

# From image registry to chart repository

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# Project Harbor

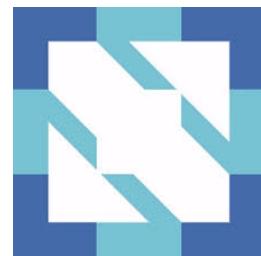
## A brief history ...

Started as an image registry



<https://github.com/goharbor/harbor>

Accepted by CNCF!



2016. 3

- Management UI
- Role Based Access Control

2016. 9

- LDAP integration
- Image replication across instances.
- ~1000 stars

2017. 4

- Content trust.
- ~2000 stars

2017. 9

- Image scanning.
- Project level control policy.

2018. 4

- Label support
- Stateless Job service

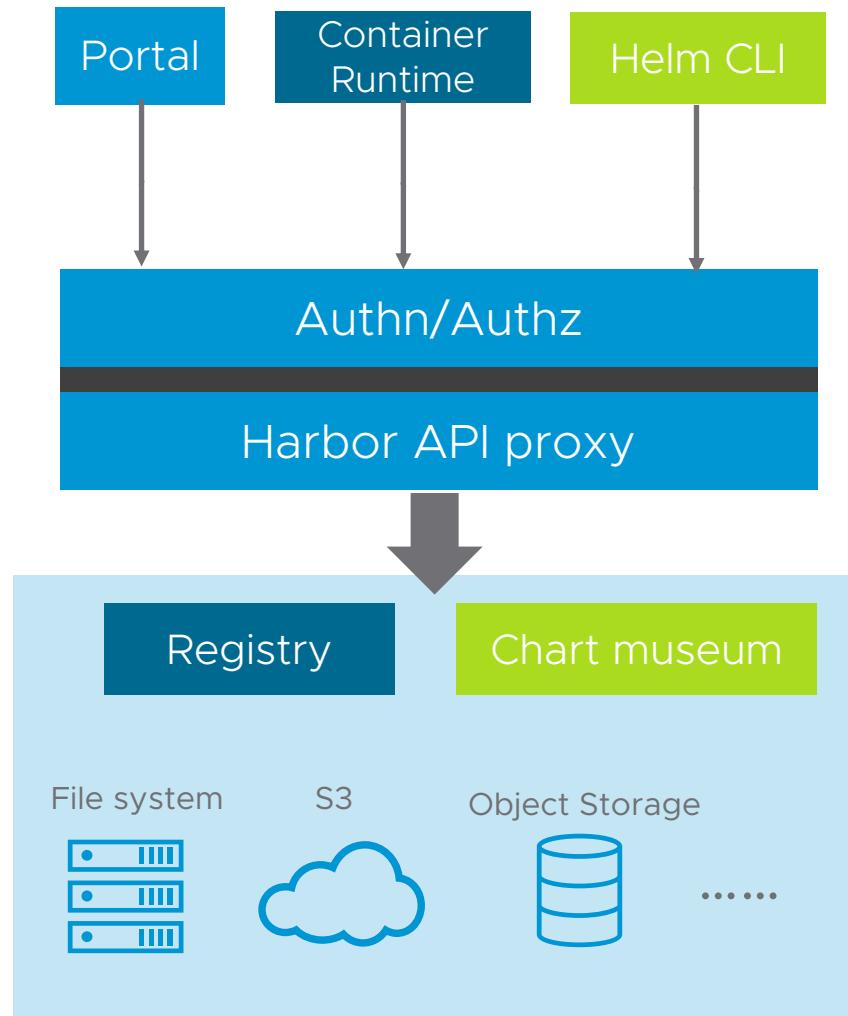
# Embrace Kubernetes and cloud native



Harbor as the “Kubernetes Registry”

- Helm is the standard for package deployment and management.
- Effective approach for running Enterprise application on top of Kubernetes.
- Single pane for Kubernetes users
- Provide consistent user experience for both Helm chart and image management.

# Integrated of Chartmuseum (diagram)



- Introduce Chartmuseum for storage and index of helm charts.
- Adaptable to multiple storage backends.
- Leverage “project” as the container of helm charts.
- Same RBAC rules apply to both images and helm charts.
- Enhanced the “push” plugin to improve integration workflow.

# How it looks like

The screenshot shows the Harbor UI interface. The top navigation bar has a search bar labeled "Search Harbor...". On the left, a sidebar menu includes "Projects", "Logs", "Administration" (which is expanded to show "Users", "Registries", "Replications", and "Configuration"), and a "System Admin" dropdown. The main content area shows the "kubecon-demo" project details. The "Helm Charts" tab is selected, displaying a table of charts. The table columns are "Name", "Status", and "Versions". The data in the table is as follows:

Name	Status	Versions
consul	Active	2
datadog	Active	1
drone	Active	4
kong	Active	3

Below the table are buttons for "UPLOAD", "DELETE", and "DOWNLOAD".

# How it looks like

The screenshot shows the Harbor UI interface. The left sidebar has a dark grey header "Harbor" and a light grey body with navigation items: Projects, Logs, Administration (with sub-items Users, Registries, Replications, Configuration), and a "Drone" section (with sub-items Users, Registries, Replications, Configuration). The main content area has a dark blue header with the "Harbor" logo and a search bar "Search Harbor...". Below the header, the breadcrumb navigation shows "Projects < Charts < Versions". The main content displays a chart for "drone:1.7.0" by "System Admin". The "Summary" tab is selected, showing a brief description: "Drone is a Continuous Delivery system built on container technology". Below this, there's a section titled "Drone.io" with a brief description: "Drone is a Continuous Integration platform built on container technology." There's also a "TL;DR;" section with the command: `$ helm install stable/drone`. At the bottom, there's a section titled "Installing the Chart" with the command: `$ helm install --name my-release stable/drone`.

# How it looks like

The screenshot displays the Harbor UI interface across three panels. The top navigation bar is consistently labeled "Harbor".

- Left Sidebar:** Contains links for "Projects", "Logs", and "Administration". Under "Administration", there are sub-links for "Users", "Registries", "Replications", and "Configuration".
- Top Panel:** Shows a search bar and the "Harbor" logo.
- Middle Panel:** Shows a search bar and the "Projects" section of the UI. It includes a "Logs" tab and an "Administration" section with "Users", "Registries", "Replications", and "Configuration".
- Right Panel:** Shows a detailed view of a Docker chart for "drone:1.7.0" under the "System Admin" role. The navigation bar here includes "Projects < Charts < Versions".
  - Summary Tab:** Summary information for the chart.
  - Dependencies Tab:** Information about dependencies.
  - Values Tab:** Active tab, showing the YAML configuration for the chart.

```
appVersion: "0.8.6"

images:
  ## The official drone (server) image, change tag to use a different version.
  ## ref: https://hub.docker.com/r/drone/drone/tags/
  ##
  server:
    repository: "docker.io/drone/drone"
    tag: 0.8.6
    pullPolicy: IfNotPresent

  ## The official drone (agent) image, change tag to use a different version.
  ## ref: https://hub.docker.com/r/drone/agent/tags/
  ##
  agent:
    repository: "docker.io/drone/agent"
    tag: 0.8.6
    pullPolicy: IfNotPresent

  ## The official docker (dind) image, change tag to use a different version.
  ## ref: https://hub.docker.com/r/library/docker/tags/
  ##
```

# How it looks like

The image shows a terminal session and a screenshot of the Harbor UI side-by-side.

**Terminal Session:**

```
root@jt-dev:~# helm repo add --ca-file ./harbor_ca.crt --username admin --password whatever demo https://10.192.43.140/chartrepo/kubecon-demo
Error: Looks like "https://10.192.43.140/chartrepo/kubecon-demo" is not a valid chart repository or cannot be reached: Failed to fetch https://10.192.43.140/chartrepo/kubecon-demo/index.yaml : 401 Unauthorized
root@jt-dev:~#
root@jt-dev:~#
root@jt-dev:~# helm repo add --ca-file ./harbor_ca.crt --username admin --password Passw0rd demo https://10.192.43.140/chartrepo/kubecon-demo
"demo" has been added to your repositories
root@jt-dev:~#
root@jt-dev:~# helm push --ca-file ./harbor_ca.crt drone-1.7.0.tgz demo
Pushing drone-1.7.0.tgz to demo...
Done.
root@jt-dev:~# helm fetch demo/kong
root@jt-dev:~#
```

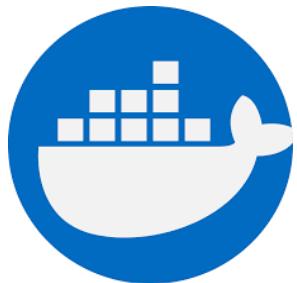
**Harbor UI Screenshot:**

The Harbor UI shows the 'Projects' section. A search bar at the top right contains the placeholder 'Search Harbor...'. Below the search bar, there is a breadcrumb navigation path: 'Projects < Charts < Versions'. The main area displays a list of charts, with one chart titled 'drone' visible. The 'drone' chart has a status of 'Pushed' and a version of '1.7.0'. The chart details page shows the following YAML configuration:

```
## The official drone (agent) image, change tag to use a different version.
## ref: https://hub.docker.com/r/drone/agent/tags/
##
agent:
  repository: "docker.io/drone/agent"
  tag: 0.8.6
  pullPolicy: IfNotPresent

## The official docker (dind) image, change tag to use a different version.
## ref: https://hub.docker.com/r/library/docker/tags/
##
```

# The challenge ...



Helm chart is not self-contained.  
So what images will be deployed?



Flexible reference:

```
serviceAccountName: {{ template "drone.serviceAccountName" . }}
```

```
containers:
```

```
- name: {{ template "drone.fullname" . }}-server
```

```
image: "{{ .Values.images.server.repository }}:{{ .Values.images.server.tag }}"
```

```
imagePullPolicy: {{ .Values.images.server.pullPolicy }}
```

```
env:
```

```
images:
```

```
## The official drone (server) image, change tag to use a different version.
```

```
## ref: https://hub.docker.com/r/drone/drone/tags/
```

```
##
```

```
server:
```

```
repository: "docker.io/drone/drone"
```

```
tag: 0.8.6
```

```
pullPolicy: IfNotPresent
```

Overwritable during installation:

```
~/charts/drone#
```

```
~/charts/drone#
```

```
~/charts/drone# helm install --set images.server.repository=another_drone \
```

```
--set images.server.tag=another_version \
```

```
demo/drone
```



# Thank You