Let’s start with an analogy..

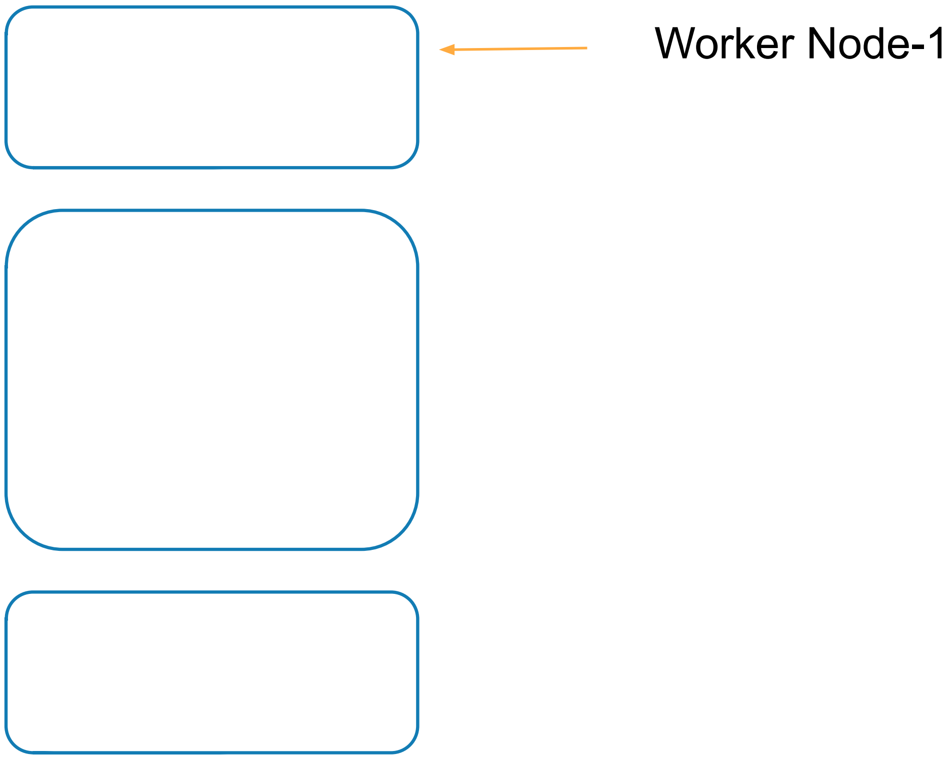
A Cargo Ship…

Carries containers across the sea

A Cargo Ship…

Host Application as Containers ~ Worker Nodes

Overview



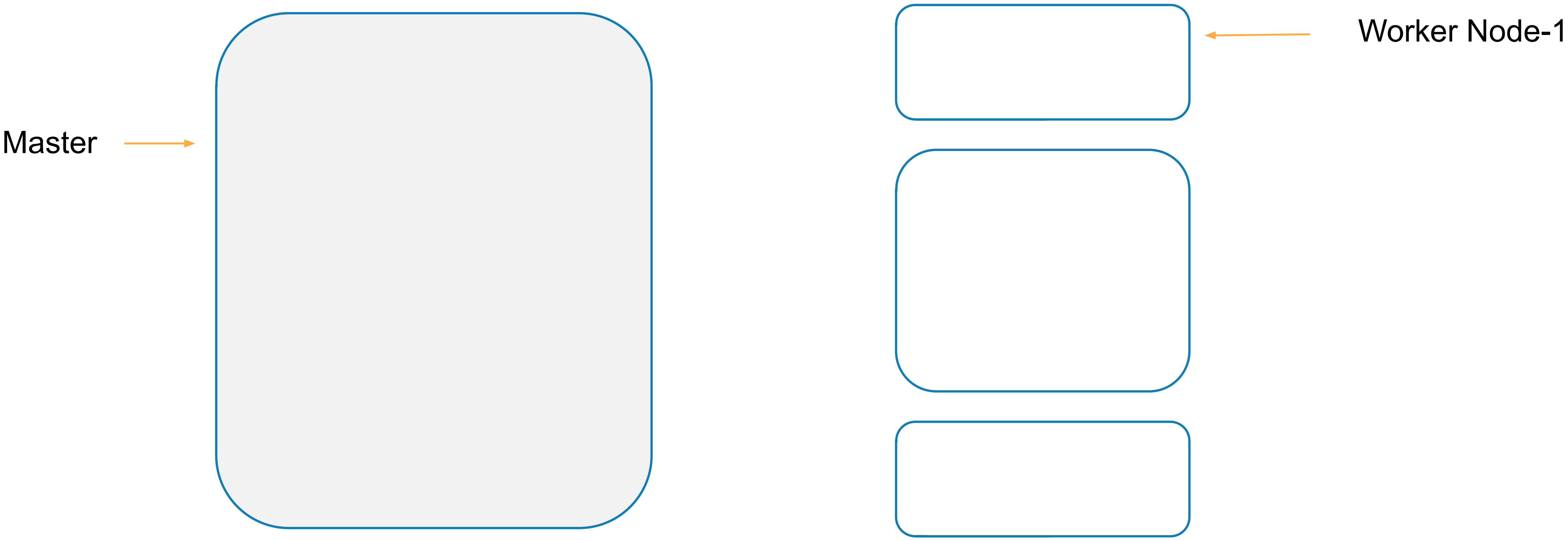
Control Ships..

Managing & Monitoring of the cargo ships

Control Ships..

Manage, Plan, Schedule, Monitor ~ Master

Overview



Let’s talk about Master Components..

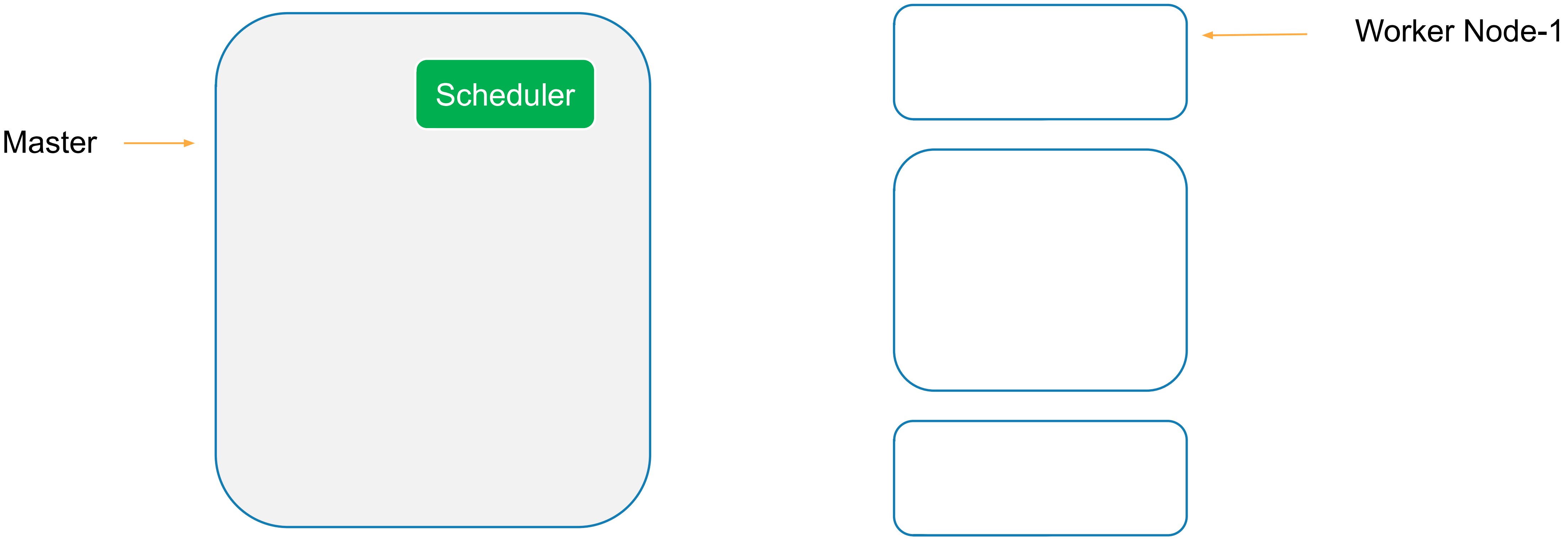
Ship Cranes

Identifies the placement of containers

Ship Cranes

Identifies the right node to place a containers ~ Kube-Scheduler

Overview



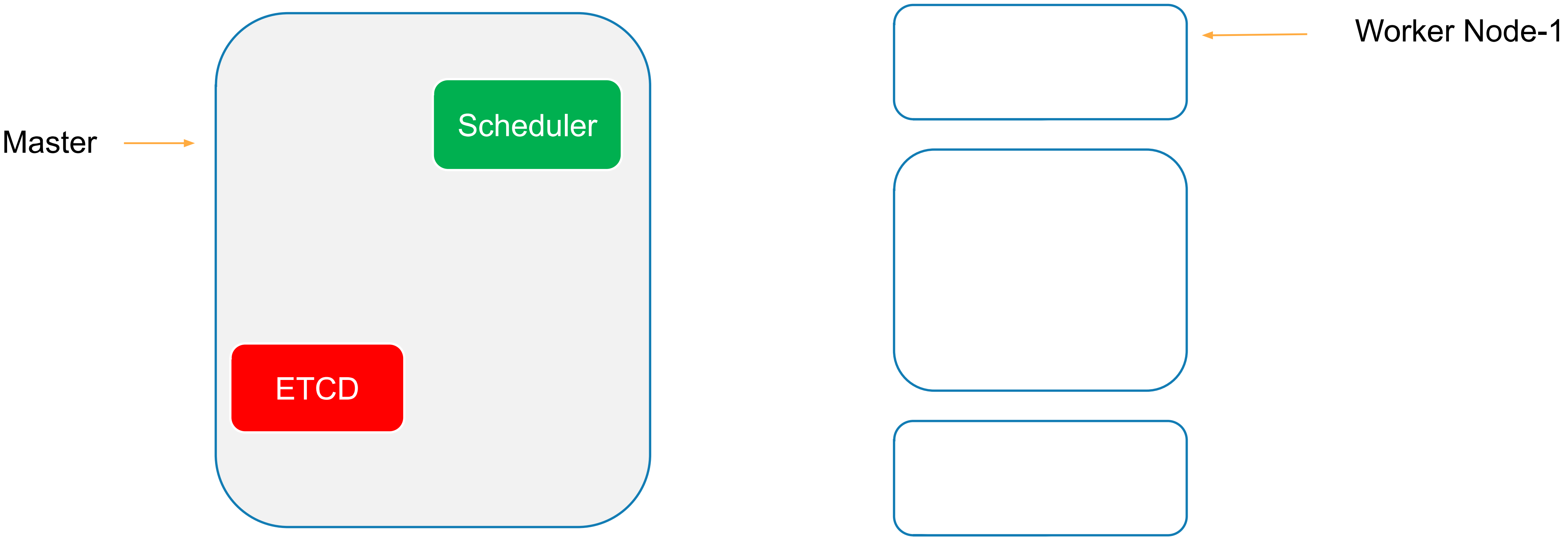
Cargo Ship Profiles

HA database ~ Which containers on which ships? When was it loaded?

Cargo Ship Profiles

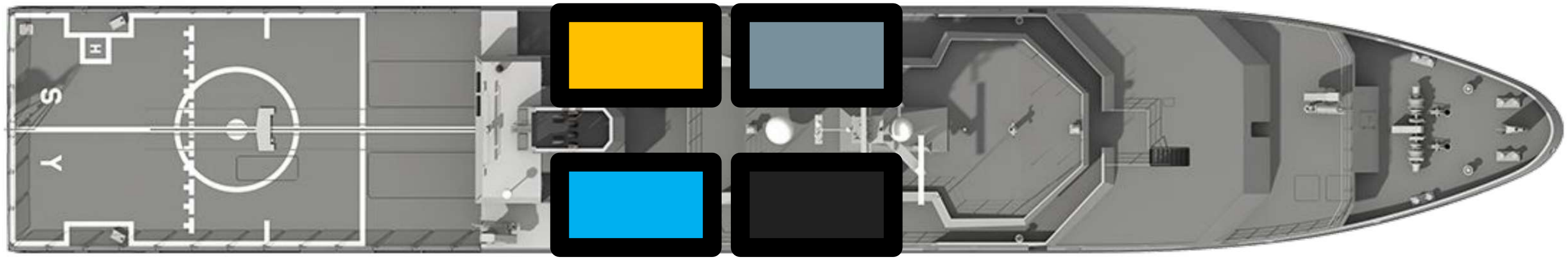
HA database ~ Which containers on which ships? When was it loaded? ~ The ETCD Cluster

Overview



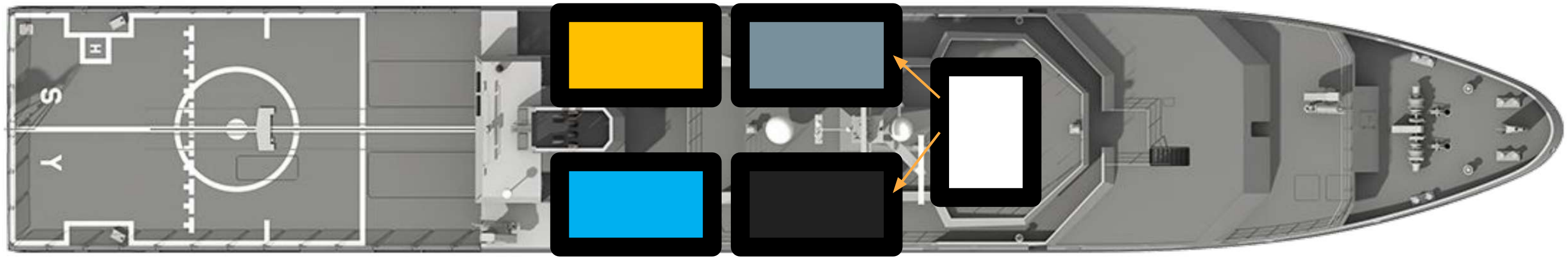
Offices in Dock

- Operation Team Office ~ Ship Handling, Control
- Cargo Team Office ~ verify if containers are damaged, ensure that new containers are rebuilt
- IT & Communication Office – Communication in between various ships

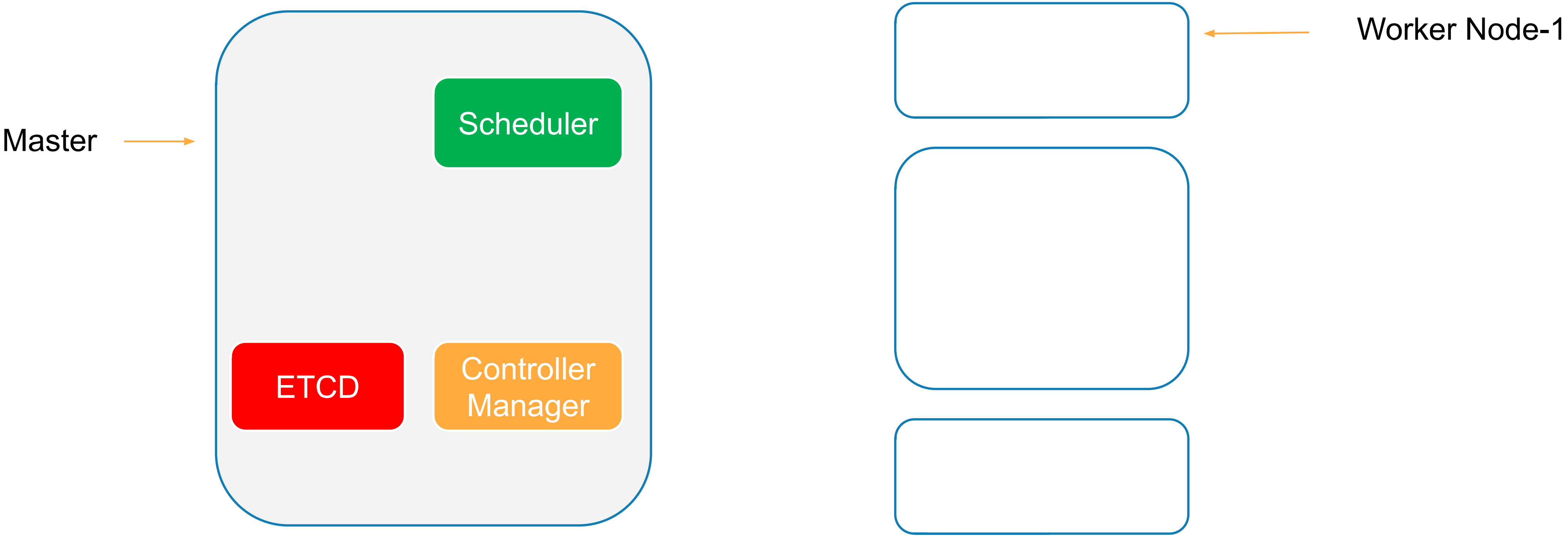


Controllers

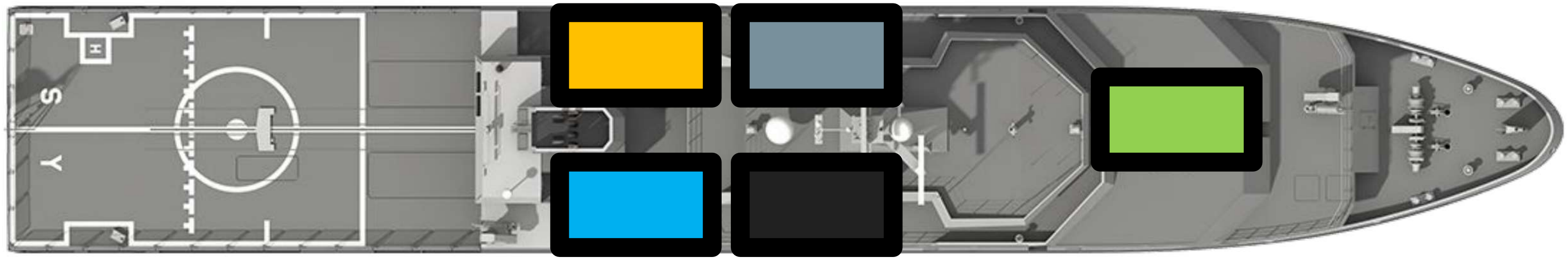
- Node Controllers – Takes care of Nodes | Responsible for onboarding new nodes in a cluster | Availability of Nodes
- Replicas Controller – Ensures that desired number of containers are running at all times
- Controller Manager - Manages all these controllers in place



Overview

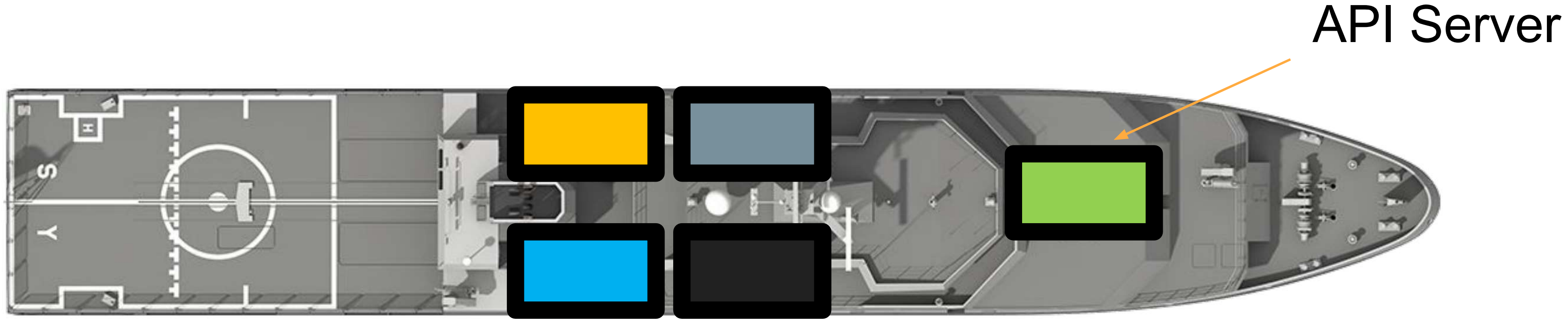


How does each of these services communicate with each other?

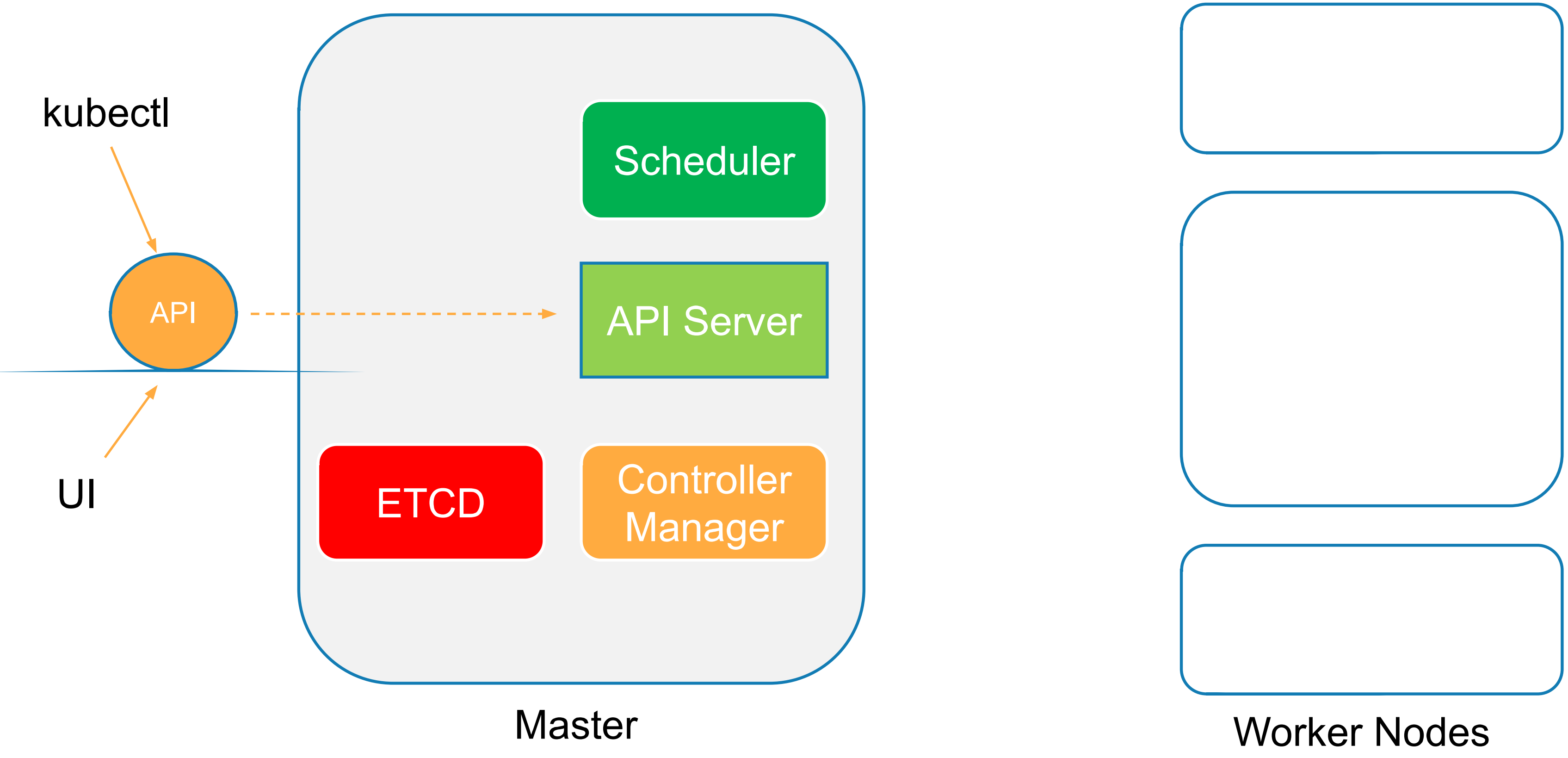


Kube API Server

- A primary management component of k8s
- Responsible for orchestrating all operations within a cluster
- Exposes K8s API ,used by external users to perform management operation in the cluster and number of controller to monitor the state of the cluster



Overview


kubectl
API
UI
Scheduler
API Server
ETCD
Controller Manager
Master
Worker Nodes

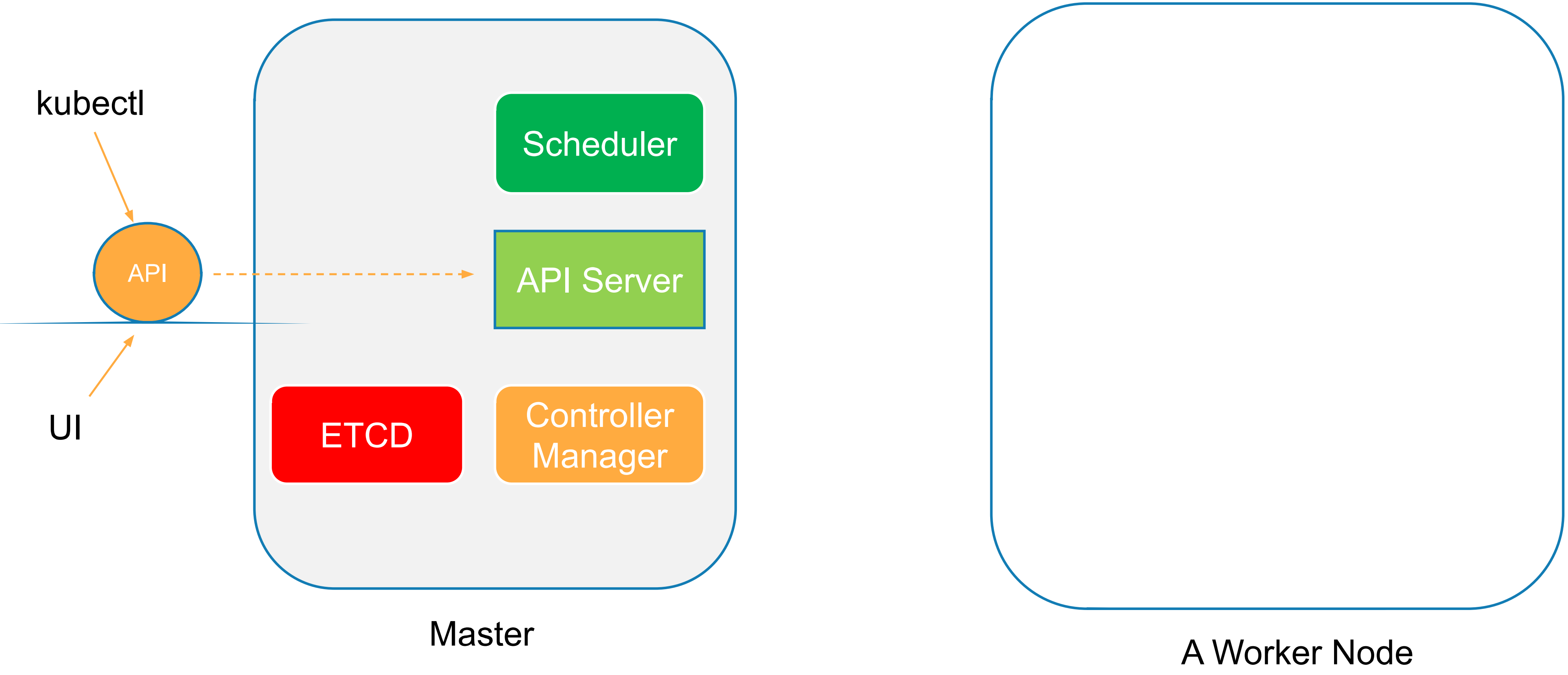
In nutshell…

$kubectl get componentstatus

```
[node1 install]$ kubectl get nodes -o wide

NAME    STATUS     ROLES    AGE   VERSION   INTERNAL-IP        EXTERNAL-IP   OS-IMAGE              KERNEL-VERSION       CONTAINER-RUNTIME

node1   Ready      master   92s   v1.14.2   192.168.0.18   <none>     CentOS Linux 7 (Core)   4.4.0-141-generic   docker://18.9.6
node2   Ready      <none>   57s   v1.14.2   192.168.0.17   <none>     CentOS Linux 7 (Core)   4.4.0-141-generic   docker://18.9.6
node3   NotReady   <none>   39s   v1.14.2   192.168.0.16   <none>     CentOS Linux 7 (Core)   4.4.0-141-generic   docker://18.9.6
node4   NotReady   <none>   32s   v1.14.2   192.168.0.15   <none>     CentOS Linux 7 (Core)   4.4.0-141-generic   docker://18.9.6

[node1 install]$ kubectl get componentstatus

NAME                 STATUS    MESSAGE            ERROR
scheduler            Healthy   ok
controller-manager   Healthy   ok
etcd-0               Healthy   {"health":"true"}
```

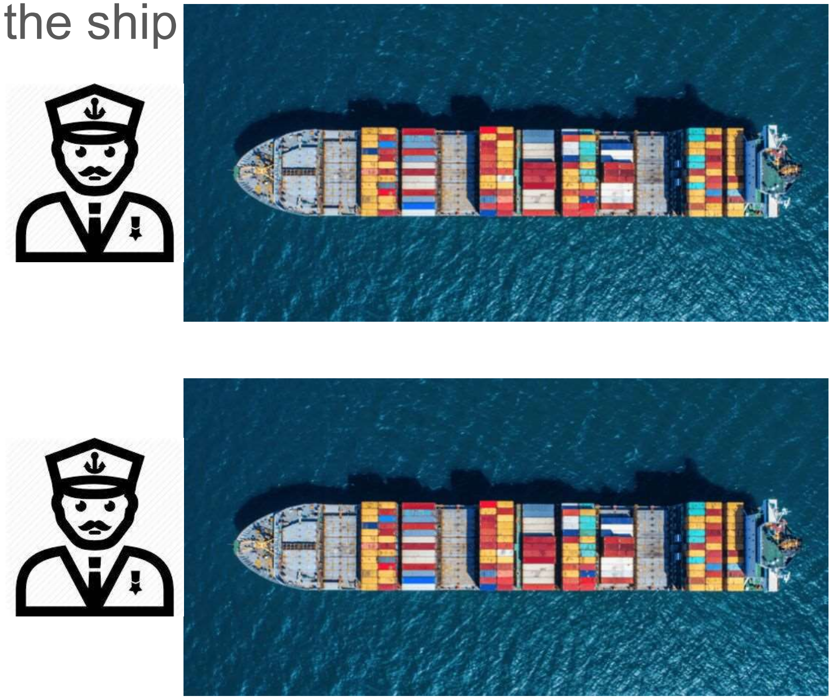
Let’s talk about Worker Components..

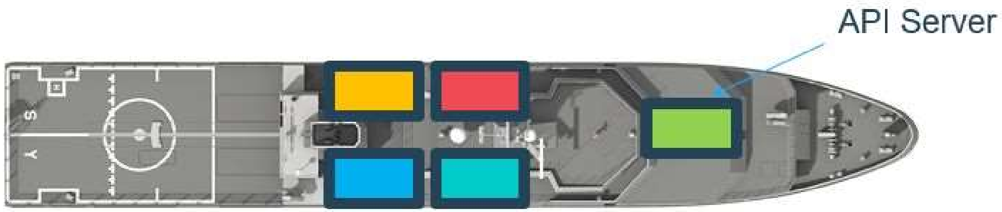
Overview


kubectl
API
UI
Scheduler
API Server
ETCD
Controller Manager
Master
A Worker Node

Captain of the Ship

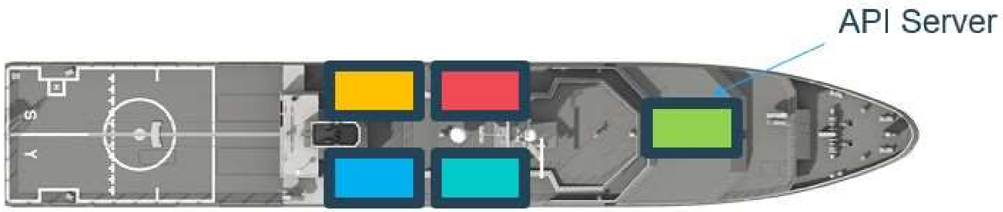
- Manages all sort of activity on the ship
- Let master ship knows they are interested to join
- Sending reports back to master about the status of the ship
- Sending reports about the status of the containers

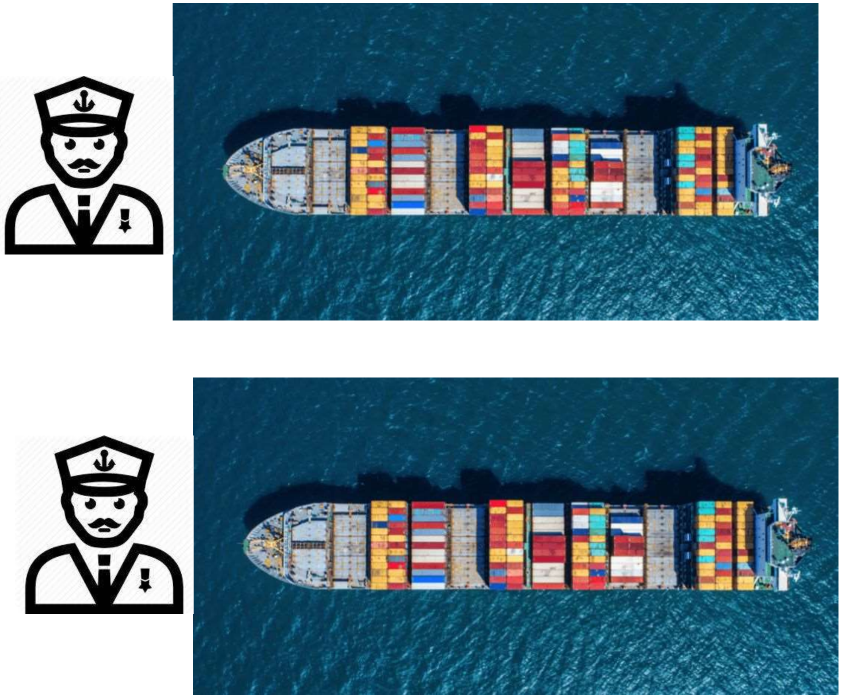




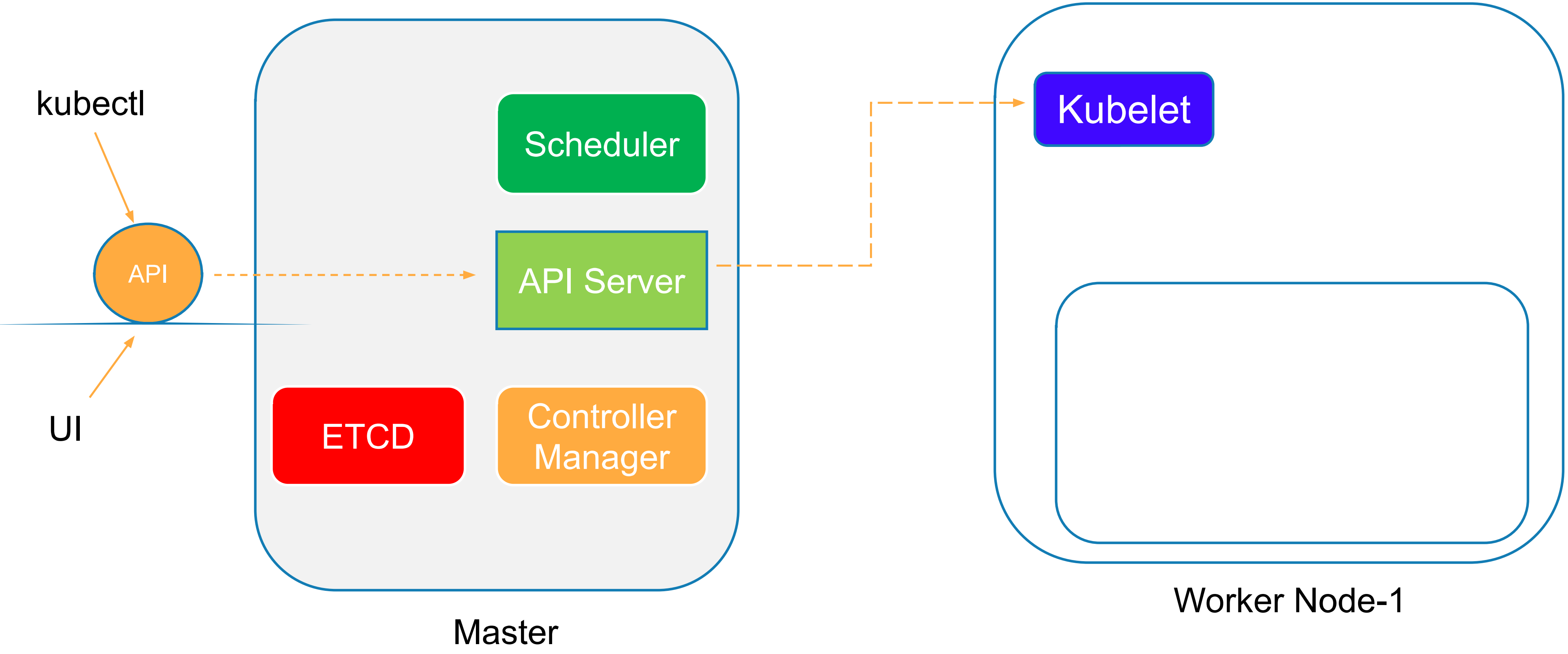
Captain of the Ship ~ Kubelet

Agent which runs on each nodes of the container



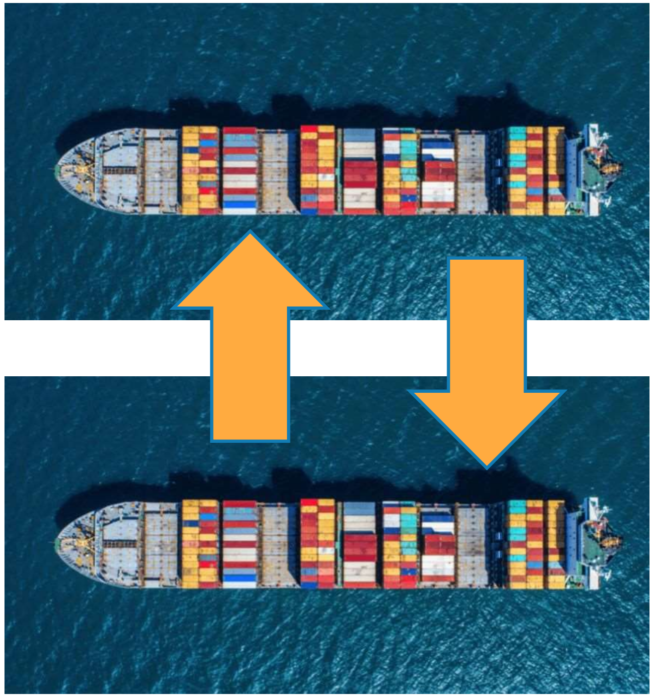


Overview


kubectl
API
UI
Scheduler
API Server
ETCD
Controller Manager
Master
Kubelet
Worker Node-1

Communication between Cargo Ships

How does two cargo ships communicate with each other?

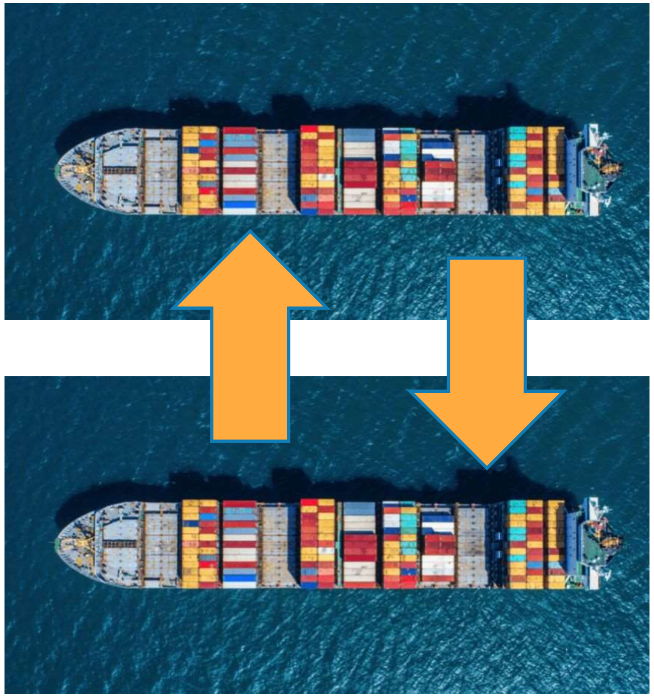


Kube-proxy Service

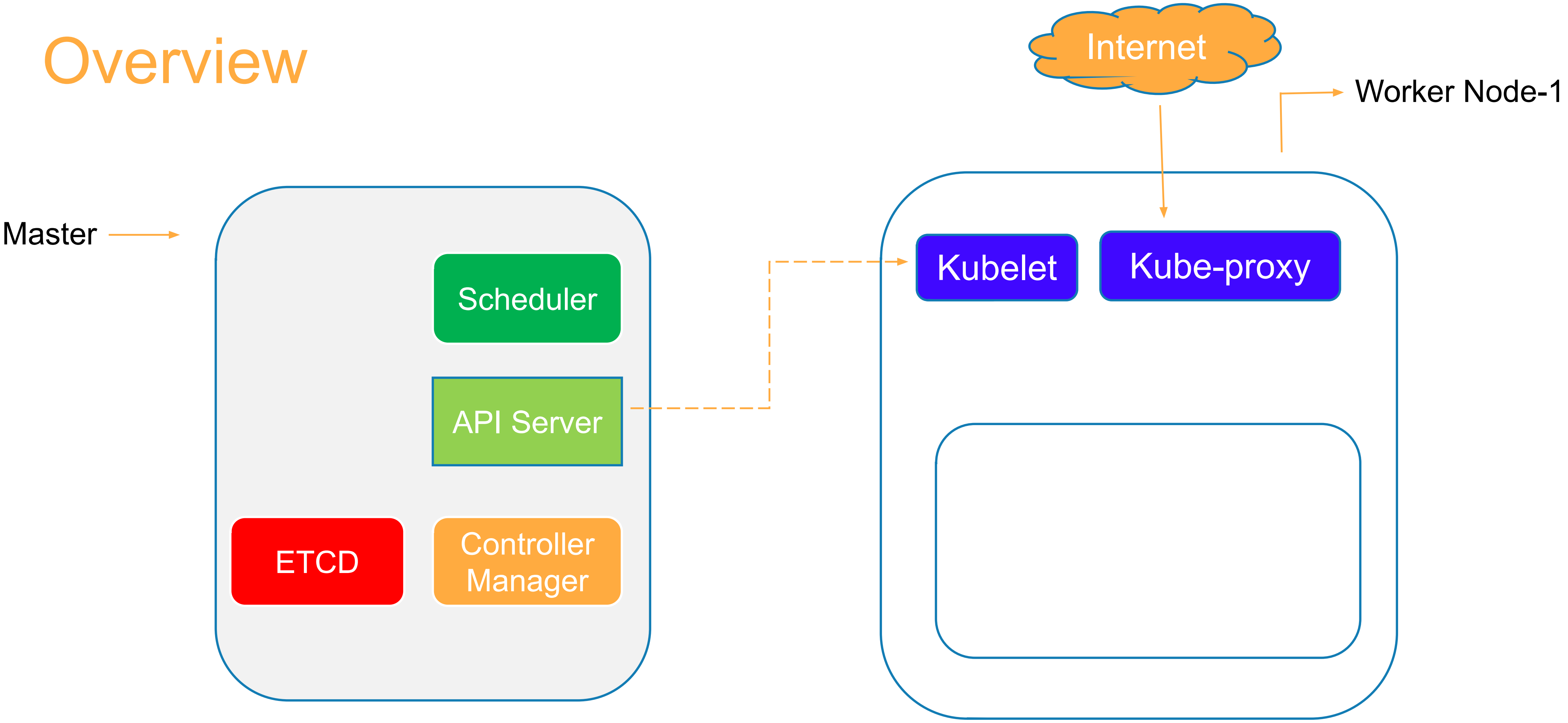
How will web server running on one worker node reach out to DB server on another worker node?

Communication between worker nodes

Kube-proxy

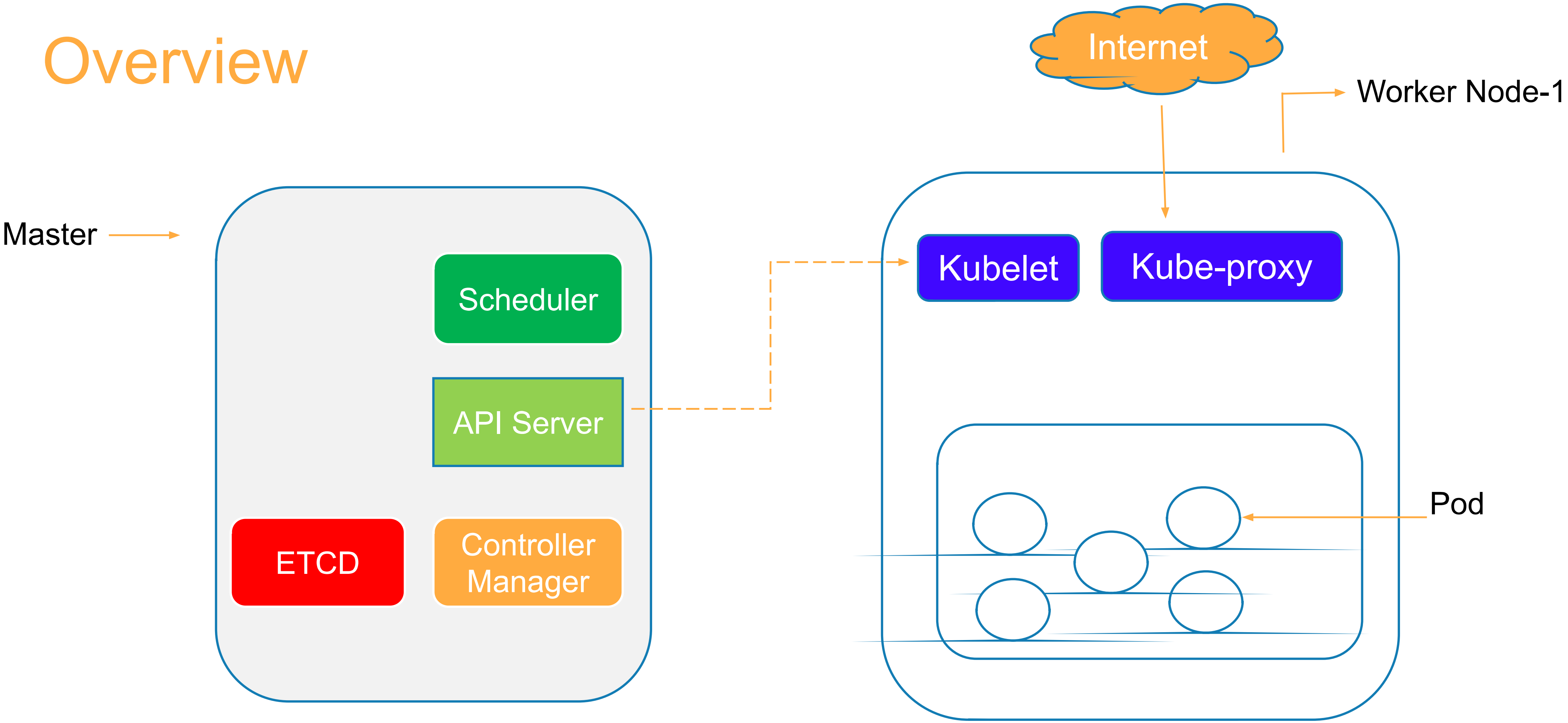


Overview

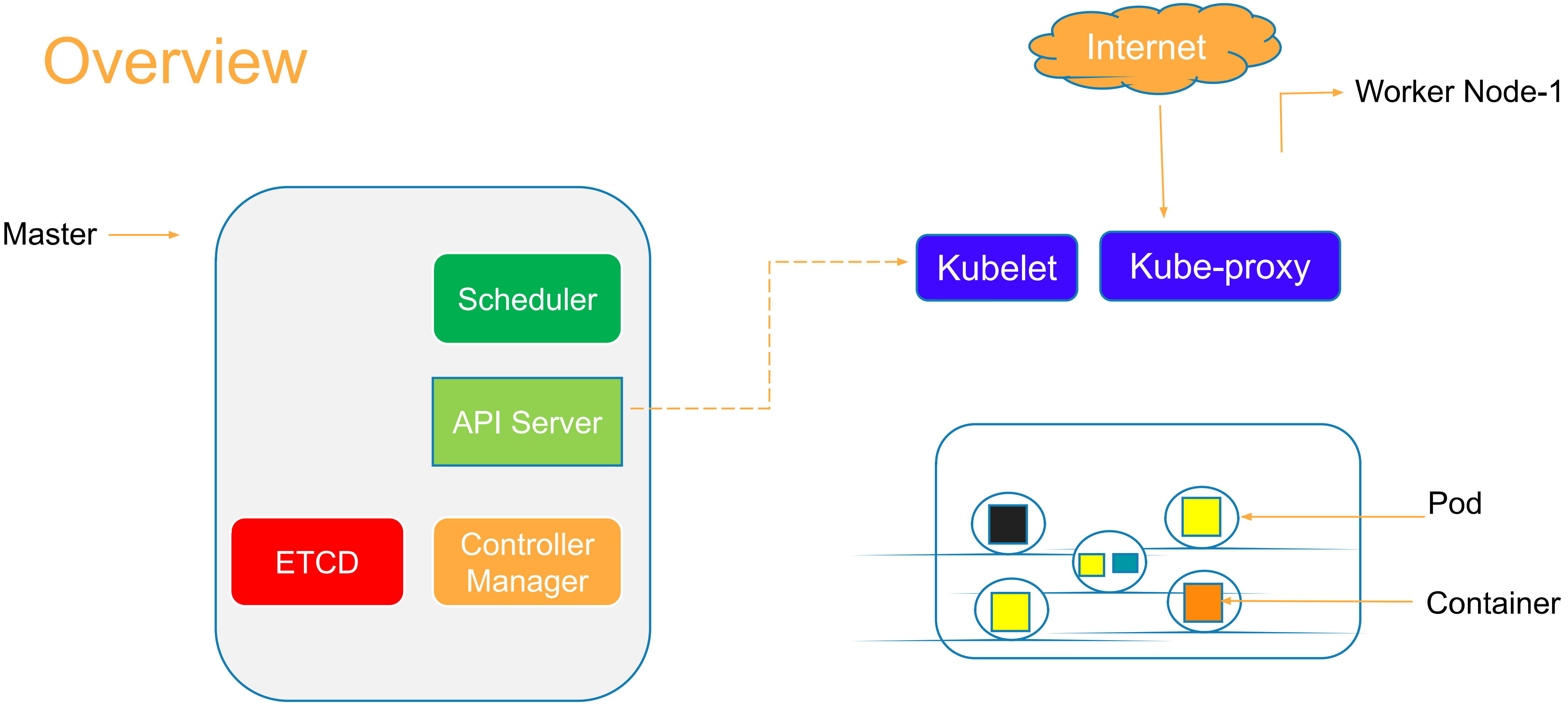

Internet
Worker Node-1
Master
Scheduler
API Server
ETCD
Controller Manager
Kubelet
Kube-proxy

Let’s talk about Pods..

Overview


Internet
Worker Node-1
Master
Scheduler
API Server
ETCD
Controller Manager
Kubelet
Kube-proxy
Pod

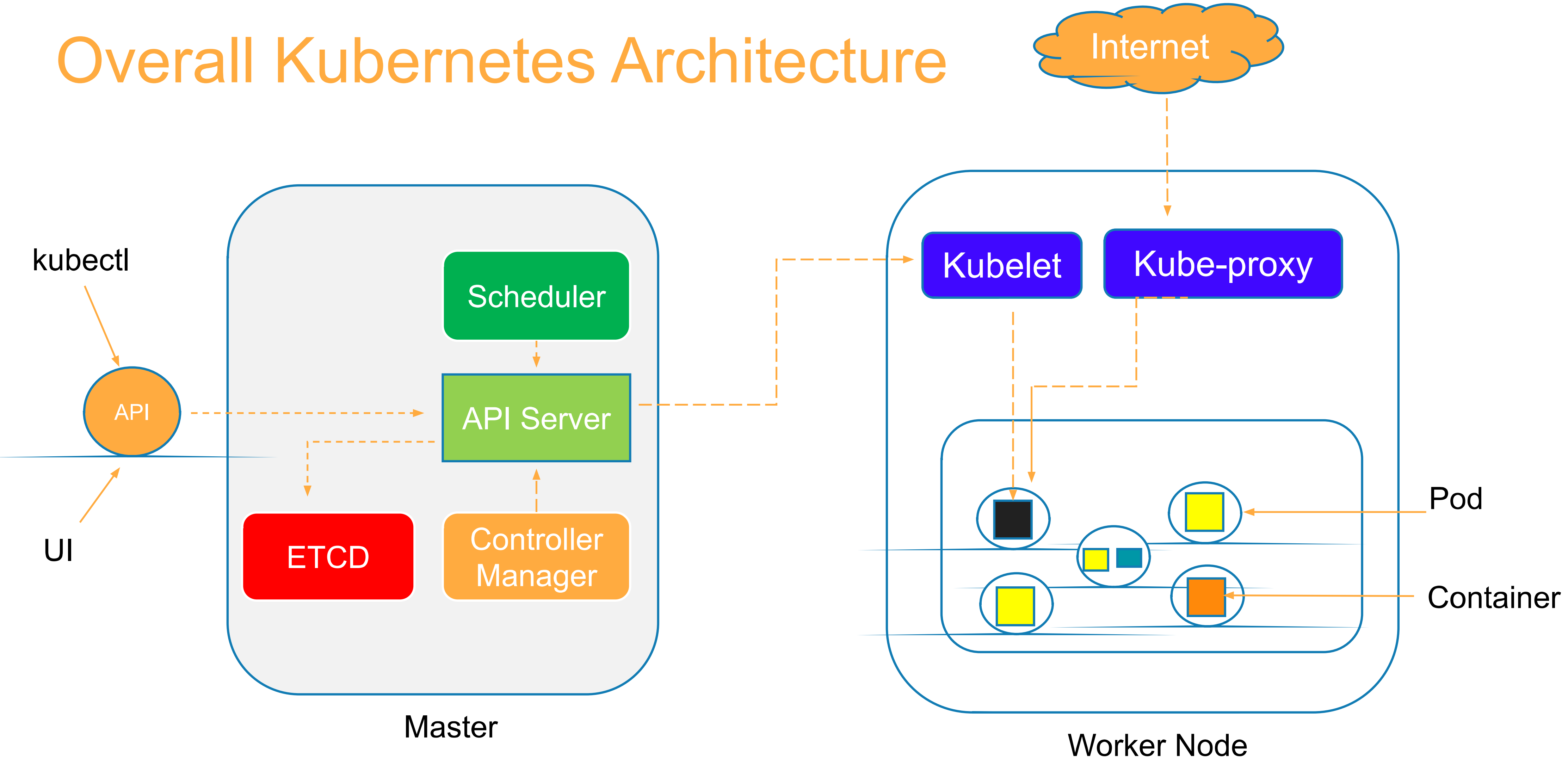
Overview


Internet
Worker Node-1
Master
Kubelet
Kube-proxy
Scheduler
API Server
ETCD
Controller Manager
Pod
Container

Docker Containers

A popular Container Runtime

Overall Kubernetes Architecture



Demo

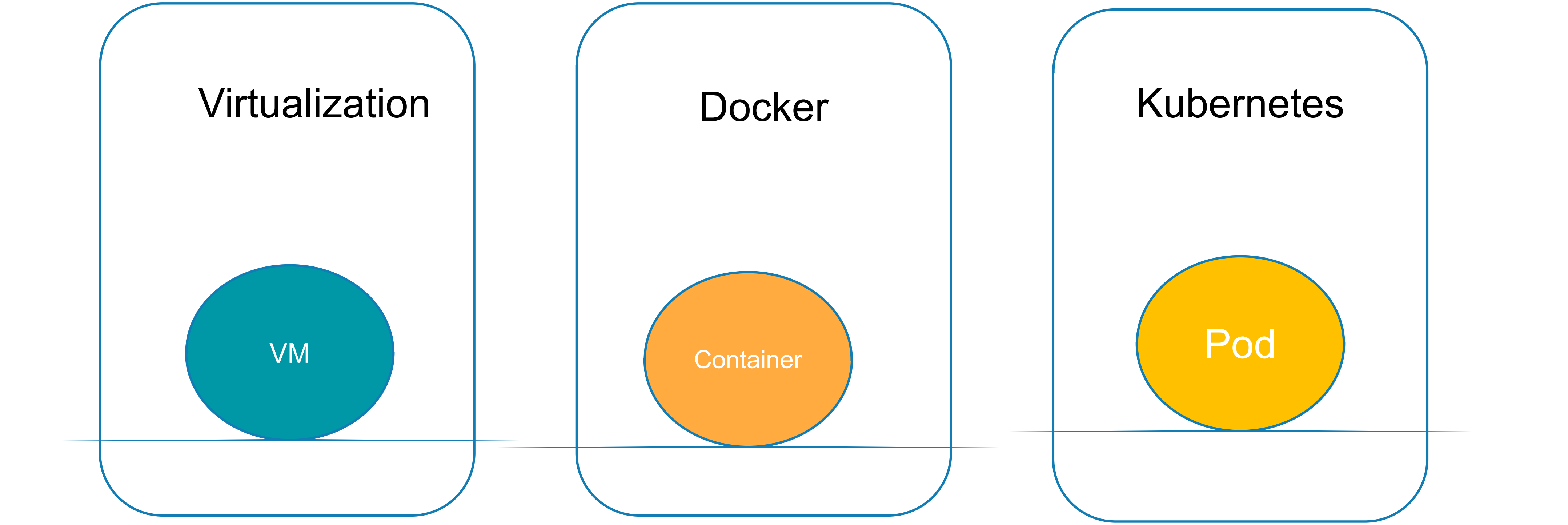
- Setting up a single Node K8s cluster on Docker Desktop for Mac / Windows
- Setting up 5 Node Kubernetes Cluster on PWK
- Setting up 3 Nodes K8s Cluster on Bare Metal or VM

Let’s Deep Dive into Pods…

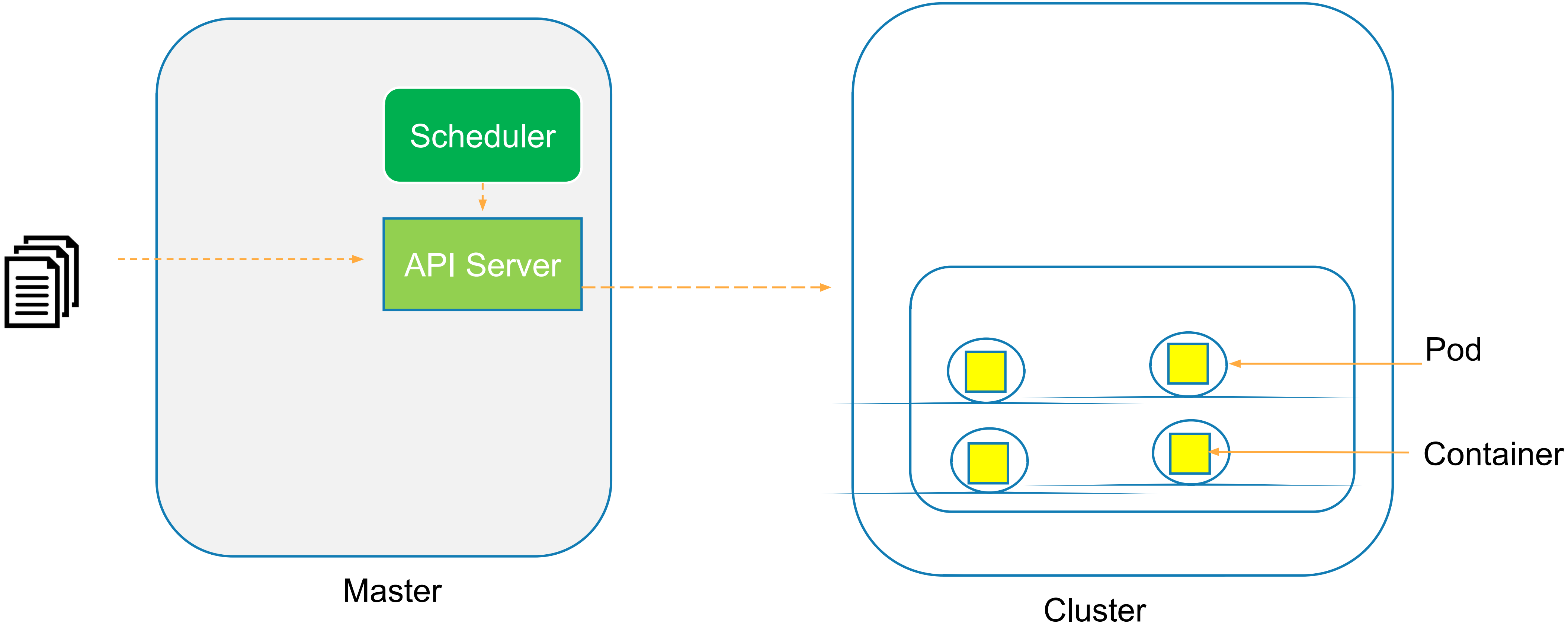
Pod - Concepts

- What is Pod?
- Pod Deployment
- Multi-Container
- Pod Networking
- Inter-Pod & Intra-Pod Networking
- Pod Lifecycle
- Pod Manifest File

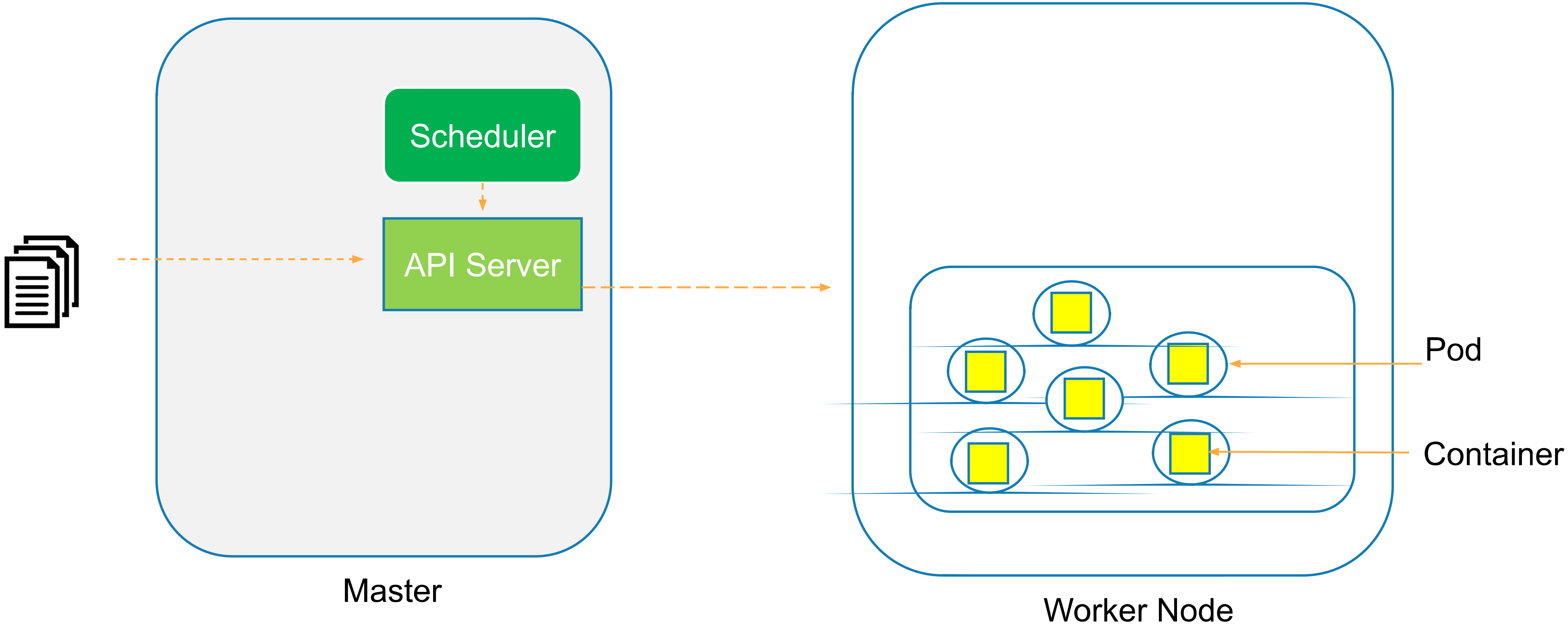
Atomic Unit of Scheduling



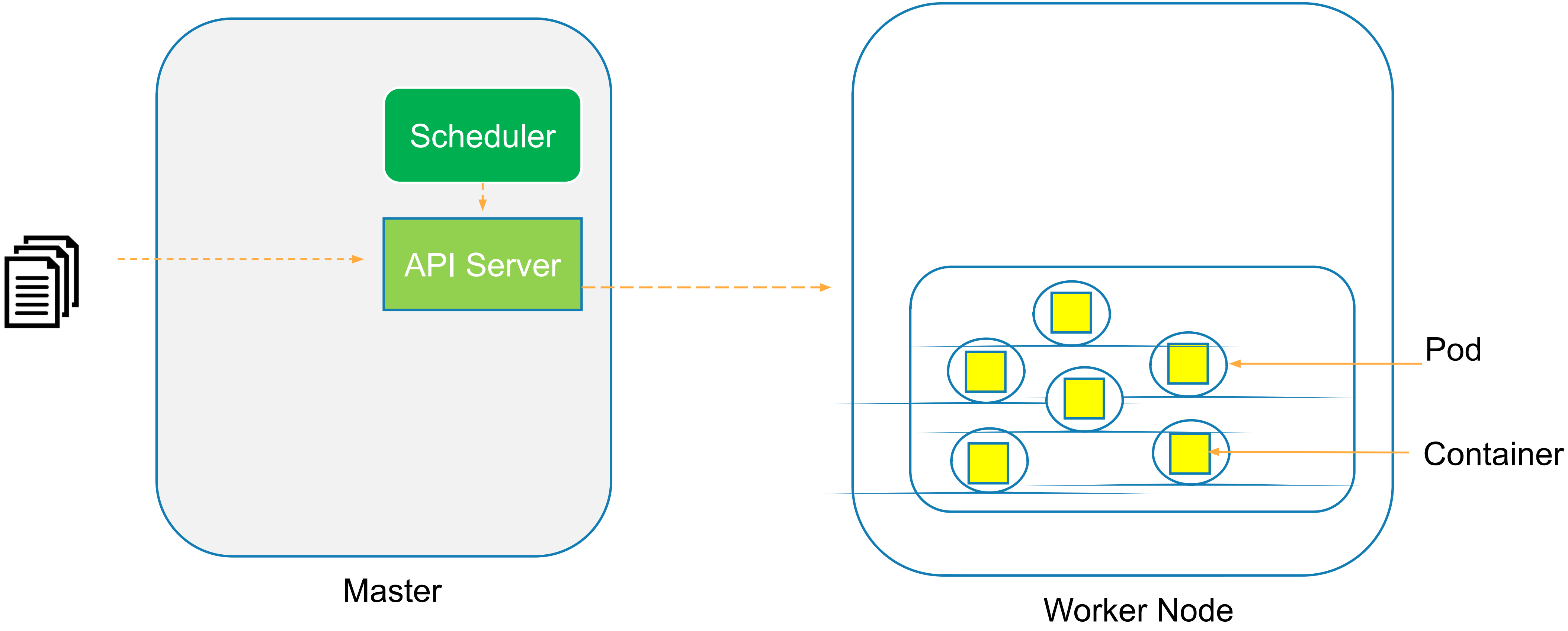
How Pods are deployed?



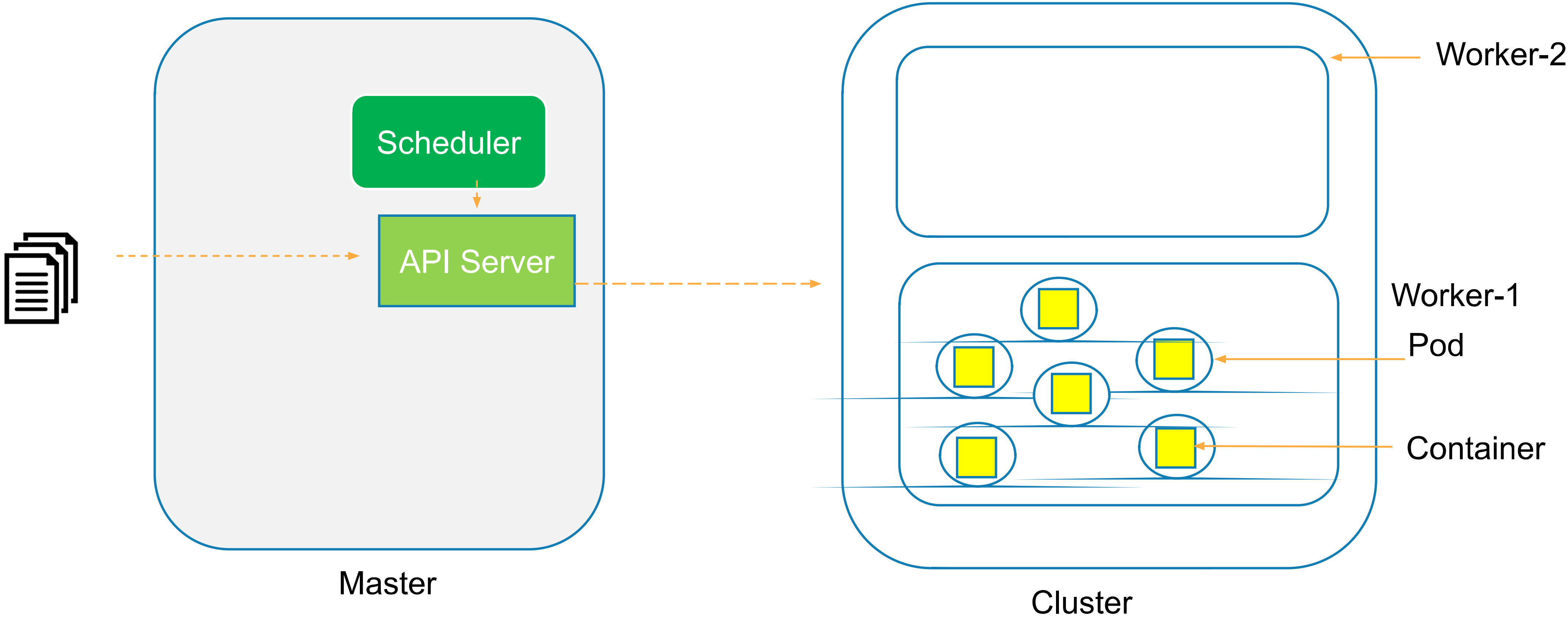
Scaling the Pods to accommodate increasing traffic



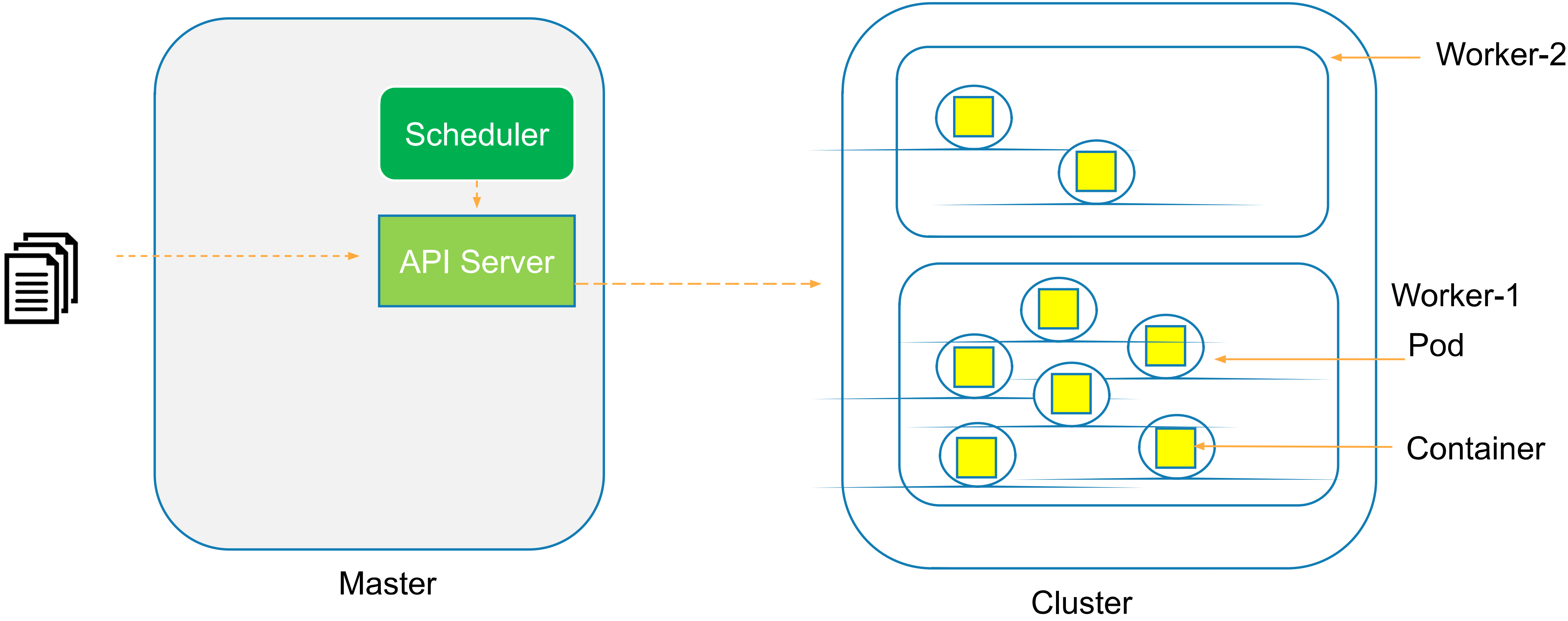
What if node resources is getting insufficient?



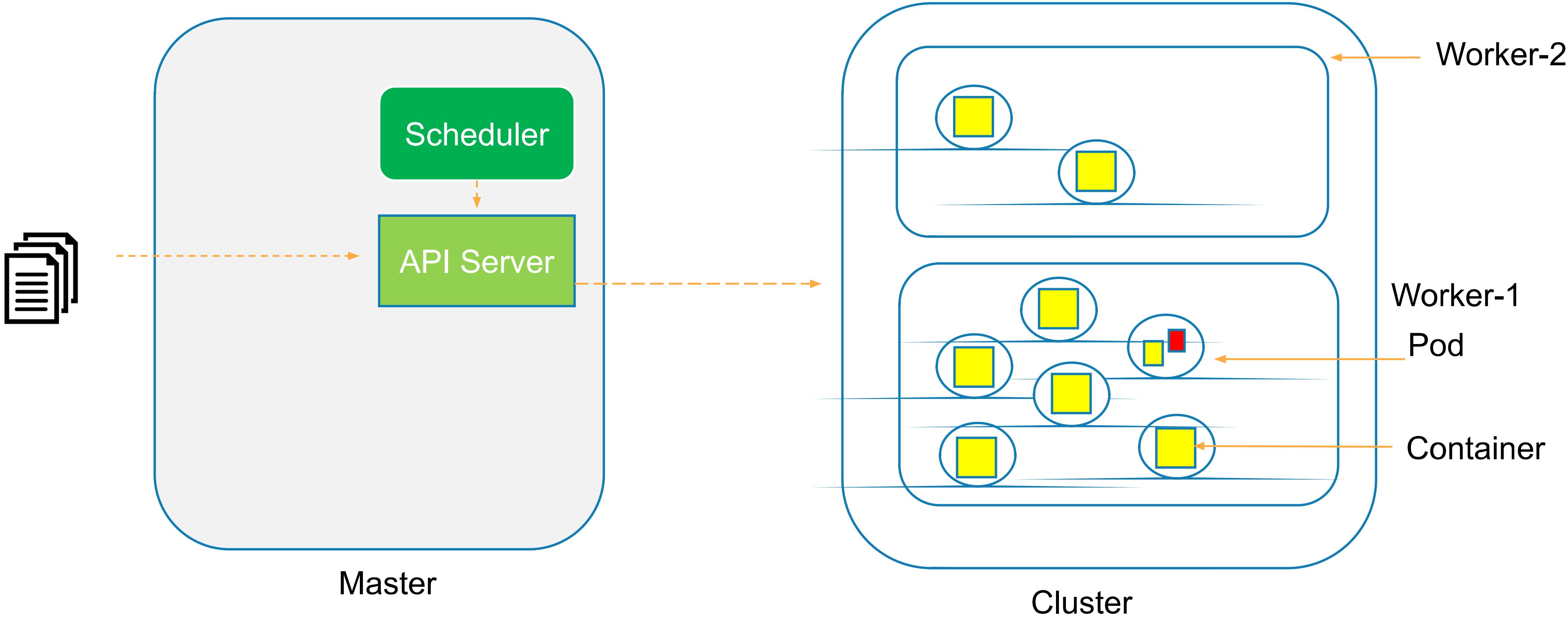
What if node resources is getting insufficient?



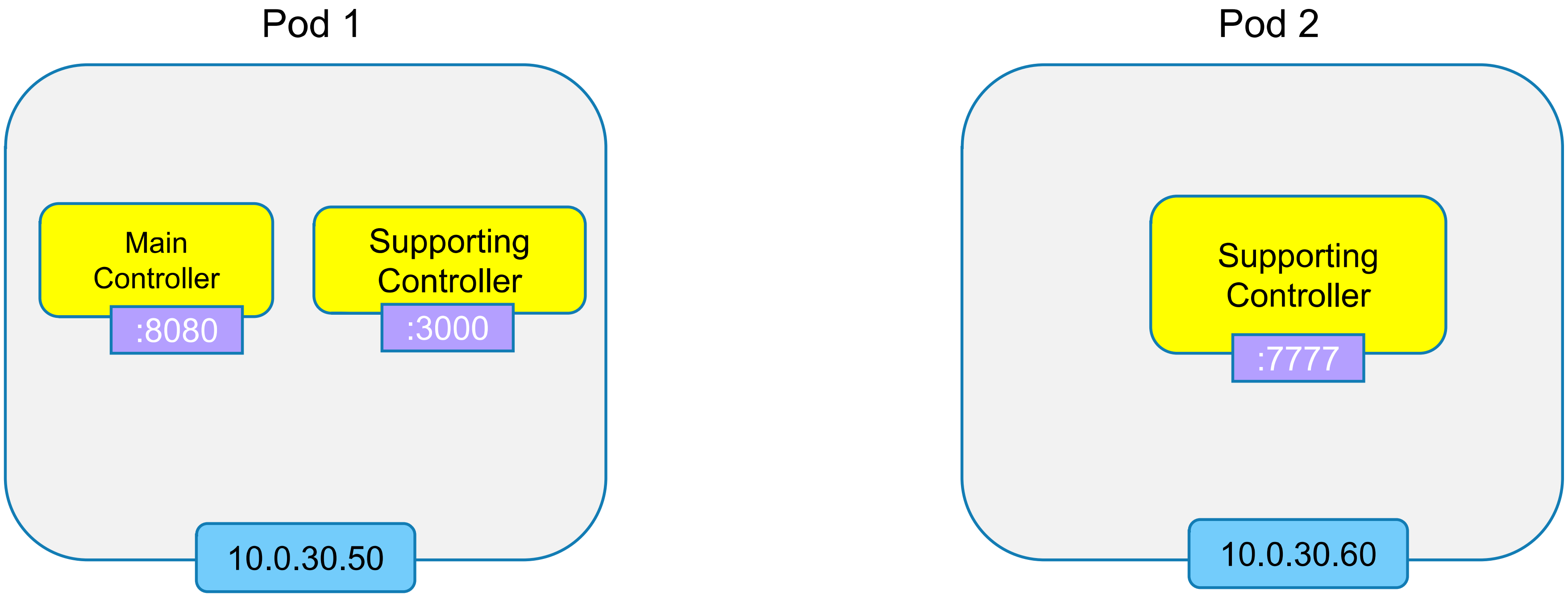
What if node resources is getting insufficient?



2 Containers in a same Pod

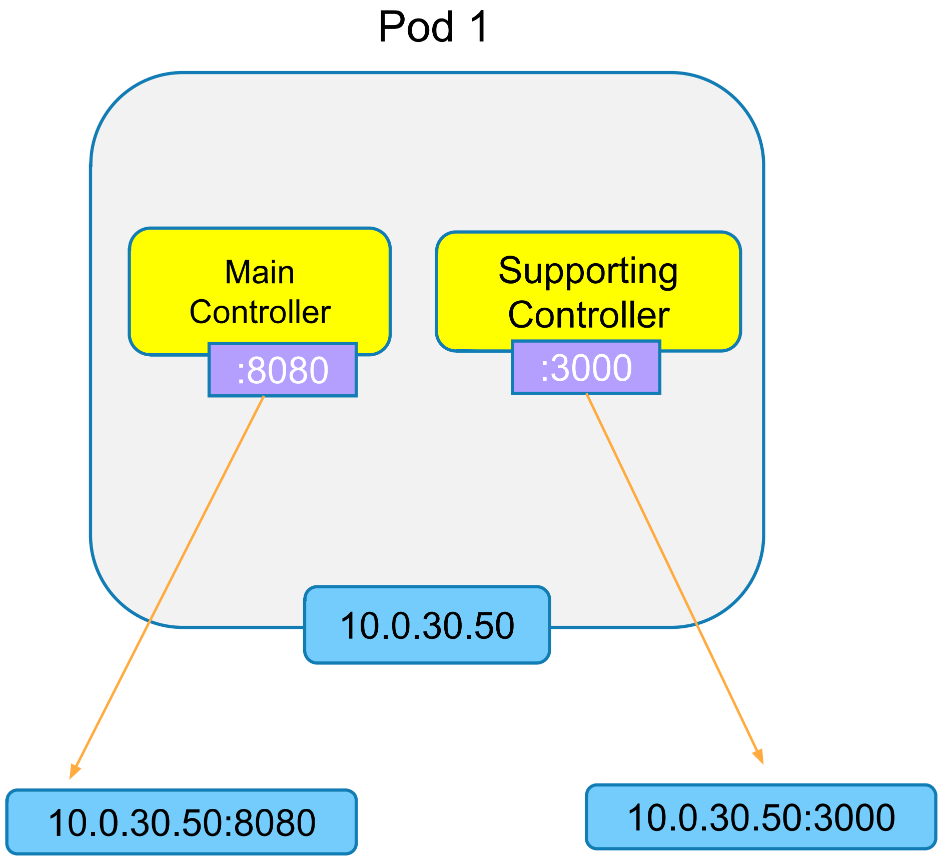


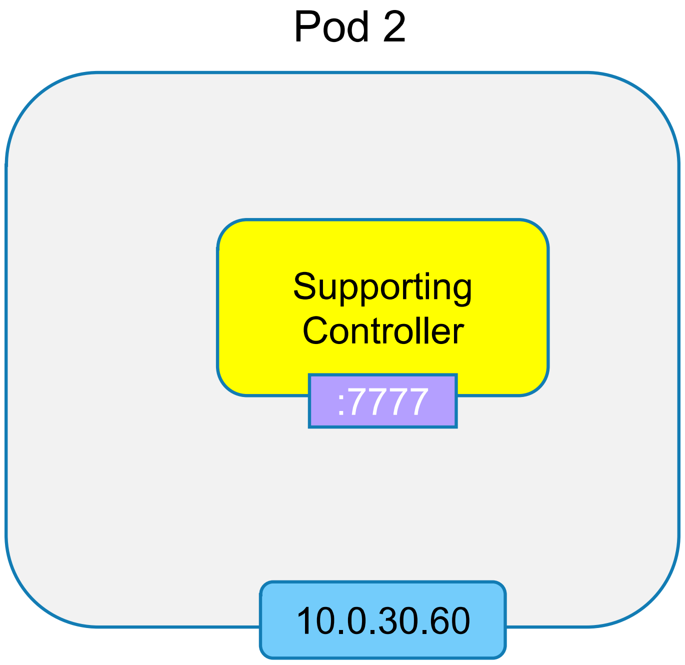
Pod Networking



How does these containers inside Pods communicate with External World?

Network Namespace

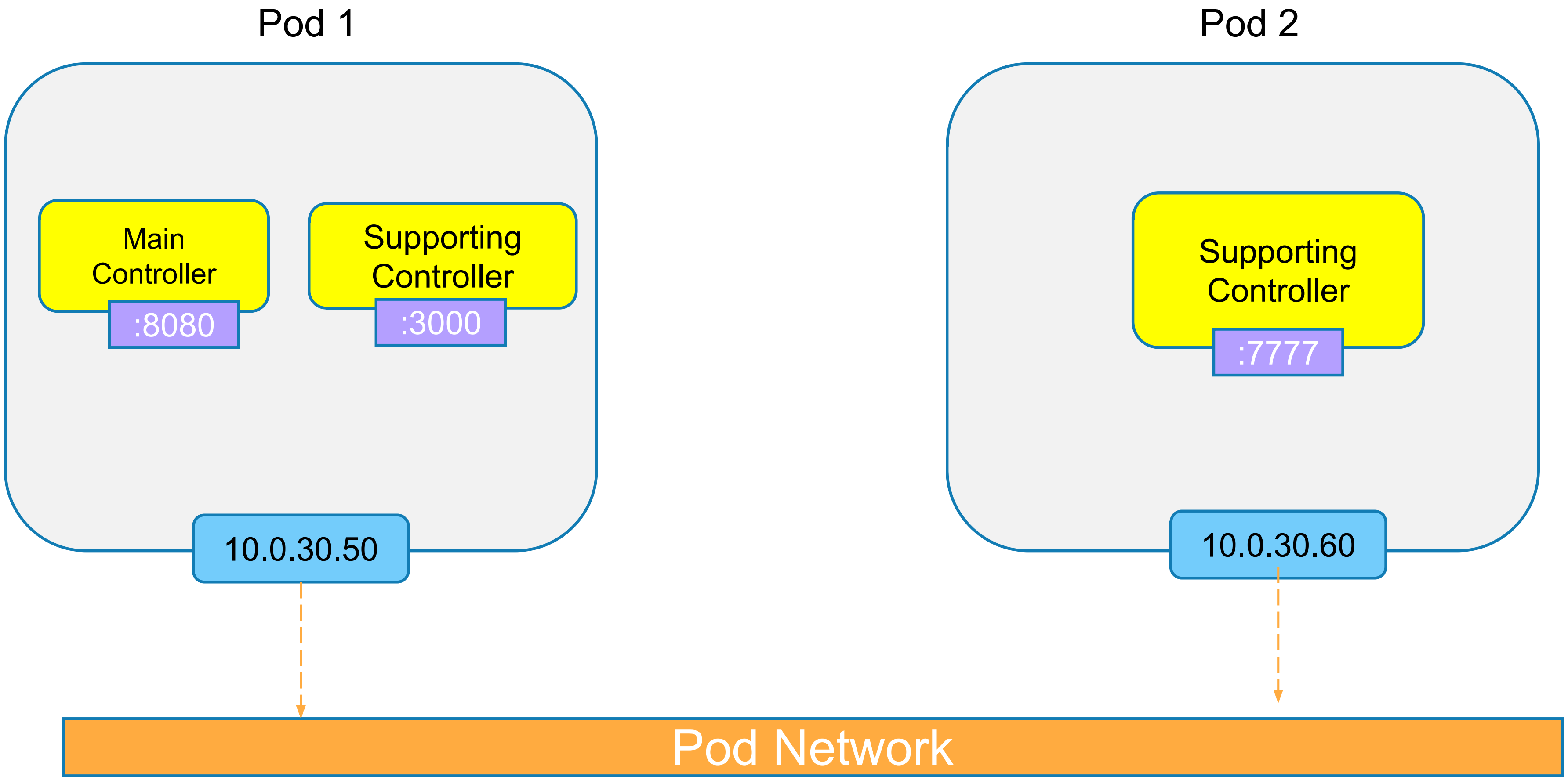




How does one Pod talk to another Pod?

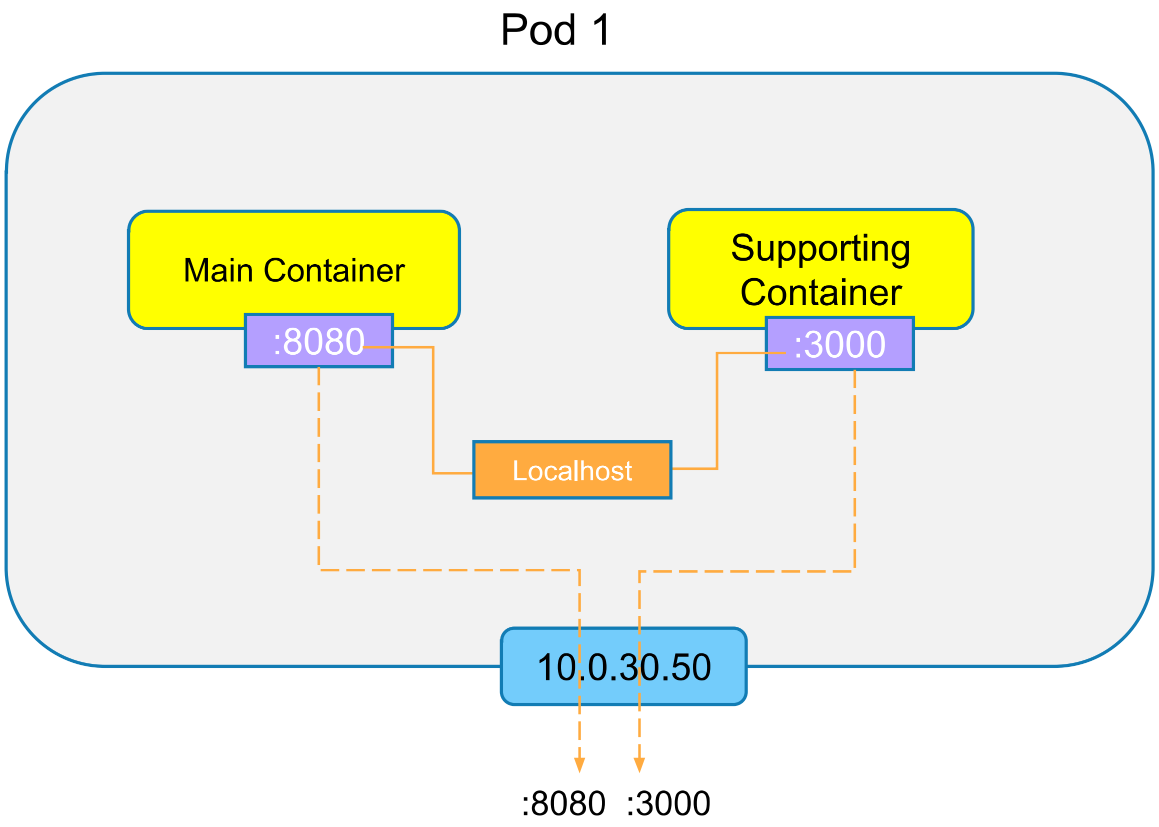
Welcome to Inter-Pod Communication..

Pod Networking

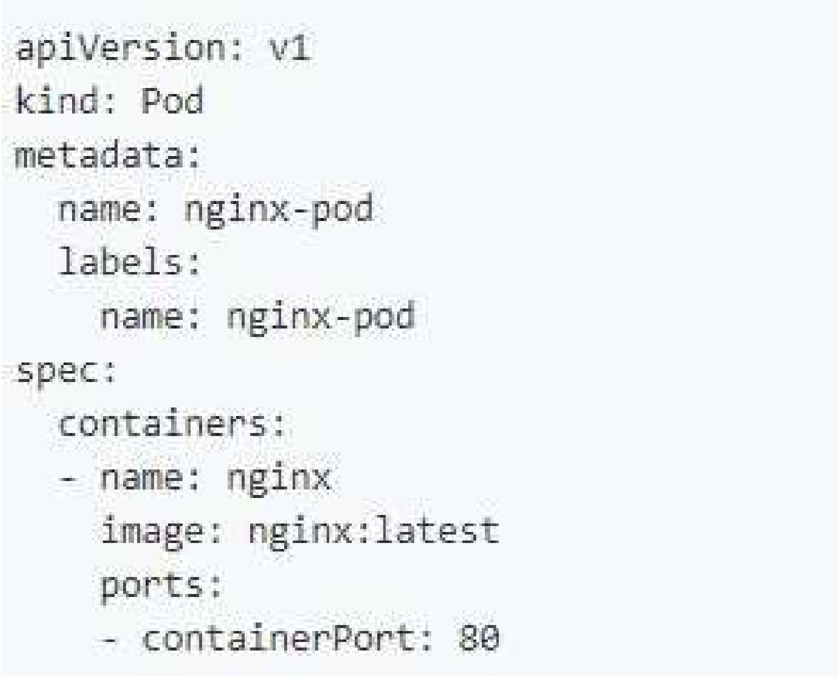


How does Intra-Pod communication take place?

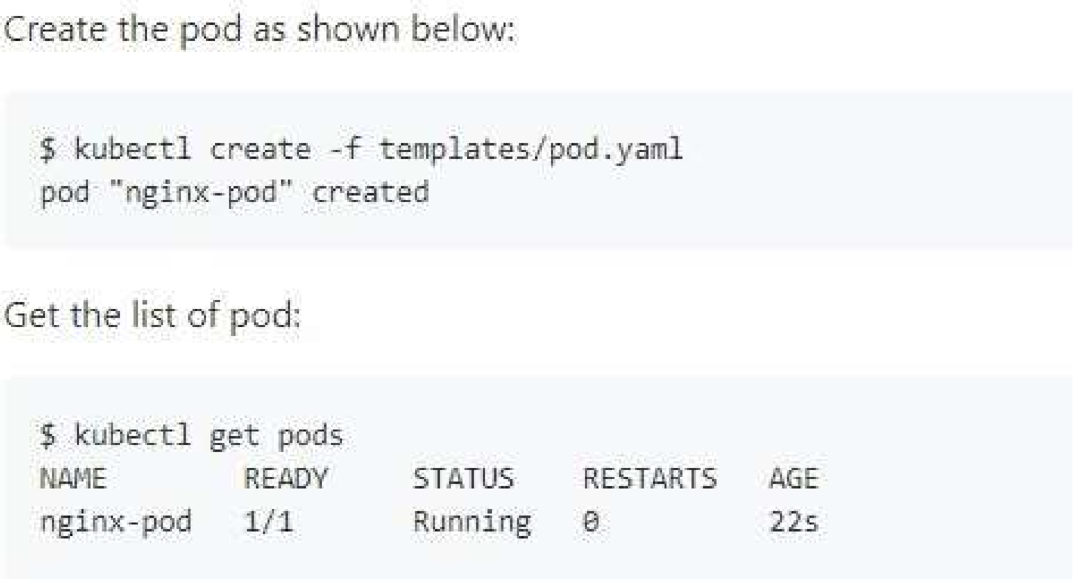
Intra-Pod Communication



A Look at Pod Manifest



```
apiVersion: v1
kind: Pod
metadata:
  name: nginx-pod
  labels:
    name: nginx-pod
spec:
  containers:
  - name: nginx
    image: nginx:latest
    ports:
    - containerPort: 80
```



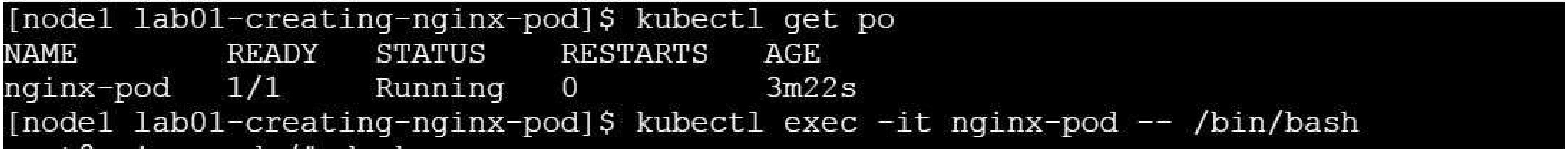
Create the pod as shown below:

```
$ kubectl create -f templates/pod.yaml
pod "nginx-pod" created
```

Get the list of pod:

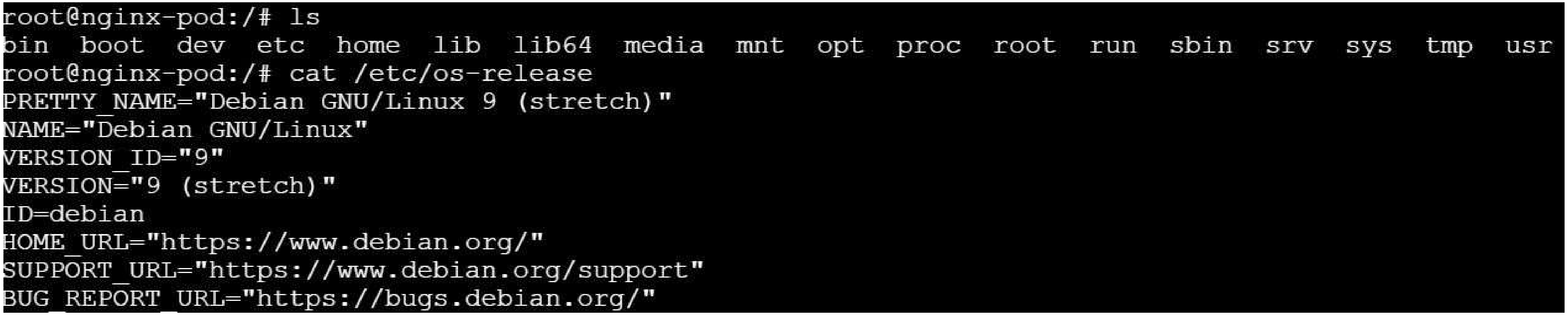
```
$ kubectl get pods
NAME         READY     STATUS     RESTARTS    AGE
nginx-pod    1/1       Running    0           22s
```

Get a shell to a running Container



```
[node1 lab01-creating-nginx-pod]$ kubectl get po
NAME         READY    STATUS     RESTARTS    AGE
nginx-pod    1/1      Running    0           3m22s
[node1 lab01-creating-nginx-pod]$ kubectl exec -it nginx-pod -- /bin/bash
```

Verifying the Operating System

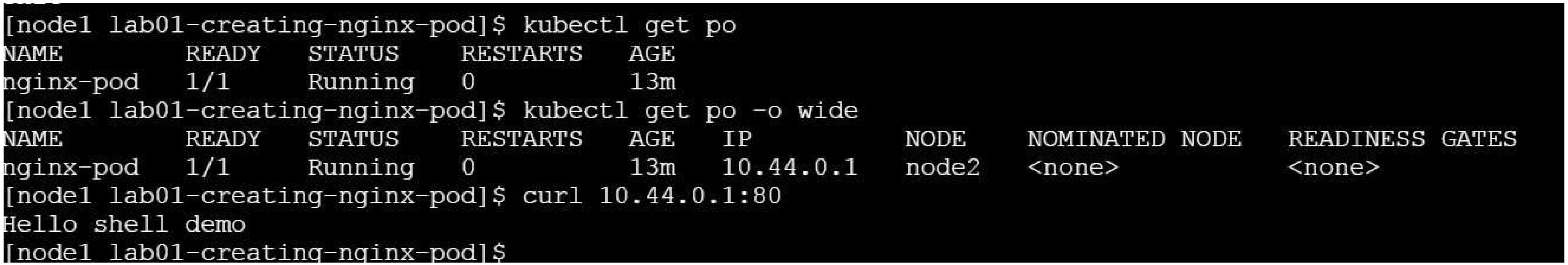


```
root@nginx-pod:/# ls
bin  boot  dev  etc  home  lib  lib64  media  mnt  opt  proc  root  run  sbin  srv  sys  tmp  usr
root@nginx-pod:/# cat /etc/os-release
PRETTY_NAME="Debian GNU/Linux 9 (stretch)"
NAME="Debian GNU/Linux"
VERSION_ID="9"
VERSION="9 (stretch)"
ID=debian
HOME_URL="https://www.debian.org/"
SUPPORT_URL="https://www.debian.org/support"
BUG_REPORT_URL="https://bugs.debian.org/"
```

Get a shell to a running Container

```
root@nginx-pod:/# echo Hello shell demo > /usr/share/nginx/html/index.html
```

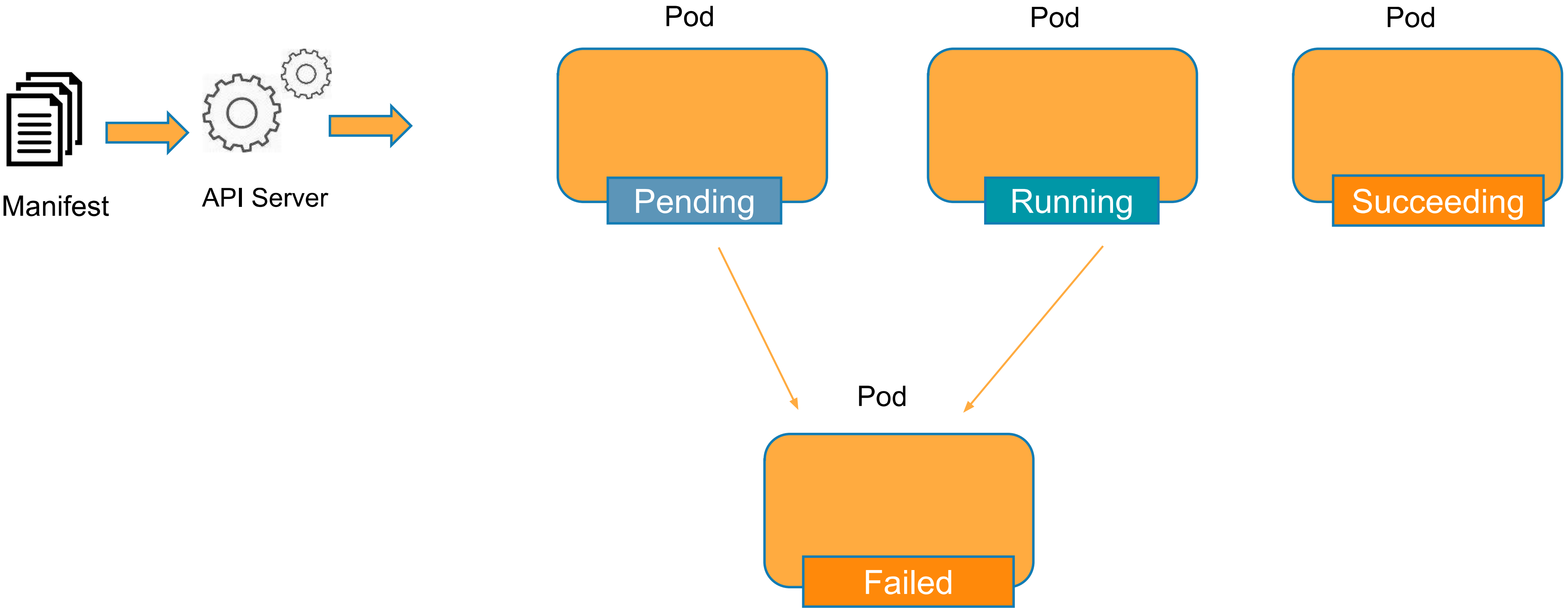
Verifying the index page



```
[node1 lab01-creating-nginx-pod]$ kubectl get po
NAME        READY   STATUS    RESTARTS   AGE
nginx-pod   1/1     Running   0          13m
[node1 lab01-creating-nginx-pod]$ kubectl get po -o wide
NAME        READY   STATUS    RESTARTS   AGE   IP          NODE    NOMINATED NODE   READINESS GATES
nginx-pod   1/1     Running   0          13m   10.44.0.1   node2   <none>           <none>
[node1 lab01-creating-nginx-pod]$ curl 10.44.0.1:80
Hello shell demo
[node1 lab01-creating-nginx-pod]$
```

Stages of Life Cycle of Pod

Lifecycle of a Pod



How can you ensure that there are 3 Pods instances which are always available and running at point in time?

ReplicaSet

What is ReplicaSet all about?

Maintain a stable set of replica Pods running at any given time

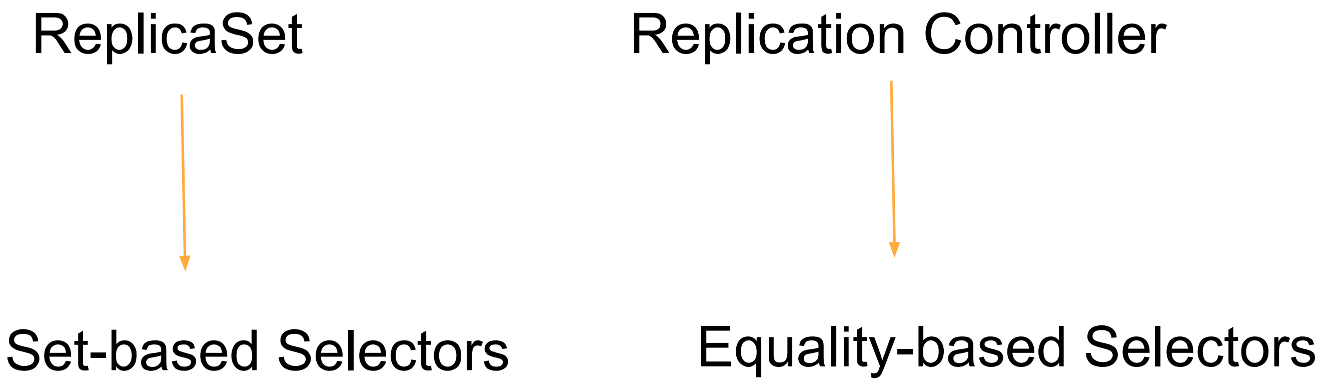
- Ensures that a specified number of Pods are running at any time

  a. If there are access Pods, they get killed and vice versa
  b. New Pods are launched when they get failed, get deleted and terminated

- ReplicaSet & Pods are associated with “labels”

Replication Controller Vs ReplicaSets

- ReplicaSet is the next generation of Replication Controller
- Both serve the same purpose



ReplicaSet

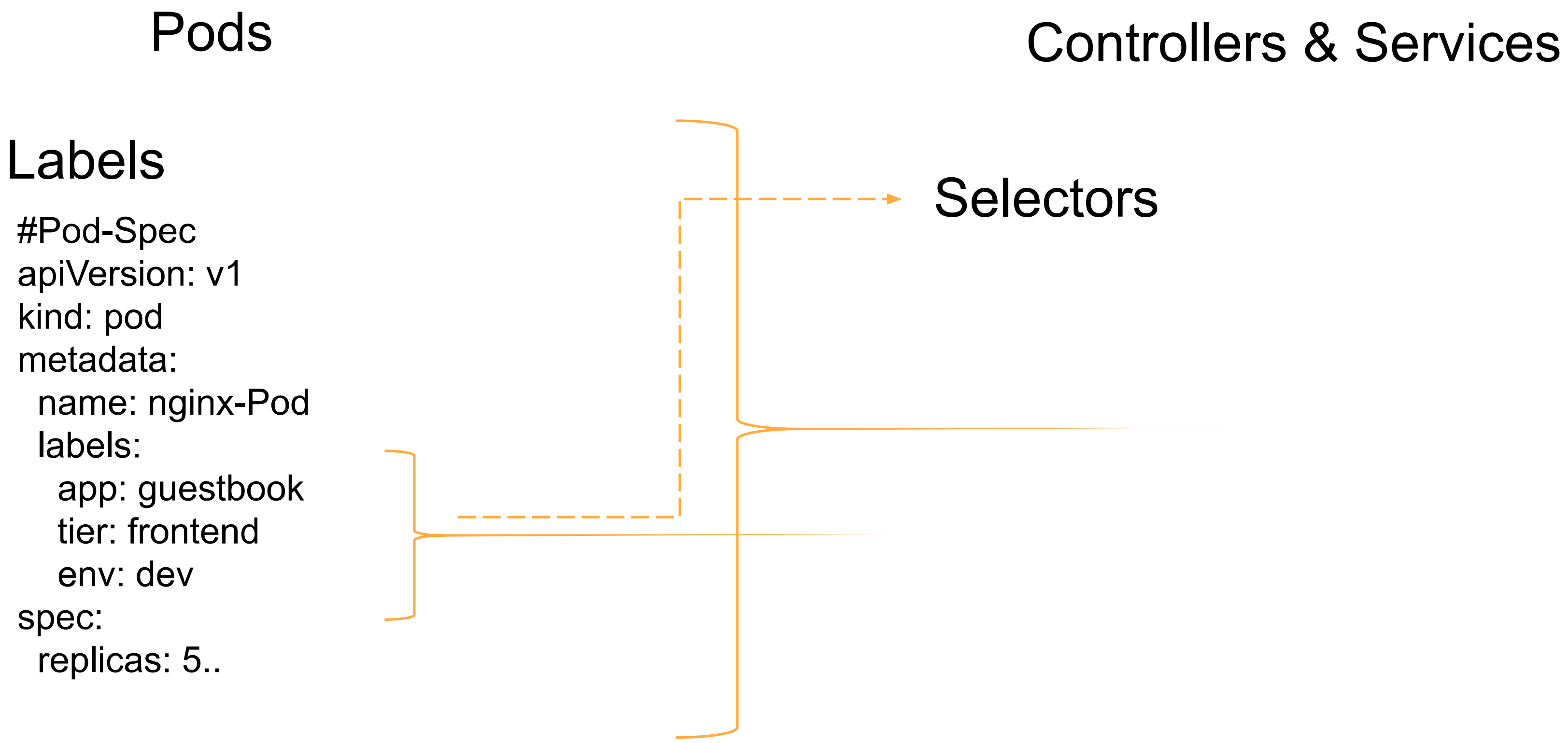
Set-based Selectors

Replication Controller

Equality-based Selectors

Labels & Selectors

When Pods are scaled, how are these Pods Managed at such large scale?



Pods

Controllers & Services

Labels

Selectors

```
#Pod-Spec
apiVersion: v1
kind: pod
metadata:
  name: nginx-Pod
  labels:
    app: guestbook
    tier: frontend
    env: dev
spec:
  replicas: 5..
```

Equality-based Selectors

Operators:

= and ==

Examples:

environment = production
tier! = frontend

Commandline:

```
$kubectl get pods -l environment=production
```

In Manifest:

```
..
selector:
  environment: production
  tier: frontend
..
```

Supports: Services, Replication Controller

Set-based Selectors

Operators:

in notin exists

Examples:

environment in (production, qa)
tier notin(frontend, backend)

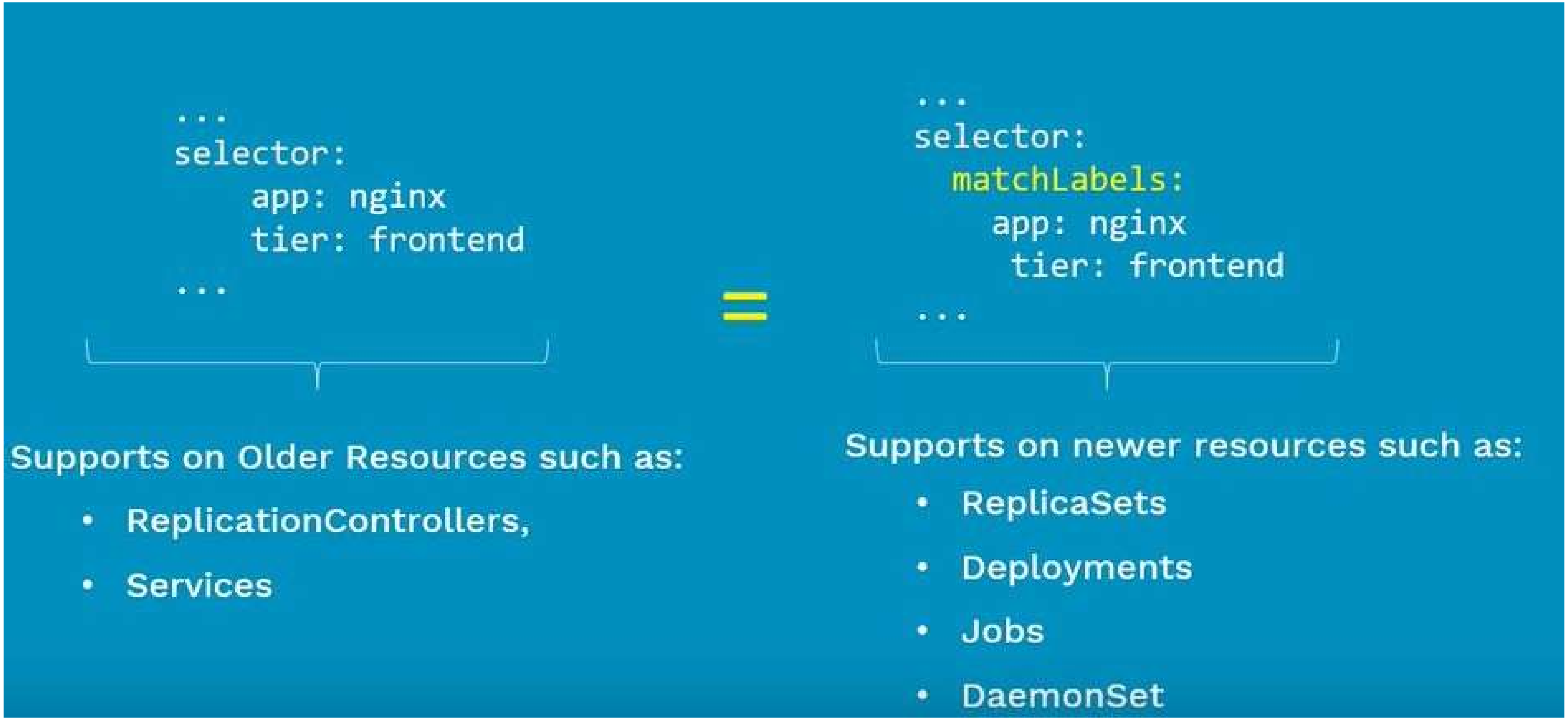
Commandline:

```
$kubectl get pods -l `enviornment in(production)
```

In Manifest:

```
..
selector:
  matchExpressions:
    - {key:environment,operator:in,values:[prod,qa]}
    - {key:tier,operator:Notin,values:[frontend,backend]}
..
```

Supports: Job, Deployment, ReplicaSet, DaemonSet



```
...
selector:
    app: nginx
    tier: frontend
...
```

=

```
...
selector:
  matchLabels:
    app: nginx
     tier: frontend
...
```

Supports on Older Resources such as:

- ReplicationControllers,
- Services

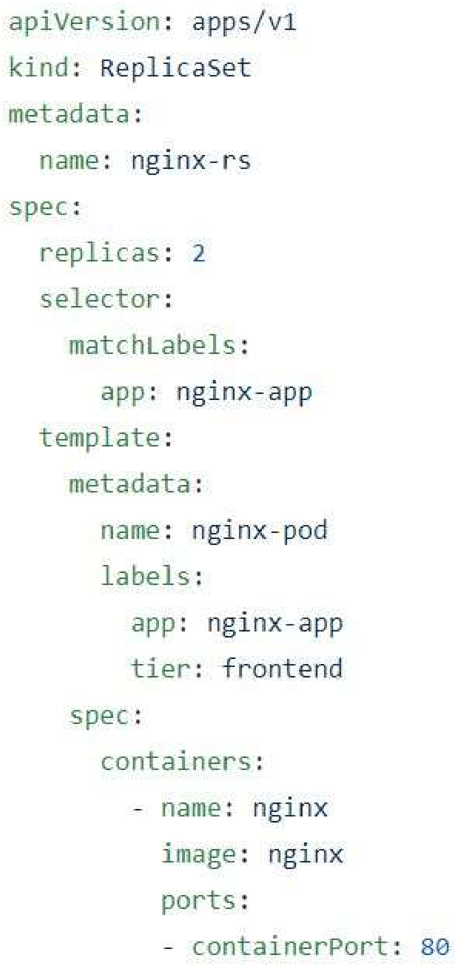
Supports on newer resources such as:

- ReplicaSets
- Deployments
- Jobs
- DaemonSet

Demo - ReplicaSet

- Manifest file
- Deploy app using RS
  Display and validate RS
- Test – Node Fails
- Test – Scale Up
- Test – Scale Down

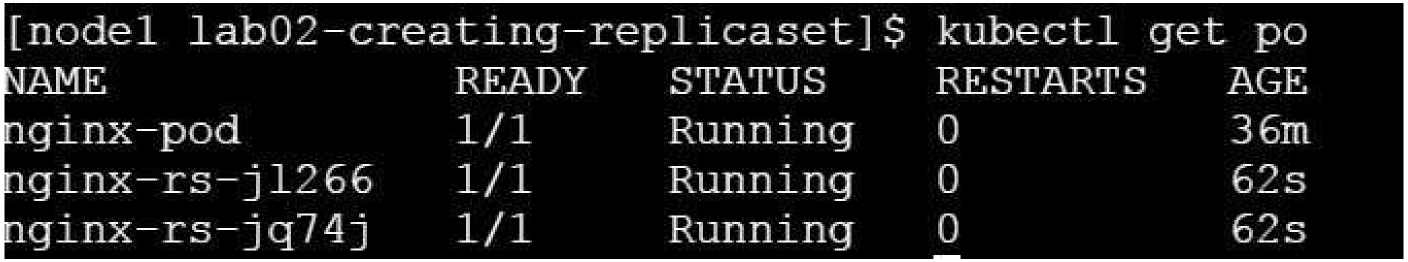
ReplicaSet Manifest File



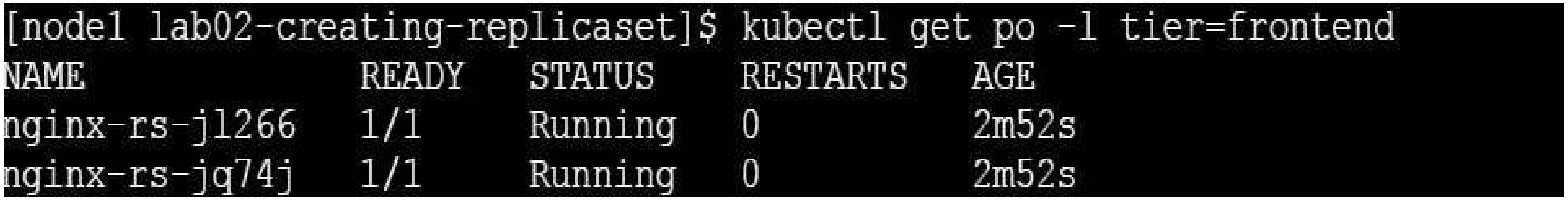
```yaml
apiVersion: apps/v1
kind: ReplicaSet
metadata:
  name: nginx-rs
spec:
  replicas: 2
  selector:
    matchLabels:
      app: nginx-app
  template:
    metadata:
      name: nginx-pod
      labels:
        app: nginx-app
        tier: frontend
    spec:
      containers:
        - name: nginx
          image: nginx
          ports:
          - containerPort: 80
```

Creating Nginx-rs Pods

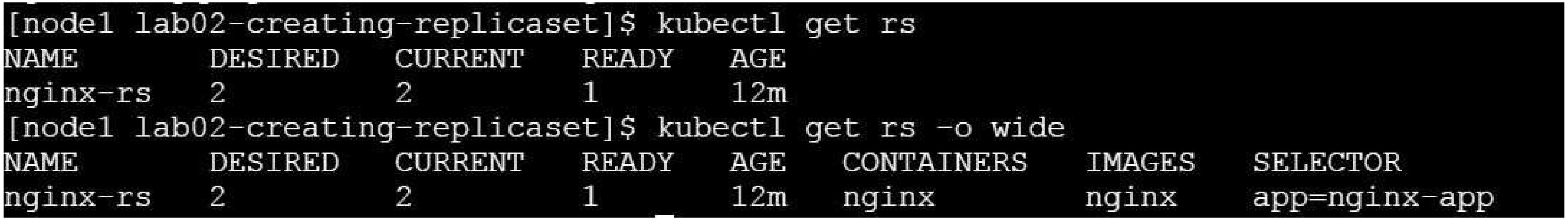
$kubectl create –f nginx-rs.yaml



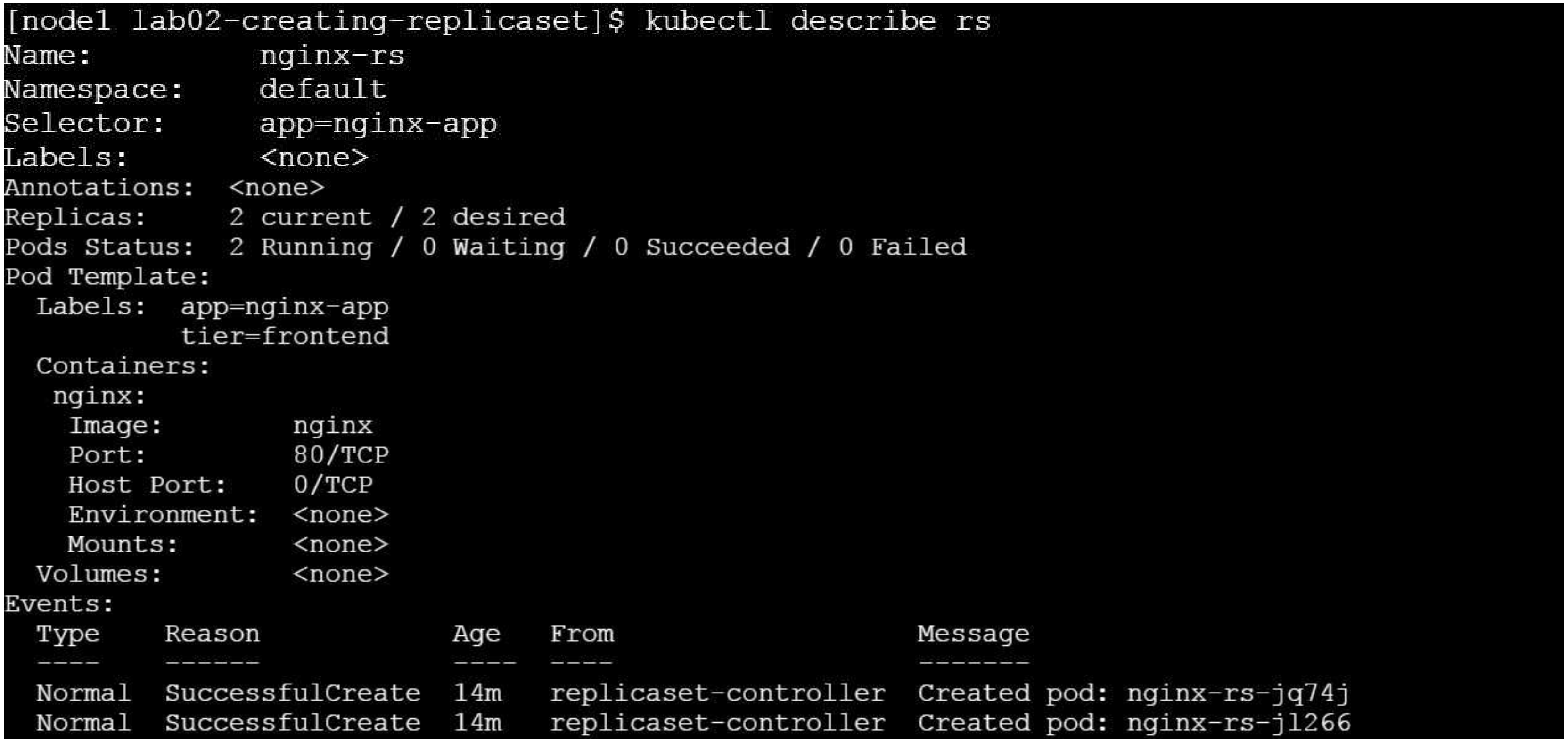
```
[node1 lab02-creating-replicaset]$ kubectl get po
NAME              READY    STATUS     RESTARTS    AGE
nginx-pod         1/1      Running    0           36m
nginx-rs-jl266    1/1      Running    0           62s
nginx-rs-jq74j    1/1      Running    0           62s
```



```
[node1 lab02-creating-replicaset]$ kubectl get po -l tier=frontend
NAME              READY    STATUS     RESTARTS    AGE
nginx-rs-jl266    1/1      Running    0           2m52s
nginx-rs-jq74j    1/1      Running    0           2m52s
```

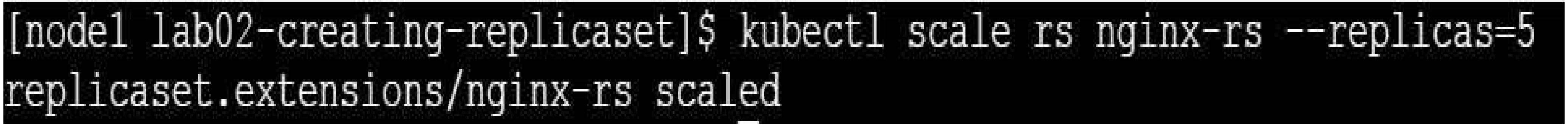


```
[node1 lab02-creating-replicaset]$ kubectl get rs
NAME        DESIRED    CURRENT    READY    AGE
nginx-rs    2          2          1        12m
[node1 lab02-creating-replicaset]$ kubectl get rs -o wide
NAME        DESIRED    CURRENT    READY    AGE    CONTAINERS    IMAGES    SELECTOR
nginx-rs    2          2          1        12m    nginx         nginx     app=nginx-app
```



```
[node1 lab02-creating-replicaset]$ kubectl describe rs
Name:           nginx-rs
Namespace:      default
Selector:       app=nginx-app
Labels:         <none>
Annotations:  <none>
Replicas:     2 current / 2 desired
Pods Status:  2 Running / 0 Waiting / 0 Succeeded / 0 Failed
Pod Template:
  Labels:  app=nginx-app
           tier=frontend
  Containers:
   nginx:
    Image:         nginx
    Port:          80/TCP
    Host Port:     0/TCP
    Environment:  <none>
    Mounts:        <none>
  Volumes:         <none>
Events:
  Type    Reason            Age   From                   Message
  ----    ------            ----  ----                   -------
  Normal  SuccessfulCreate  14m   replicaset-controller  Created pod: nginx-rs-jq74j
  Normal  SuccessfulCreate  14m   replicaset-controller  Created pod: nginx-rs-jl266
```

Scaling the Nginx Service



```
[node1 lab02-creating-replicaset]$ kubectl scale rs nginx-rs --replicas=5
replicaset.extensions/nginx-rs scaled
```

Deployment

Deployment

A Deployment controller provides declarative updates for Pods and ReplicaSets.

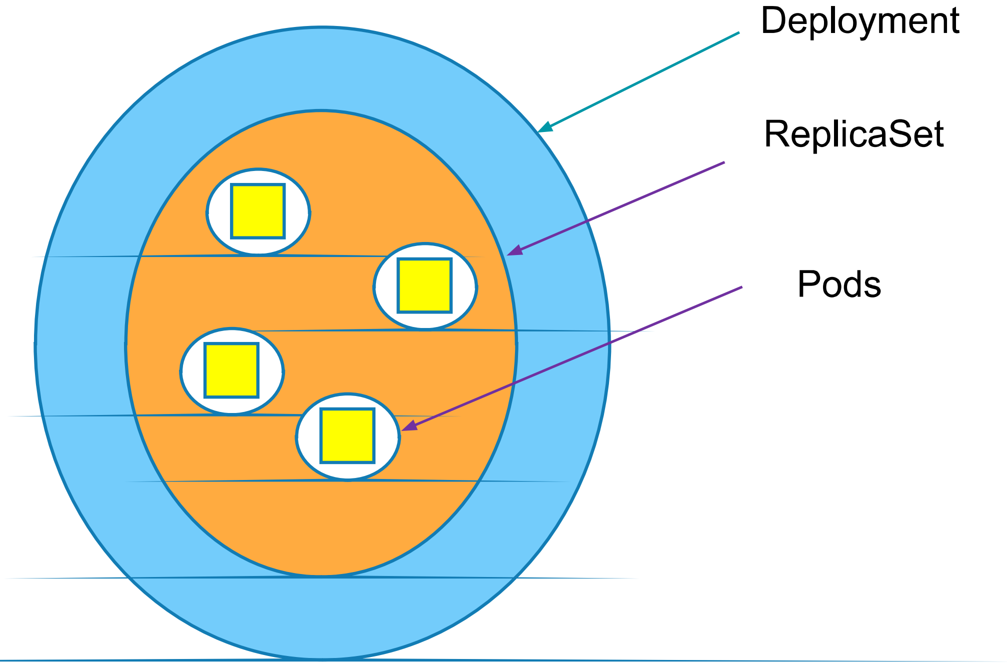
You describe a desired state in a Deployment, and the Deployment controller changes the actual state to the desired state at a controlled rate. You can define Deployments to create new ReplicaSets, or to remove existing Deployments and adopt all their resources with new Deployments.

How is it different from Replicaset?
ReplicaSet doesn’t provide features like updates & roll backs.

A Single Deployment Manifest File

Do we need to create 3 different manifest files for each on these?

Answer is “No”. We can create all 3 different objects using a single Deployment manifest file



Features of Deployment

- Multiple Replicas
- Upgrade
- Rollback
- Scale Up or Down
- Pause & Resume

Deployment Types - Recreate

- Recreate

How it works?

Shutting down version A and then making sure, version A is turned off...
then bringing up version B.

Demerits:

During this, there will be a downtime of the service.

Easy to setup.

- Blue/Green

Deployment Type – Rolling Updates

- RollingUpdate(Ramped or Incremental)

- Default updating strategy in Kubernetes.
- It can take sometime for a complete update process

How it works?

Slowly rollout a version of app by replacing instances one after the other until all the instances are successfully rolled out.
Assume that there are 10 instances of version A which is running behind the LB. Then update strategy starts with one instance of version B is deployed When version B is ready to accept traffic, one instance of version A is removed from the pool

Deployment Type - Canary

- Canary

- Ideal deployment method for someone who want to test newer version before it is deployed 100%.

How it works?

This method is all about gradually shifting production traffic from version A to version B.

Lets imagine that there are about 10 instances of app version A running inside a cluster. You use Canary deployment when you dont want to upgrade all of your instances. Let's say you upgraded your 2 instances of ver A to version B then do some testing. If test results are good, then you upgrade remaining 8 instances to version B. Say, your version B is ready, then you completely shut down version A.

Deployment Type – Blue Green

- Blue Green

- Instance roll out and roll back.

How it works?

Using this method, version B(which is GREEN) is deployed along side version A(which is BLUE) with exactly same amount of instances.
After testing new version with all the requirement, the traffic is switched from version A to version B at the LB level.

Demo - Deployment

- Manifest file

- Deploy app using RS

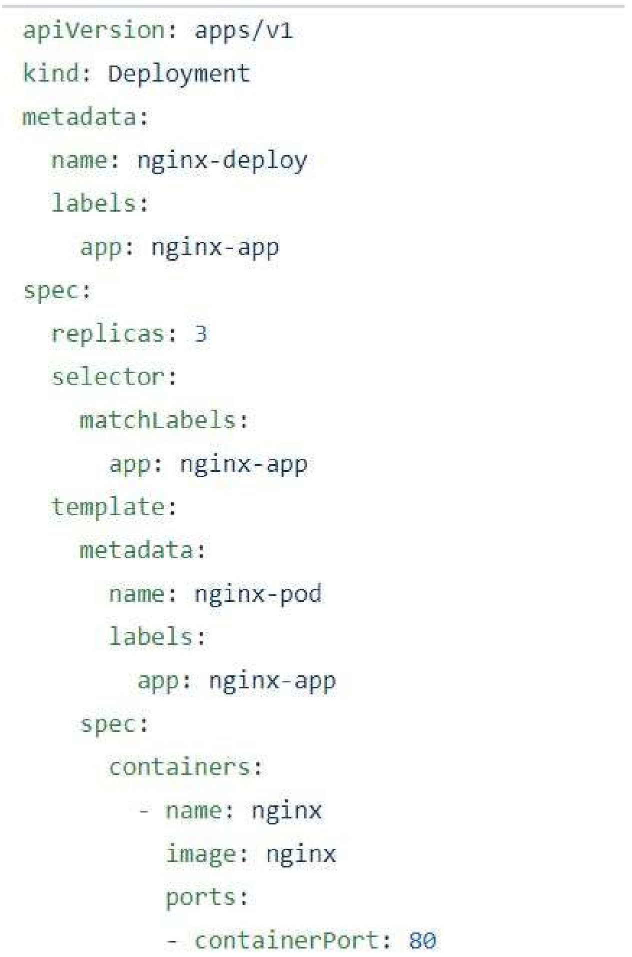
- Display and validate RS

- Test – Node Fails

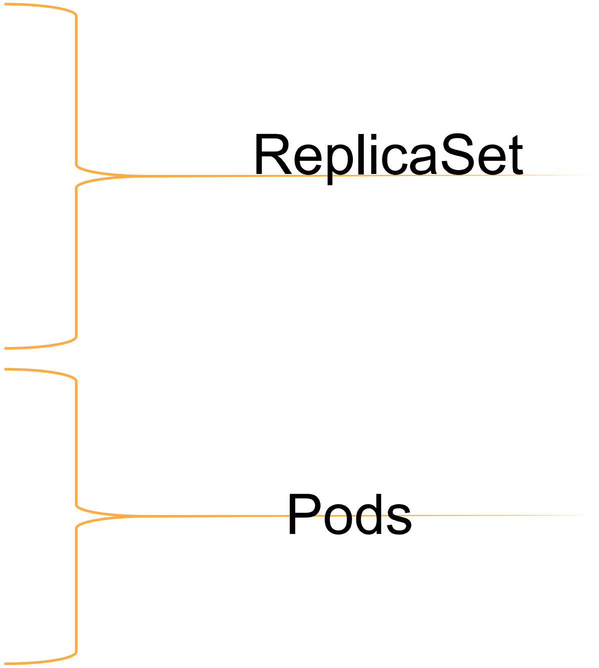
- Test – Scale Up

- Test – Scale Down

Deployment Manifest File



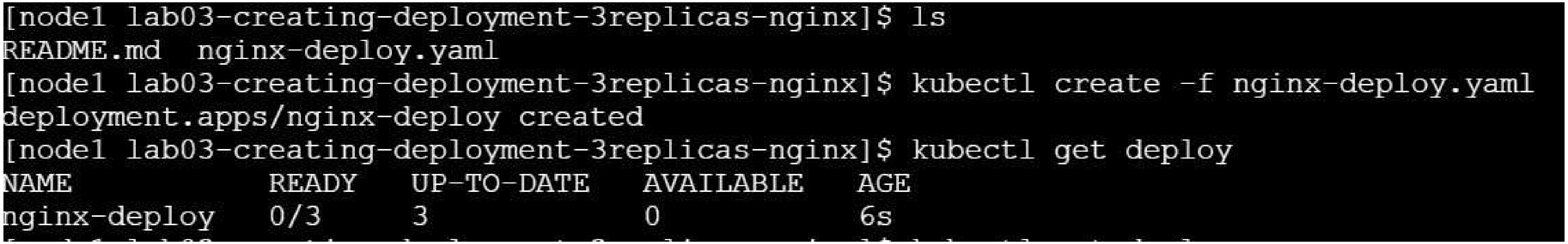
```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: nginx-deploy
  labels:
    app: nginx-app
spec:
  replicas: 3
  selector:
    matchLabels:
      app: nginx-app
  template:
    metadata:
      name: nginx-pod
      labels:
        app: nginx-app
    spec:
      containers:
        - name: nginx
          image: nginx
          ports:
          - containerPort: 80
```



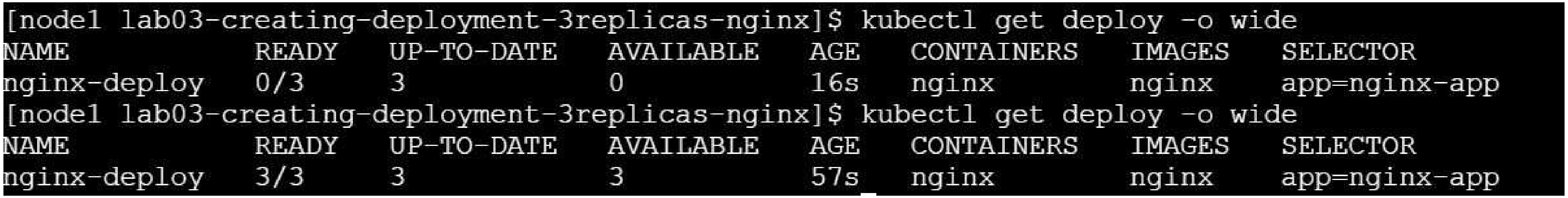
ReplicaSet

Pods

Deployment

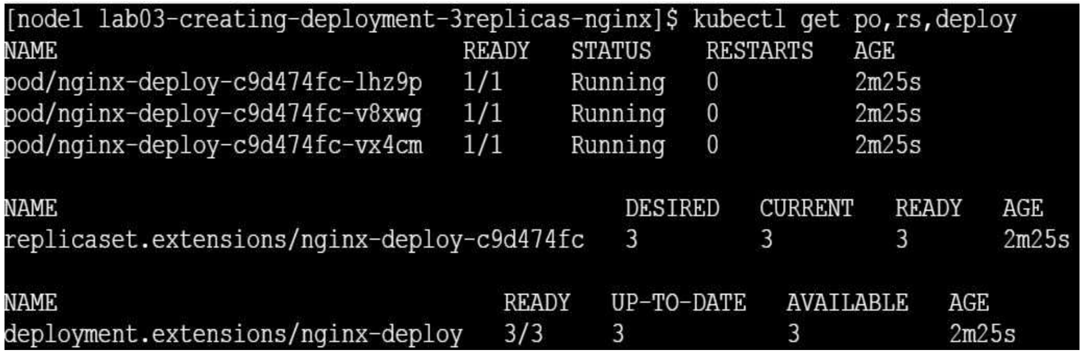


```
[node1 lab03-creating-deployment-3replicas-nginx]$ ls
README.md  nginx-deploy.yaml
[node1 lab03-creating-deployment-3replicas-nginx]$ kubectl create -f nginx-deploy.yaml
deployment.apps/nginx-deploy created
[node1 lab03-creating-deployment-3replicas-nginx]$ kubectl get deploy
NAME             READY   UP-TO-DATE   AVAILABLE   AGE
nginx-deploy     0/3     3            0           6s
```

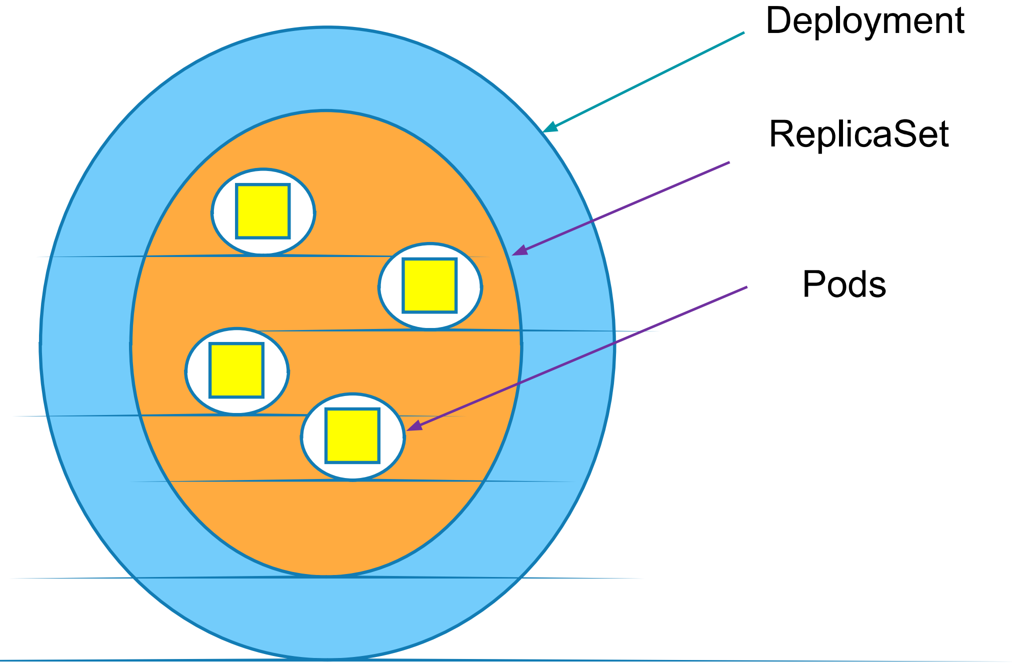


```
[node1 lab03-creating-deployment-3replicas-nginx]$ kubectl get deploy -o wide
NAME            READY   UP-TO-DATE   AVAILABLE   AGE   CONTAINERS   IMAGES   SELECTOR
nginx-deploy    0/3     3            0           16s   nginx        nginx    app=nginx-app
[node1 lab03-creating-deployment-3replicas-nginx]$ kubectl get deploy -o wide
NAME            READY   UP-TO-DATE   AVAILABLE   AGE   CONTAINERS   IMAGES   SELECTOR
nginx-deploy    3/3     3            3           57s   nginx        nginx    app=nginx-app
```

Deployment => Pods + ReplicaSet



```
[node1 lab03-creating-deployment-3replicas-nginx]$ kubectl get po,rs,deploy
NAME                              READY   STATUS    RESTARTS   AGE
pod/nginx-deploy-c9d474fc-lhz9p   1/1     Running   0          2m25s
pod/nginx-deploy-c9d474fc-v8xwg   1/1     Running   0          2m25s
pod/nginx-deploy-c9d474fc-vx4cm   1/1     Running   0          2m25s

NAME                                          DESIRED   CURRENT   READY   AGE
replicaset.extensions/nginx-deploy-c9d474fc   3         3         3       2m25s

NAME                                 READY   UP-TO-DATE   AVAILABLE   AGE
deployment.extensions/nginx-deploy   3/3     3            3           2m25s
```

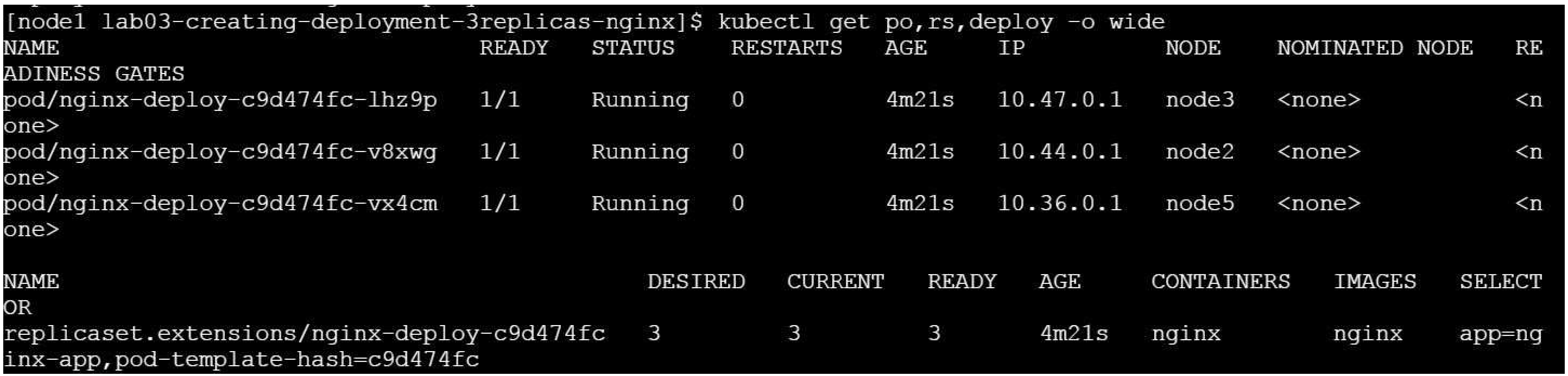


Deployment

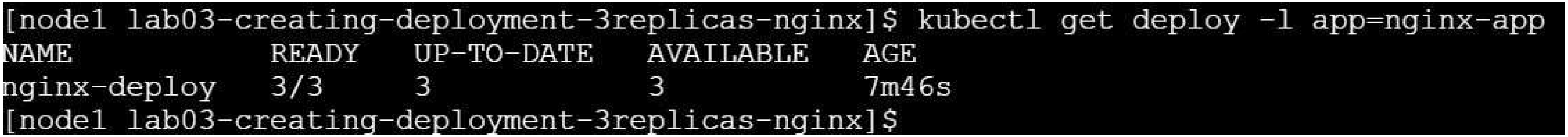
ReplicaSet

Pods

3 Instances of same Nginx Apps running in the form of Pods

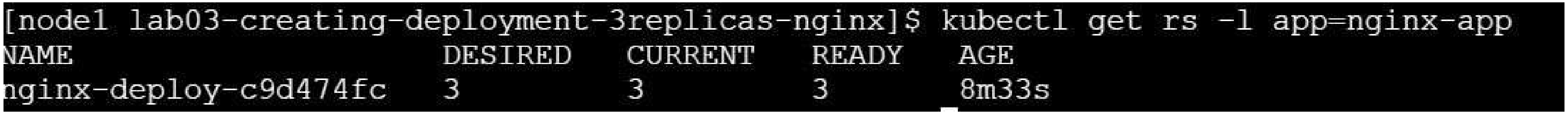


```
[node1 lab03-creating-deployment-3replicas-nginx]$ kubectl get po,rs,deploy -o wide
NAME                                READY    STATUS     RESTARTS    AGE      IP           NODE     NOMINATED NODE    RE
ADINESS GATES
pod/nginx-deploy-c9d474fc-lhz9p     1/1      Running    0           4m21s    10.47.0.1    node3    <none>            <n
one>
pod/nginx-deploy-c9d474fc-v8xwg     1/1      Running    0           4m21s    10.44.0.1    node2    <none>            <n
one>
pod/nginx-deploy-c9d474fc-vx4cm     1/1      Running    0           4m21s    10.36.0.1    node5    <none>            <n
one>

NAME                                           DESIRED    CURRENT    READY    AGE      CONTAINERS    IMAGES    SELECT
OR
replicaset.extensions/nginx-deploy-c9d474fc    3          3          3        4m21s    nginx         nginx     app=ng
inx-app,pod-template-hash=c9d474fc
```



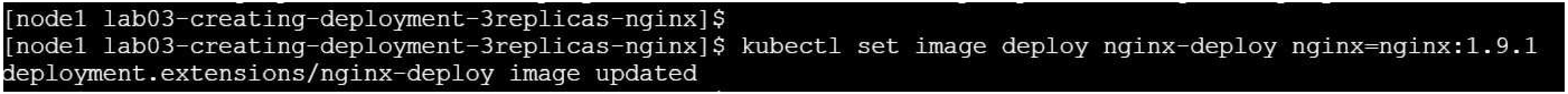
```
[node1 lab03-creating-deployment-3replicas-nginx]$ kubectl get deploy -l app=nginx-app
NAME           READY   UP-TO-DATE   AVAILABLE   AGE
nginx-deploy   3/3     3            3           7m46s
[node1 lab03-creating-deployment-3replicas-nginx]$
```

3 Instances of same Nginx Apps running in the form of Pods

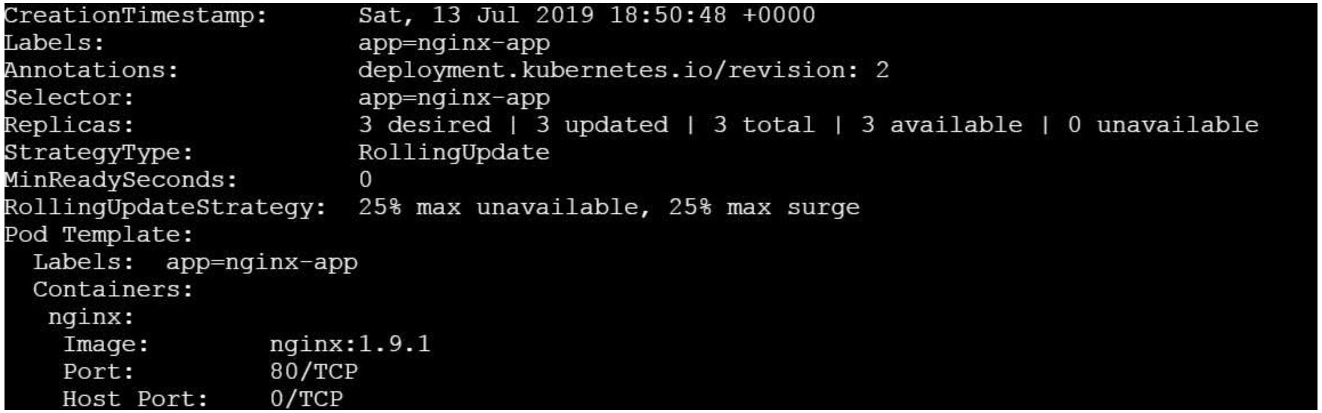


```
[node1 lab03-creating-deployment-3replicas-nginx]$ kubectl get rs -l app=nginx-app
NAME                        DESIRED    CURRENT    READY    AGE
nginx-deploy-c9d474fc       3          3          3        8m33s
```

Update Deployment

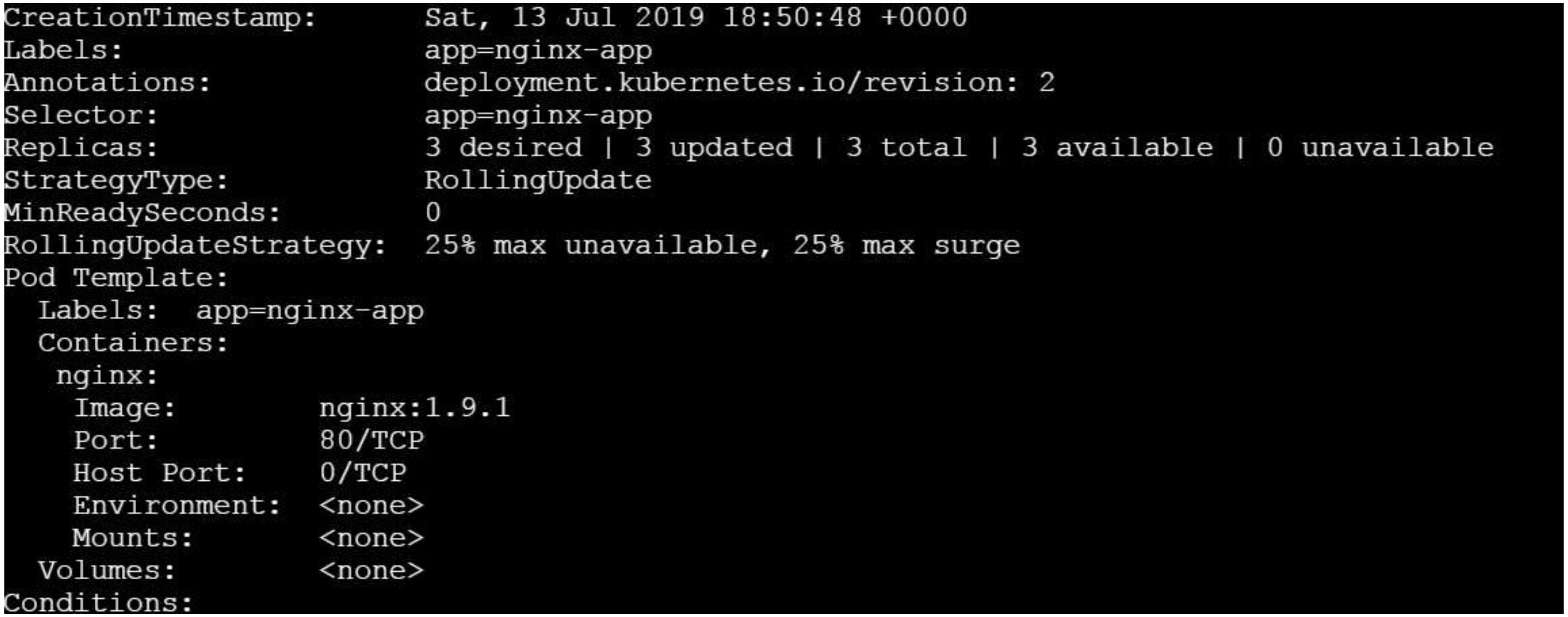


```
[node1 lab03-creating-deployment-3replicas-nginx]$
[node1 lab03-creating-deployment-3replicas-nginx]$ kubectl set image deploy nginx-deploy nginx=nginx:1.9.1
deployment.extensions/nginx-deploy image updated
```

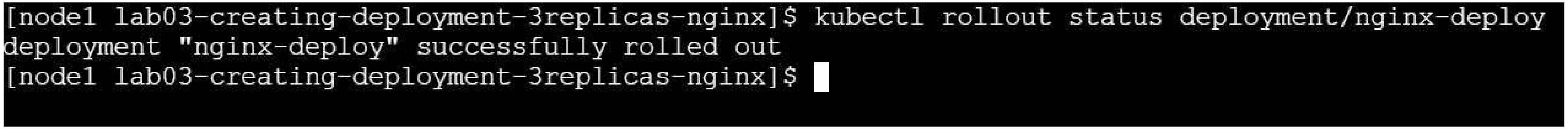


```
CreationTimestamp:      Sat, 13 Jul 2019 18:50:48 +0000
Labels:                 app=nginx-app
Annotations:            deployment.kubernetes.io/revision: 2
Selector:               app=nginx-app
Replicas:               3 desired | 3 updated | 3 total | 3 available | 0 unavailable
StrategyType:           RollingUpdate
MinReadySeconds:        0
RollingUpdateStrategy:  25% max unavailable, 25% max surge
Pod Template:
  Labels:  app=nginx-app
  Containers:
   nginx:
    Image:        nginx:1.9.1
    Port:         80/TCP
    Host Port:    0/TCP
```

3 Instances of same Nginx Apps running in the form of Pods

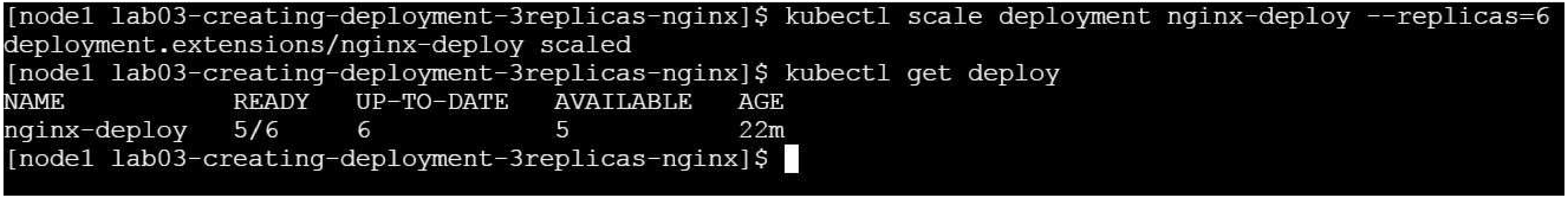


```
CreationTimestamp:      Sat, 13 Jul 2019 18:50:48 +0000
Labels:                 app=nginx-app
Annotations:            deployment.kubernetes.io/revision: 2
Selector:               app=nginx-app
Replicas:               3 desired | 3 updated | 3 total | 3 available | 0 unavailable
StrategyType:           RollingUpdate
MinReadySeconds:        0
RollingUpdateStrategy:  25% max unavailable, 25% max surge
Pod Template:
  Labels:  app=nginx-app
  Containers:
   nginx:
    Image:        nginx:1.9.1
    Port:         80/TCP
    Host Port:    0/TCP
    Environment:  <none>
    Mounts:       <none>
  Volumes:        <none>
Conditions:
```

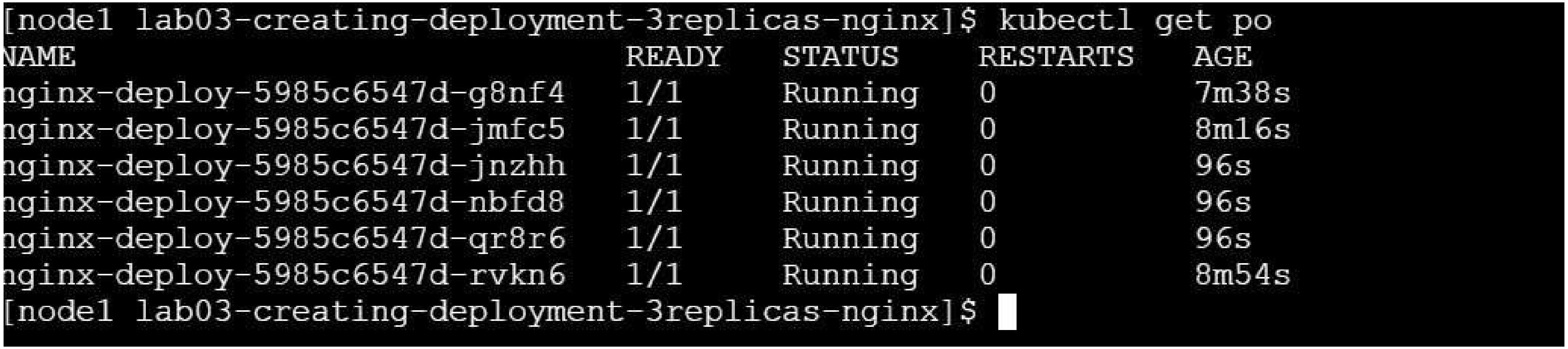


```
[node1 lab03-creating-deployment-3replicas-nginx]$ kubectl rollout status deployment/nginx-deploy
deployment "nginx-deploy" successfully rolled out
[node1 lab03-creating-deployment-3replicas-nginx]$
```

Scaling up

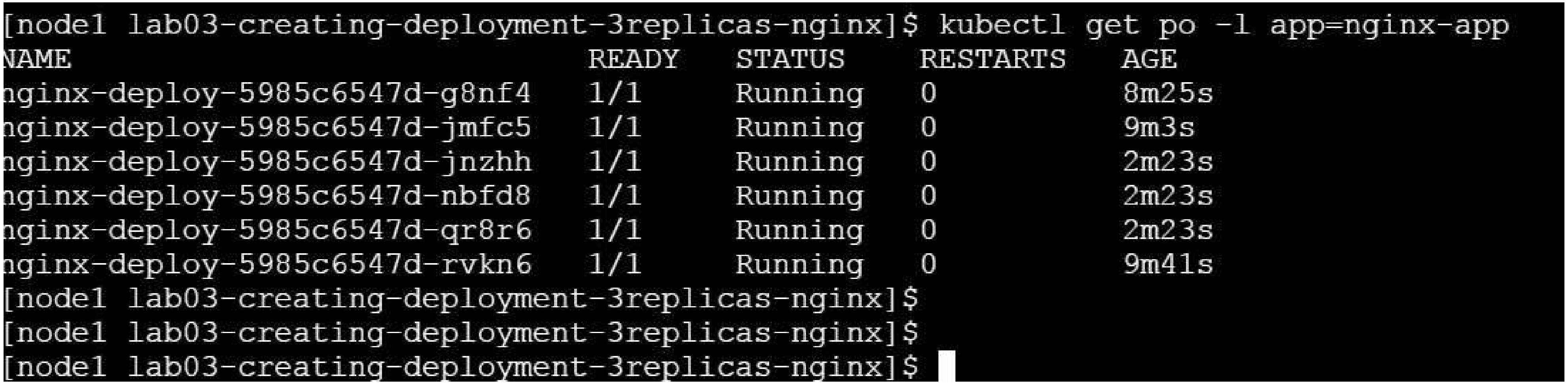


```
[node1 lab03-creating-deployment-3replicas-nginx]$ kubectl scale deployment nginx-deploy --replicas=6
deployment.extensions/nginx-deploy scaled
[node1 lab03-creating-deployment-3replicas-nginx]$ kubectl get deploy
NAME           READY   UP-TO-DATE   AVAILABLE   AGE
nginx-deploy   5/6     6            5           22m
[node1 lab03-creating-deployment-3replicas-nginx]$
```



```
[node1 lab03-creating-deployment-3replicas-nginx]$ kubectl get po
NAME                            READY   STATUS    RESTARTS   AGE
nginx-deploy-5985c6547d-g8nf4   1/1     Running   0          7m38s
nginx-deploy-5985c6547d-jmfc5   1/1     Running   0          8m16s
nginx-deploy-5985c6547d-jnzhh   1/1     Running   0          96s
nginx-deploy-5985c6547d-nbfd8   1/1     Running   0          96s
nginx-deploy-5985c6547d-qr8r6   1/1     Running   0          96s
nginx-deploy-5985c6547d-rvkn6   1/1     Running   0          8m54s
[node1 lab03-creating-deployment-3replicas-nginx]$
```

Listing Pods by Labels



```
[node1 lab03-creating-deployment-3replicas-nginx]$ kubectl get po -l app=nginx-app
NAME                               READY     STATUS     RESTARTS    AGE
nginx-deploy-5985c6547d-g8nf4      1/1       Running    0           8m25s
nginx-deploy-5985c6547d-jmfc5      1/1       Running    0           9m3s
nginx-deploy-5985c6547d-jnzhh      1/1       Running    0           2m23s
nginx-deploy-5985c6547d-nbfd8      1/1       Running    0           2m23s
nginx-deploy-5985c6547d-qr8r6      1/1       Running    0           2m23s
nginx-deploy-5985c6547d-rvkn6      1/1       Running    0           9m41s
[node1 lab03-creating-deployment-3replicas-nginx]$
[node1 lab03-creating-deployment-3replicas-nginx]$
[node1 lab03-creating-deployment-3replicas-nginx]$ 
```

Services

Services

- Imagine that, you have been asked to deploy web app

- How does this frontend web app exposed to outside world?
- How do front end app connected to backend database?
- How do we resolve Pod IP changes, when they die?

Agenda

- Why do we need services?
- What is Service?
- Type of Services

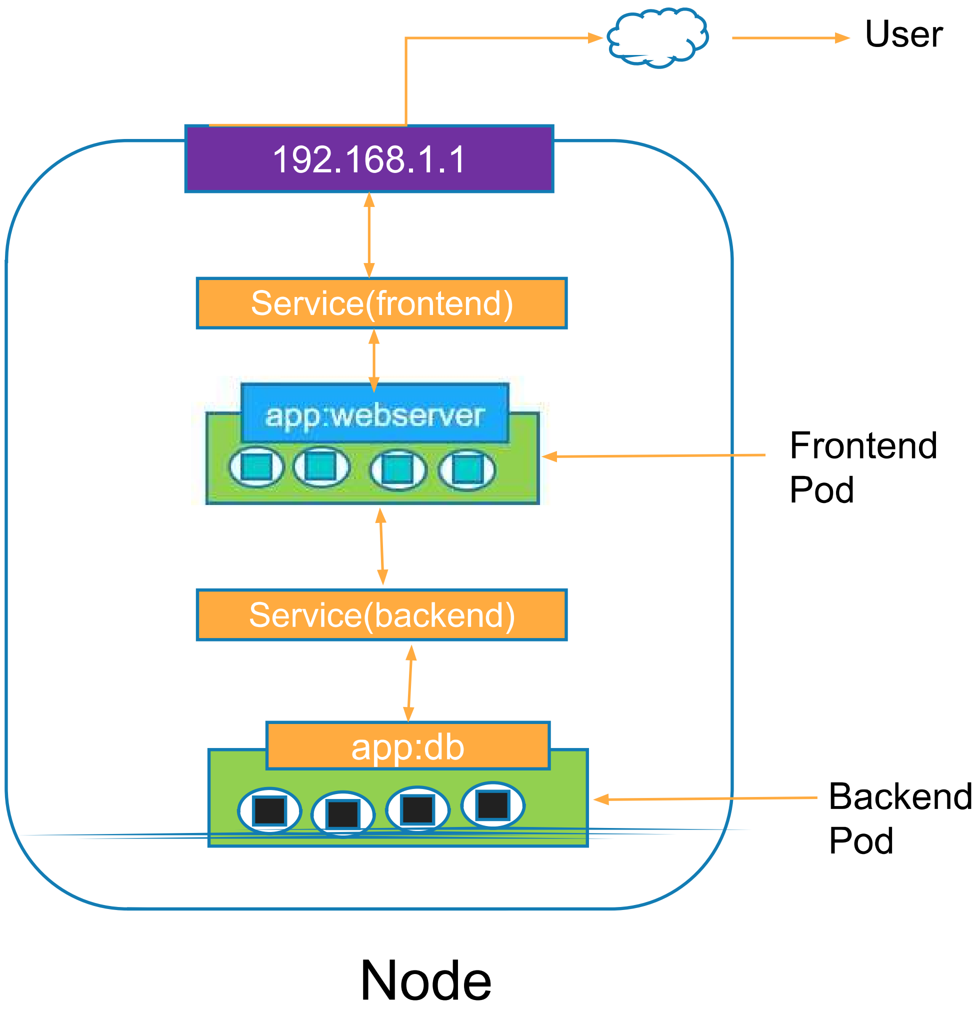
Services

<u>Frontend Service:</u>

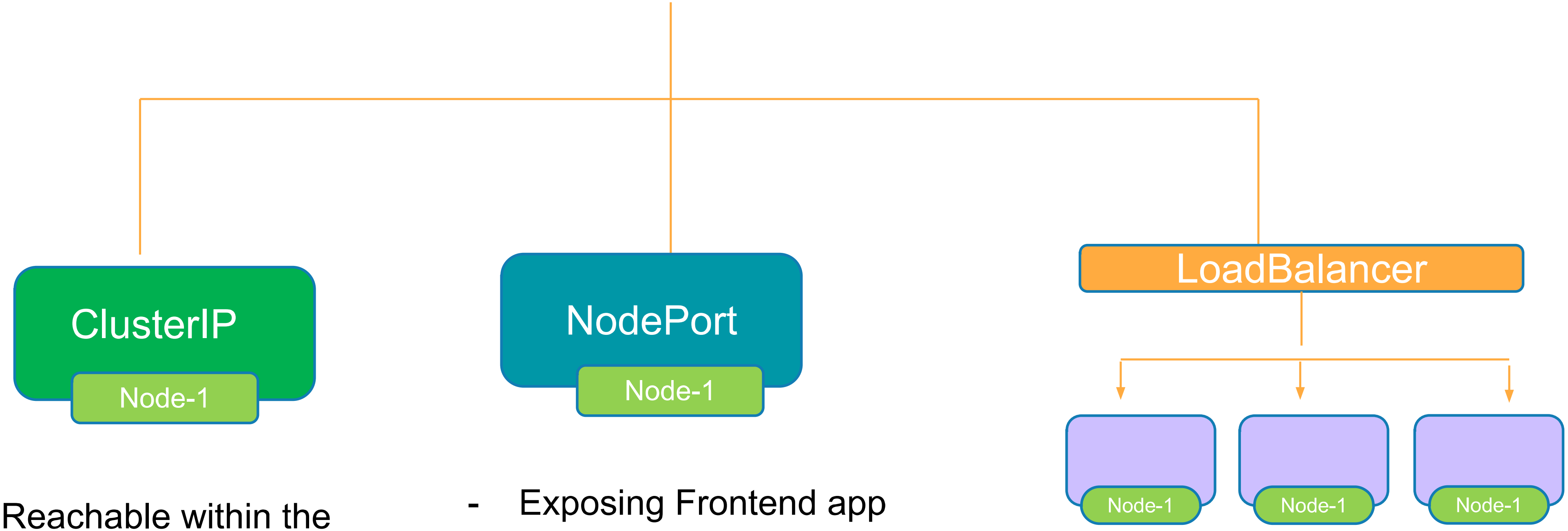
A Service which stays between user and frontend pod

<u>Backend Service:</u>

A Service which communicate between frontend Pod and backend end



Types of Services



- Reachable within the cluster.
- Connects Frontend Pods to Backend Pods

- Exposing Frontend app to external world

- Equally distribute the loads

Services: ClusterIP

Services

- Imagine you need to deploy one full fledge app which consists of frontend app & backend app

- How can we restrict access of backend database to only within the kubernetes cluster?