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—互联网人实战大学—

《Kubernetes 原理剖析与实战应用》

正范

— 拉勾教育出品 —

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12 | Helm Charts：如何在生产环境中释放部署生产力？

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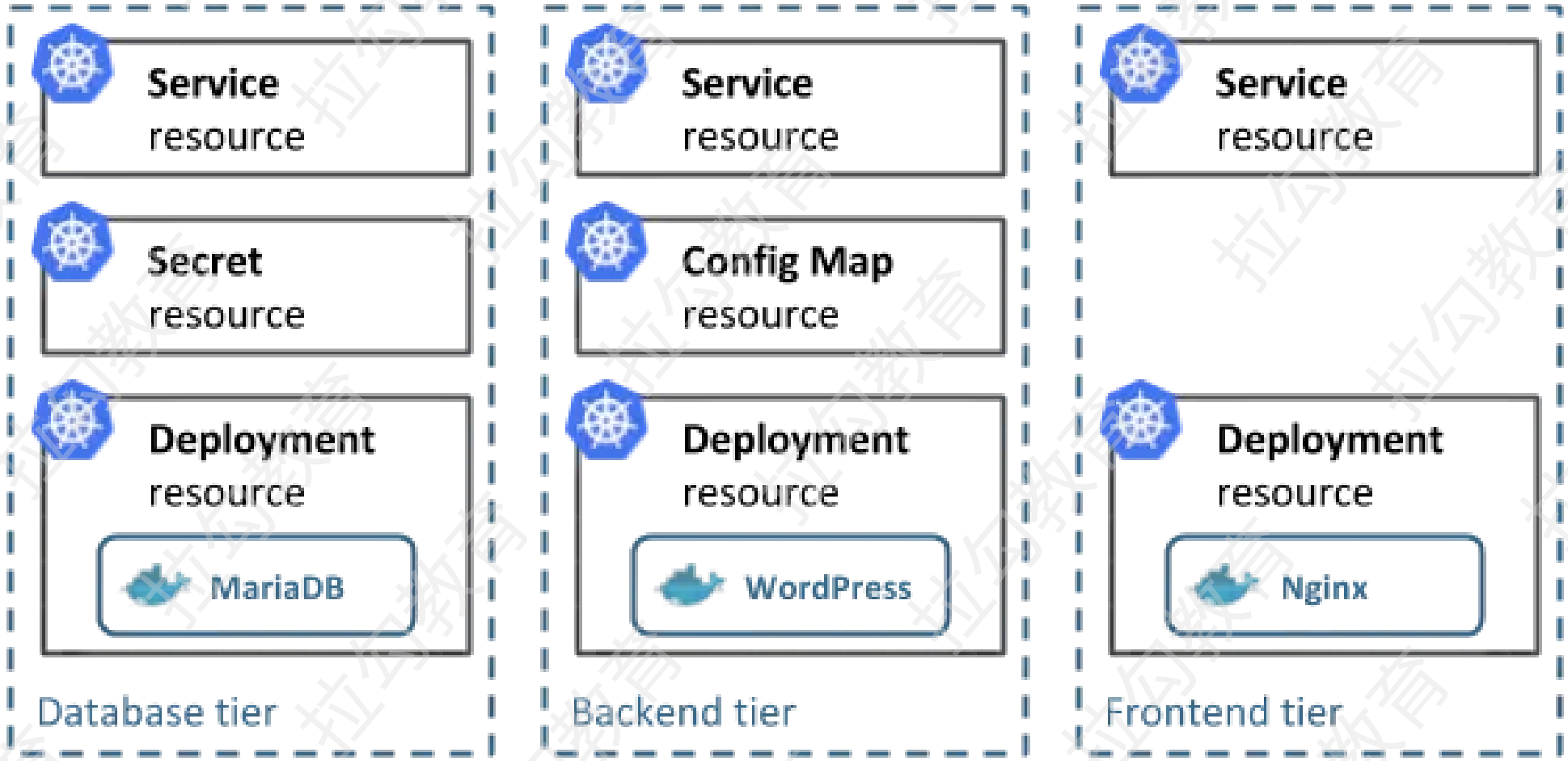
前言

Kubernetes 是一个强大的**容器调度系统**

可以通过一些声明式的定义

很方便地在 Kubernetes 中部署业务

前言


Service
resource
Secret
resource
Deployment
resource
MariaDB
Database tier
Service
resource
Config Map
resource
Deployment
resource
WordPress
Backend tier
Service
resource
Deployment
resource
Nginx
Frontend tier

前言

能不能通过一种包的方式进行管理呢？

前言

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能不能通过一种包的方式进行管理呢？

在 Kubernetes 中，这个答案就是 **Helm**

前言

Helm 降低了使用 Kubernetes 的门槛

无须从头开始编写应用部署文件

甚至都不需要了解 Kubernetes 中的各个对象以及相应的 YAML 语义

Helm 中的几个概念

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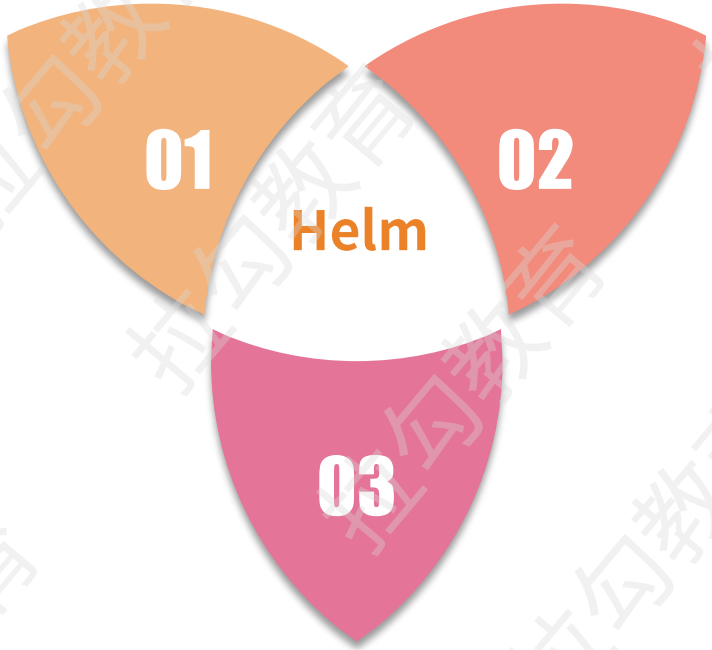
Chart



Config

Release

Helm 中的几个概念


```
apiVersion: v1
name: redis
version: 11.0.0
appVersion: 6.0.8
description: Open source, advanced key-value store. It is often referred to as a data
structure server since keys can contain strings, hashes, lists, sets and sorted sets.
keywords:
  - redis
  - keyvalue
  - database
home: https://github.com/bitnami/charts/tree/master/bitnami/redis
icon: https://bitnami.com/assets/stacks/redis/img/redis-stack-220x234.png
sources:
  - https://github.com/bitnami/bitnami-docker-redis
  - http://redis.io/
maintainers:
  - name: Bitnami
```

Helm 中的几个概念


```
keywords:
  - redis
  - keyvalue
  - database
home: https://github.com/bitnami/charts/tree/master/bitnami/redis
icon: https://bitnami.com/assets/stacks/redis/img/redis-stack-220x234.png
sources:
  - https://github.com/bitnami/bitnami-docker-redis
  - http://redis.io/
maintainers:
  - name: Bitnami
    email: containers@bitnami.com
  - name: desaintmartin
    email: cedric@desaintmartin.fr
engine: gotpl
annotations:
  category: Database
```

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Helm 的安装及架构组成


```
$ curl https://raw.githubusercontent.com/helm/helm/master/scripts/get-helm-3 | bash
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100 11213  100 11213    0     0  12109      0 --:--:-- --:--:-- --:--:-- 12096
Downloading https://get.helm.sh/helm-v3.3.1-darwin-amd64.tar.gz
Verifying checksum... Done.
Preparing to install helm into /usr/local/bin
Password:
helm installed into /usr/local/bin/helm
```

Helm 的安装及架构组成

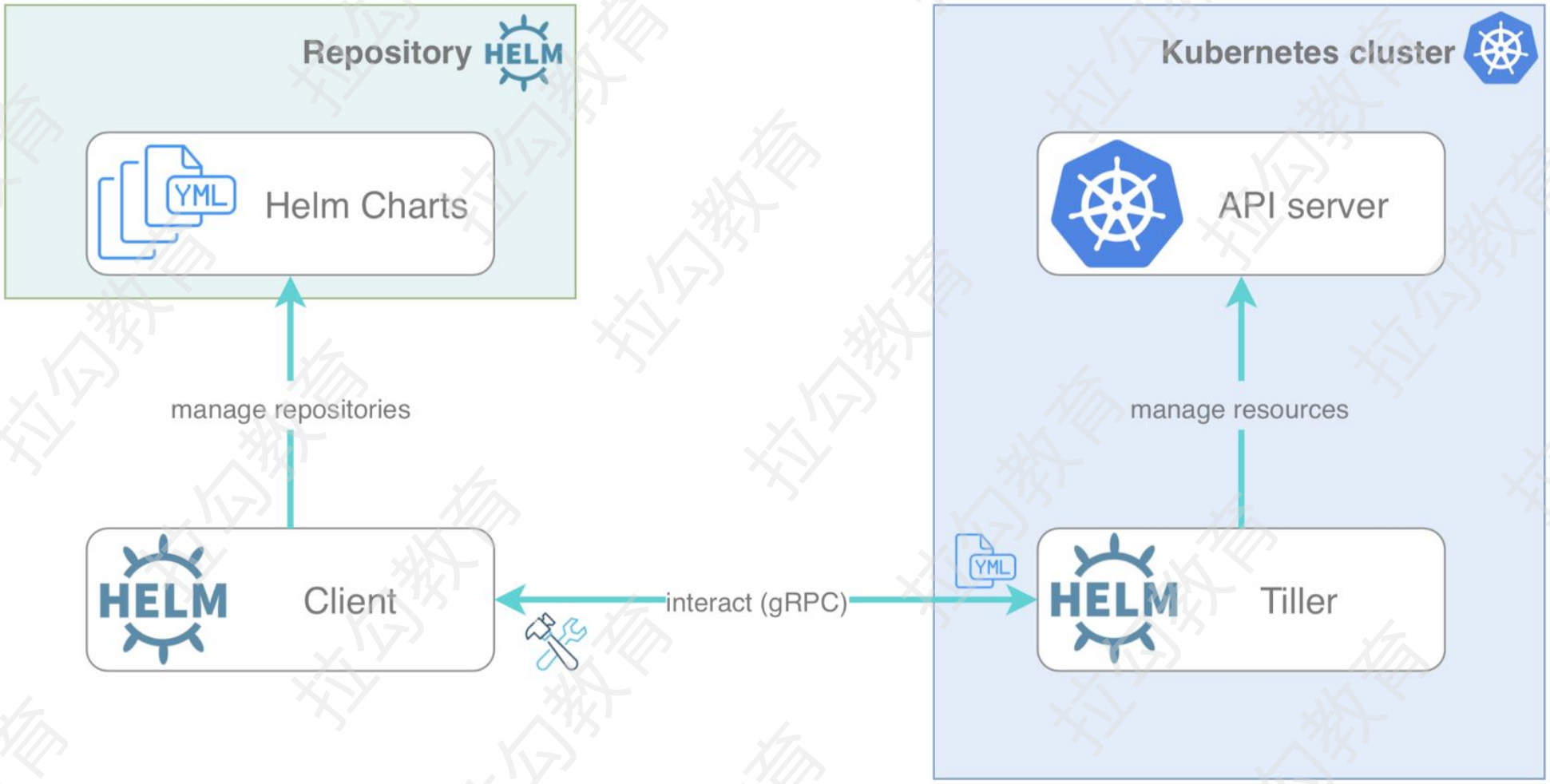
```
$ curl https://raw.githubusercontent.com/helm/helm/master/scripts/get-helm-3 | bash
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100 11213  100 11213    0     0  12109      0 --:--:-- --:--:-- --:--:-- 12096
Downloading https://get.helm.sh/helm-v3.3.1-darwin-amd64.tar.gz
Verifying checksum... Done.
Preparing to install helm into /usr/local/bin
Password:
helm installed into /usr/local/bin/helm
```

https://helm.sh/docs/intro/install/

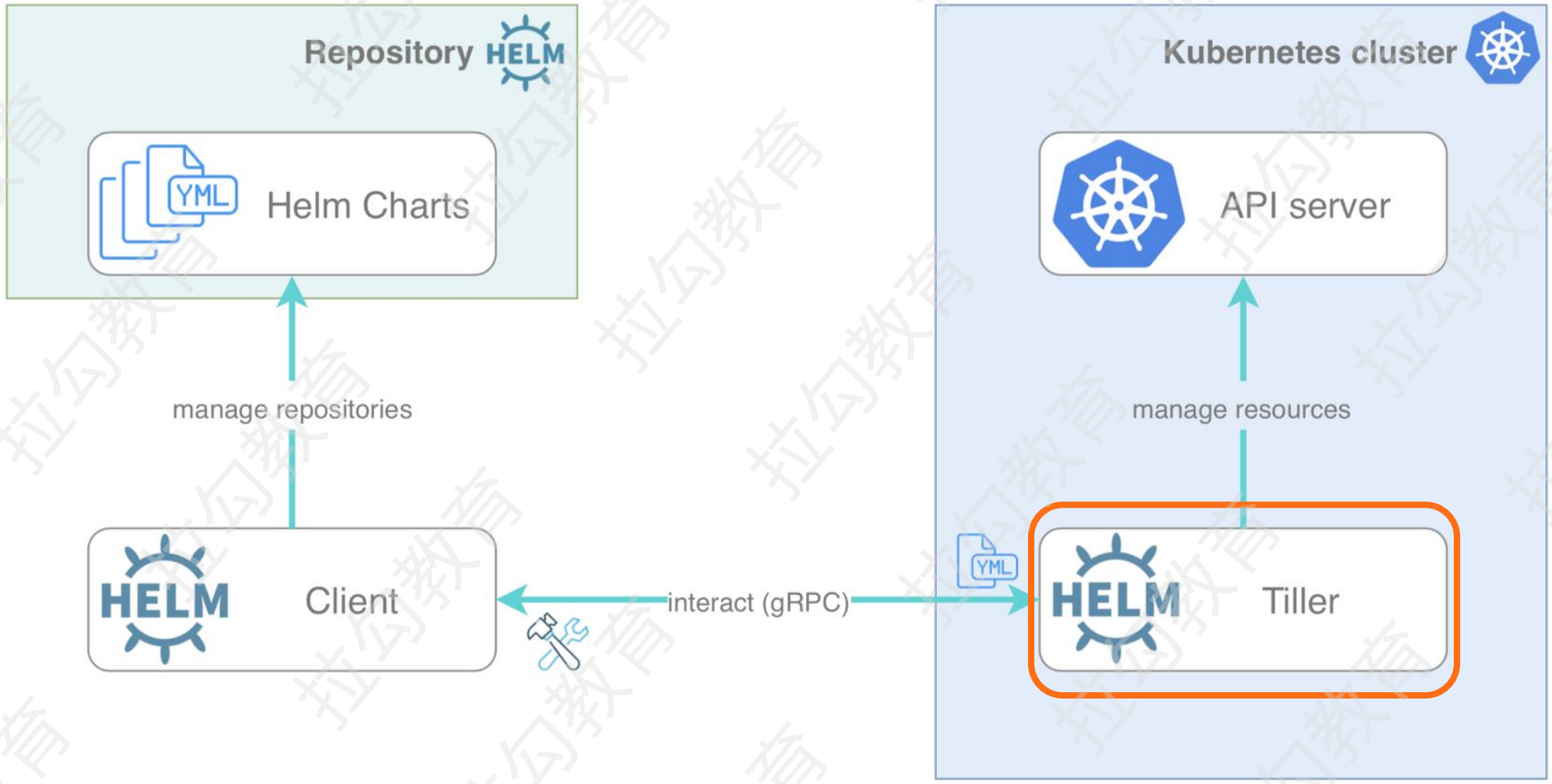
Helm 的安装及架构组成


```
$ helm version
version.BuildInfo{Version:"v3.3.1",
GitCommit:"249e5215cde0c3fa72e27eb7a30e8d55c9696144", GitTreeState:"clean",
GoVersion:"go1.14.7"}
```

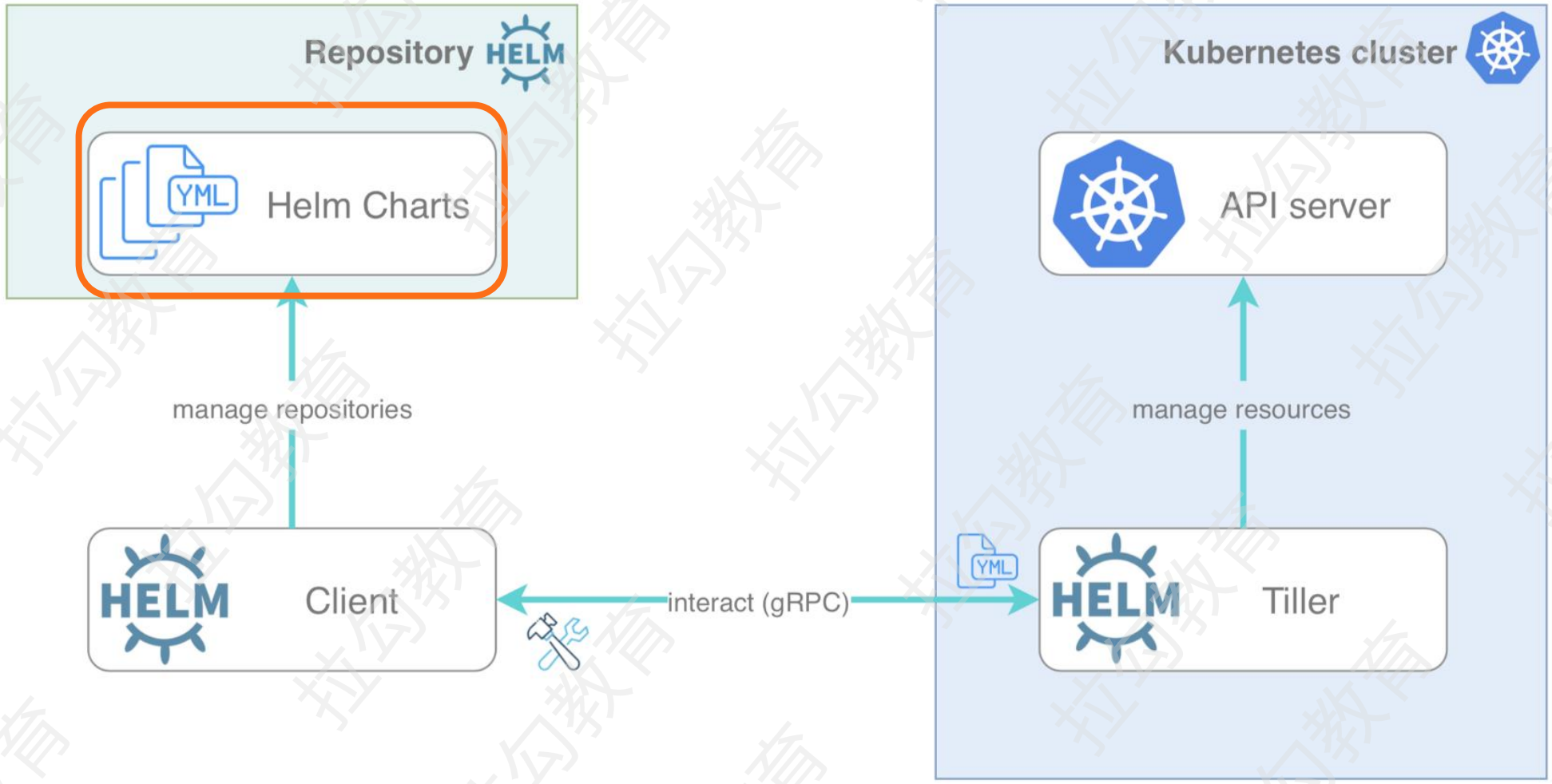
Helm 的安装及架构组成



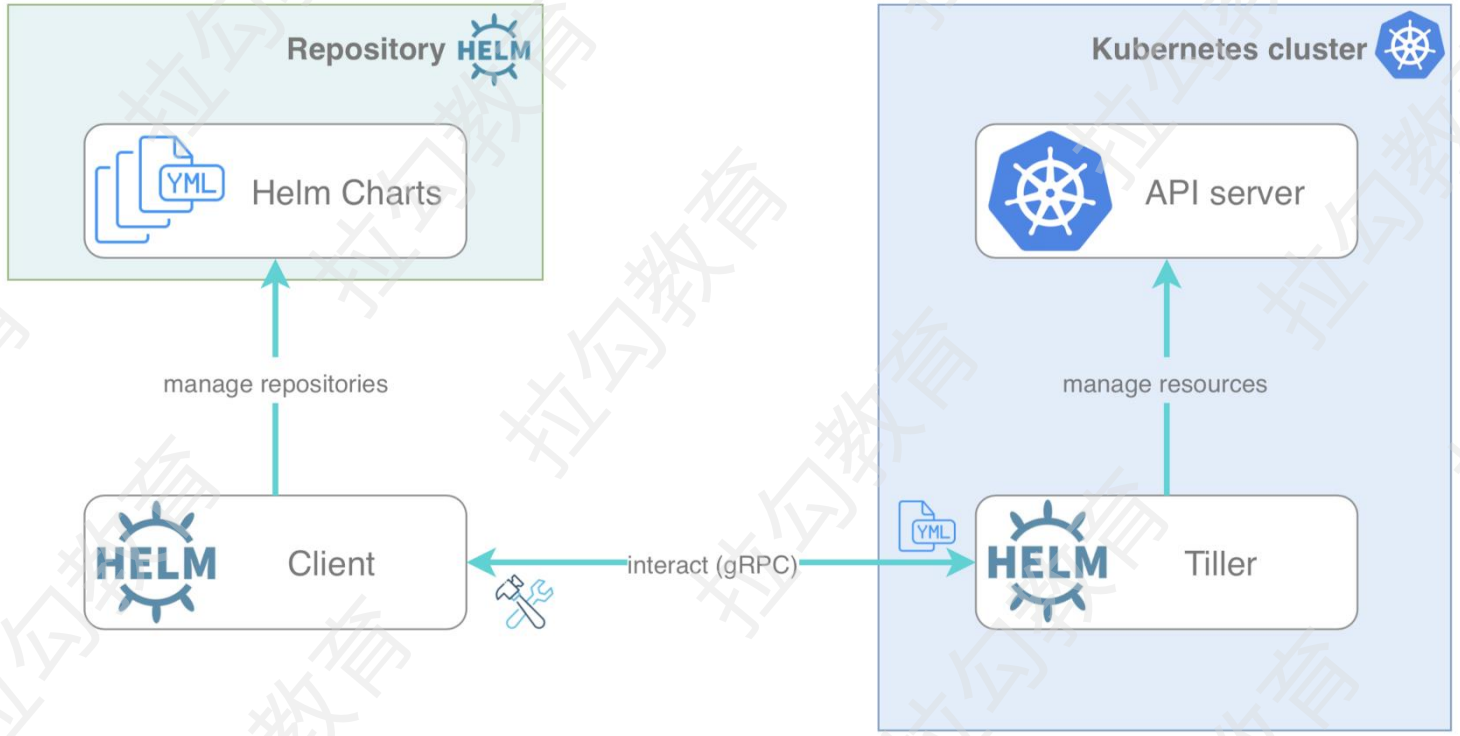
Helm 的安装及架构组成



Helm 的安装及架构组成



Helm 的安装及架构组成



1. 要对外暴露自身的端口
2. 自身运行过程中，跟 Kubernetes 交互需要很高的权限
   这样才可以在 Kuberentes 中创建、删除各种各样的资源

Helm 的安装及架构组成

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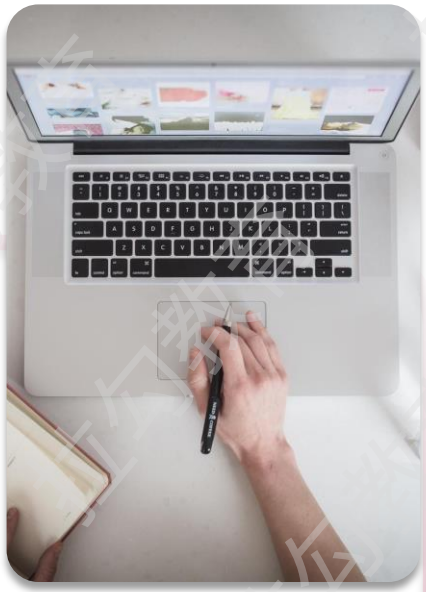

Helm 3 是在 Helm 2 之上的一次大更改，于 2019 年 11 月份正式推出

相比较于 Helm 2， 简单了很多，移除了 Tiller，只剩下一个 Helm Client

至此Helm 2 开始要退出历史的舞台

如何创建和部署 Helm Chart


```
$ helm create hello-world
Creating hello-world
```

如何创建和部署 Helm Chart


```
$ tree ./hello-world
./hello-world
├── Chart.yaml
├── charts
├── templates
│   ├── NOTES.txt
│   ├── _helpers.tpl
│   ├── deployment.yaml
│   ├── hpa.yaml
│   ├── ingress.yaml
│   ├── service.yaml
│   ├── serviceaccount.yaml
│   ├── tests
│   │   └── test-connection.yaml
└── values.yaml

3 directories, 10 files
```

如何创建和部署 Helm Chart

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```
apiVersion: v2
name: hello-world
description: A Helm chart for Kubernetes


# A chart can be either an 'application' or a 'library' chart.
#
# Application charts are a collection of templates that can be packaged into versioned archives
# to be deployed.
#
# Library charts provide useful utilities or functions for the chart developer. They're included as
# a dependency of application charts to inject those utilities and functions into the rendering
# pipeline. Library charts do not define any templates and therefore cannot be deployed.
type: application


# This is the chart version. This version number should be incremented each time you make changes
# to the chart and its templates, including the app version.
# Versions are expected to follow Semantic Versioning (https://semver.org/)
version: 0.1.0
```

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如何创建和部署 Helm Chart


```
#
# Application charts are a collection of templates that can be packaged into versioned archives
# to be deployed.
#
# Library charts provide useful utilities or functions for the chart developer. They're included as
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# pipeline. Library charts do not define any templates and therefore cannot be deployed.
type: application


# This is the chart version. This version number should be incremented each time you make changes
# to the chart and its templates, including the app version.
# Versions are expected to follow Semantic Versioning (https://semver.org/)
version: 0.1.0


# This is the version number of the application being deployed. This version number should be
# incremented each time you make changes to the application. Versions are not expected to
# follow Semantic Versioning. They should reflect the version the application is using.
appVersion: 1.16.0
```

如何创建和部署 Helm Chart


```
helm install -f myvalues.yaml hello-world ./hello-world
```

如何创建和部署 Helm Chart


```
$ helm repo add brigade https://brigadecore.github.io/charts
"brigade" has been added to your repositories
$ helm search repo brigade
NAME                    CHART VERSION APP VERSION DESCRIPTION
brigade/brigade         1.3.2         v1.2.1      Brigade provides event-driven scripting of Kube...
brigade/brigade-github-app  0.4.1         v0.2.1      The Brigade GitHub App, an advanced gateway for...
brigade/brigade-github-oauth  0.2.0         v0.20.0     The legacy OAuth GitHub Gateway for Brigade
brigade/brigade-k8s-gateway  0.1.0                     A Helm chart for Kubernetes
brigade/brigade-project     1.0.0         v1.0.0      Create a Brigade project
brigade/kashti          0.4.0         v0.4.0      A Helm chart for Kubernetes
```

如何创建和部署 Helm Chart

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```
$ helm repo add brigade https://brigadecore.github.io/charts
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NAME                    CHART VERSION APP VERSION DESCRIPTION
brigade/brigade         1.3.2         v1.2.1      Brigade provides event-driven scripting of Kube...
brigade/brigade-github-app  0.4.1         v0.2.1      The Brigade GitHub App, an advanced gateway for...
brigade/brigade-github-oauth 0.2.0         v0.20.0     The legacy OAuth GitHub Gateway for Brigade
brigade/brigade-k8s-gateway  0.1.0                     A Helm chart for Kubernetes
brigade/brigade-project      1.0.0         v1.0.0      Create a Brigade project
brigade/kashti          0.4.0         v0.4.0      A Helm chart for Kubernetes
```

https://helm.sh/docs/intro/using_helm/

写在最后

目前 Helm 是 CNCF 基金会旗下已经“毕业”的独立的项目

简化了 Kubernetes 应用的部署和管理，大大提高了效率

越来越多的人在生产环境中使用 Helm 来部署和管理应用

Next：《13 | 服务守护进程：如何在 Kubernetes 中运行 DaemonSet 守护进程？》

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