

Using to Deploy to

(Helm) *(Ethereum)* *(Kubernetes)*

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A detailed view of a woodworking workshop. The room is filled with various wooden items, including a large wooden cabinet with intricate carvings, a wooden table, and several chairs. The walls are covered with tools, and the floor is littered with wood shavings. A large wooden box is in the foreground, and a basket of wood shavings is on the right. The workshop appears to be a place where a lot of work is done, with many tools and materials visible.

Kubernetes provides
you the tools to build your
furniture from scratch

Most of us don't want to
build from scratch

IKKEA

We need a tool to
manage a group of
resources as one unit.



The Kubernetes Package Manager

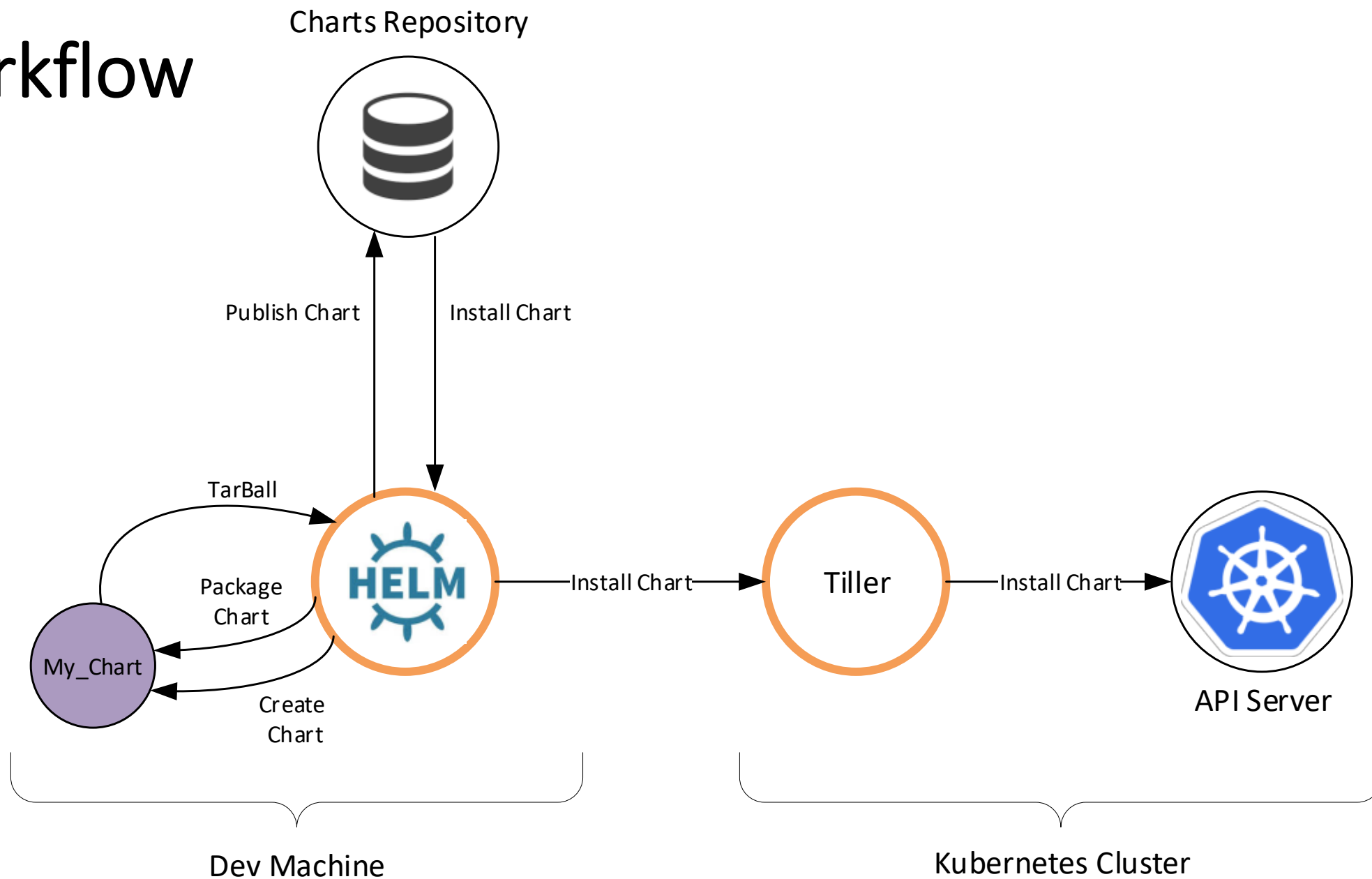
Package Manager

- Bundle primitives into a single logical deployment unit: **Chart**
- Consist of...
 - Metadata
 - Kubernetes resource definitions
 - Documentation
- Charts == Helm Package

Deployment Manager

- Repeatable deployment
- Dependency Management
- Update, rollback, and test application deployments
- Release == Instance of chart running in cluster

Workflow



Getting Started

- Install

- MacOS: `brew install kubernetes-helm`
- Windows: `choco install kubernetes-helm`
- Linux: Download from github.com/kubernetes/helm/releases

Demos

- Init
- Install a Chart
- Upgrade a Release
- Delete a Release

Your First Chart

```
$ helm create myapp
```

Navigating a Chart

myapp

- Chart.yaml
- README.md
- charts
- templates
- values.yaml
- requirements.yaml



Templates

```
myapp
├── Chart.yaml
├── README.md
├── charts
├── templates
│   ├── deployment.yaml
│   └── svc.yaml
├── values.yaml
└── requirements.yaml
```


Configuration

```
myapp
├── Chart.yaml
├── README.md
├── charts
├── templates
│   ├── deployment.yaml
│   └── svc.yaml
├── values.yaml
└── requirements.yaml
```

values.yaml

```
image: mycompany/myapp:1.0.0
imagePullPolicy: IfNotPresent
service:
  port: 80
```

templates/deployment.yaml

```
apiVersion: extensions/v1beta1
kind: Deployment
spec:
  template:
    spec:
      containers:
        - name: {{ .Chart.Name }}
          image: "{{ .Values.image }}"
          imagePullPolicy: {{ .Values.imagePullPolicy }}
          ports:
            - containerPort: {{ .Values.service.port }}
```

Configuration

values.yaml

```
image: mycompany/myapp:1.0.0
imagePullPolicy: IfNotPresent
service:
  port: 80
```

Configure values on command line with the --set flag

```
$ helm install --set service.port=8080 myapp/
```

Or pass in a new values file on command line with the -f flag

```
$ helm install -f myvalues.yaml myapp
```

Dependencies

myapp

- Chart.yaml
- README.md
- charts
- templates
- values.yaml
- requirements.yaml

requirements.yaml

```
dependencies:  
- name: mariadb  
  version: 0.5.2  
  repository: http://storage.googleapis.com/kubernetes-  
charts
```

Documentation

myapp

- Chart.yaml
- README.md
- charts
- templates
 - NOTES.txt
- values.yaml

Metadata

myapp

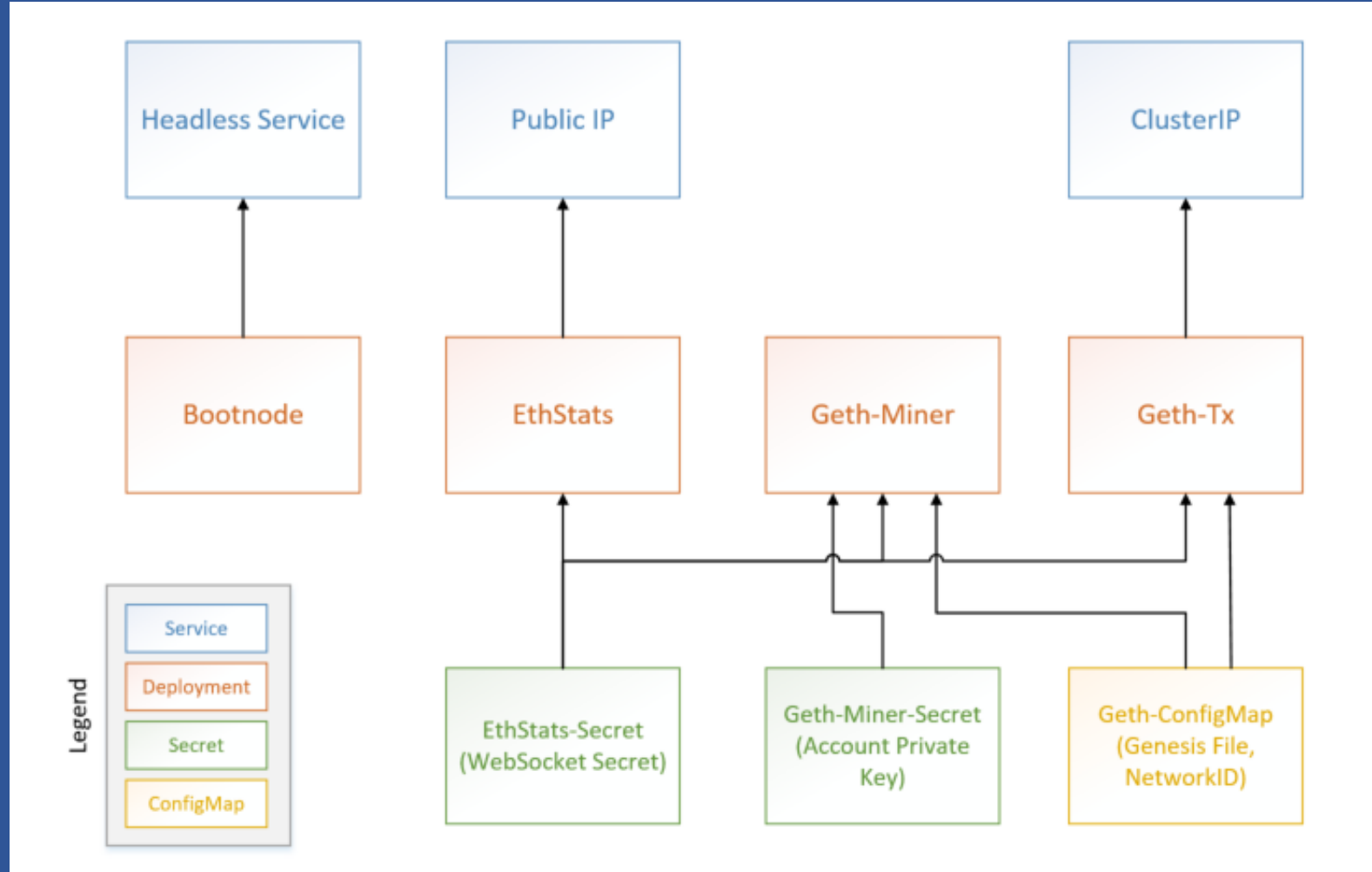
- Chart.yaml
- README.md
- charts
- templates
- values.yaml
- requirements.yaml

Webjet's Road to Helm

- Templatize and easily configure their deployments for use across different environments
- Stable distributions of the application that can be shared to other dependent teams
- 'Push Button' Deploy



Ethereum



Official Charts Repository

- Curated, ready-to-run applications
- github.com/kubernetes/charts
- [KubeApps.com](https://kubernetes.io/docs/tasks/manage-kubernetes-objects/install-repo-releases/#kubernetes-charts-repository)



Chart repositories

- Has an index.yaml file
- Any web server accessible via http(s)

Index of /

[../](#)

[index.yaml](#)

04-Nov-2016 01:48

[myapp-0.1.0.tgz](#)

04-Nov-2016 01:47

[myapp-0.2.0.tgz](#)

04-Nov-2016 01:48

```
$ helm repo add mycompany charts.mycompany.com  
$ helm install mycompany/myapp
```

Chart Best Practices

- Charts are...
 - ☒ Self-Contained
 - ☒ Modularized
 - ☒ Reusable
 - ☒ Reproducible
 - ☒ Configurable



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Resources

- **Helm Docs**
https://docs.helm.sh/using_helm/
- **Helm Charts Repo**
<https://github.com/kubernetes/charts>
- **Helm Core**
<https://github.com/kubernetes/helm>
- **KubeApps**
<https://kubeapps.com/>
- **Using Helm to Deploy Blockchain to Kubernetes**
www.microsoft.com/developerblog/2018/02/09/using-helm-deploy-blockchain-kubernetes/
- **Slides Inspired from (with permission):**
Taking the Helm: Delivering Kubernetes-Native Applications
<https://cnkc16.sched.com/event/8K95/taking-the-helm-delivering-kubernetes-native-applications-michelle-noorali-and-matt-butcher-deis-adnan-abdulhussein-bitnami>