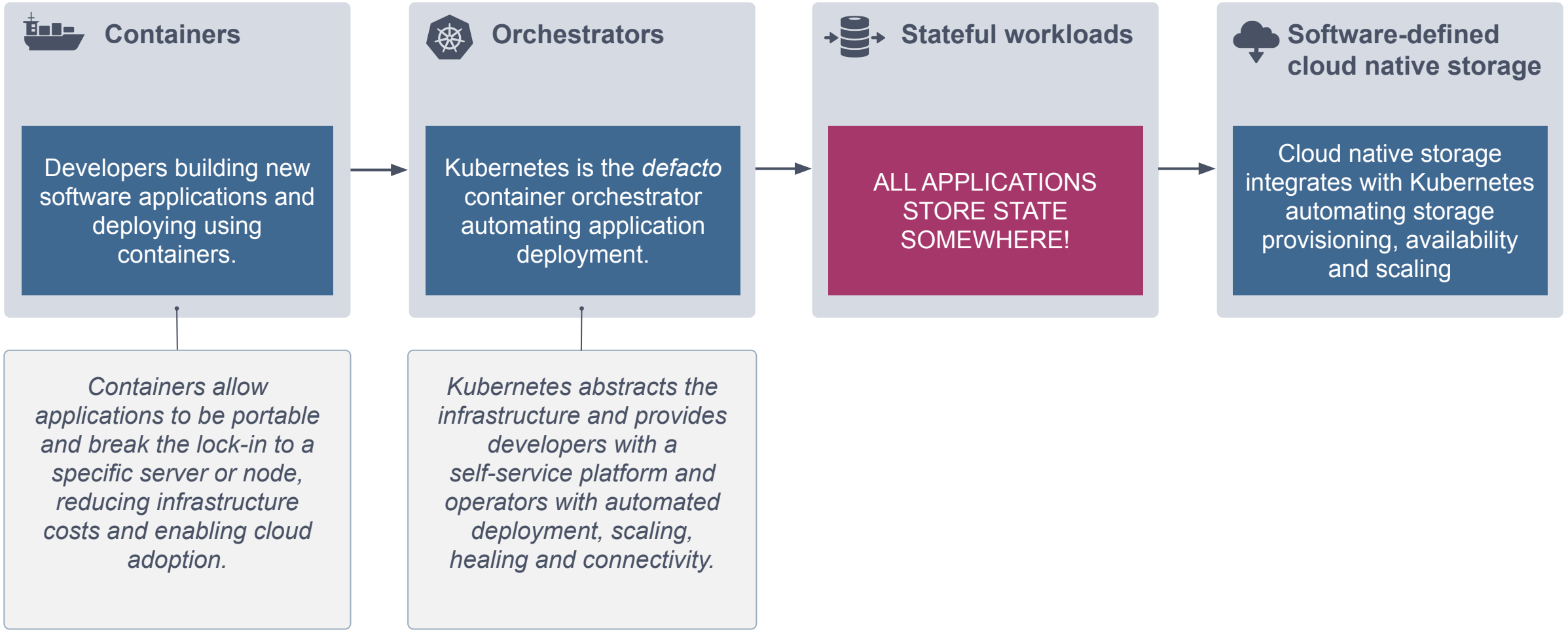

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Orchestrators

Kubernetes is the *defacto* container orchestrator automating application deployment.

Kubernetes abstracts the infrastructure and provides developers with a self-service platform and operators with automated deployment, scaling, healing and connectivity.

Stateful workloads

ALL APPLICATIONS STORE STATE SOMEWHERE!

Software-defined cloud native storage

Cloud native storage integrates with Kubernetes automating storage provisioning, availability and scaling

Application Centric Storage

Move all applications to apply the benefits of orchestration:

Build stateful applications

Enable self service storage provisioning:

Build anything as a service

Dynamic Provisioning in K8s: How it Works

Show me the YAML!

Dynamic Provisioning in K8s: How it Works

Show me the YAML!

StorageClass

```
apiVersion: storage.k8s.io/v1
kind: StorageClass
metadata:
 name: storageos
 labels:
   app: storageos
provisioner: csi.storageos.com
parameters:
 fsType: ext4
 pool: default
 adminSecretNamespace: default
 adminSecretName: storageos-api
```

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PersistentVolumeClaim

```
apiVersion: v1
kind: PersistentVolumeClaim
metadata:
 name: database-vol1
spec:
 storageClassName: storageos
 accessModes:
   - ReadWriteOnce
 resources:
   requests:
     storage: 5Gi
```

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   requests:
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```

Application (Pod/StatefulSet)

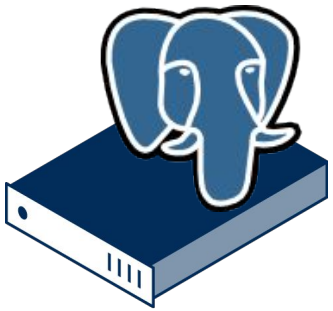
```
apiVersion: v1
kind: pod
metadata:
name: postgres
spec:
containers:
- name: pg
  image:
crunchydata/crunchy-postgres:centos7
-10.4-1.8.3
  volumeMounts:
    - mountPath: /pgdata
      name: data
volumes:
- name: data
  persistentVolumeClaim:
    claimName: database-vol1
```

Cloud Native Journey for a Database

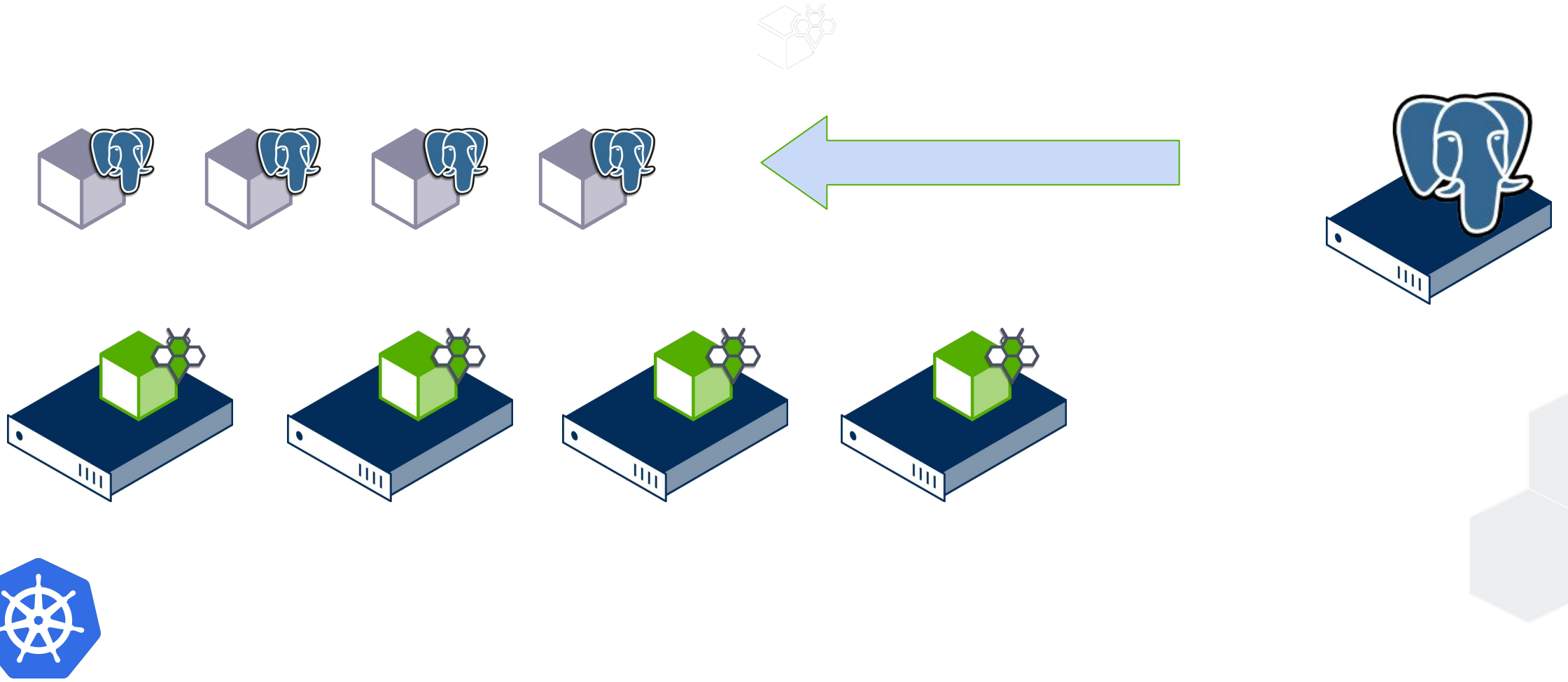
Server Centric

Scale-up Architecture

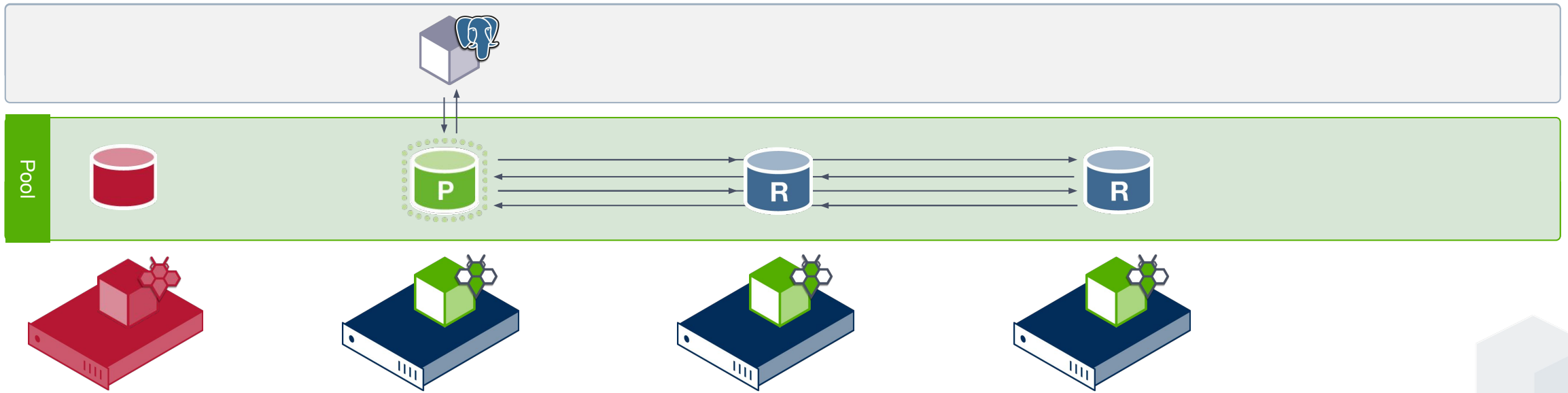
Multiple databases on a node



Cloud Native Journey for your Database



Replication & Automatic Failover



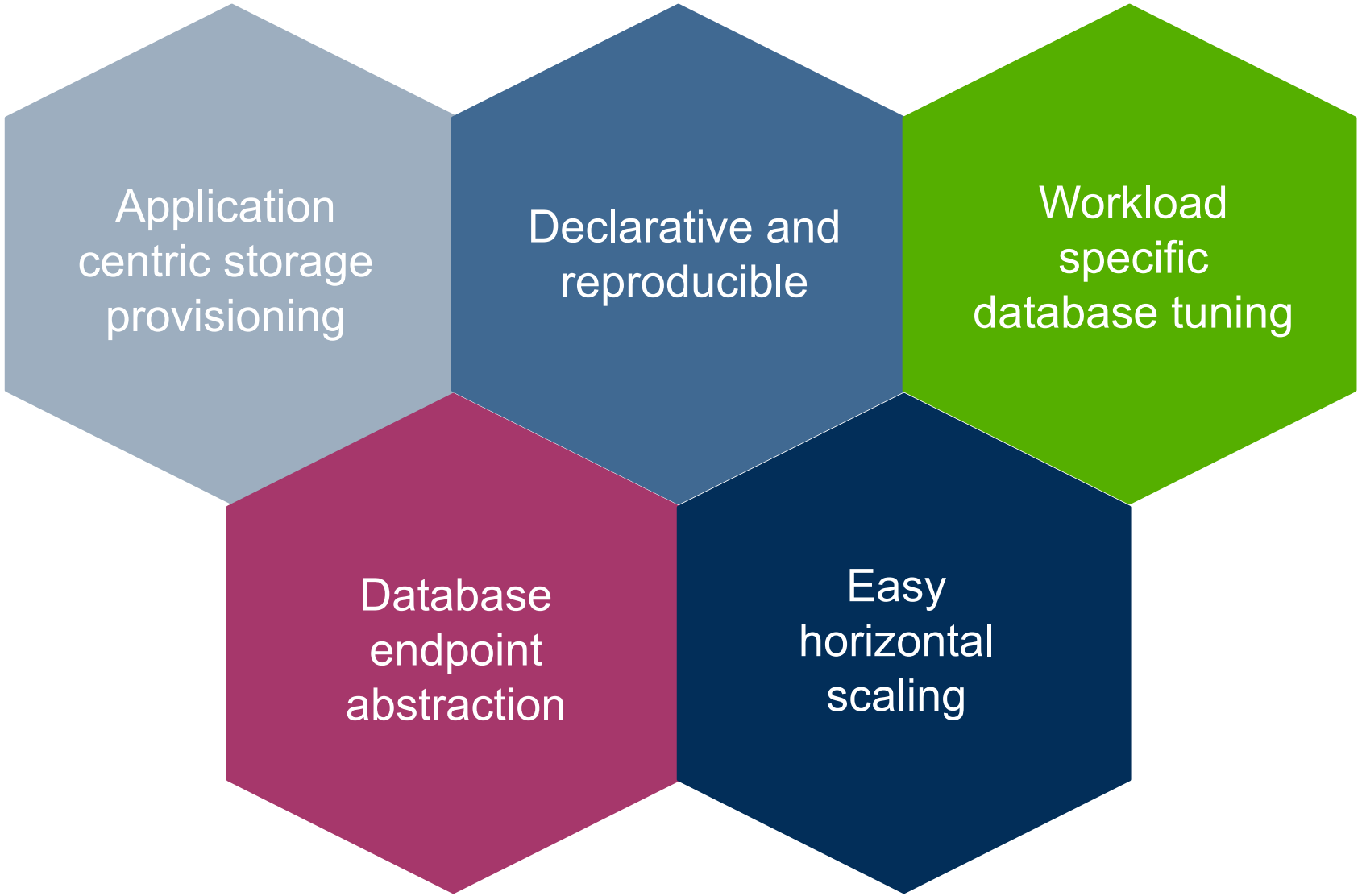
Stateful Applications in Kubernetes

- Stateful vs stateless
- Containers are ephemeral, nodes can be ephemeral
- Pods scheduled anywhere, rescheduled somewhere else
- Performance vs flexibility
- Capacity provisioning

- Multiples copies of data with automatic failover
- Access data from anywhere
- Low latency, high throughput and predictable performance
- Application centric

Live Demo

Database-as-a-Service



How Can I Try StorageOS?

StorageOS **Developer Edition** is forever FREE with 5TB storage

Docs site - https://docs.storageos.com/docs/support/

Self Evaluation Guide - https://docs.storageos.com/docs/self-eval/

Join us on Slack - https://slack.storageos.com/

Email us info@storageos.com

Questions

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Thank You

www.storageos.com