Disaster Recovery For Your Kubernetes Clusters

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Andy Goldstein

Staff Systems Engineer

- C64 Basic -> C -> Perl -> Java -> Ruby -> Go
- Kubernetes contributor since 2014
- Heptio Ark lead

github.com/ncdc

@andygoldstein

medium.com/@andy.goldstein

Steve Kriss

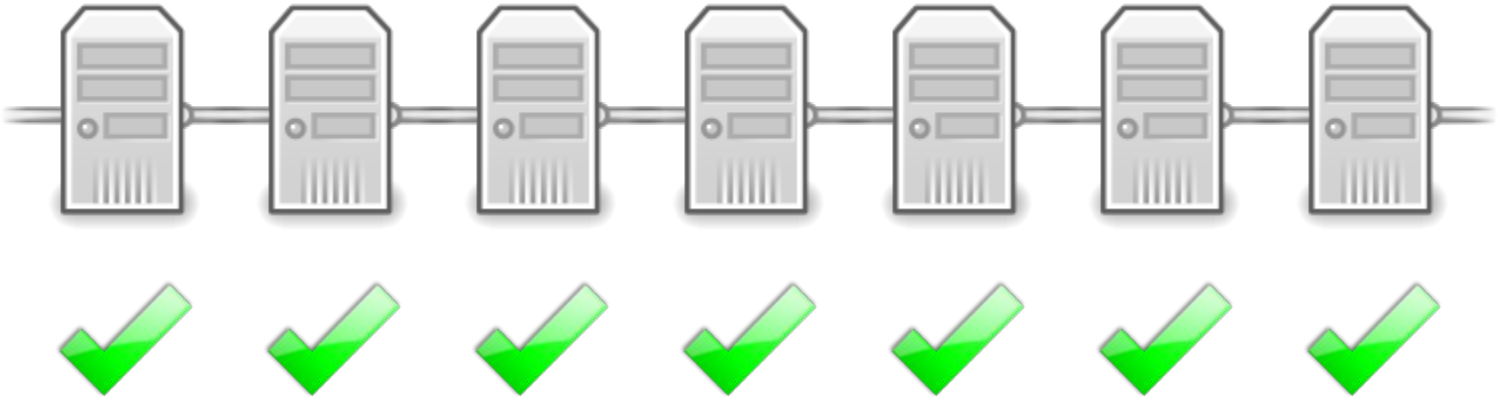
Senior Systems Engineer

- Heptio Ark team member
- Contributor & past member of Kubernetes release team
- Former “enterprise IT” engineer - has experienced some of the challenges of DR & DR testing

github.com/skriss

@krissst16

What you want



heptio

What actually happens...

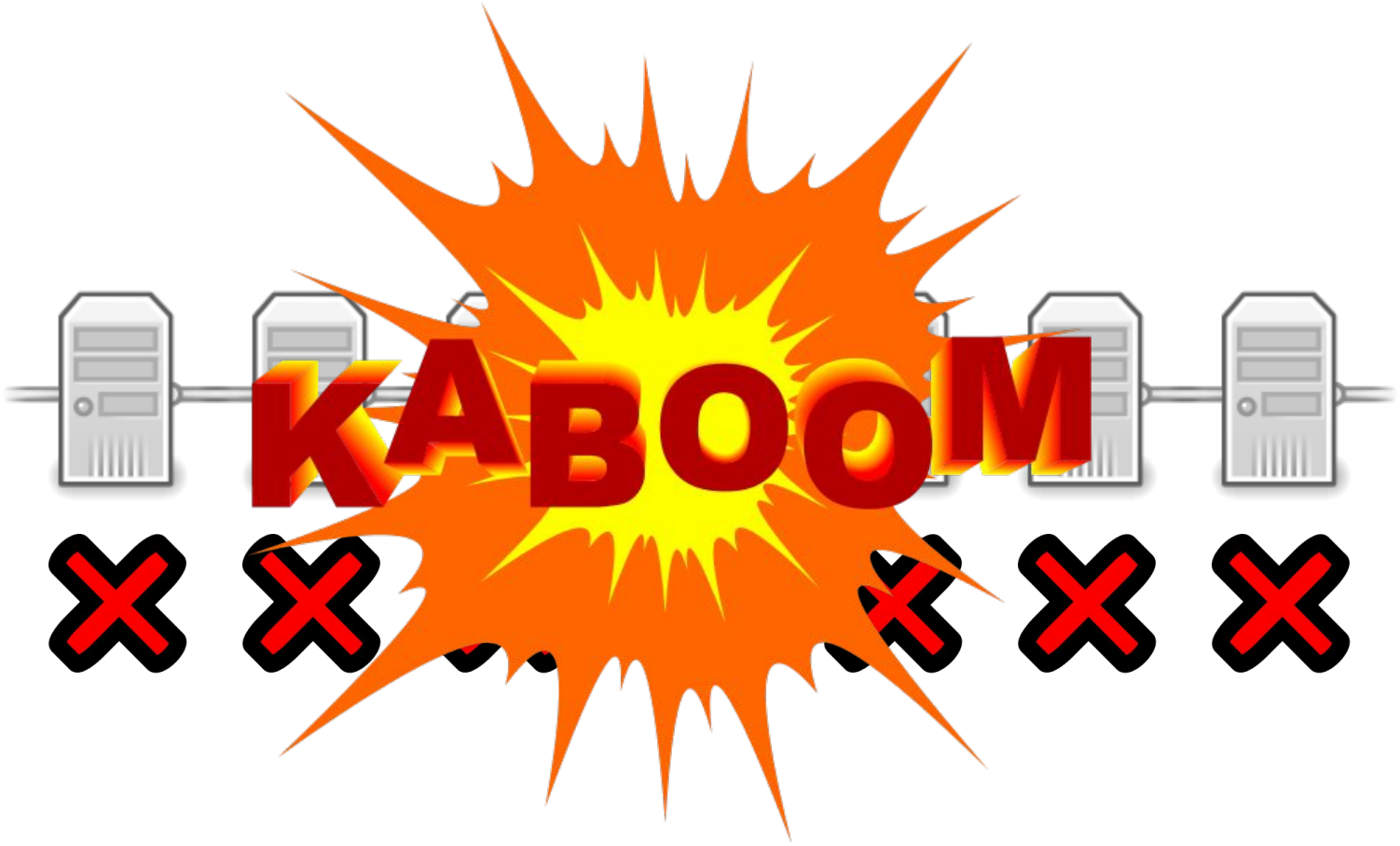


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Image from https://www.wpclipart.com/energy/kaboom.png.html

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In the beginning...

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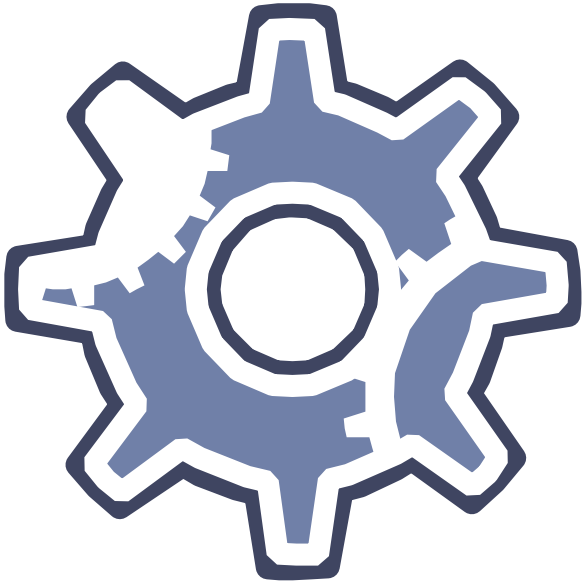
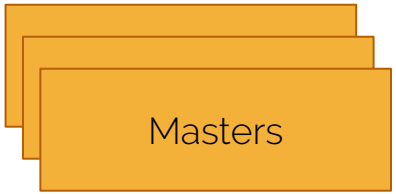


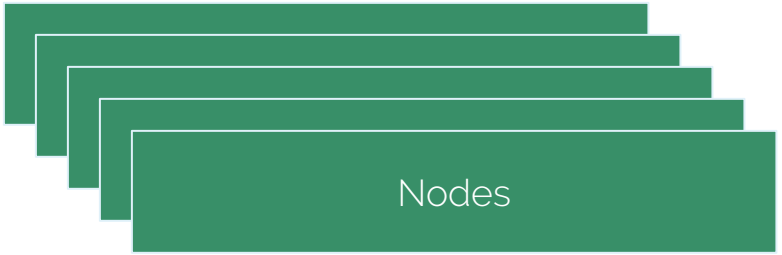
App

=

VM / Server

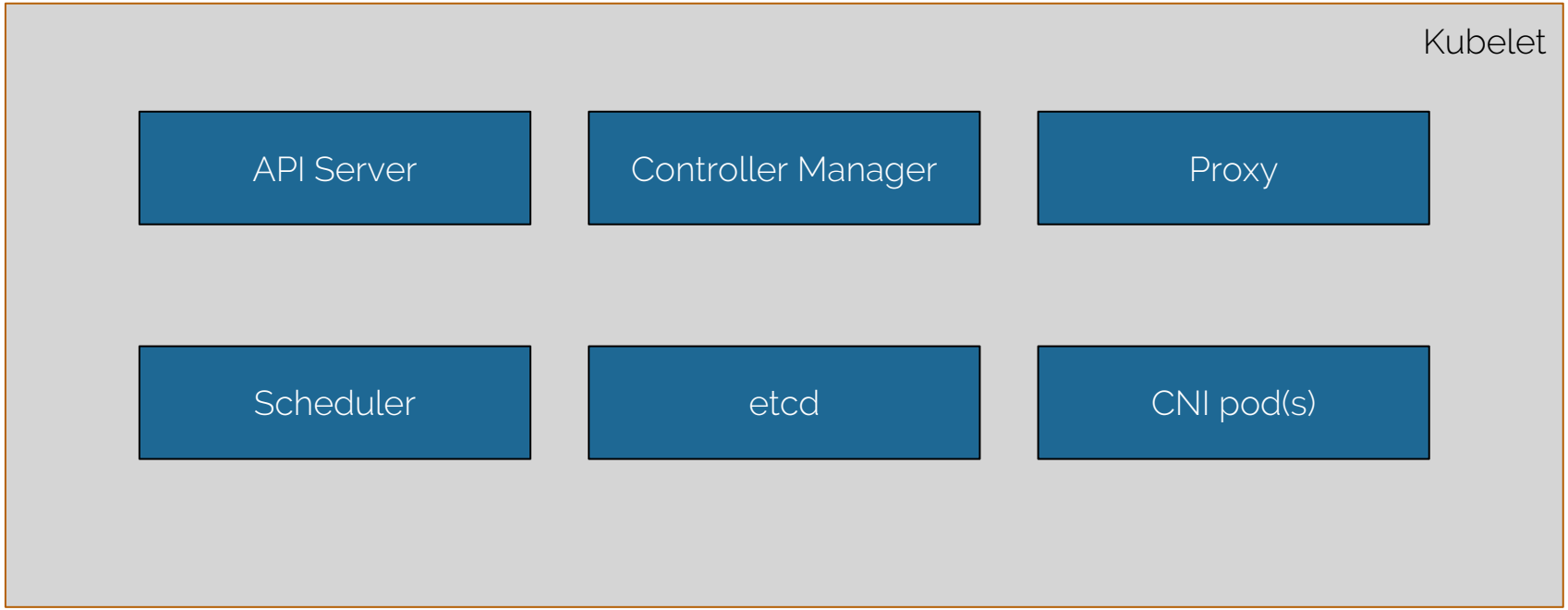
And now!


Masters

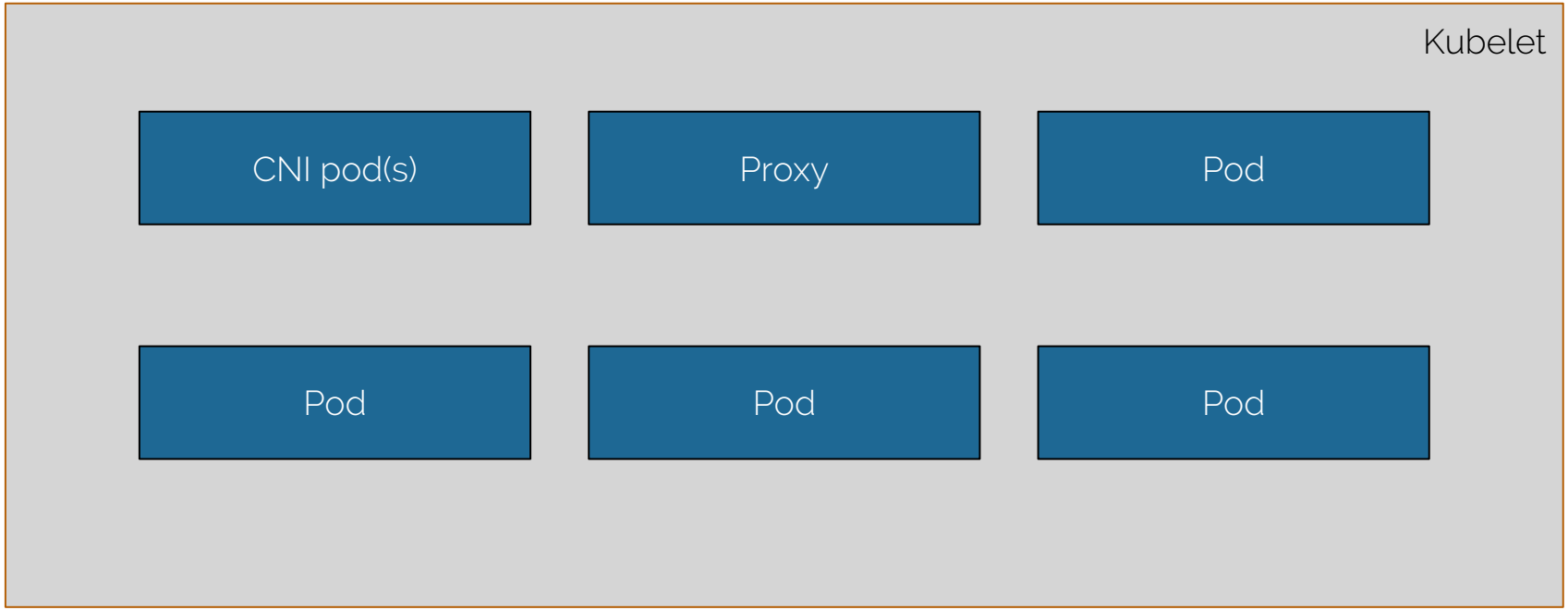

Nodes

etcd

Master


Kubelet
API Server
Controller Manager
Proxy
Scheduler
etcd
CNI pod(s)

Node



Masters

Nodes

Stateless

Stateful

etcd

Persistent Volumes

Master/node DR

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Automate

(but don’t lose your certificates!)

etcd DR

etcd DR methods

- Block
- File system
- etcdctl
- Kubernetes API discovery

Persistent Volume DR

PV DR methods

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- Cloud provider snapshot APIs
- Roll your own

Kube DR with Heptio Ark

Ark Features

- Uses Kubernetes discovery API
- Backups stored in object storage
- PV snapshots
- Scheduled backups

Ark Features

- Filtering
  - Namespaces
  - Resources,
  - Label selector
- Restore into different namespaces

Ark Extensibility

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- gRPC via Hashicorp's go-plugin
- Cloud provider
  - Object storage
  - Block storage
- Item backup actions
- Item restore actions

Demo!!!

What's Next?

Ark's Future

- Backup templates
- Multiple backup/restore targets
- Automated cross region/zone migration
- `ark install`
- Conflict handlers
- And more!

Ark's Community

heptio

- https://github.com/heptio/ark
- Kubernetes Slack: #ark-dr
- https://groups.google.com/forum/#!forum/heptio-ark
- Twitter: @HeptioArk