

Managing Dependencies of Helm Charts

Managing Dependencies



Packaging a chart

Publishing to a repository

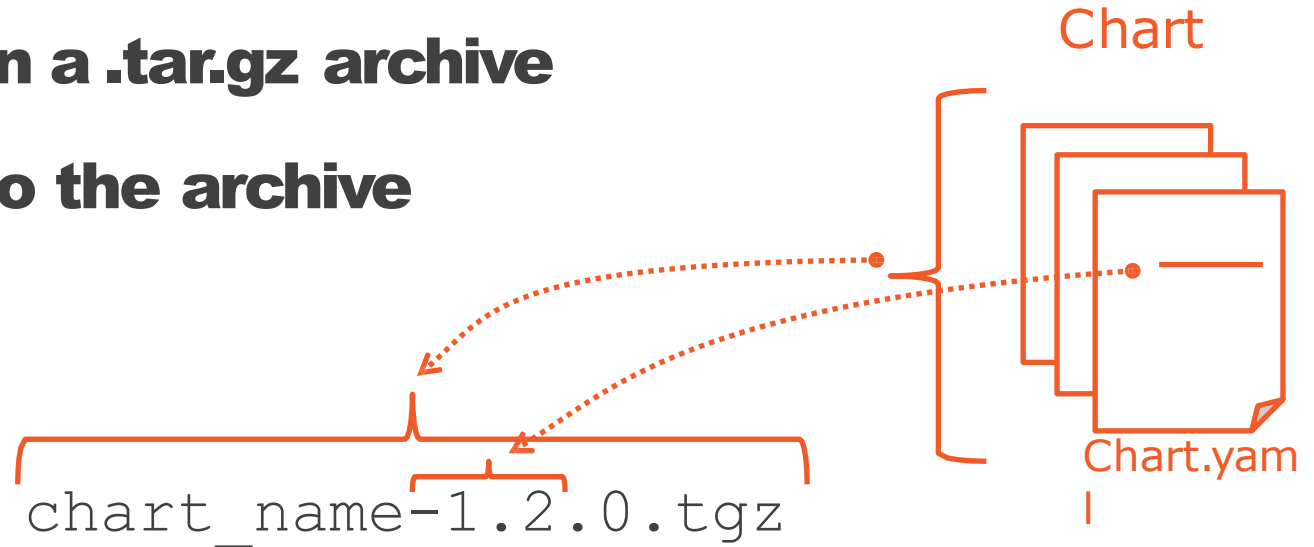
How to define dependencies

Tags and conditions

Packaging Your Charts

Packaging a Chart

- **Compress chart folder in a .tar.gz archive**
- **Add a version number to the archive**

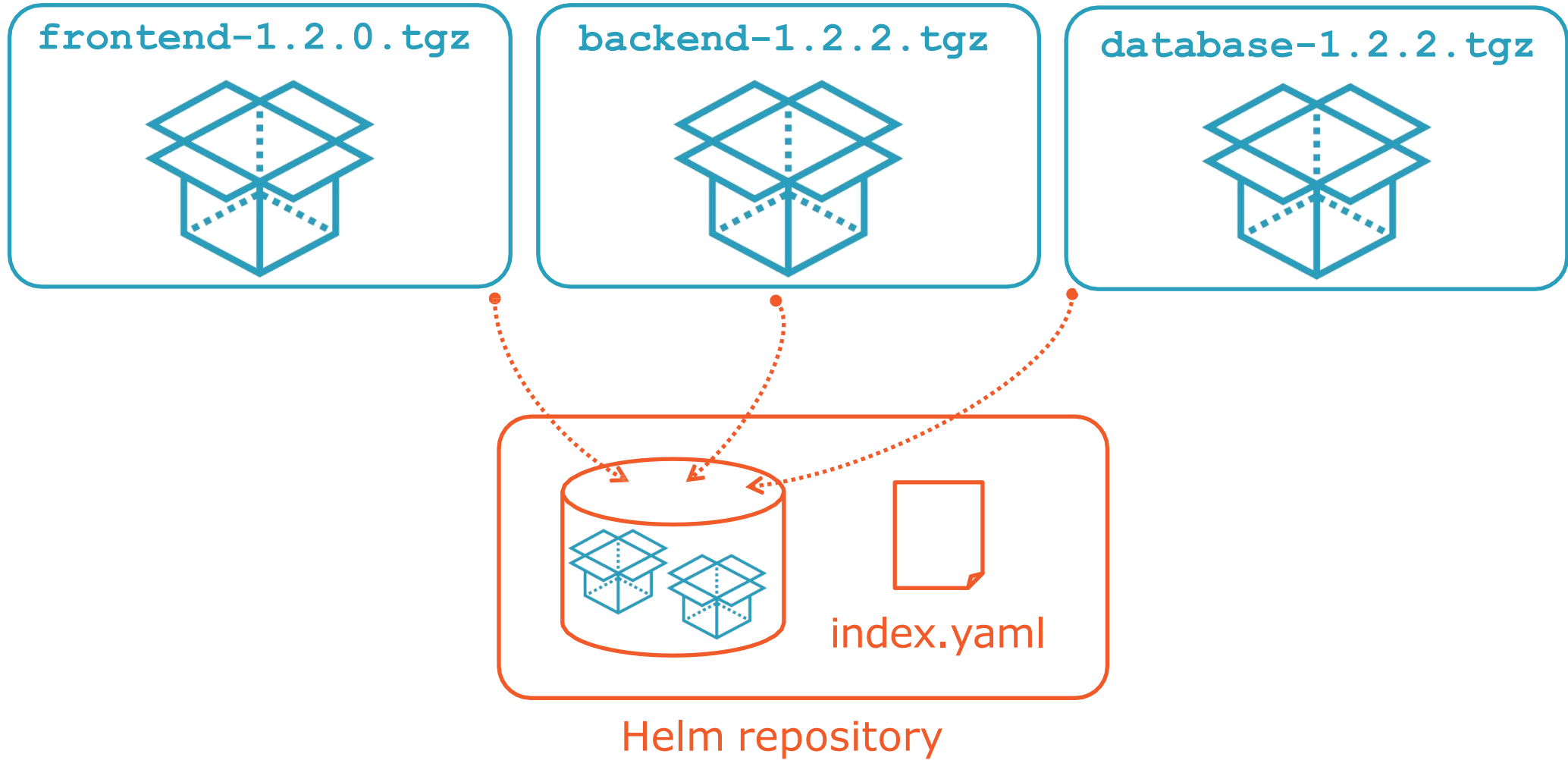


```
> tar -zcvf chart_name-1.2.0.tgz chart_name
```

```
> helm package chart_name
```

Publishing Charts in Repositories

Helm Repository



Publishing in a Repository

Create the index.yaml

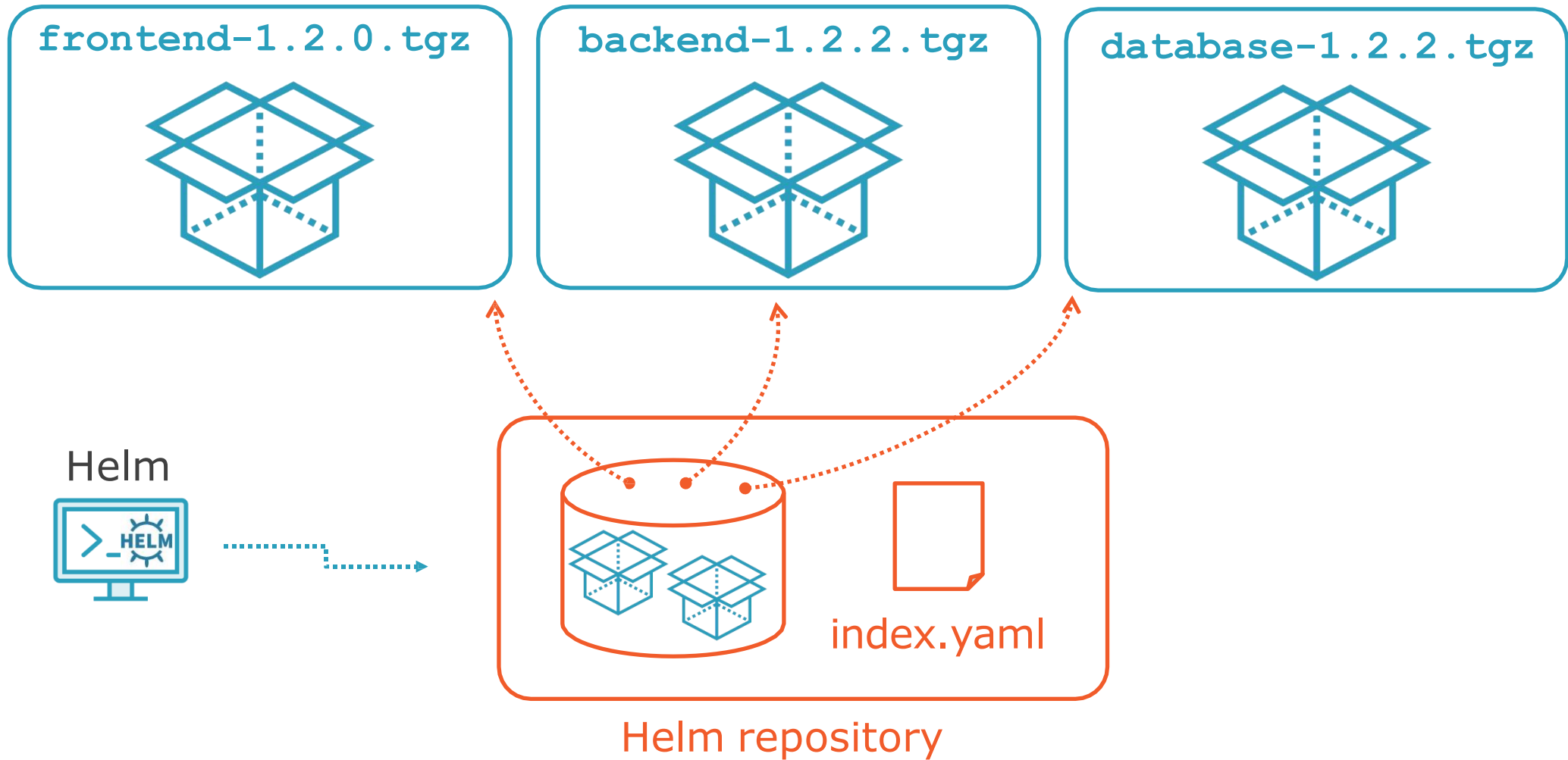
Upload charts' archives and index file to an http server

- Nginx, Apache, Cloud or useChartmuseum

Provenance files

```
> helm repo index .  
  
> helm package --sign  
  
> helm verify chart.tgz  
  
> helm install --verify
```

Helm Repository



Managing a Repository List

Helm maintains a list of repositories

- Stable
- Customs

Update that list by adding or removing repositories

```
me@cursus:~/helm/lab11/$ helm repo list
NAME      URL
stable    https://charts.helm.sh/stable
```

Default Repository

No repository by default in Helm 3

Highly recommended to add stable helm repository

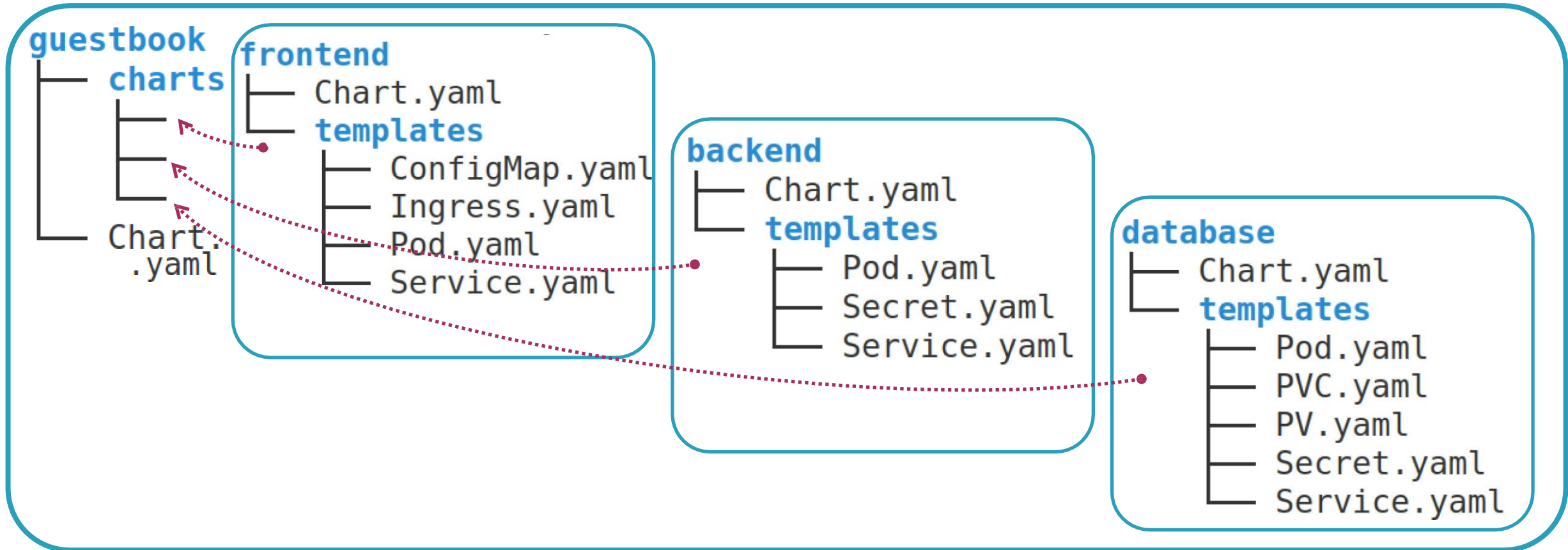
```
> helm repo add stable https://charts.helm.sh/stable
```

Defining Dependencies

What is helm umbrella chart?

Helm charts have the ability to include other charts, referred to as subcharts, via their dependencies section. When a chart is created for the purpose of grouping together related subcharts/services, such as to compose a whole application or deployment, we call this an umbrella chart.

Charts Dependencies



Charts Dependencies

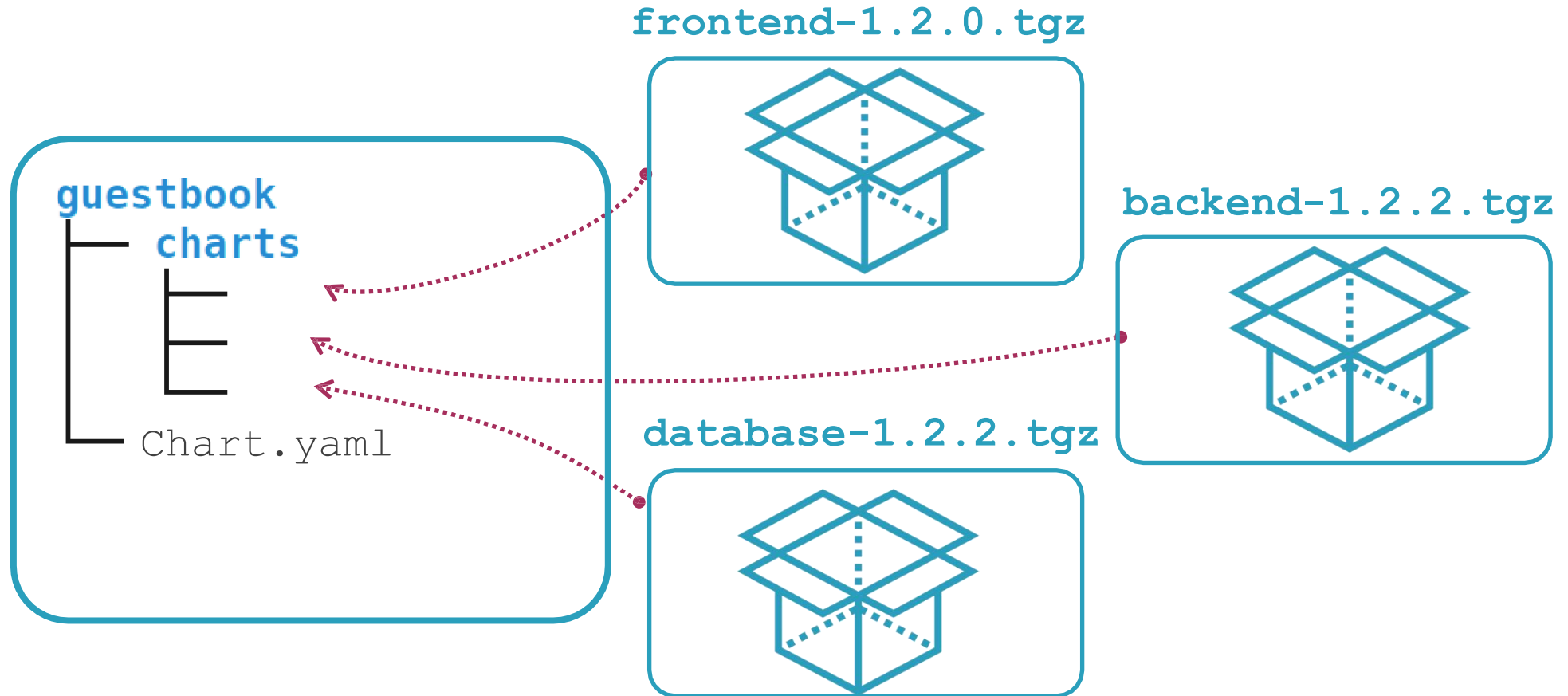


Chart.yaml

```
apiVersion: v2
name: guestbook
appVersion: "2.0"
description: A Helm chart for Guestbook 2.0
version: 1.2.2
type: application

dependencies:
  - name: backend
    version: ~1.2.2
    repository: http://localhost:8080
  - name: frontend
    version: ^1.2.0
    repository: http://localhost:8080
  - name: mongodb
    version: 7.8.x
    repository: https://charts.helm.sh/stable
```

requirements.yaml

requirements.yaml

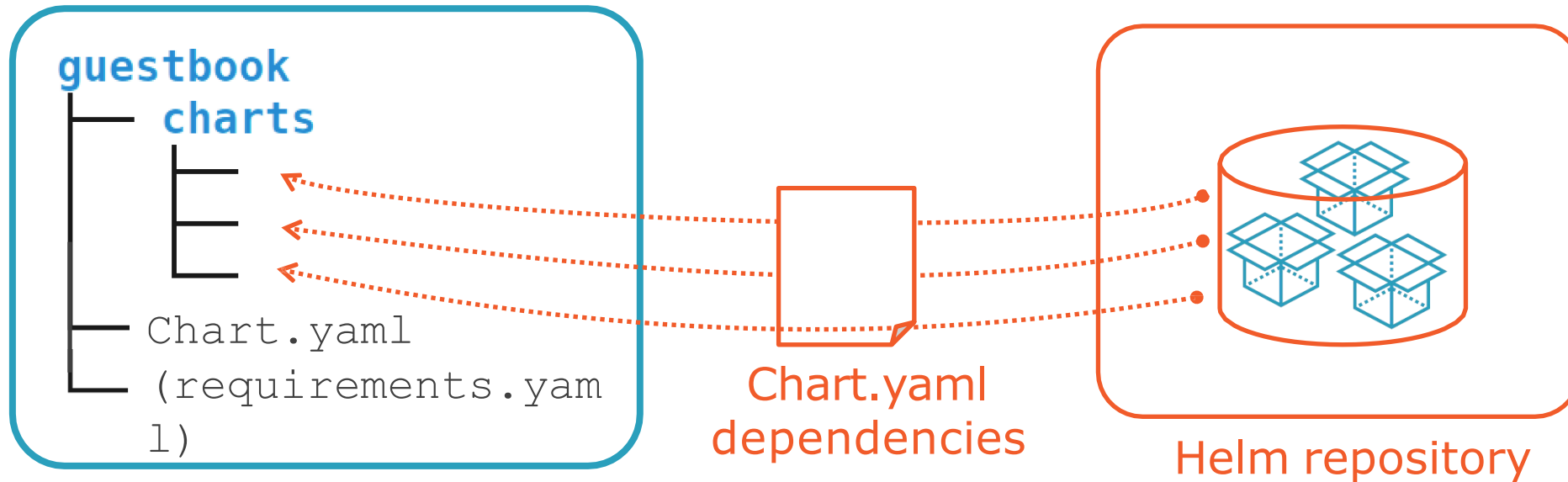
```
dependencies:  
- name: backend  
  version: ~1.2.2  
  repository: http://127.0.0.1:8879/charts  
- name: frontend  
  version: ^1.2.0  
  repository: http://127.0.0.1:8879/charts  
- name: mariadb  
  version: 5.x.x  
  repository: https://kubernetes-charts.storage.googleapis.com/
```


Semver 2.0 Versions

Range	Versions
~1.2.3	>=1.2.3, < 1.3.0
1.2.x	>=1.2.0, < 1.3.0
^1.2.3	>=1.2.3, < 2.0.0
1.x.x	>=1.2.0, < 2.0.0
1.2 - 1.4.5	>=1.2, <= 1.4.5

<https://github.com/masterminds/semver>

Charts Dependencies



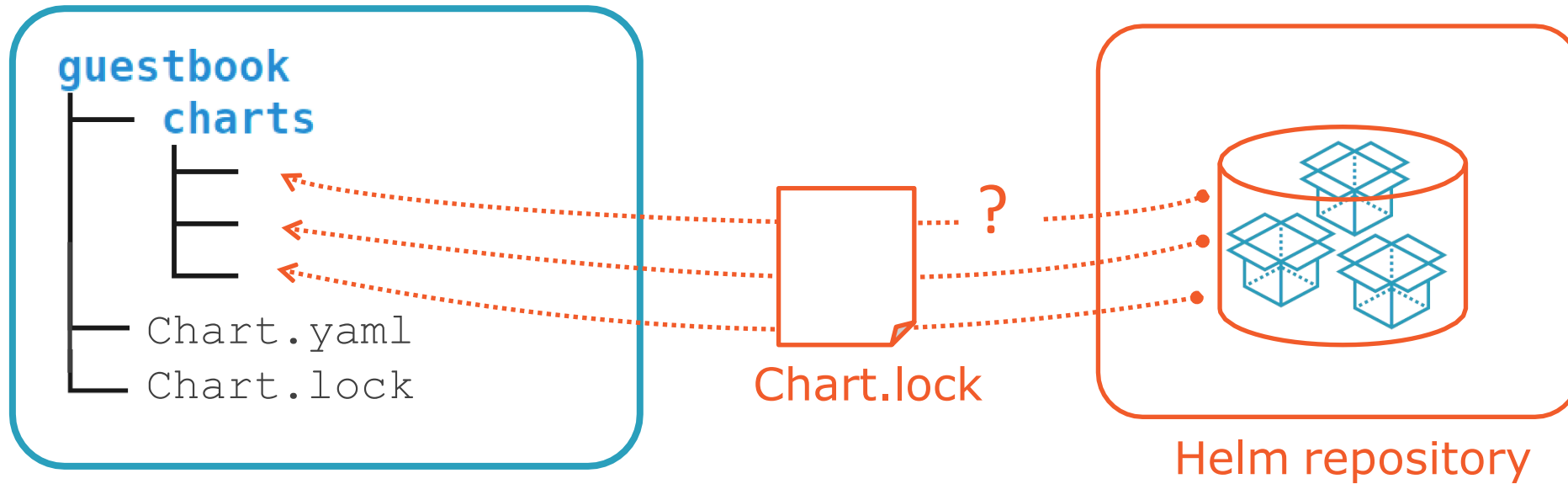
```
> helm dependency update guestbook
```

```
> helm dependency list guestbook
```

Chart.lock

```
dependencies:  
- name: backend  
  repository: http://localhost:8080  
  version: 1.2.2  
- name: frontend  
  repository: http://localhost:8080  
  version: 1.2.2  
- name: database  
  repository: http://localhost:8080  
  version: 1.2.2  
digest: sha256:6a58a52c55ee4296ec43ffe1985ec1147186025c4d9724bcbe5c5354a13df635  
generated: "2020-02-27T12:16:00.991397779+01:00"
```

Charts Dependencies



```
> helm dependency build guestbook
```

Adding Conditions and Tags

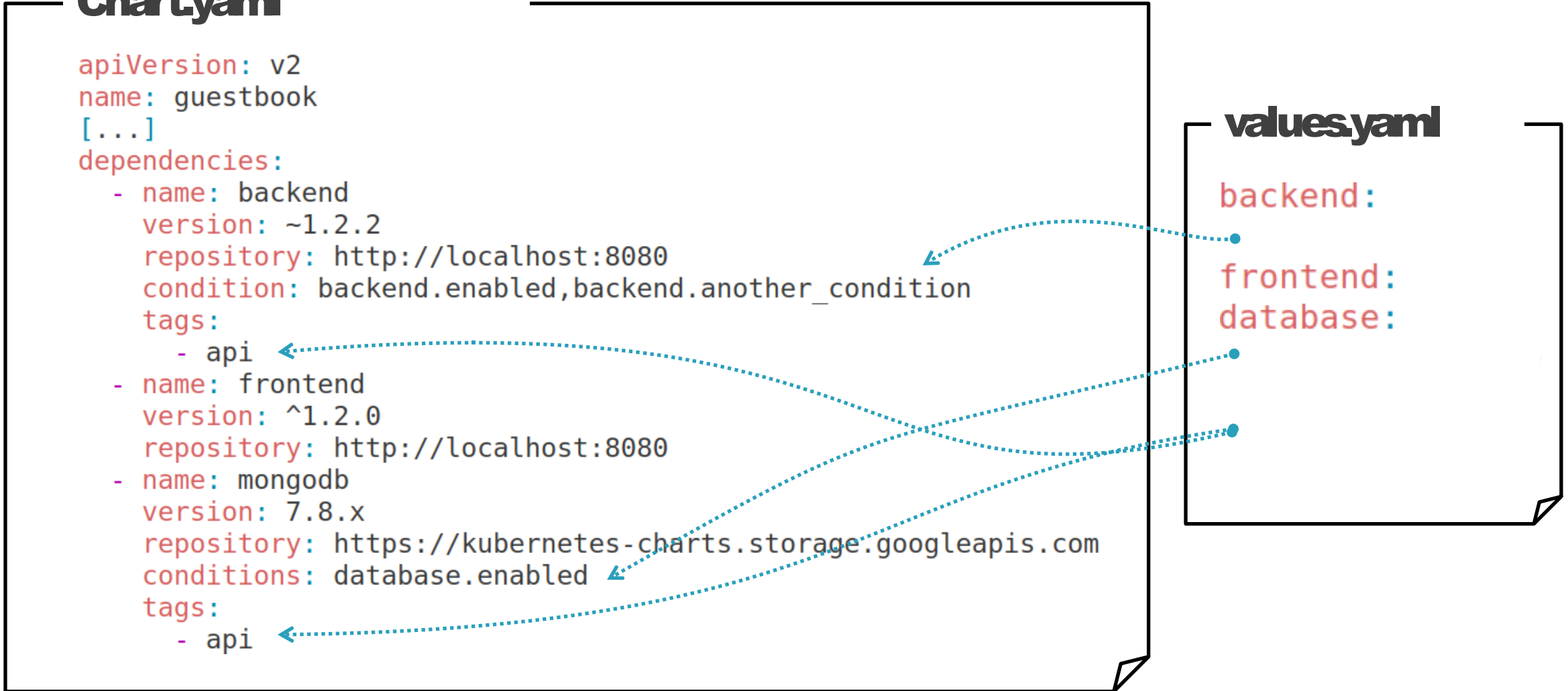
Conditions & Tags

Chart.yaml

```
apiVersion: v2
name: guestbook
[...]
dependencies:
- name: backend
  version: ~1.2.2
  repository: http://localhost:8080
  condition: backend.enabled,backend.another_condition
  tags:
    - api
- name: frontend
  version: ^1.2.0
  repository: http://localhost:8080
- name: mongodb
  version: 7.8.x
  repository: https://kubernetes-charts.storage.googleapis.com
  conditions: database.enabled
  tags:
    - api
```

values.yaml

```
backend:
frontend:
database:
```



Conditions & Tags

All charts are downloaded with “helm dependency update”

Partial installation with “helm install”

“--set ..” overrides value.yaml

Conditions override tags

```
> helm dependency update guestbook
```

```
> helm install demo guestbook
```

```
> helm install demo guestbook --set database.enabled=true
```

```
> helm install demo guestbook --set tags.api=false
```

Demo



Packaging charts

Publishing charts in repositories

[http://github.com/phcollignon/helm3/
lab10_helm_dependencies_begin](http://github.com/phcollignon/helm3/lab10_helm_dependencies_begin)
lab10_helm_dependencies_final

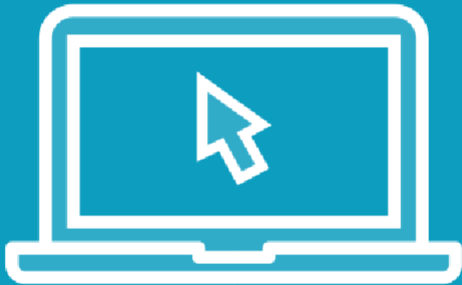
Demo



Managing dependencies

[http://github.com/phcollignon/helm3/
lab10_helm_dependencies_begin](http://github.com/phcollignon/helm3/lab10_helm_dependencies_begin)
lab10_helm_dependencies_final

Demo



Controlling dependencies with conditions and tags

[http://github.com/phcollignon/helm3/
lab10_helm_dependencies_begin](http://github.com/phcollignon/helm3/lab10_helm_dependencies_begin)
lab10_helm_dependencies_final

Summary



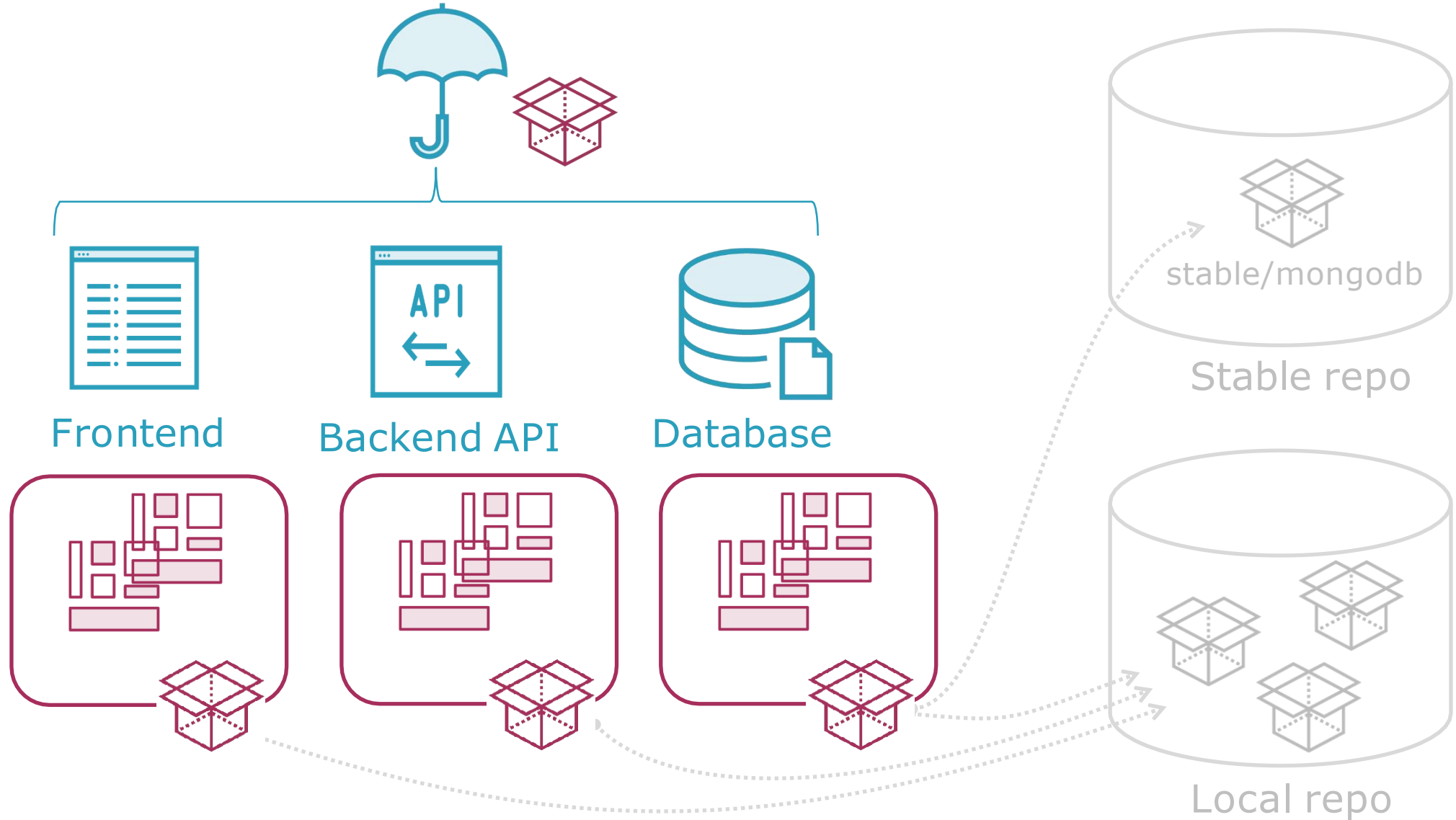
Packaging your chart

Publishing in a Helm repository

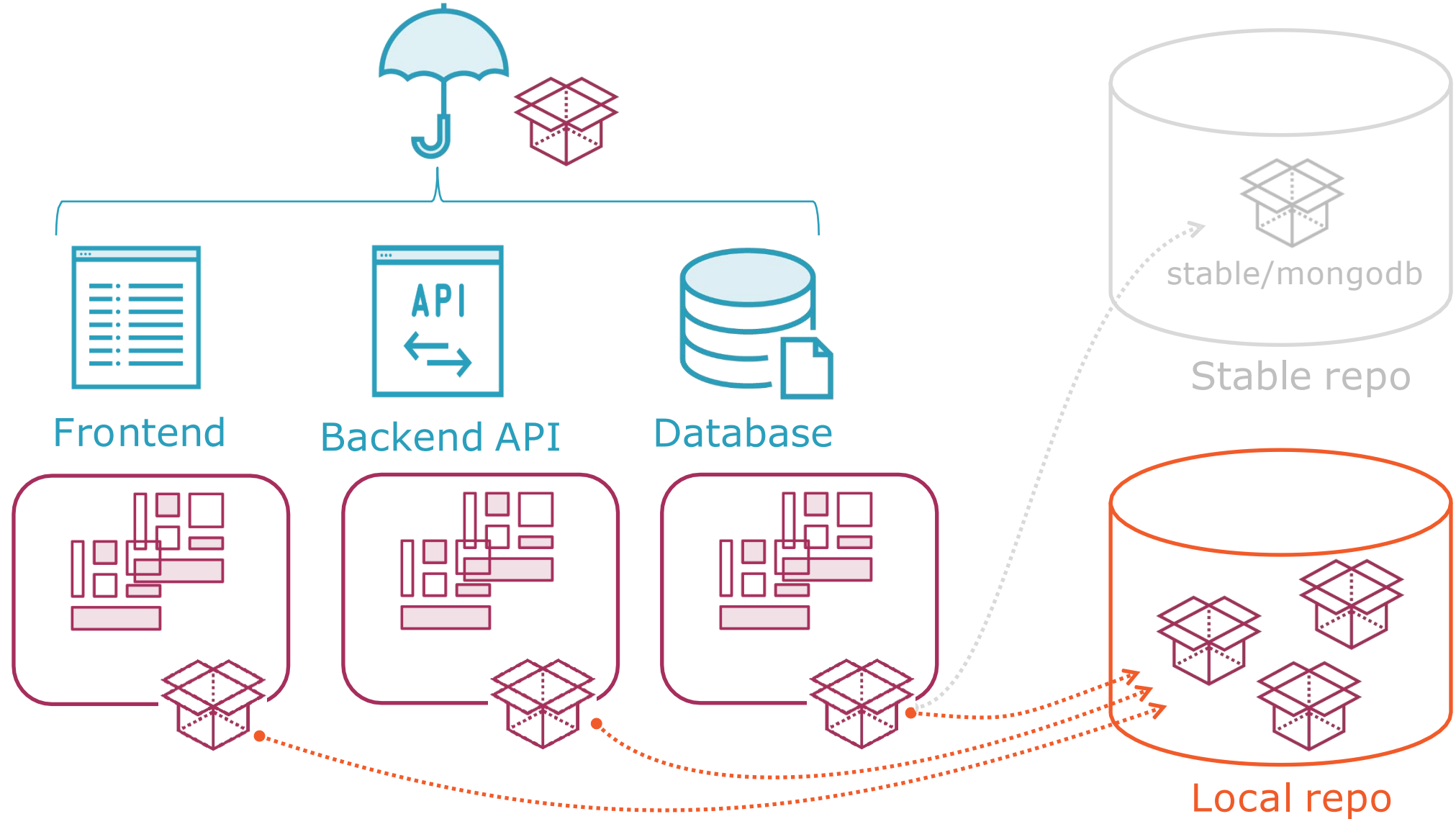
Define and manage dependencies

Add conditions and tags

Guestbook application



Guestbook application



Guestbook application

