Helm 3 Sneak Preview

What you can expect to see in Helm version 3

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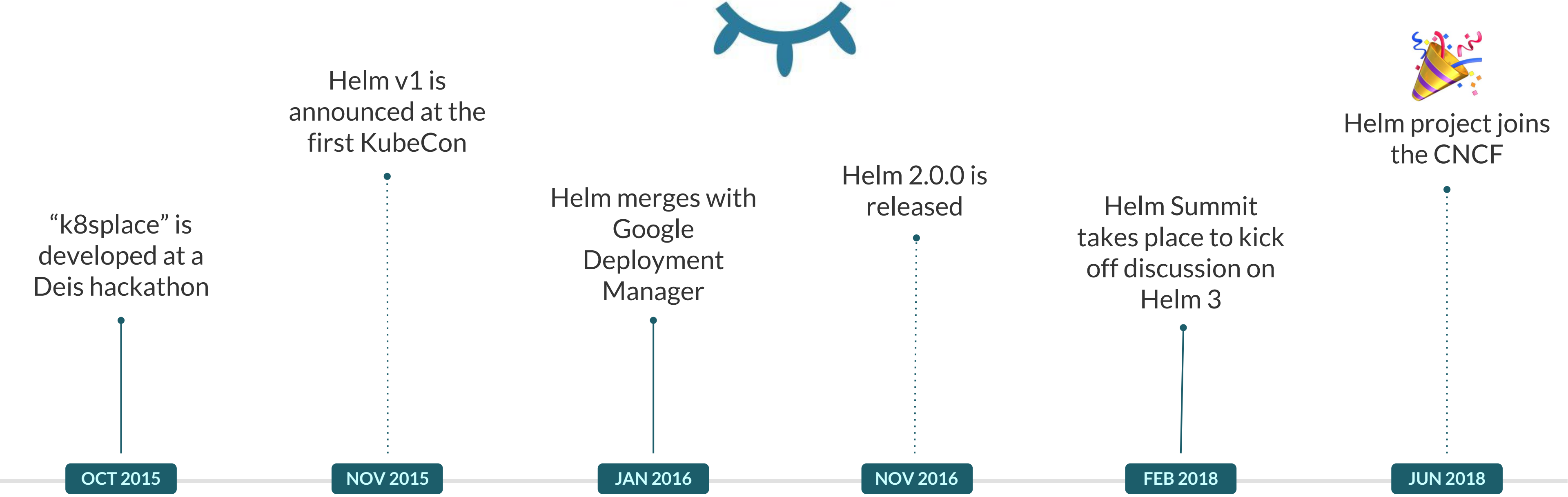
BRIEF HISTORY OF HELM



OCT 2015

“k8splace” is developed at a Deis hackathon

NOV 2015

Helm v1 is announced at the first KubeCon

JAN 2016

Helm merges with Google Deployment Manager

NOV 2016

Helm 2.0.0 is released

FEB 2018

Helm Summit takes place to kick off discussion on Helm 3

JUN 2018

🎉 Helm project joins the CNCF

Major changes to expect in Helm 3

- **Embedded Lua engine**

Removal of Tiller

Chart repo auth & upload

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Embedded Lua engine

Making Helm charts more robust and programmable

Major changes to expect in Helm 3

Embedded Lua engine

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Embedded Lua engine

- Lua can be used with, or in place of, YAML templates
- Treat Kubernetes resources as objects, not strings
- Intercept lifecycle events, modify chart on-the-fly
- Sandboxed - optionally limit access to network/io
- Develop and import reusable “library charts”
- Helm plugins will have access to the Lua runtime

Helm 2

```
apiVersion: v1
kind: Pod
metadata:
  name: {{ template "alpine.fullname" . }}
  labels:
    heritage: {{ .Release.Service }}
    release: {{ .Release.Name }}
    chart: {{ .Chart.Name }}-{{ .Chart.Version }}
    app: {{ template "alpine.name" . }}
spec:
  restartPolicy: {{ .Values.restartPolicy }}
  containers:
  - name: waiter
    image: "{{.Values.img}}:{{.Values.img.tag}}"
    imagePullPolicy: {{ .Values.img.pullPolicy }}
    command: ["/bin/sleep", "9000"]
```

Helm 3

Helm 2

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    imagePullPolicy: {{ .Values.img.pullPolicy }}
    command: ["/bin/sleep", "9000"]
```

Helm 3

```
function create_alpine_pod(_)
  local pod = {
    apiVersion = "v1",
    kind = "Pod",
    metadata = {
      name = alpine_fullname(_),
      labels = {
        heritage = _.Release.Service or "helm",
        release = _.Release.Name,
        chart = _.Chart.Name .. "-" .. _.Chart.Vers
        app = alpine_name(_)
      }
    },
    spec = {
      restartPolicy = _.Values.restartPolicy,
      containers = {
        {
          name = waiter,
          image = _.Values.image.repository .. ":"
          imagePullPolicy = _.Values.image.pullPoli
          command = {
            "/bin/sleep",
            "9000"
```

Helm 2

```
apiVersion: v1
kind: Pod
metadata:
  name: {{ template "alpine.fullname" . }}
  labels:
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    app: {{ template "alpine.name" . }}
spec:
  restartPolicy: {{ .Values.restartPolicy }}
  containers:
  - name: waiter
    image: "{{.Values.img}}:{{.Values.img.tag}}"
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```

Helm 3

```
-- Example of using a "library chart"
local pods = require("mylib.pods");

function create_alpine_pod(_)
  myPod = pods.new("alpine:3.7", _)
  myPod.spec.restartPolicy = "Always"
  -- set any other properties
  _.Manifests.add(myPod)
end
```

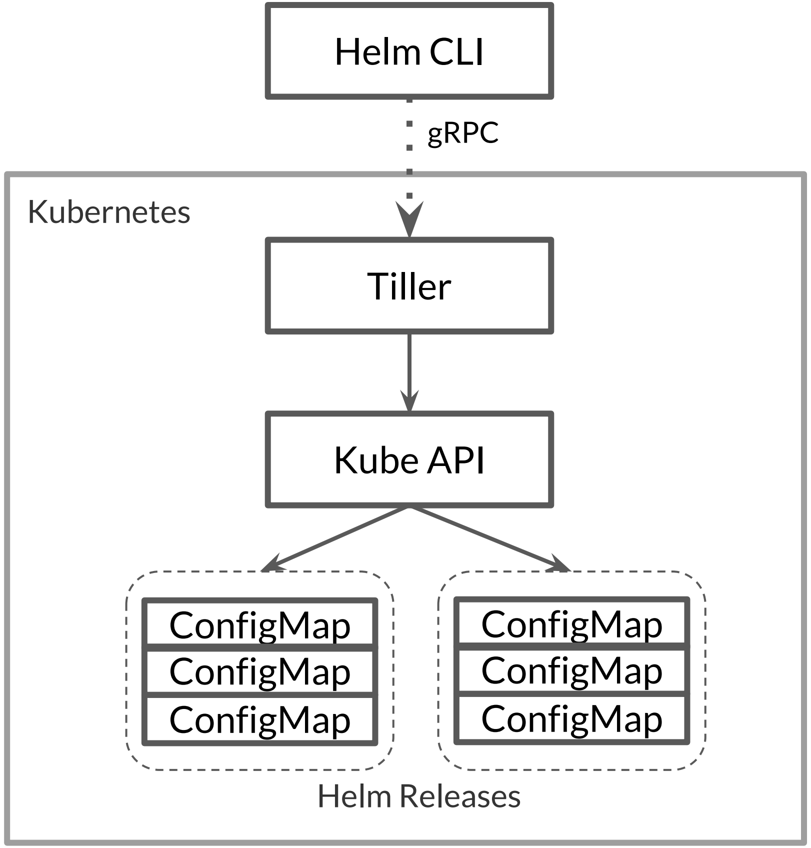
Removal of Tiller

Improving security by delegating auth to Kubernetes RBAC

Removal of Tiller

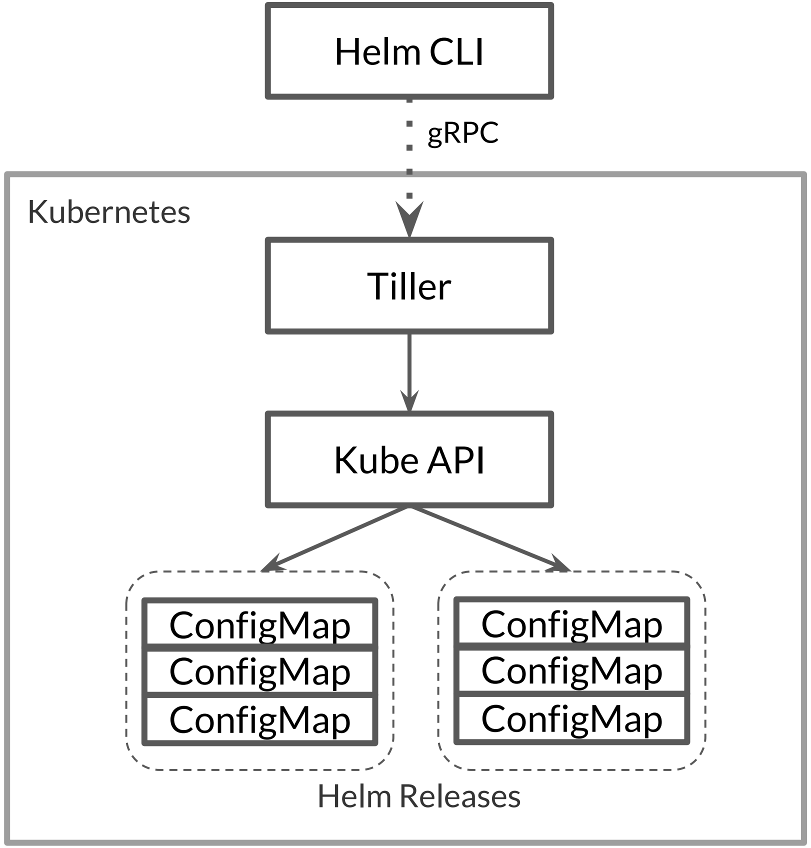
- Shrinks the security model for Helm, now client-only
- Auth is delegated to Kubernetes RBAC
- Release history maintained using ULIDs vs. integers
- “Release” CRD will store instance of an application
- “ReleaseVersion” CRD will store version of release

Helm 2


Helm CLI
gRPC
Kubernetes
Tiller
Kube API
ConfigMap
ConfigMap
ConfigMap
ConfigMap
ConfigMap
ConfigMap
Helm Releases

Helm 3

Helm 2


Helm CLI
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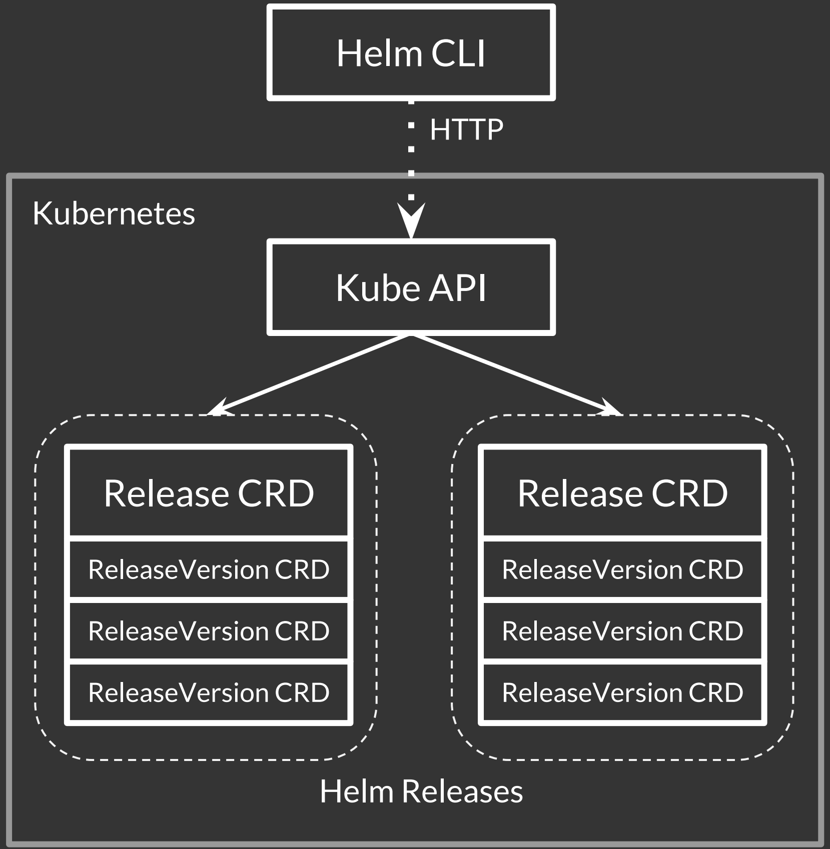
Helm 3


Helm CLI
HTTP
Kubernetes
Kube API
Release CRD
ReleaseVersion CRD
ReleaseVersion CRD
ReleaseVersion CRD
Release CRD
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ReleaseVersion CRD
Helm Releases

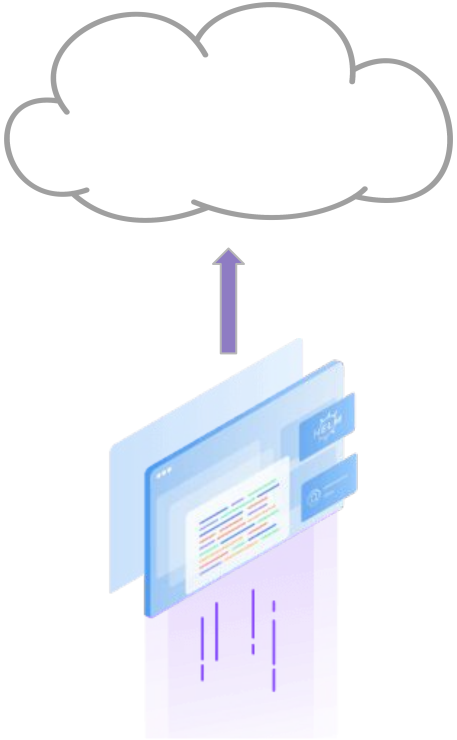

Chart repo auth & upload

New commands and API spec for working with chart repositories

Chart repo auth & upload

- “helm push” command to upload chart to a repo
- API spec for HTTP uploads, based on ChartMuseum
- Plugins can supply custom protocols (e.g. `s3://`)
- “helm login” command to authenticate against a repo
- OAuth2 authorization flow, bearer/token auth
- Limit which users can upload/install which charts

Helm 2

```
$ helm repo add myrepo        \
    https://site.com/myrepo \
    --username=josh         \
    --password=*****
```

```
$ helm package mychart/
```

```
$ ./my-custom-uploader.sh \
     mychart-0.1.0.tgz
```

```
$ helm repo update
```

```
$ helm install myrepo/mychart
```

Helm 3

Helm 2

```
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    https://site.com/myrepo \
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```
$ helm repo update
```

```
$ helm install myrepo/mychart
```

Helm 3

```
$ helm login https://site.com
```

```
$ helm repo add myrepo \
    https://site.com/myrepo
```

```
$ helm push mychart/ myrepo
```

```
$ helm repo update
```

```
$ helm install myrepo/mychart
```

Other Helm 3 changes

- “Managed” hooks - if Helm creates something, it will delete it
- index.yaml will move to index.json, and be partitioned for performance
- Schematize your values by including a values.schema.yaml file
- “helm serve” and “helm reset” commands will be removed
- ???

Want to know more about Helm 3?

Helm 3 Design Proposal

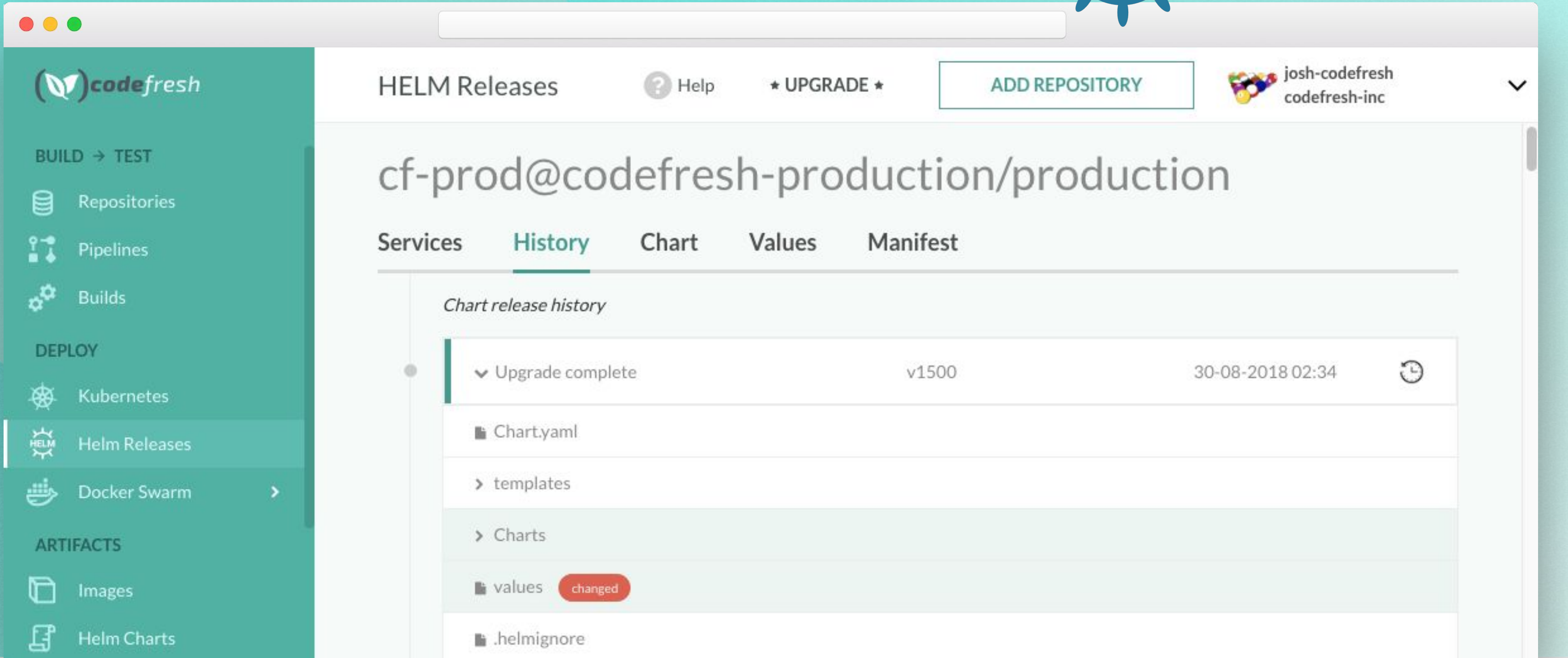
https://github.com/helm/community/tree/master/helm-v3

“A First Look at the Helm 3 Plan” by Matt Butcher

https://sweetcode.io/a-first-look-at-the-helm-3-plan/

codefresh

The platform committed to supporting HELM 3 on day 1!



HELM Releases

cf-prod@codefresh-production/production

Services | History | Chart | Values | Manifest

Chart release history

Upgrade complete	v1500	30-08-2018 02:34

- Chart.yaml
- templates
- Charts
- values changed
- .helmignore

Thank you!

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Want to watch the video for this presentation? Click below!