



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](https://twitter.com/andygoldstein)

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Steve Kriss

Senior Systems Engineer

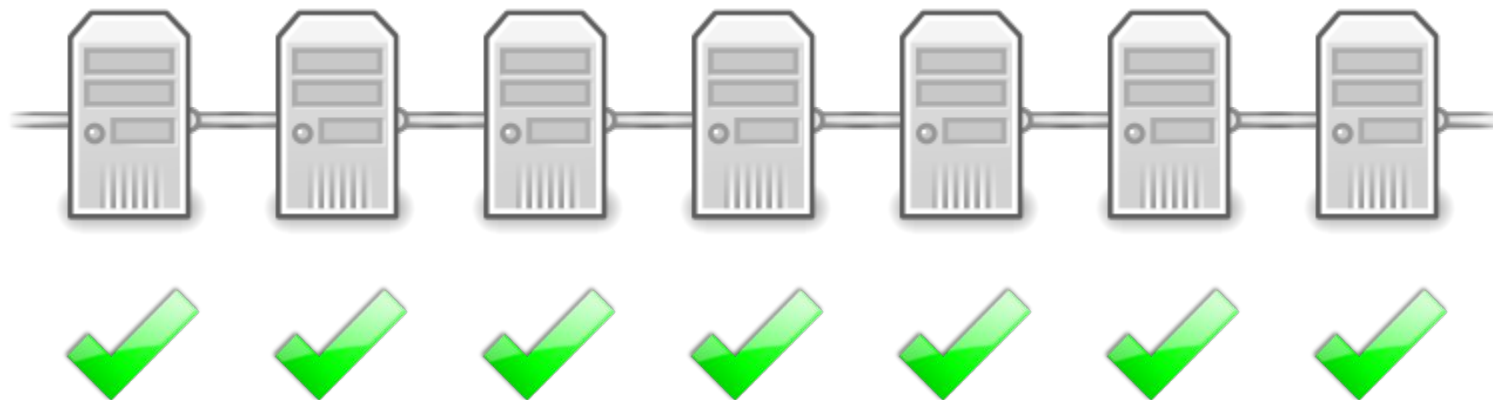


- Heptio Ark team member
- Contributor & past member of Kubernetes release team
- Former “enterprise IT” engineer - experience with the challenges of DR strategies

github.com/skriss

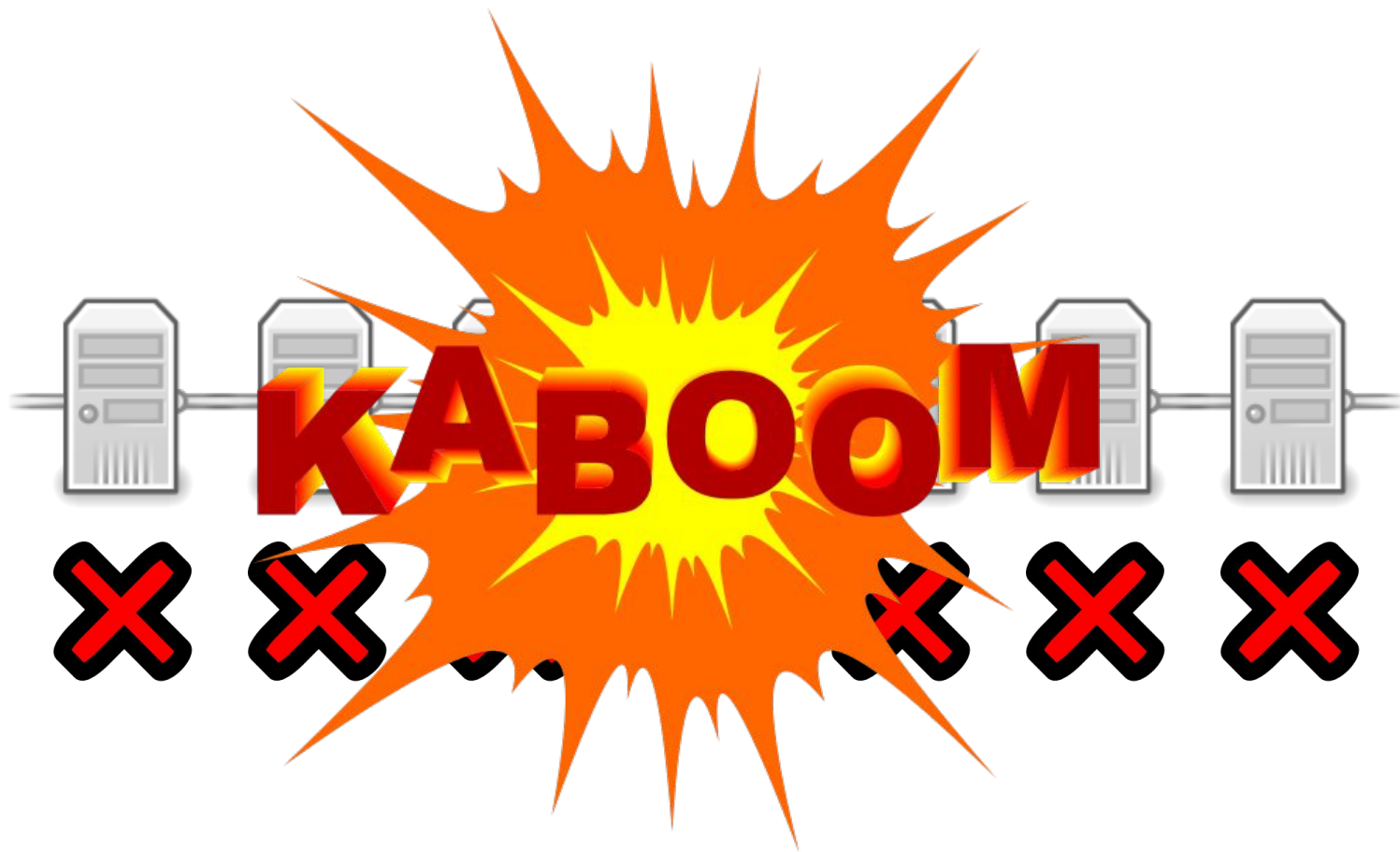
[@krisst16](https://twitter.com/krisst16)

What you want





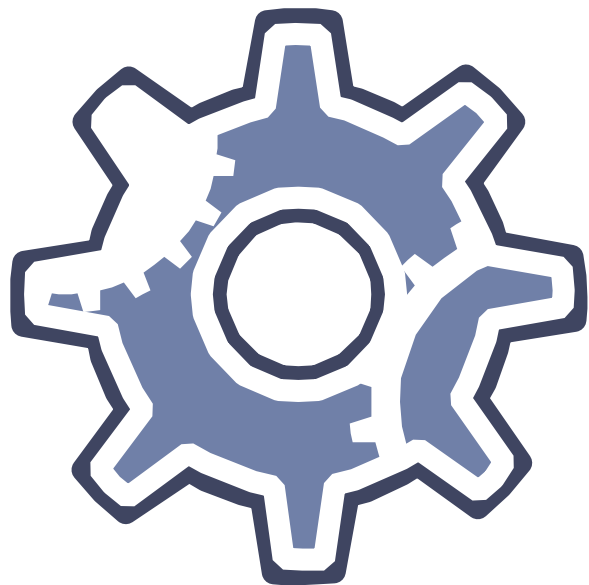
What actually happens...







In the beginning...



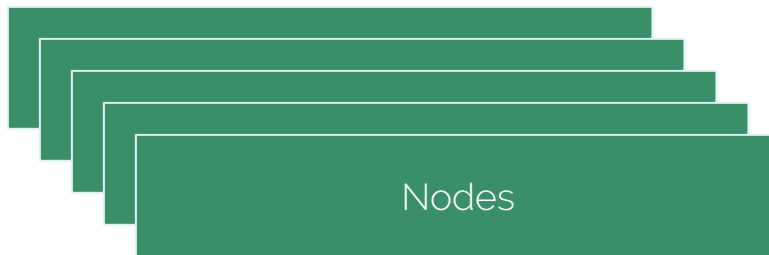
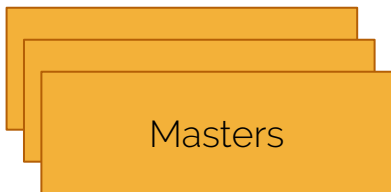
App



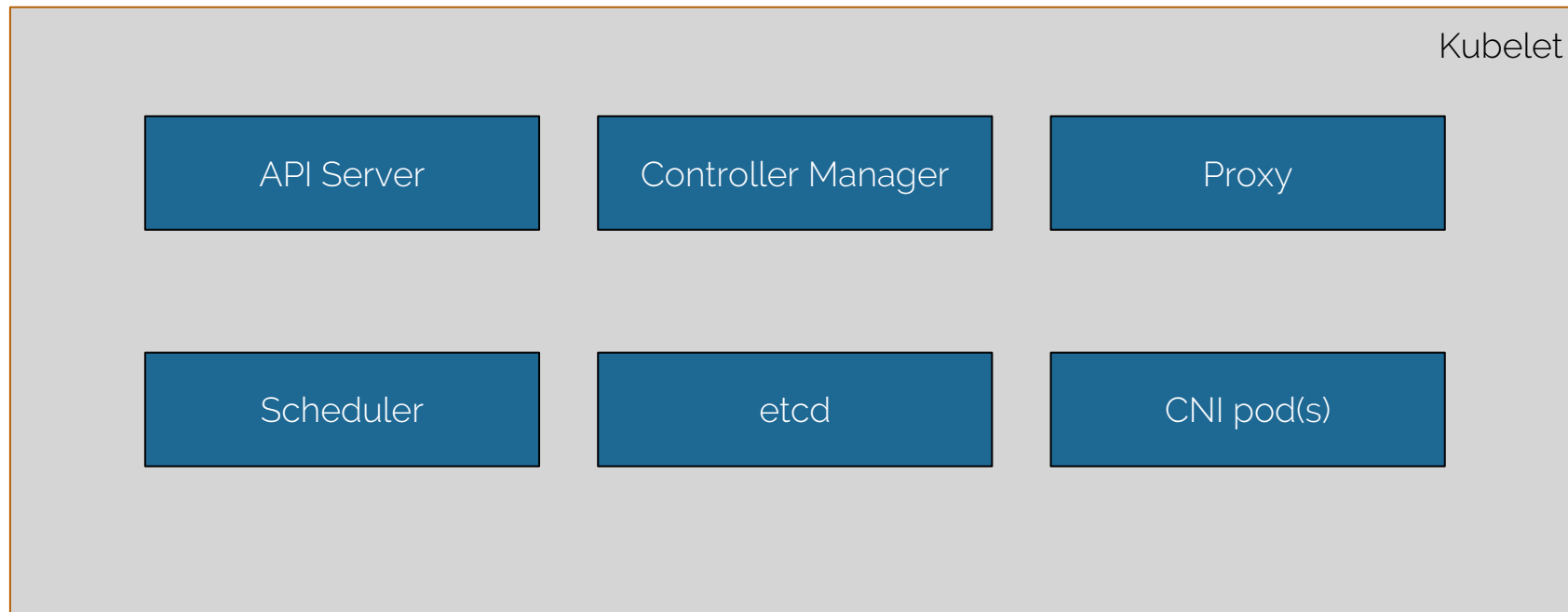
VM / Server

And now!

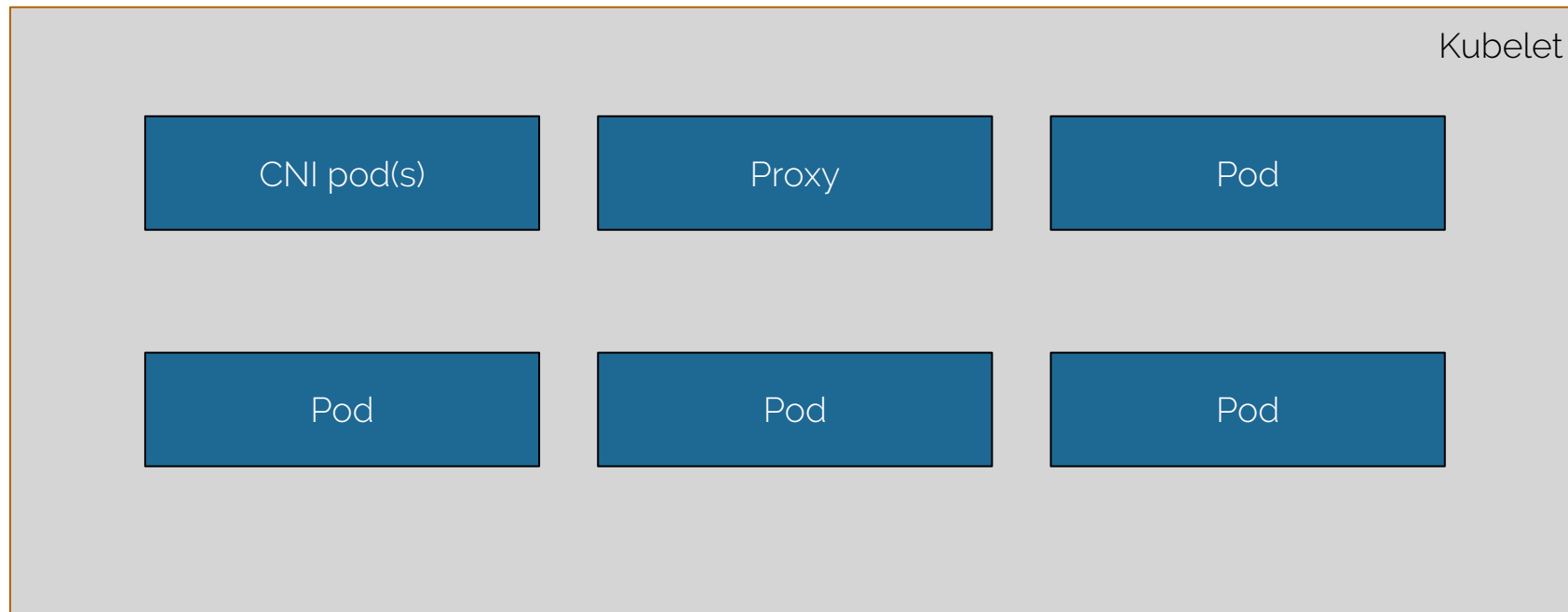
Kubernetes Cluster



Master



Node





Stateful

etcd



Persistent Volumes



Stateless

Masters

Nodes

Master/node DR

Unhealthy servers



- Kubectl cordon & drain
- Provision replacement master / node

Automate!



- Use your preferred automation tooling (Ansible, Chef, Puppet, ...)
- Minimize time to provision a master/node/cluster
- Preserve your certificates
- Not the key DR problem here - stateful data is

etcd DR

etcd DR methods



- 1) Block
- 2) File system
- 3) etcdctl
- 4) Kubernetes API discovery

Persistent Volume DR

PV DR methods



- Cloud provider snapshot APIs
- ???

Kube DR with Heptio Ark

Ark Features



- Backup & restore Kubernetes API objects
 - Uses Kubernetes discovery API
 - Does not talk directly to etcd
 - Backups stored in object storage
- Backup & restore your PVs
 - Uses snapshot APIs

Ark Features

- Scheduled backups
- Filtering
 - Namespaces
 - Resources
 - Label selector
- Restore into different namespaces

Ark Extensibility



- Hooks
- Plugins
 - Object storage
 - Block storage
 - Item backup actions
 - Item restore actions

Demo

Please Join Us!



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