KUBERNETES

FUNDAMENTALS

About Me

My name is Kirk Patrick, and I have 17+ years of experience in the technology industry, including:

- 10 years as a Software Engineer
- 4 years as a DevOps Engineer
- 3 years as a Solution Architect

Academic Background

- Technical Degree in Accounting — Rui Barbosa School
- Bachelor's Degree in Systems Analysis and Development — FIAP
- Professional Baccalaureate in Data Science — Datatech Florida
- Postgraduate Degree in Machine Learning — FIAP
- Currently pursuing a Postgraduate Degree in Astronomy with an emphasis in Planetary Geology - FGE São Paulo / Space Today

Additional Information

- Speaker at Campus Party Brazil (Goiânia Edition), my hometown.
- Guest Mentor for NASA events in Brazil (NASA Space Apps Challenge)
- Certified Professional in AWS, Azure, and GCP (Google Cloud Platform).

Contact

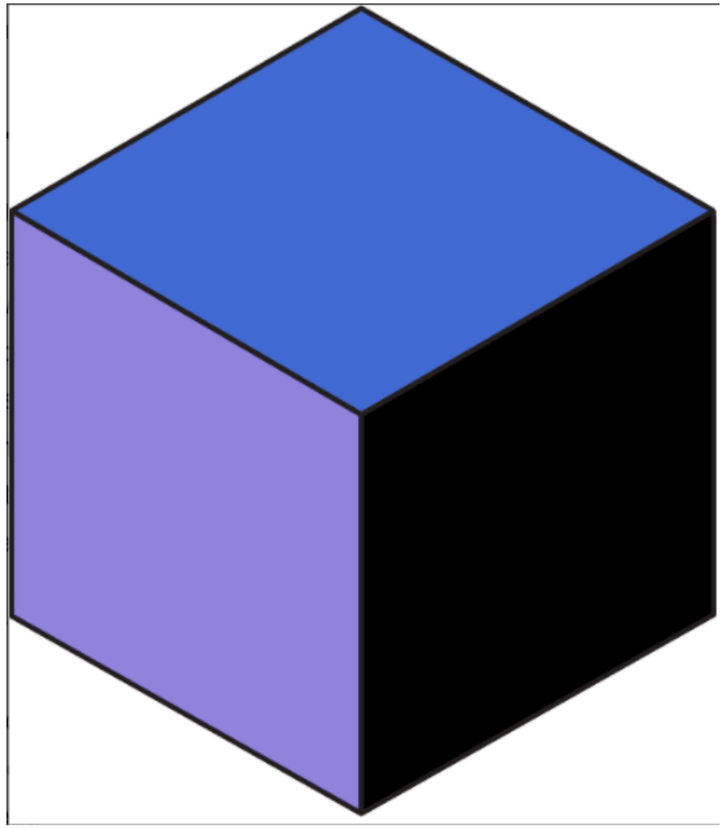
- LinkedIn → https://www.linkedin.com/in/kirkgo/

From Monolith to Microservices – The Beginning

How it All Started

The journey of deployment architectures began with monoliths—single, unified applications that were simple to deploy and manage.

- Monolith Architecture
  - Easy to monitor and deploy—one package, one team.
  - Deployment was infrequent and manually handled by operations.
  - Failures were resolved by manually shifting workloads to healthy servers.
  - Limitations
    - Difficult to scale components independently.
    - Even small changes required redeploying the entire application.
    - Poor modularity often led to tightly coupled, hard-to-maintain designs.



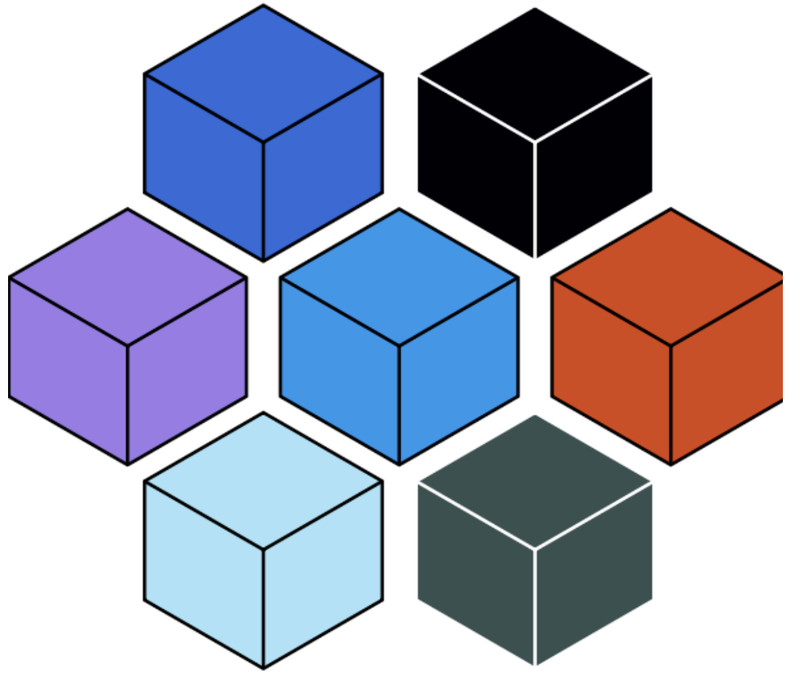
Enter Microservices – More Power, More Complexity

Microservice-based Architectures

As systems evolved, monoliths gave way to microservices—independent, small services that could be developed, deployed, and scaled separately.

- Advantages
  - Services are independently deployable and scalable.
  - Teams gained autonomy, often merging development and operations (DevOps).

- Challenges
  - Managing hundreds or thousands of services is complex.
  - Hosting each service on its own machine is cost-prohibitive.
  - Services must coexist on shared infrastructure, often with conflicting dependencies and resource needs.



Introduction to Kubernetes

Why Do We Need Kubernetes?

After packaging applications as container images, we need a system to run and manage them reliably—this is where Kubernetes comes in.

- **What Kubernetes Does**
  - Groups multiple machines and exposes them as a single compute resource.
  - Acts like an OS for the datacenter: abstracts away machine-level details.
  - Users simply declare their needs; Kubernetes figures out how to meet them.

- **How It Works**
  - You don’t specify where to run your app—just what you want (e.g., "2 replicas, 2 CPU cores, 5 GB RAM").
  - Kubernetes handles deployment, resource allocation, restarts on failure, and isolation between applications.

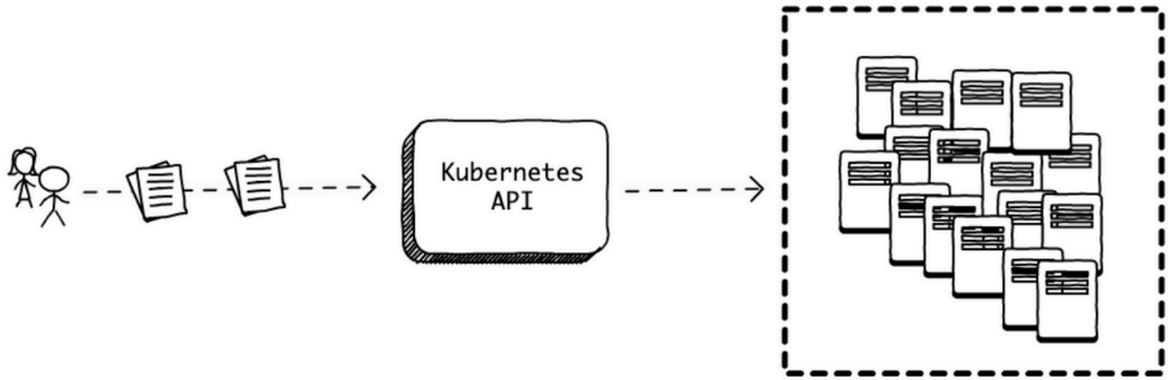
Kubernetes – Key Features

What Makes Kubernetes Powerful?

- Declarative API
  - Define desired state; Kubernetes maintains it automatically.

- Resource Management
  - Ensures applications stay within their defined limits.
  - Prevents one app from impacting others on shared infrastructure.

- Built-in Capabilities
  - Self-healing: Automatically restarts crashed apps.
  - Load balancing: Distributes traffic across replicas.
  - Networking: Exposes services internally or externally.
  - Configuration and Secrets Management: Secure and flexible handling.
  - Scheduled and One-off Tasks: Run jobs on demand or via cron-style schedules.



Deploying Our First Application

Let’s deploy a simple app (nginx) to see how Kubernetes works in practice.

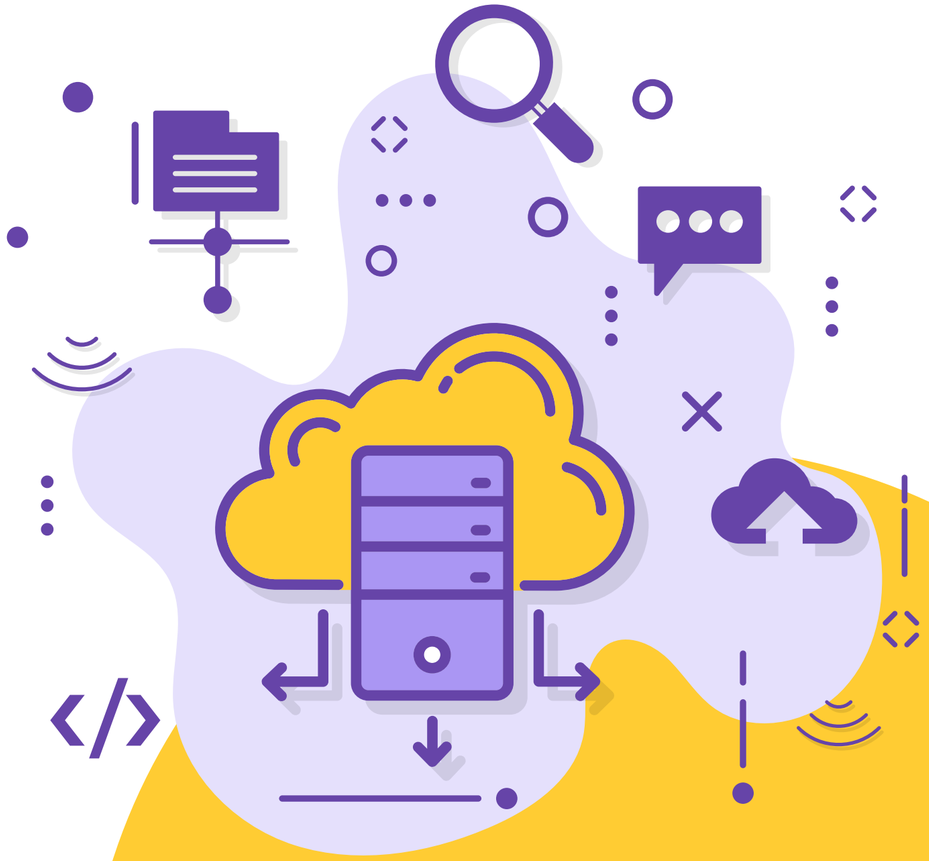
- Kubernetes is Declarative
  - We describe what we want, not how to do it.
  - This is done using a YAML manifest file

nginx.yaml

k8s-fundamentals > 001-first-deploy > nginx.yaml > {} spec > [ ] containers > {} 0

```yaml
apiVersion: v1
kind: Pod
metadata:
  name: nginx
spec:
  containers:
    - name: nginx-container
      image: nginx

```



Deploying Our First Application

Deployment Command

Using the CLI tool kubectl, we apply our manifest:

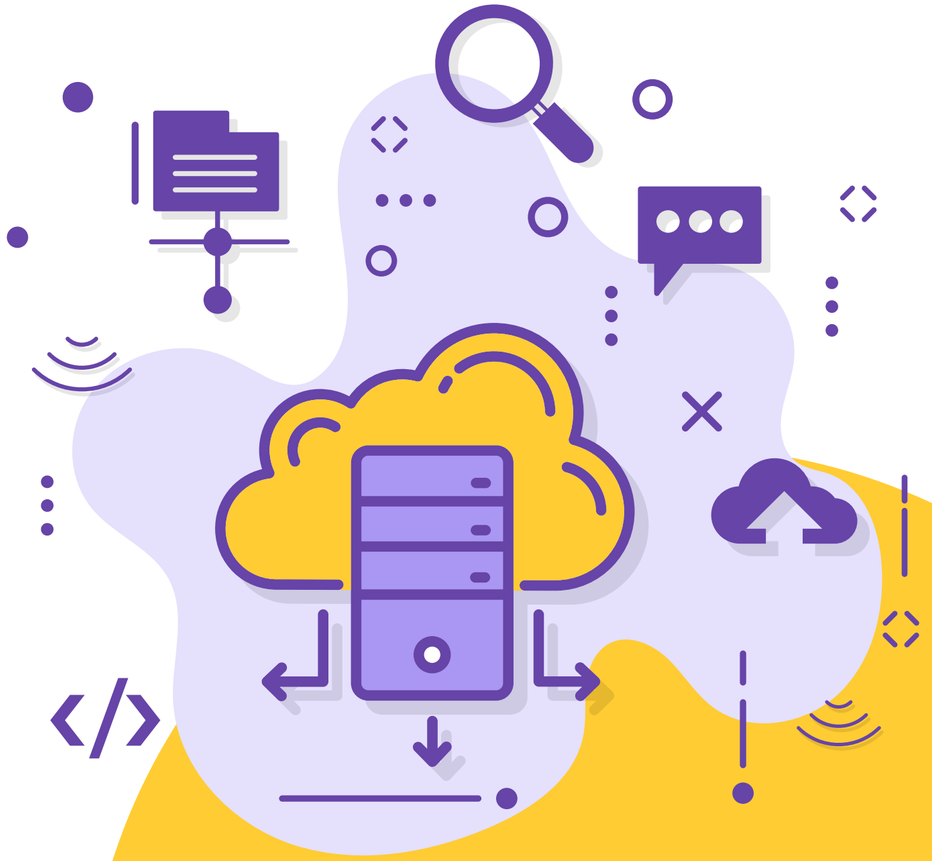
- *kubectl apply -f nginx.yaml*

Result

- This tells Kubernetes to create and run an nginx pod (containerized app).
  - Response: *pod/nginx created*

Checking if Nginx is Running

- Monitor Pod Status
  - Run this command to check the pod:
    - *kubectl get pods*
      - Status will first show as ContainerCreating while the image downloads.
      - Once ready, the status should be Running.



Accessing the Application

Viewing the Nginx Welcome Page

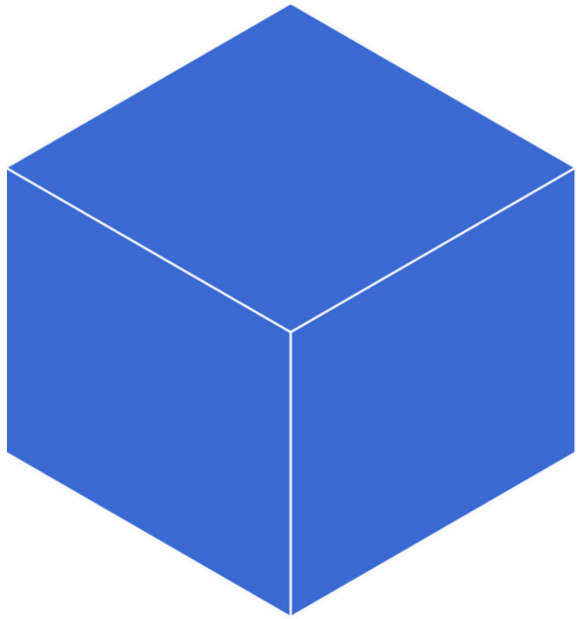
- Port Forwarding
  - To access the app from your browser, use:
    - kubectl port-forward --address 0.0.0.0 nginx 3000:80
      - Forwards local port 3000 to container port 80.
      - This makes nginx available at http://localhost:3000.

  - Another way of port-foward:
    - *kubectl port-forward nginx 3000:80*

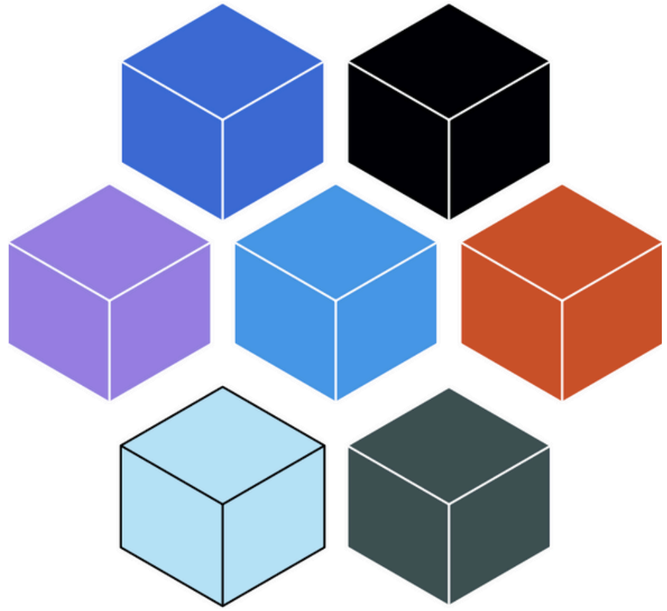
Kubernetes Cluster

When we say “cluster,” we are talking about the two main components of Kubernetes:

- The master node
- Worker nodes



Master Node



Worker Node

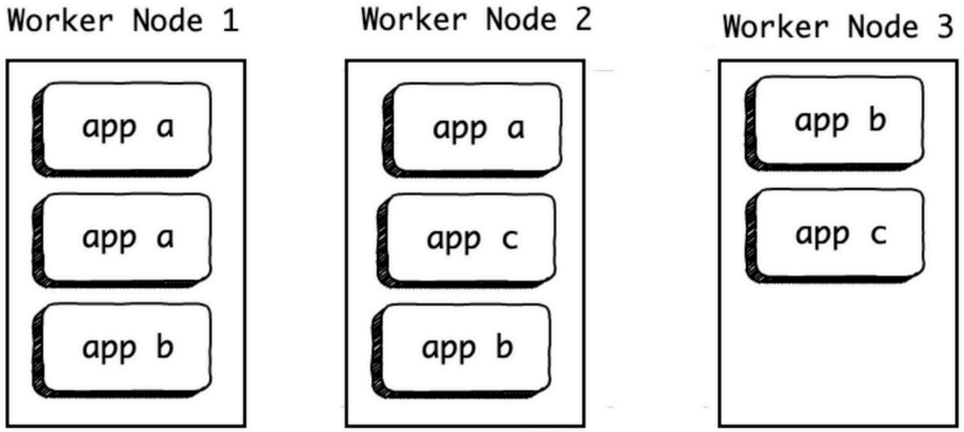
Understanding Worker Nodes

What Are Worker Nodes?

Worker nodes are the machines (virtual or physical) in a Kubernetes cluster that actually run your application workloads—such as containers and pods.

- Each node includes the necessary components to run containers, including a container runtime (like containerd or Docker), a kubelet agent, and a network proxy.

- The Kubernetes control plane (not the worker) tells these nodes what to do.



Understanding Worker Nodes

Key Concepts:

- You Rarely Interact With Them Directly
  - Developers and operators don't need to SSH into nodes or manually manage them.
  - Kubernetes manages deployment, scaling, and health checks automatically.
  - This abstraction makes nodes easily replaceable if they fail.

- Multiple Applications per Node
  - A single worker node can host multiple applications (pods) at the same time, as long as resource limits (CPU, memory) are respected.
  - Kubernetes schedules pods efficiently across available nodes.

- One Application, Many Replicas
  - An application can be replicated for scalability or high availability.
  - These replicas are distributed across multiple nodes to prevent a single point of failure.

Understanding Master Node (Control Plane)

What Is the Master Node?

The master node, also known as the control plane, is the central brain of a Kubernetes cluster. It's responsible for orchestrating and managing everything that happens in the cluster.

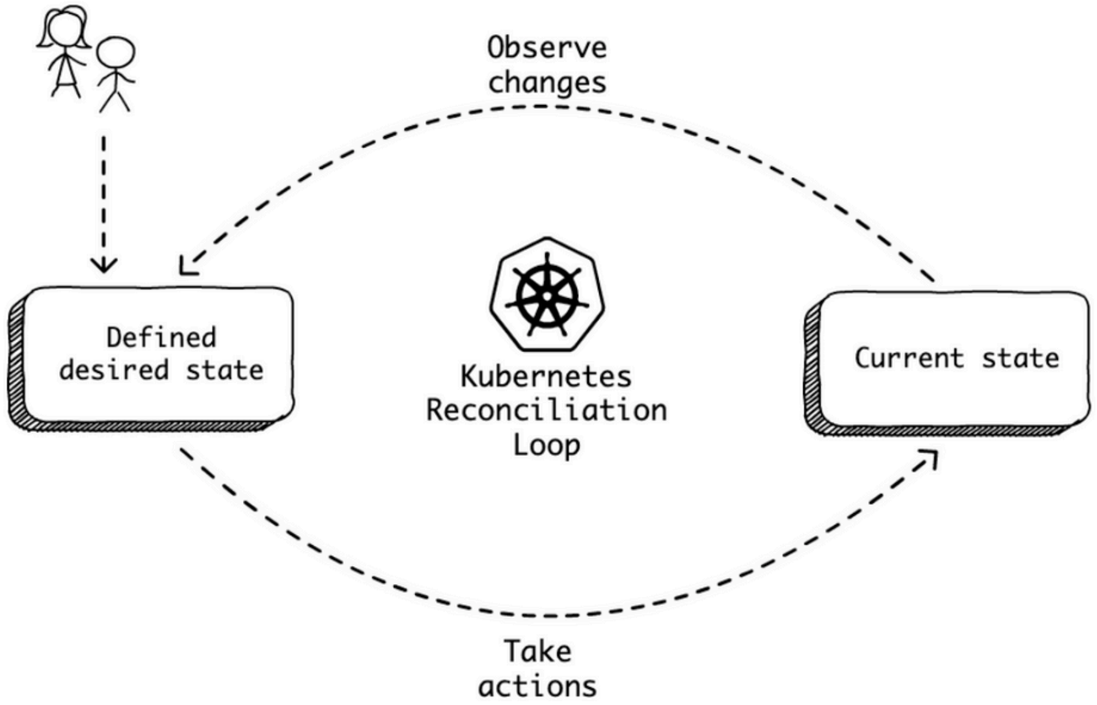
How It Works

- You Declare the Desired State
  - You describe what you want (e.g., "I need 3 nginx pods") in a YAML manifest file.
  - You then send this file to Kubernetes using tools like *kubectl*.
- The Control Plane Takes Over
  - The master node receives your request and decides how to make it happen.
  - It doesn’t just execute commands—it thinks:
  - "What’s the current situation, and what should it look like?"
- The Reconciliation Loop
  - Kubernetes continuously compares the current state of the cluster with the desired state you defined.
  - If something goes out of sync (e.g., a pod crashes or is deleted), Kubernetes automatically takes action to restore the desired state.

Understanding Master Node (Control Plane)

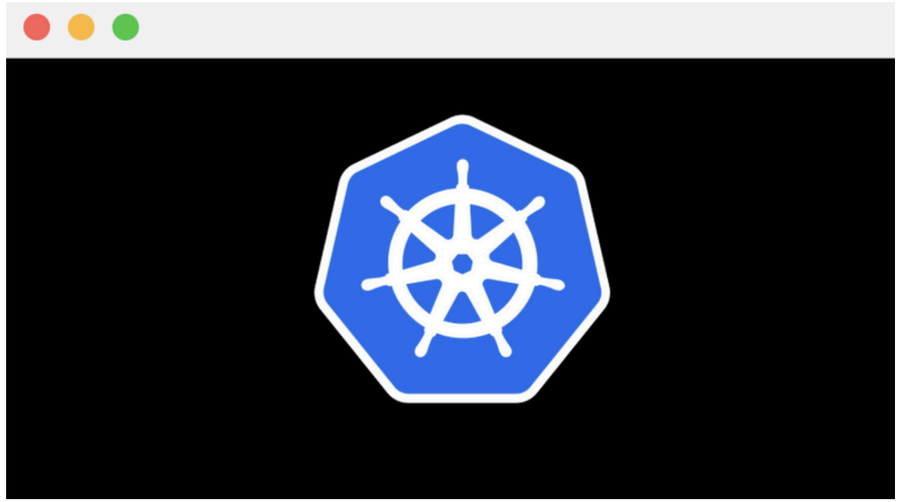
How It Works

- The Reconciliation Loop
  - Kubernetes continuously compares the current state of the cluster with the desired state you defined.
  - If something goes out of sync (e.g., a pod crashes or is deleted), Kubernetes automatically takes action to restore the desired state.



Introduction to *kubectl*

kubectl is the Kubernetes CLI, and it will be our main interface with Kubernetes for most of the time. It is the tool we use to send information to our cluster and to get information from it.



There are two main ways to use *kubectl*:

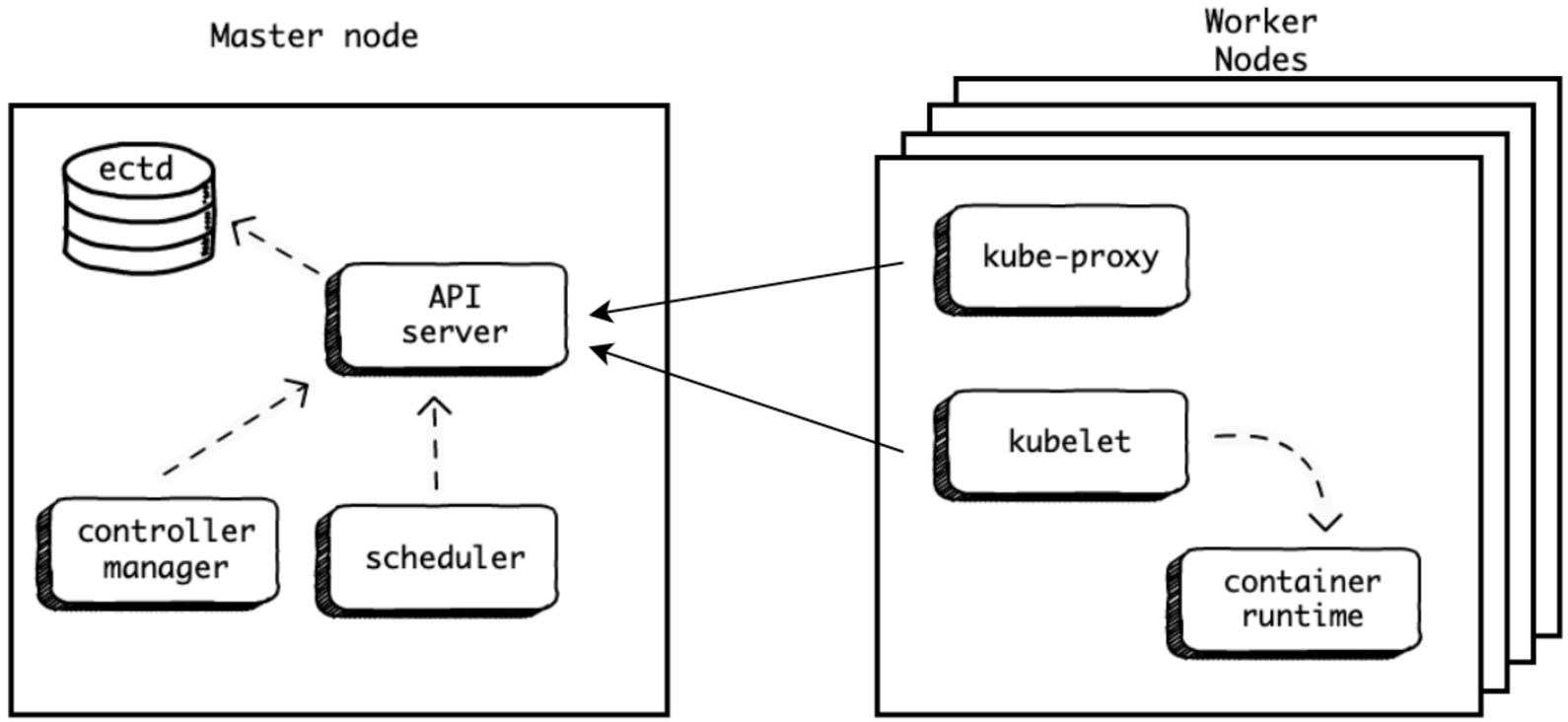
- Declarative way
- Imperative way

We use it declaratively when we create a manifest that defines what we want and just send that to our cluster that will then find a way to make that happen.

We use it imperatively when we give our cluster specific orders telling it how to do what we want. The imperative usage of kubectl is fine for development or to quickly test things out.

Kubernetes Architecture

There are multiple subcomponents running in the master and worker nodes.



Kubernetes Architecture – Control Plane (Master Node)

The control plane (often called the master node) is responsible for managing the entire Kubernetes cluster. It handles scheduling, decision-making, and maintaining the desired state.

- API Server
  - Acts as the entry point to the cluster. All commands (e.g., via kubectl) go through the API server.
- etcd
  - A key-value store that holds the cluster state—what's running, configurations, and desired specifications.
- Scheduler
  - Chooses which worker node should run a new pod, based on resources, constraints, and rules.
- Controller Manager
  - Watches the state of the cluster and takes corrective actions if the actual state doesn't match the desired state (e.g., restarts failed pods).

These components constantly communicate to keep the cluster stable, healthy, and in sync with your specifications.

Kubernetes Architecture – Worker Nodes

Worker nodes are the machines that host and execute your application containers. Each worker has several key components:

- Kubelet
  - Agent that talks to the API server and manages pods on the node. It ensures containers are running as instructed.

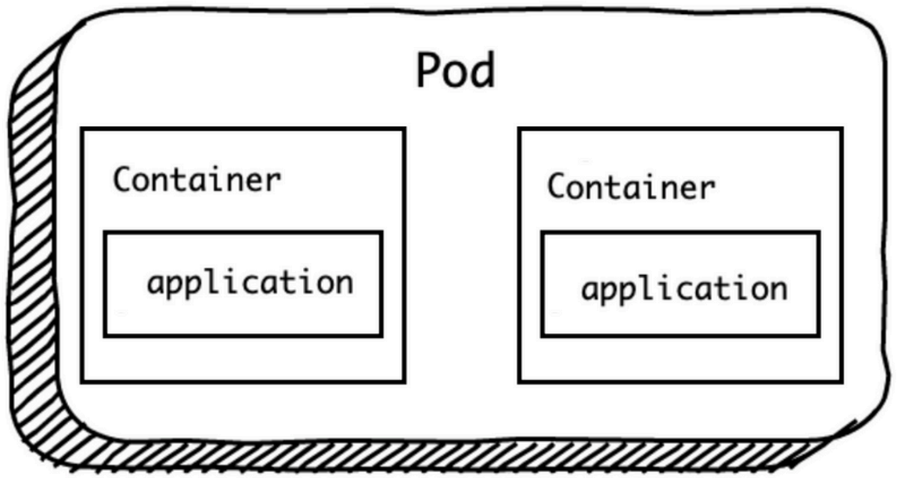
- Container Runtime
  - The engine (e.g., containerd, Docker) that actually runs the containers.

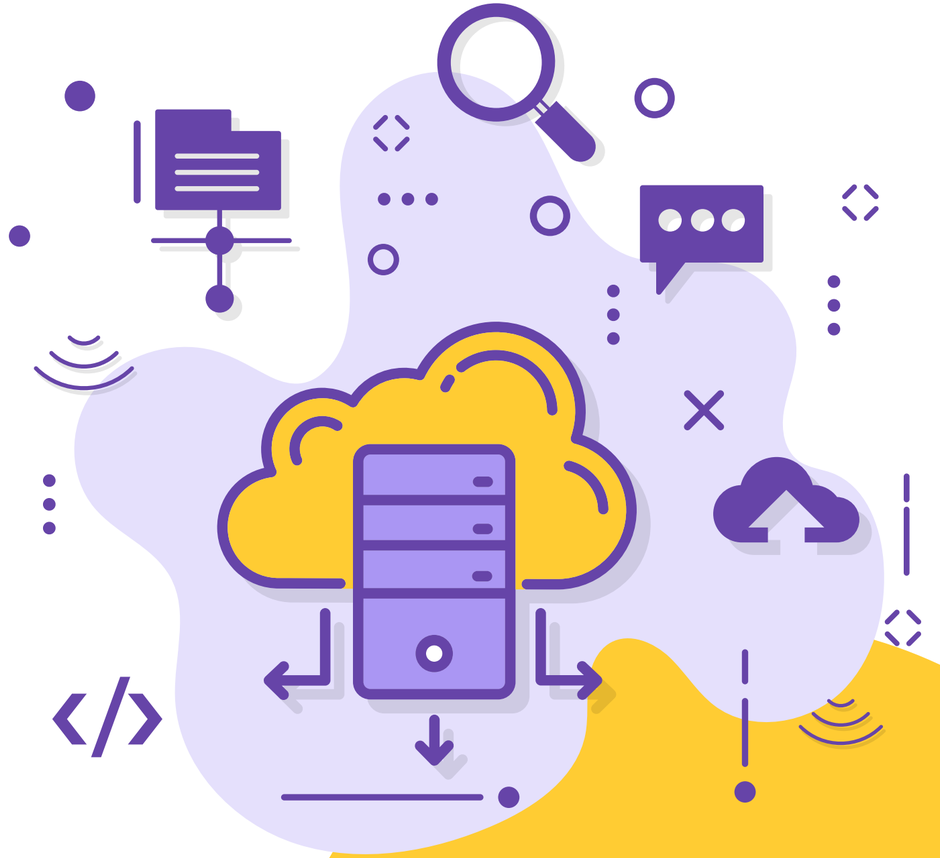
- Kube-Proxy
  - Handles networking for the node. It manages internal communication and load balancing for services.

Multiple applications can run on the same worker node, and each application can be replicated across several nodes for high availability and scalability.

Introduction to pods

Pods are where our applications run. It's the basic building block and the atomic unit of scheduling in Kubernetes. Each pod will include one or more containers and every time we run a container in Kubernetes, it will be inside a pod.





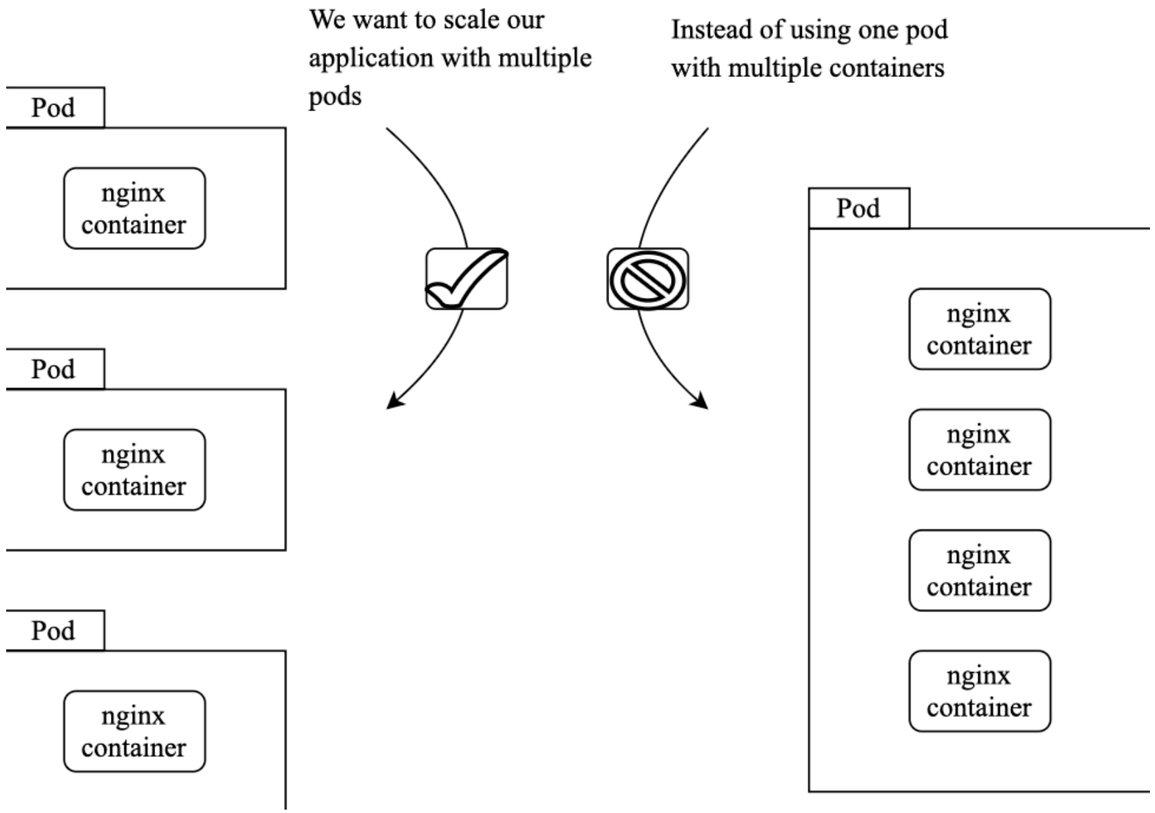
Pods: The Atomic Unit of Scheduling in Kubernetes

In Kubernetes, the pod is the smallest and most fundamental unit of scheduling. This means that when Kubernetes decides where and how to run an application, it schedules pods, not individual containers.

- *A pod typically contains one container, but it can host multiple tightly coupled containers that need to share resources like storage and networking.*

For example, if we want to run 10 replicas of an application, we don't create one pod with 10 containers. Instead, we create 10 pods, each running one instance of the container. This ensures:

- isolation
- scalability
- flexibility.



Understanding a Basic Pod Manifest

Kubernetes manifest files are written in YAML and describe what we want the cluster to create.

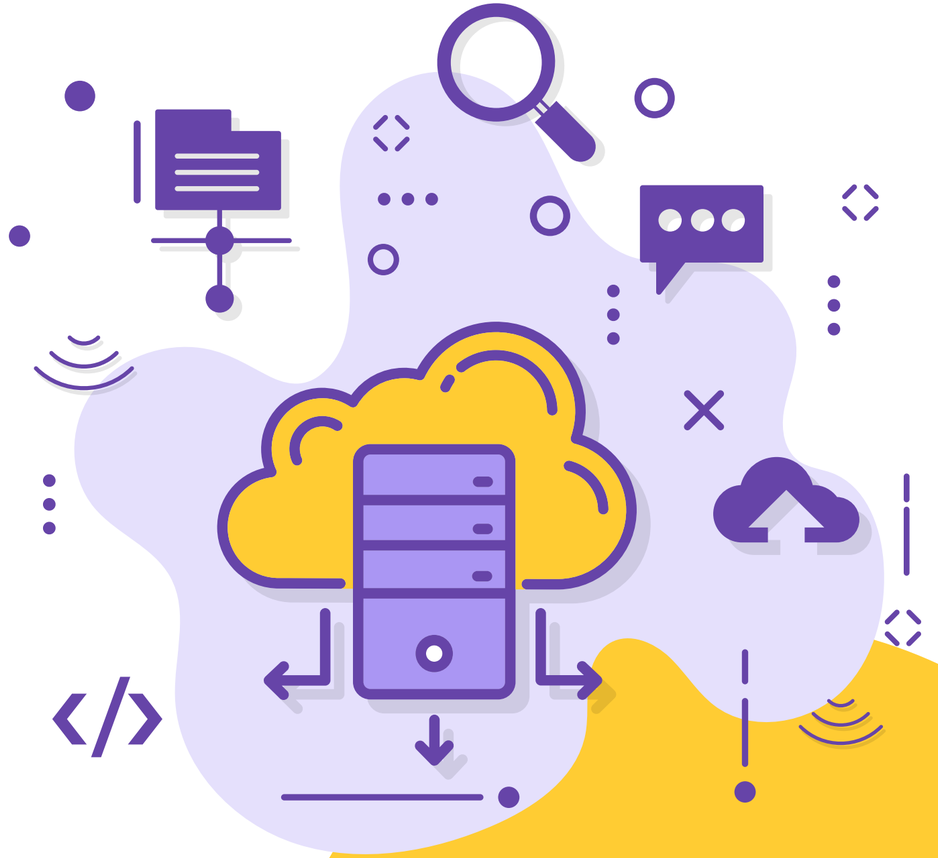
Understanding a Basic Pod Manifest

In the previous manifest we have:

- The *kind* key specifies the type of resource being defined — in this case, a Pod.
- Under *metadata*, we provide a unique name for the pod, e.g., nginx.
- The *spec* section defines what to run inside the pod.

```
5   spec:
6     containers:
7       - name: nginx-container
8         image: nginx
9
```

- This tells Kubernetes to run a container named nginx-container using the nginx Docker image.
- Most Kubernetes manifests follow this structure. While many other keys are available, this is the minimum needed to run a pod.



Where Does the Container Image Come From?

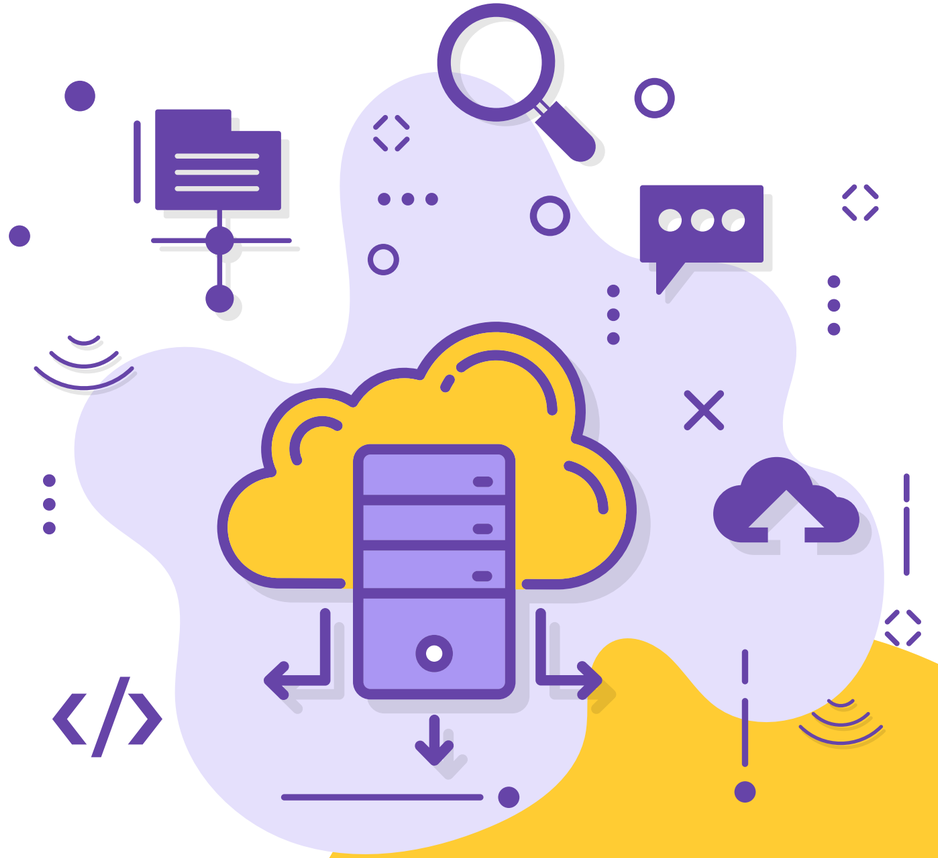
In our manifest, we declare the image name (nginx) but don’t specify a location. If we don’t specify, Kubernetes it will:

- Automatically pulls the image from a Docker registry.
- If no registry is defined, it defaults to Docker Hub.

Just like code is stored in GitHub or GitLab, container images are stored in image registries, such as:

- Docker Hub
- Google Container Registry
- Amazon ECR
- Private registries

Important: you can always specify a full image path if you're using a custom or private registry.



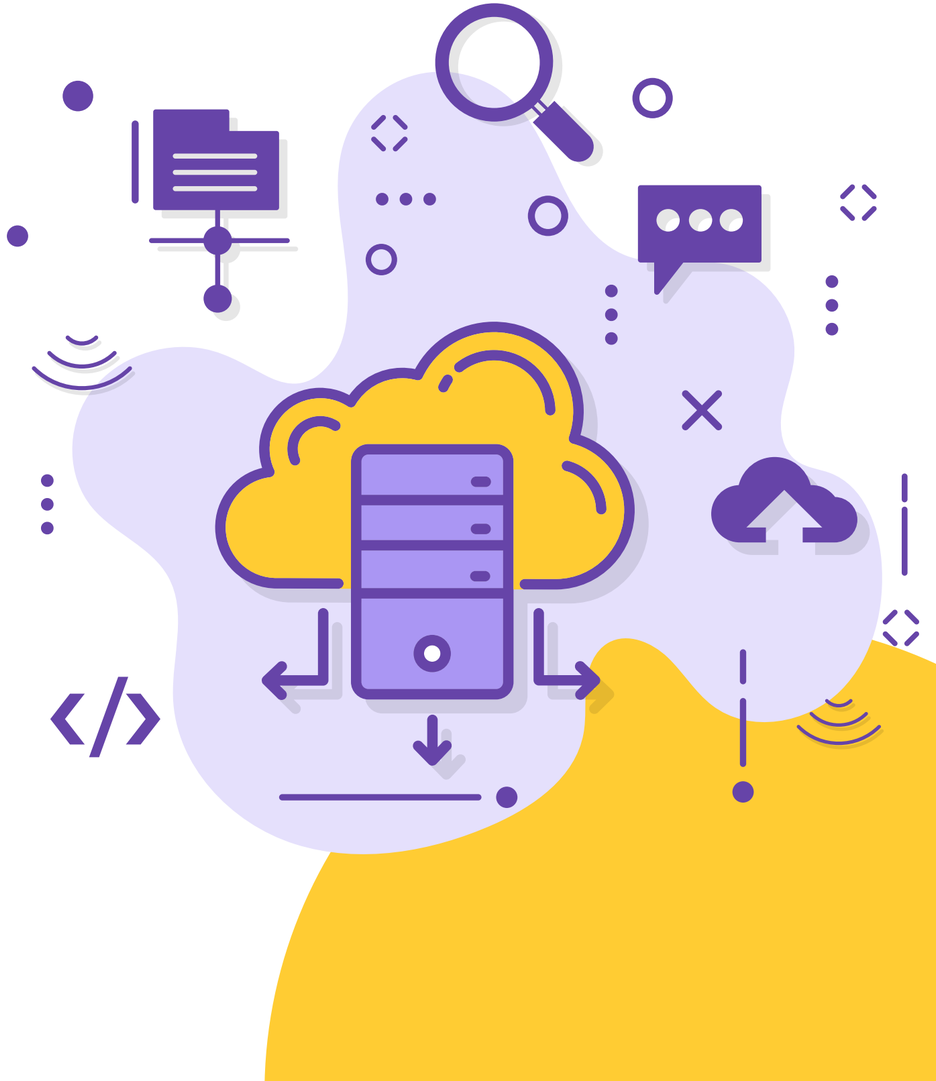
Where Does the Container Image Come From?

If we want to be more explicit, we can change our manifest to use the full image path:

nginx.yaml

k8s-fundamentals > 001-first-deploy > nginx.yaml > {} spec > [ ] containers > {} 0

```yaml
apiVersion: v1
kind: Pod
metadata:
  name: nginx
spec:
  containers:
    - name: nginx-container
      image: registry.hub.docker.com/library/nginx
```



Where Does the Container Image Come From?

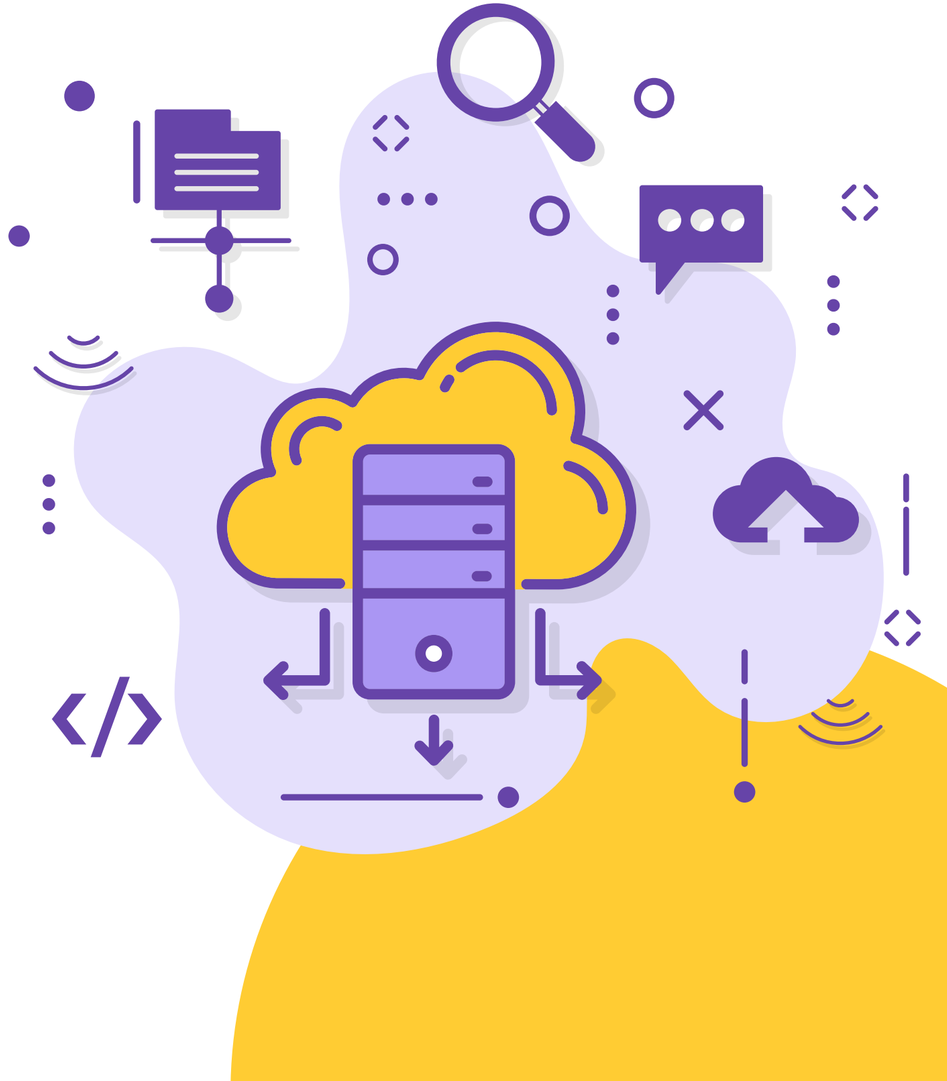
Or if you are using a different service to store images like ECR, we can define its full path as well:

nginx.yaml

k8s-fundamentals > 001-first-deploy > nginx.yaml > {} spec > [ ] containers > {} 0

```yaml
apiVersion: v1
kind: Pod
metadata:
  name: nginx
spec:
  containers:
    - name: nginx-container
      image: public.ecr.aws/nginx/nginx

```



Pods vs. Containers: What’s the Difference?

At first, pods may seem just like containers, but there's a key distinction:

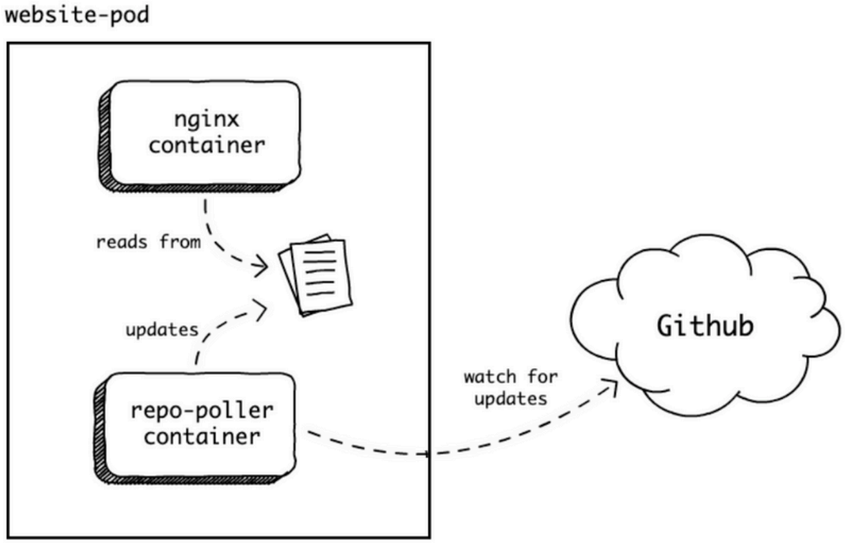
- A pod is a wrapper that can run one or more containers together as a unit.
- Containers in the same pod share networking and storage, and are scheduled together on the same node.

Think of a pod as:

A logical group of tightly coupled containers that cooperate to perform a task.

- In most cases, especially for simple apps, we run one container per pod.
- In advanced scenarios, we can run helper containers in the same pod.
  - Example: An nginx container serving a website + a sidecar container that updates the site content from GitHub.

A container runs your app, while a pod organizes and manages one or more related containers.



Interacting with Running Pods – Accessing and Logs

Deploy and Access a Pod

- Run the pod using:
  - *kubectl apply -f nginx.yaml*
- Once the pod is in Running state, access it locally:
  - kubectl port-forward --address 0.0.0.0 nginx 3001:80
    - Running it in the background:
      - nohup kubectl port-forward --address 0.0.0.0 nginx 3001:80 > /dev/null 2>&1 &

Monitor Logs in Real Time

- View real-time application logs:
  - kubectl logs --follow nginx
    - nginx: Name of the pod
    - --follow: Streams live logs

Logs show real-time HTTP requests/responses as users interact with your app.

Executing Commands Inside a Pod

Inspect and Modify Containers

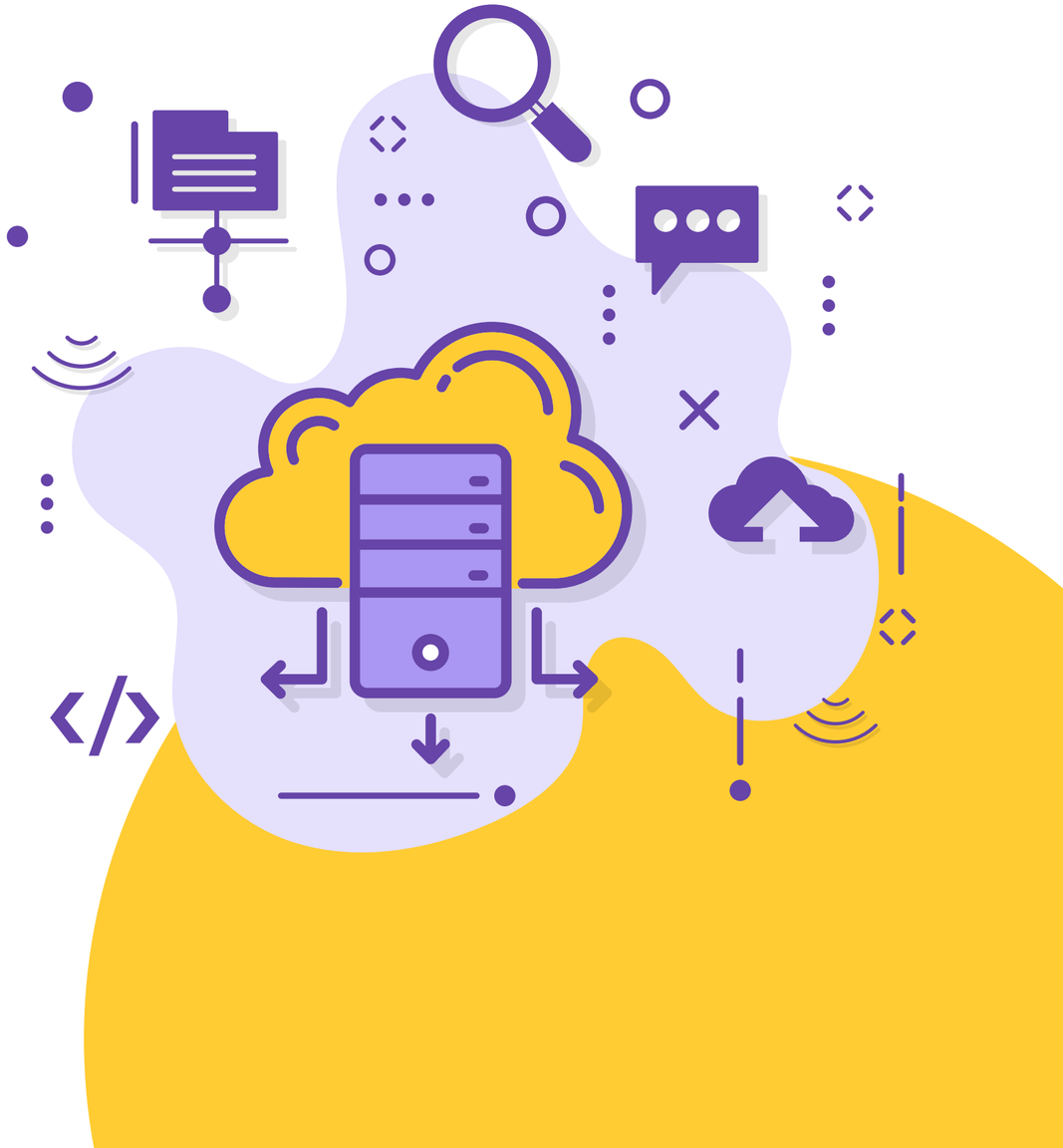
- Run a command inside the container:
  - kubectl exec nginx -- ls
- Start an interactive shell:
  - kubectl exec -it nginx -- bash
    - Example: Modify the HTML file being served:
      - echo "Hello Kubernetes!" > /usr/share/nginx/html/index.html

Killing a Pod

- Delete the pod by name:
  - kubectl delete pod nginx
- Or delete using the same manifest:
  - kubectl delete -f nginx.yaml

After deletion, running kubectl get pods should show that nginx is gone.

Questions?



Exercise - Running our own pod

Run Apache, which is another web server that works similarly. Here's a list of things you'll need to do:

- Write a pod manifest file to run the apache container (the docker image is called *httpd*).
- Use *kubectl* to apply this manifest and see it running.
- Use *kubectl port-forward* to send requests from the *port 3000* to the container's *port 80*.

Note: you need to add the ***--address 0.0.0.0*** *to the kubectl port-forward to run it on the platform.*

- Confirm that you can see Apache's default page saying "It works!" when you access the APP URL in the widget below.
- Enter the container, and change the contents of the file */usr/local/apache2/htdocs/index.html*, so when you refresh the page you can see your changes.

Exercise - Solution

apache.yaml U

002-apache-httpd > apache.yaml > {} spec > [ ] containers > {} 0

```yaml
apiVersion: v1
kind: Pod
metadata:
  name: apache
spec:
  containers:
    - name: apache-container
      image: httpd
```

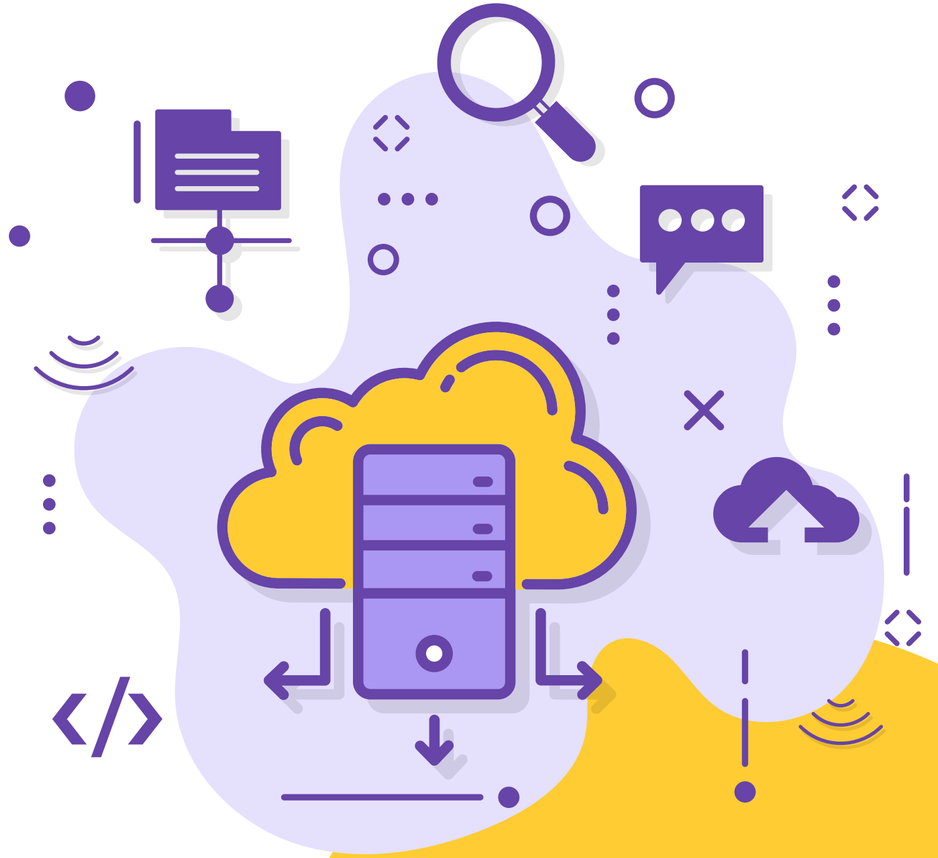
Introduction to Deployments in Kubernetes

Why not use Pods directly?

- Pods don’t auto-restart if they fail or are manually terminated.
- Managing pods manually doesn't scale in production.

Enter Deployments:

- Ensures pods are rescheduled automatically.
- Allows scaling: Increase or decrease replicas.
- Supports rolling updates: Upgrade from v1 to v2 with zero downtime.
- Enables rollbacks in case of bad releases.
- Provides version control for your application rollout.



Exercise - Building & Deploying Your Own App

app.rb U

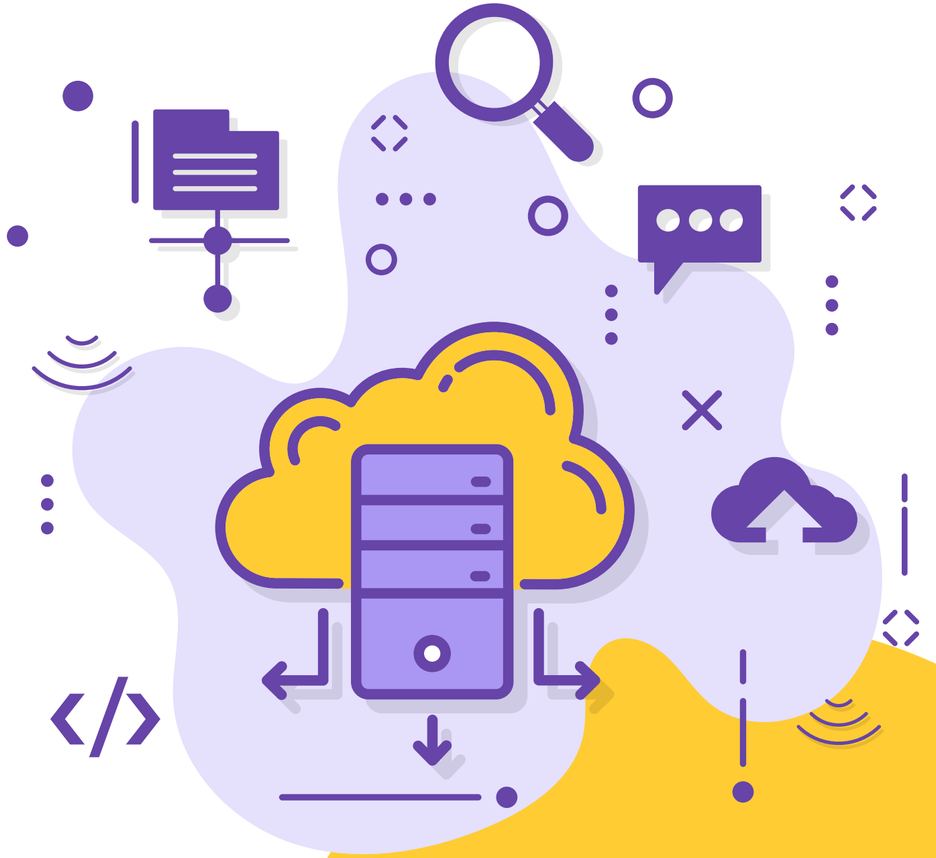
003-first-deploy > app.rb

```ruby
# app.rb
require "sinatra"

set :bind, "0.0.0.0"

get "*" do
  "[v1] Hello, Kubernetes!\n"
end

```

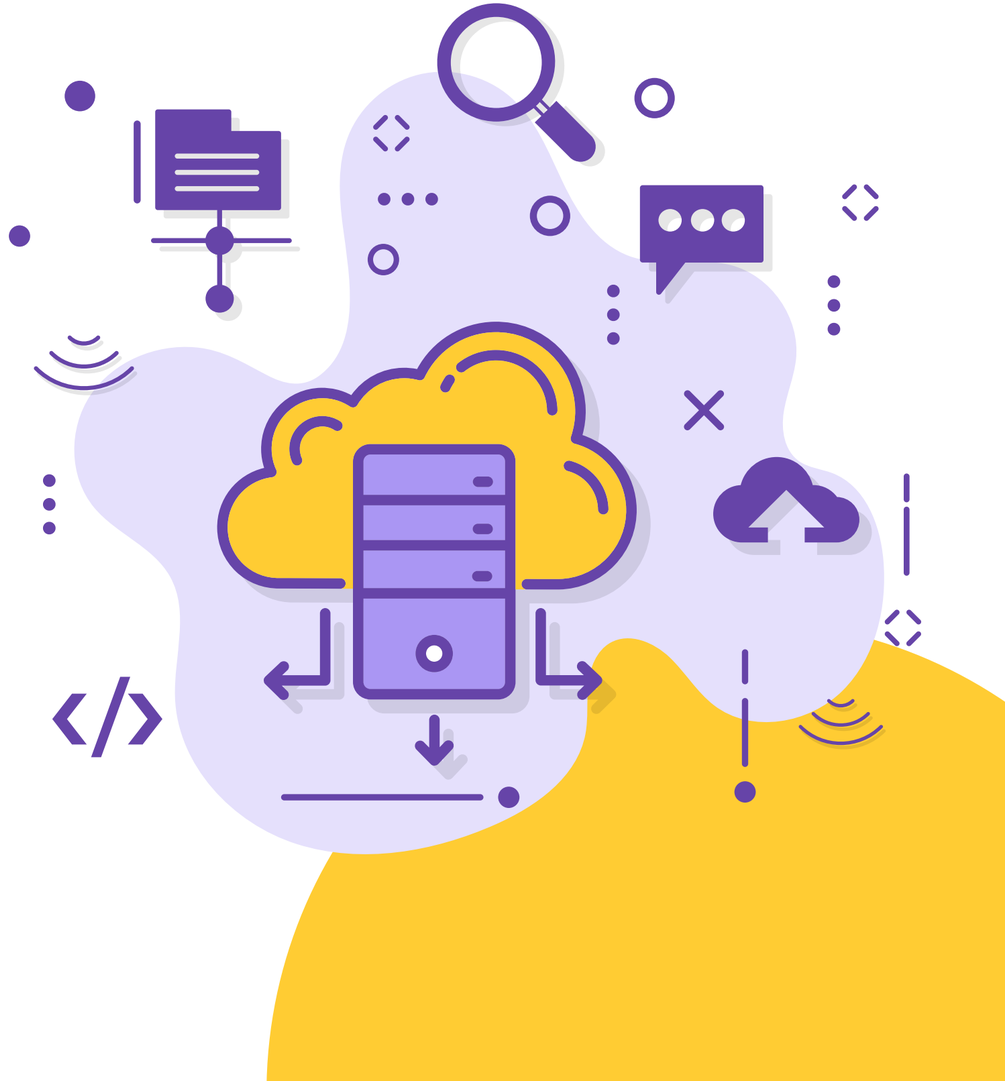


Exercise - Building & Deploying Your Own App

Gemfile U

003-first-deploy > Gemfile

```
1   source 'https://rubygems.org'
2
3   gem 'sinatra'
4   gem 'rackup'
5   gem 'puma'
6
```

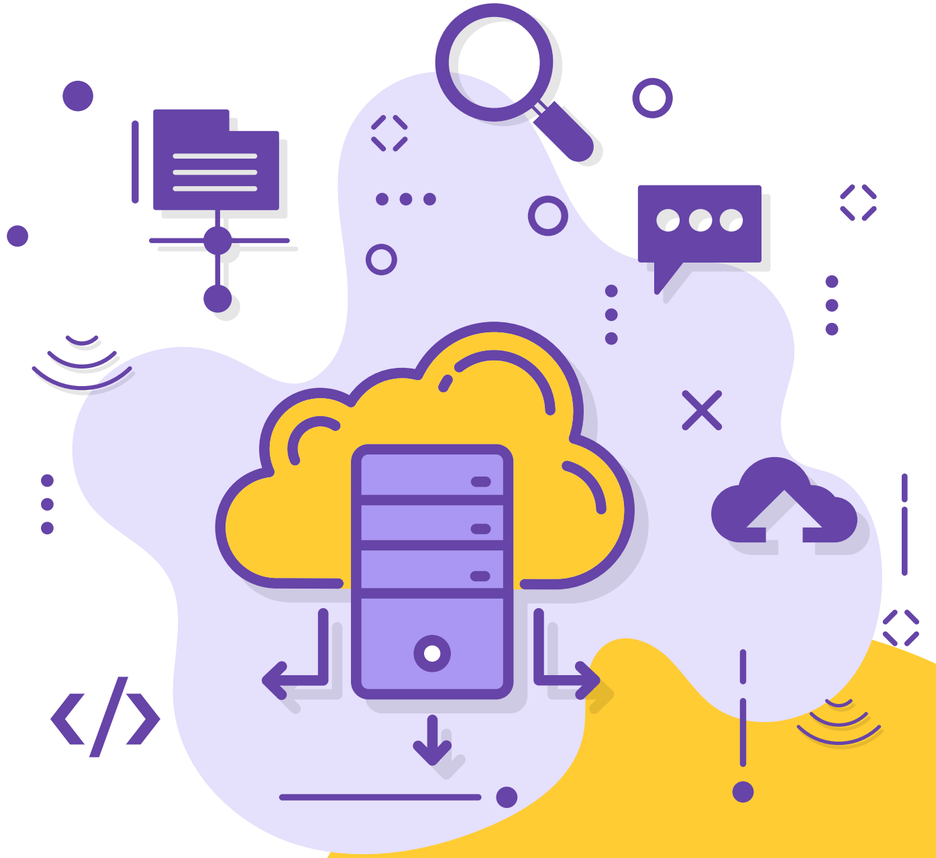


Exercise - Building & Deploying Your Own App

Dockerfile U

003-first-deploy > Dockerfile > ...

```
1  FROM ruby:3.2-alpine
2
3  RUN apk add --no-cache curl build-base
4  COPY Gemfile .
5  RUN bundle install
6  COPY app.rb .
7
8  ENTRYPOINT ["ruby", "app.rb"]
```

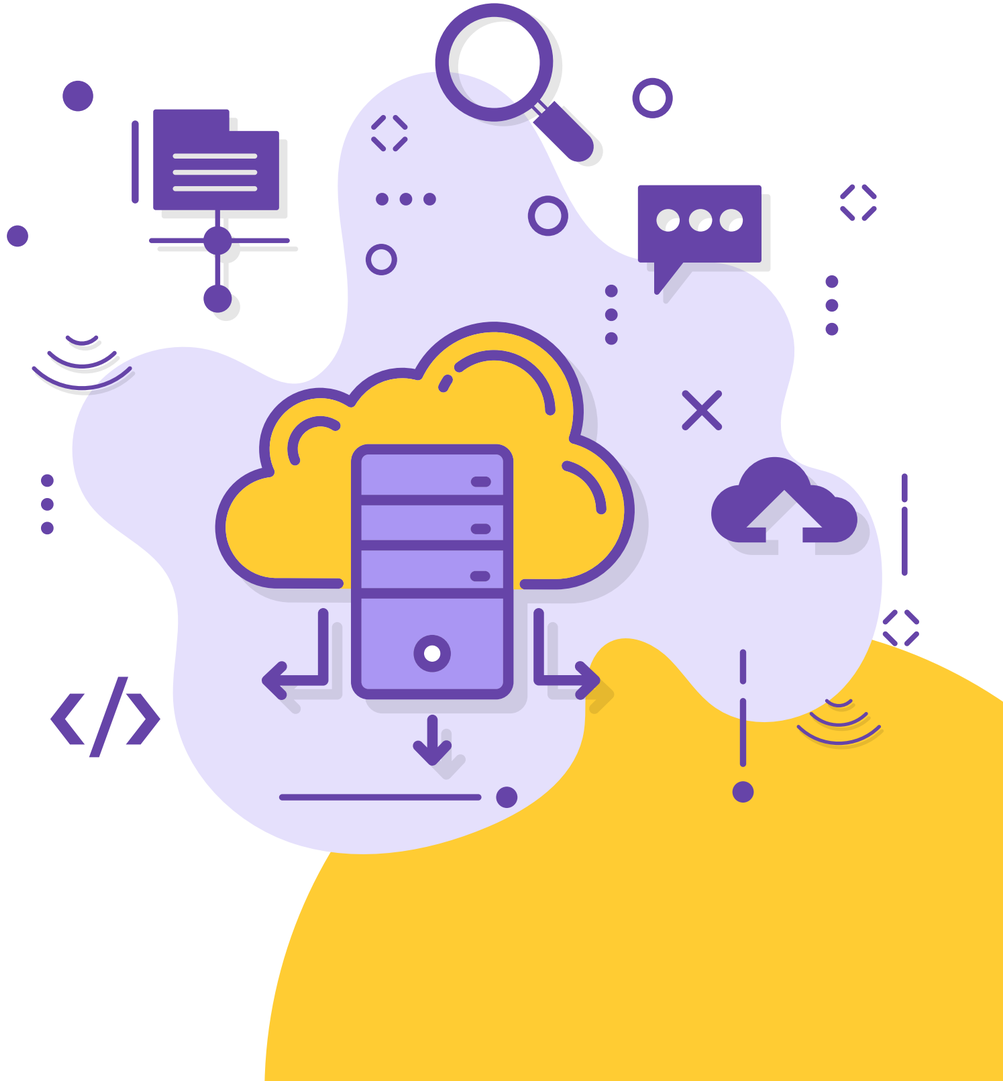


Exercise - Building & Deploying Your Own App

deployment.yaml U

003-first-deploy > deployment.yaml > {} spec > {} template > {} spec > [ ] containers > {}

```yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: hellok8s
spec:
  replicas: 1
  selector:
    matchLabels:
      app: hellok8s
  template:
    metadata:
      labels:
        app: hellok8s
    spec:
      containers:
        - image: kirkgo/hellok8s:v1
          name: hellok8s-container
          ports:
            - containerPort: 4567
          resources:
            requests:
              memory: "64Mi"
              cpu: "50m"
            limits:
              memory: "128Mi"
              cpu: "100m"
```



Breaking Down the YAML Structure

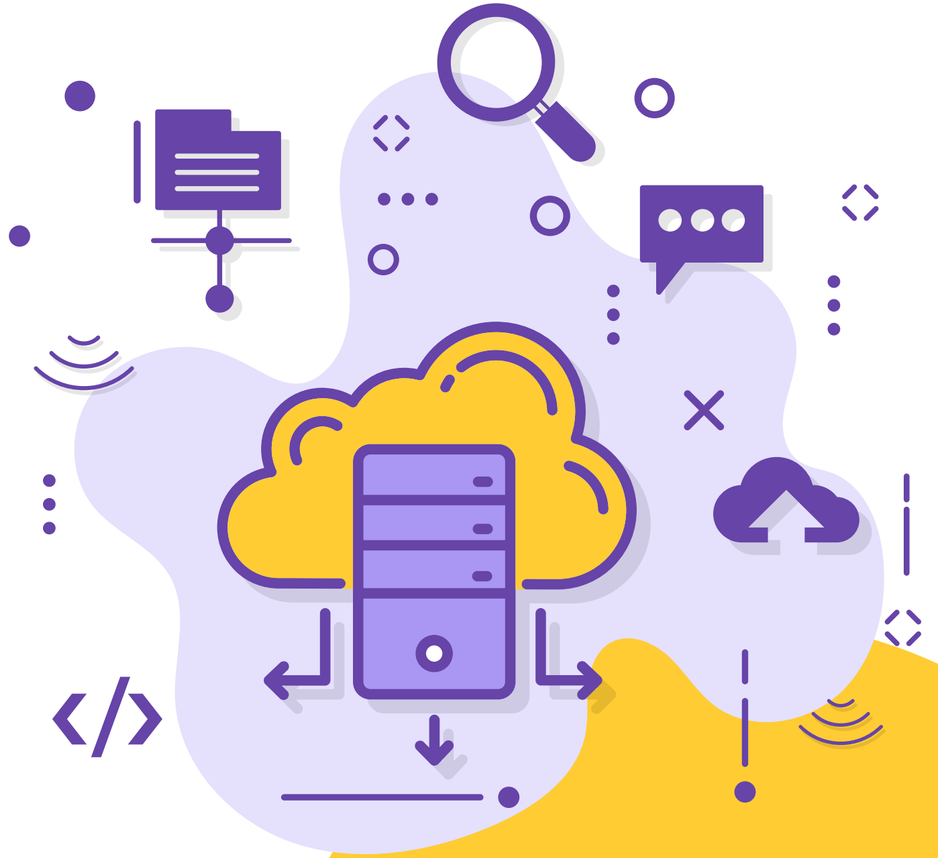
Essential Components

- *apiVersion & kind*: Tells Kubernetes this is a Deployment resource
- *metadata*: Basic information about your deployment
- *spec*: The main configuration section
  - replicas: 1 → Run 1 copy of your app
  - selector → How to find pods that belong to this deployment
  - template → The blueprint for creating pods

Pod Template Structure

The template section defines what each pod will look like:

- Pod Labels:
  - app: hellok8s → Must match selector above
- Container Configuration:
  - containers:
    - - image: kirkgo/hellok8s:v1 → *Docker image*
    - name: hellok8s-container → *Container name*
    - ports:
      - - containerPort: 4567 → *Port your app listens on*



Breaking Down the YAML Structure

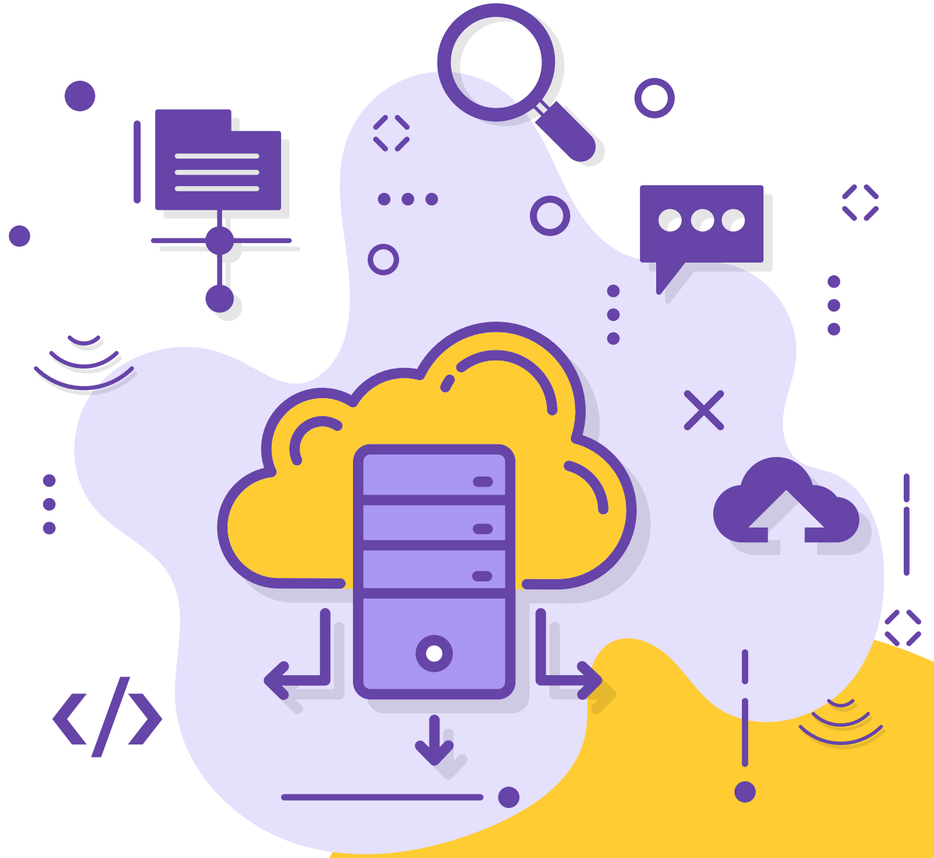
Resource Management

- resources:
  - requests → Minimum resources needed
    - memory: "64Mi"
    - cpu: "50m"
  - limits → Maximum resources allowed
    - memory: "128Mi"
    - cpu: "100m"

Deployment in Action

When you apply this YAML: *kubectl apply -f deployment.yaml*

a. Kubernetes creates 1 pod using your Docker image
b. The pod runs your Ruby/Sinatra application
c. If the pod fails, Kubernetes automatically creates a new one



The Kubernetes Hierarchy - Deployment → ReplicaSet → Pod

3-level Hierarchy

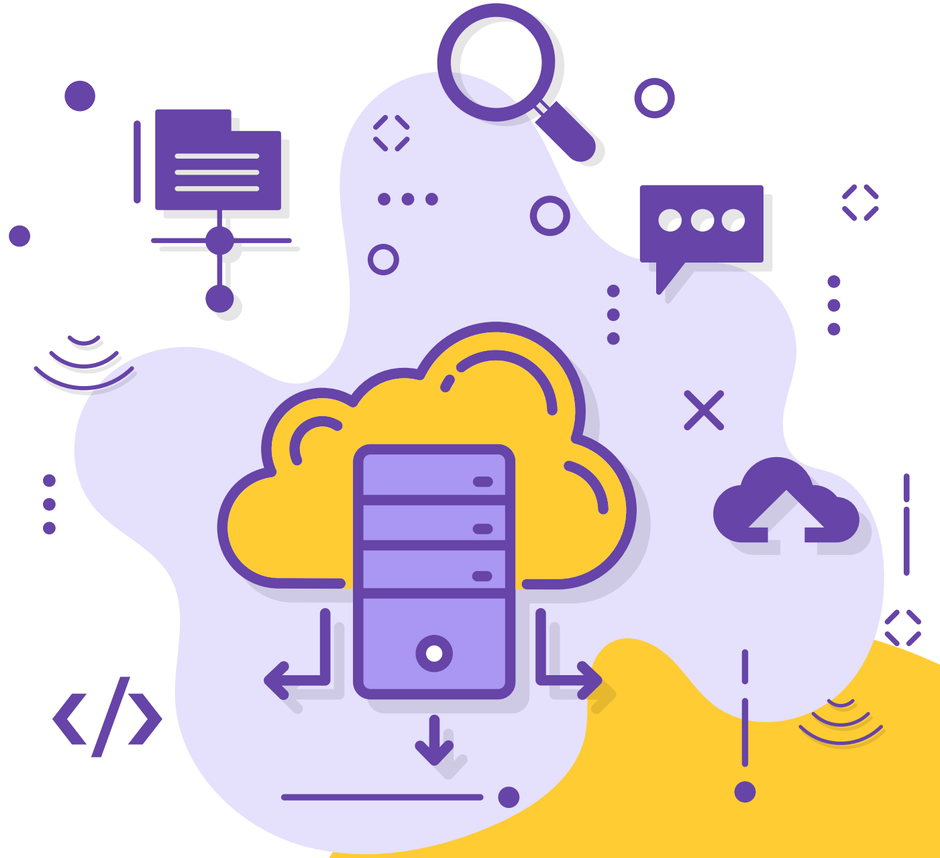
When you create a Deployment, Kubernetes creates a 3-level hierarchy:

- Deployment (*hellok8s*)
- ReplicaSet (*hellok8s-c664746f8*)
- Pod (*hellok8s-c664746f8-5wv6w*)

Why This Structure?

- *Deployment*: Manages application lifecycle and updates
- *ReplicaSet*: Ensures the right number of pods are running
- *Pod*: The actual running container

Each level adds its own identifier to create unique names and enable proper management.



The Kubernetes Hierarchy - Deployment → ReplicaSet → Pod

Breaking Down the Pod Name Pattern

Name Structure: hellok8s-c664746f8-5wv6w

Part 1: *hellok8s*

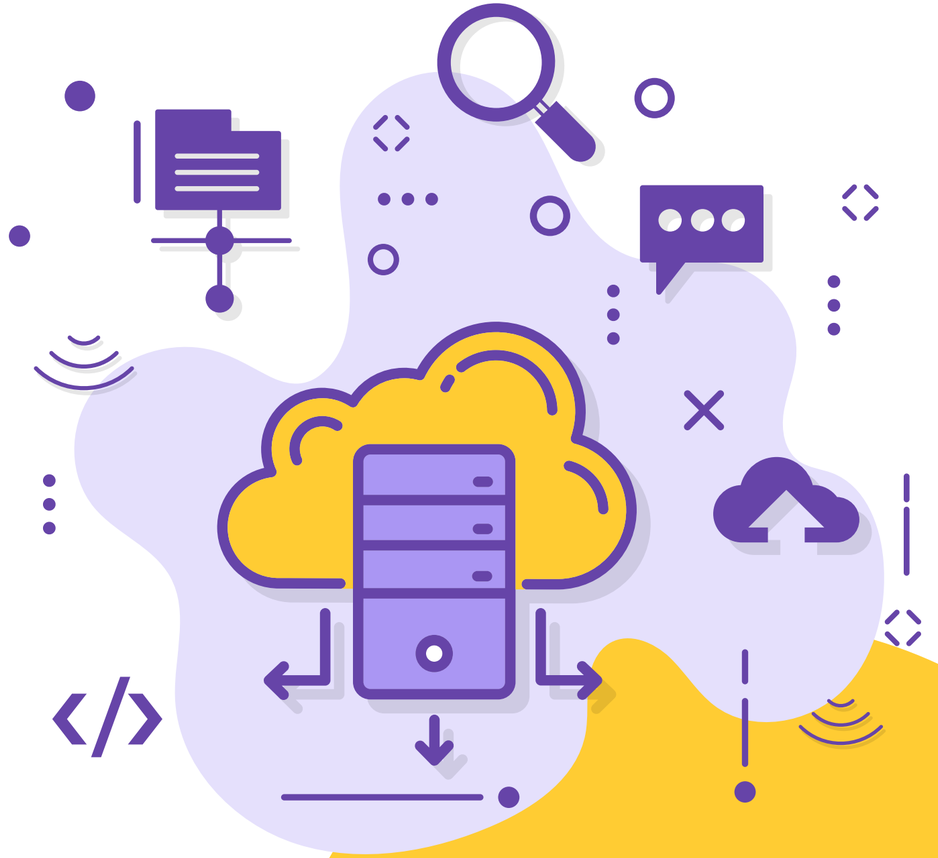
- This comes from your Deployment name
- Base identifier for your application

Part 2: *c664746f8*

- This is the ReplicaSet hash, generated from your pod template specification
- Changes when you update your deployment (new image, resources, etc.)
- Allows multiple versions to coexist during rolling updates

Part 3: *5wv6w*

- Random suffix added by the ReplicaSet
- Ensures each pod has a unique name
- Important when you have multiple replicas



The Kubernetes Hierarchy - Deployment → ReplicaSet → Pod

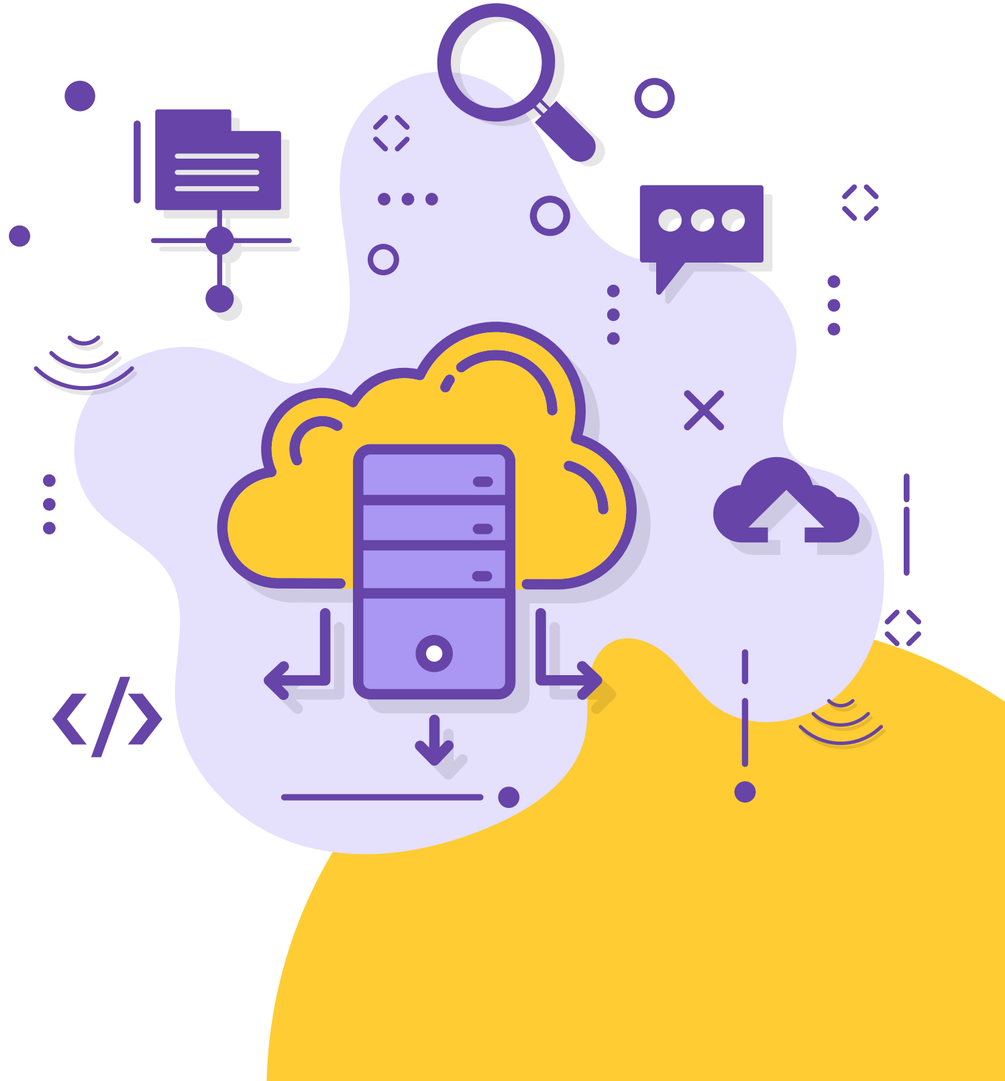
Example with Multiple Replicas

If *replicas: 3*, you'd see:

- hellok8s-c664746f8-5wv6w
- hellok8s-c664746f8-7x9mn
- hellok8s-c664746f8-k2p4r

Practical Commands

- *kubectl get deployments → hellok8s*
- *kubectl get replicasets → hellok8s-c664746f8*
- *kubectl get pods → hellok8s-c664746f8-5wv6w*



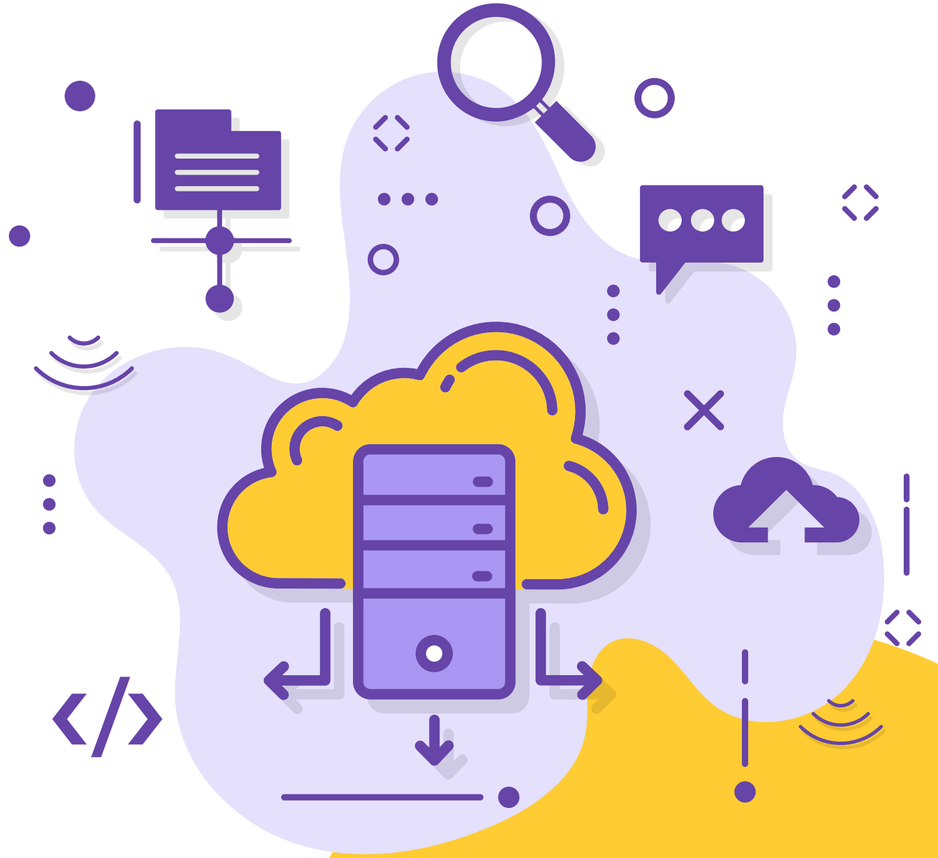
Why This Naming System Matters

When you update your deployment (e.g., new Docker image):

- Before Update
  - ReplicaSet: *hellok8s-c664746f8*
  - Pod: *hellok8s-c664746f8-5wv6w*
- During Update
  - New ReplicaSet: *hellok8s-d775857g9* (new hash!)
  - New Pod: *hellok8s-d775857g9-8abc1*
  - Old Pod: *hellok8s-c664746f8-5wv6w* (still running)
- After Update
  - Old ReplicaSet: *hellok8s-c664746f8* (scaled to 0)
  - New Pod: *hellok8s-d775857g9-8abc1* (active)

Key Benefits

- *Zero-downtime updates*: New pods start before old ones stop
- *Easy rollbacks*: Old ReplicaSets remain for quick restoration
- *Version tracking*: Each deployment change gets a new hash
- *Unique identification*: No naming conflicts even with multiple replicas



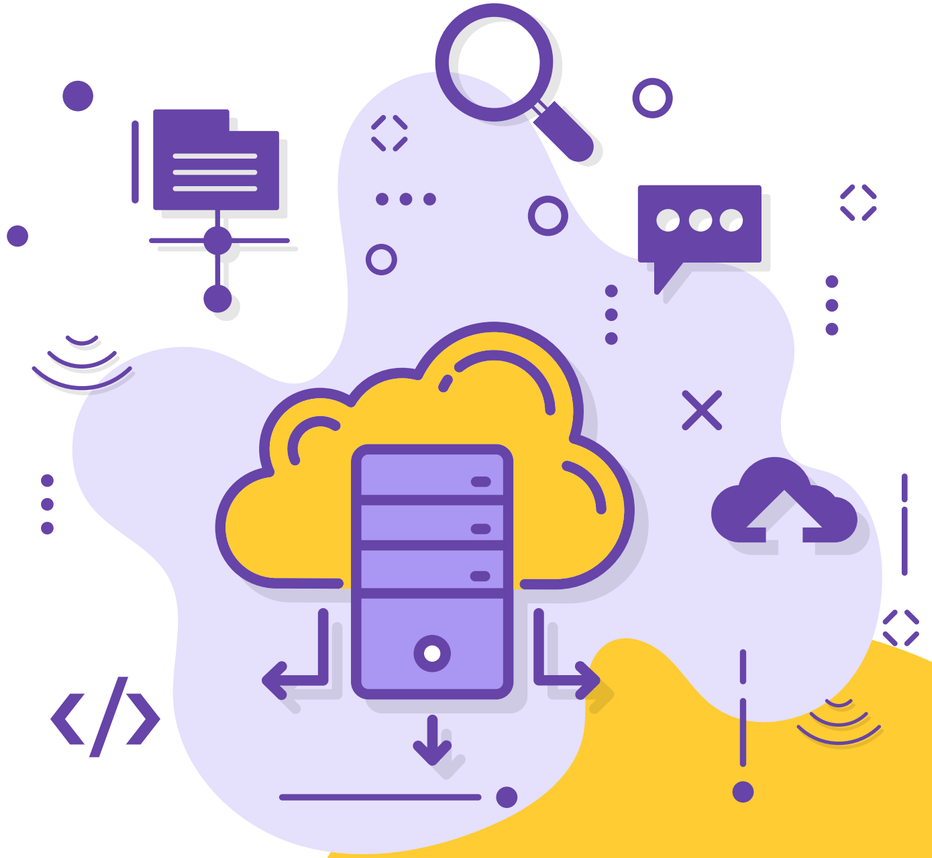
Updating our *hellok8s* App

service.yaml U

003-first-deploy > service.yaml > {} spec > [ ] ports > {} 0 > # port

```yaml
apiVersion: v1
kind: Service
metadata:
  name: hellok8s-service
spec:
  selector:
    app: hellok8s
  ports:
    - port: 3000
      targetPort: 4567
  type: LoadBalancer

```



What is a Kubernetes Service?

The Problem

Pods in Kubernetes are ephemeral - they can be destroyed and recreated at any time:

- Pod crashes → Kubernetes creates a new one with a different IP address
- Deployment update → Old pods are replaced with new ones
- Scaling up/down → Pods are added or removed

The Solution: Services

A Service provides a stable network endpoint for your pods:

- Fixed IP address that doesn't change
- DNS name you can use to reach your application
- Load balancing across multiple pod replicas
- External access from outside the Kubernetes cluster

Think of it as...

A Service is like a permanent phone number that forwards calls to your current mobile phone, even when you change devices.

Breaking Down the Service YAML

Basic Structure

- *apiVersion: v1* → Services use v1 API
- *kind: Service* → This is a Service resource
- *metadata*:
  - *name: hellok8s-service* → Service name (creates DNS entry)

Selector - Finding Your Pods

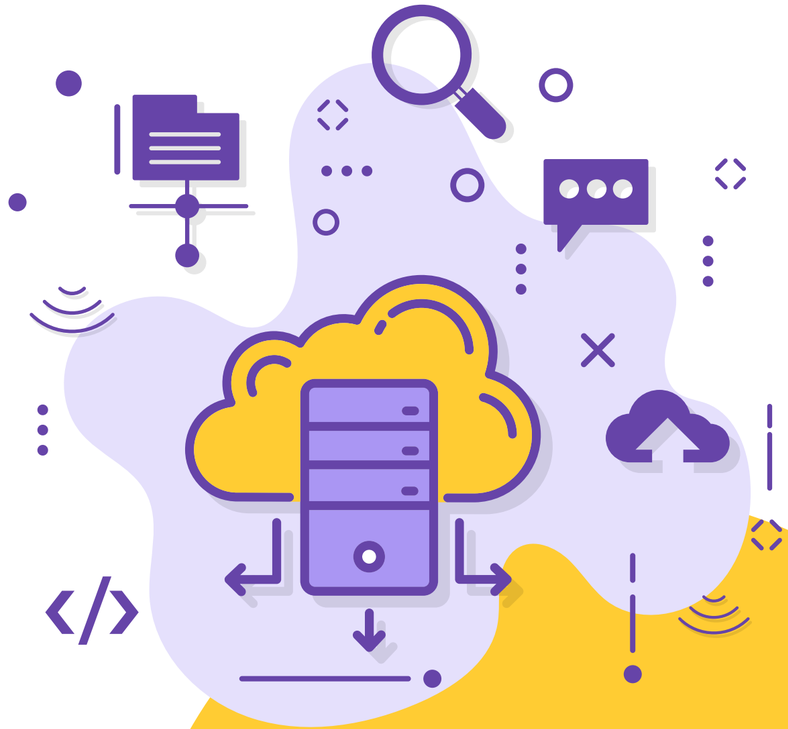
- *selector*:
  - *app: hellok8s* → Matches pods with label "*app: hellok8s*"
    - *How it works: The Service automatically finds all pods with this label and includes them in load balancing.*

Port Configuration

- *ports*:
  - *- port: 3000* → External port (what clients connect to)
  - *targetPort: 4567* → Internal port (where your app listens)
    - *Translation: "When someone connects to port 80, forward to port 4567 on the pods"*

Service Type

- *type: LoadBalancer* → *Makes service accessible from internet*



Service Types and How Traffic Flows

Service Types Explained

ClusterIP (Default)

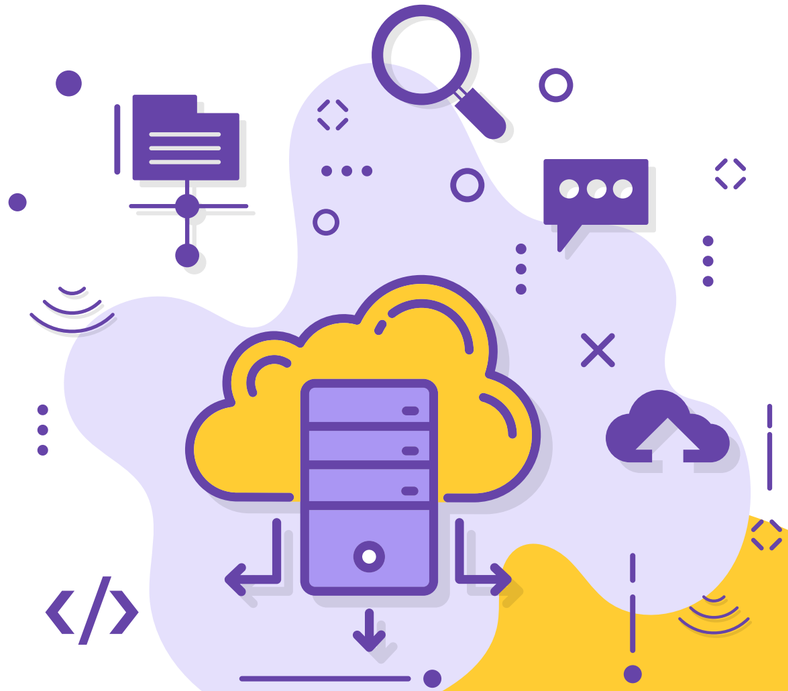
- Only accessible within the Kubernetes cluster
- Use for: Internal microservices communication

LoadBalancer (What we're using)

- Accessible from the internet
- Cloud provider creates an external load balancer
- Use for: Web applications, APIs that need public access

NodePort

- Accessible via any cluster node's IP + specific port
- Use for: Development or when LoadBalancer isn't available



Service Types and How Traffic Flows

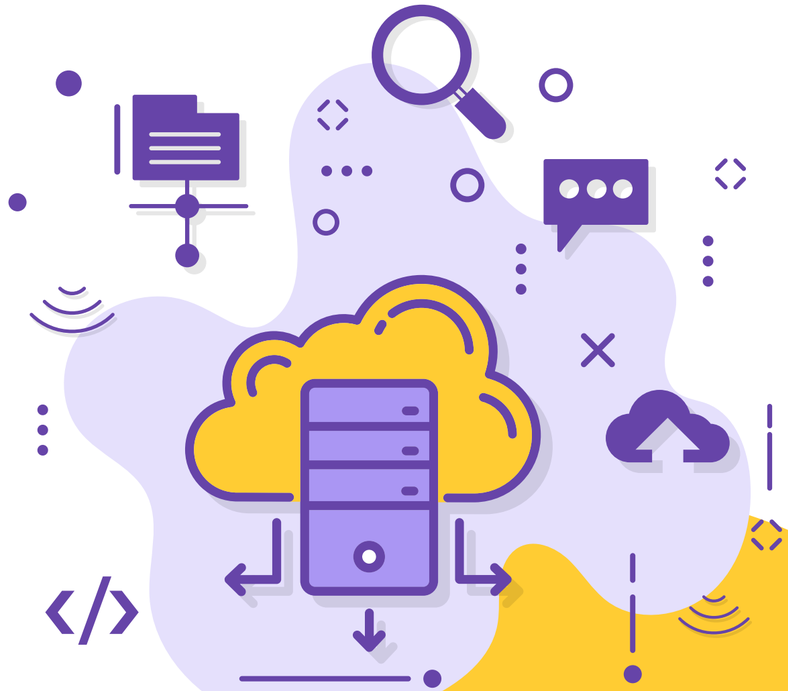
Traffic Flow with Our Service

External Request Journey:

- Internet → LoadBalancer IP:3000
- Service → Selects a pod with app: hellok8s
- Pod → Forwards to container port 4567
- Our App → Sinatra responds with "*Hello, Kubernetes!*"

Practical Commands

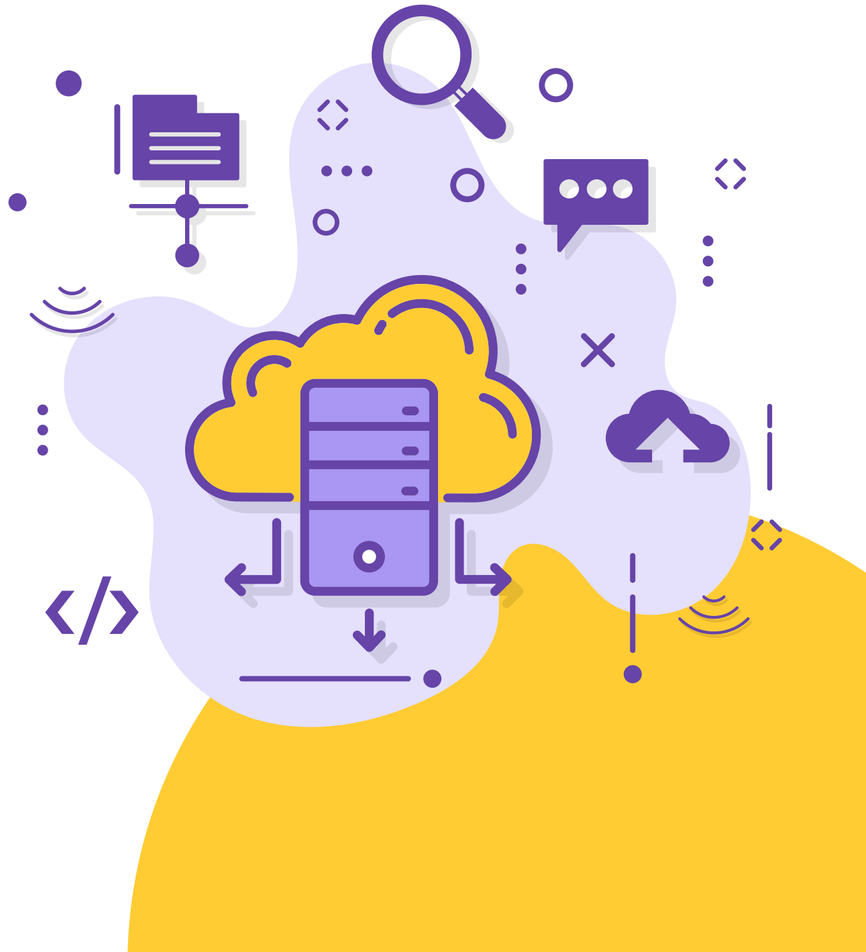
- Deploy the service
  - *kubectl apply -f service.yaml*
- Check service status
  - *kubectl get services*
- Get external IP (may take a few minutes)
  - *kubectl get service hellok8s-service*
- Test your app
  - *curl http://<EXTERNAL-IP>*



Service Types and How Traffic Flows

Key Benefits

- *High Availability*: If one pod fails, traffic goes to healthy pods
- *Scalability*: Add more replicas, service automatically includes them
- *Abstraction*: Clients don't need to know individual pod IPs



Rolling Out Releases

Releasing new versions

Another thing that deployments can help us with is rolling out new versions of our application.

app.rb U

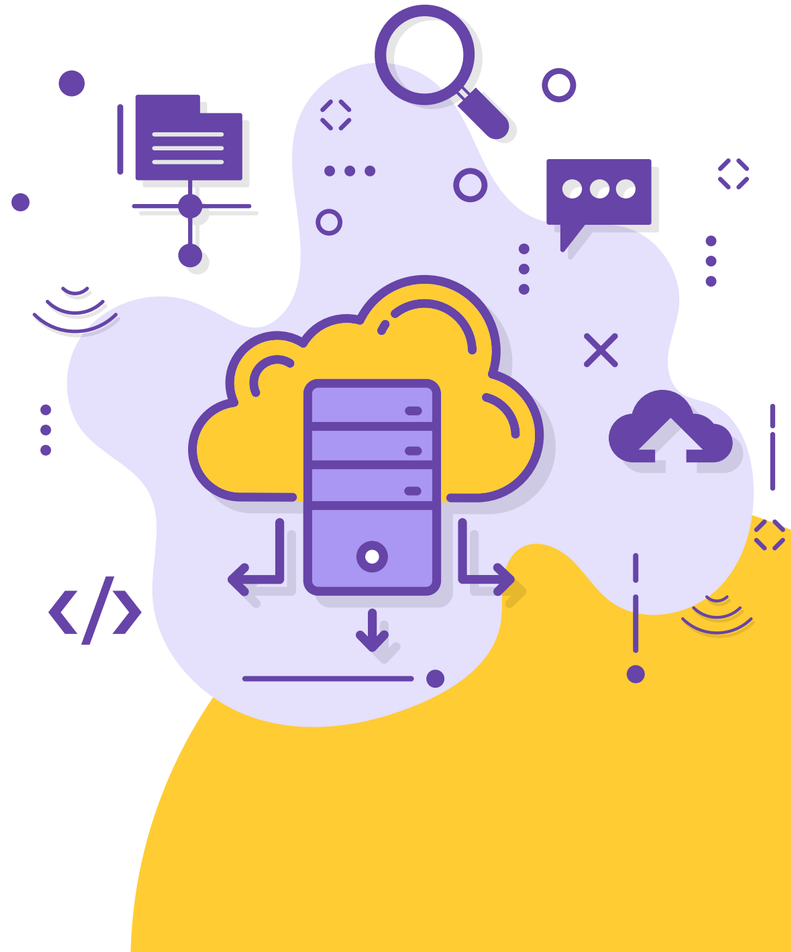
004-rolling-out-releases > app.rb

```ruby
# app.rb
require "sinatra"

set :bind, "0.0.0.0"

get "*" do
  "[v2] Hello, Kubernetes!\n"
end

```



Rolling Out Releases

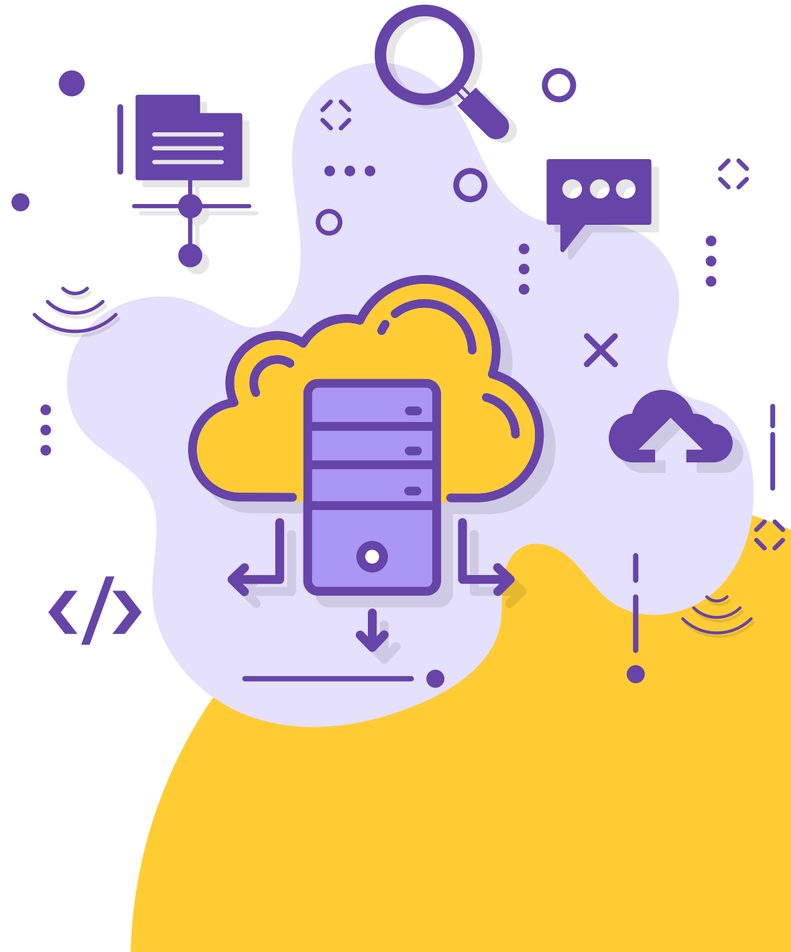
Releasing this new version is as easy as updating the manifest file to point to the version we want to use.

deployment.yaml U

004-rolling-out-releases > deployment.yaml > {} spec > # replicas

```yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: hellok8s
spec:
  replicas: 2
  selector:
    matchLabels:
      app: hellok8s
  template:
    metadata:
      labels:
        app: hellok8s
    spec:
      containers:
        - image: kirkgo/hellok8s:v2
          name: hellok8s-container
          ports:
            - containerPort: 4567
          resources:
            requests:
              memory: "64Mi"
              cpu: "50m"
            limits:
              memory: "128Mi"
              cpu: "100m"

```



Rolling Out Releases

Watching Changes

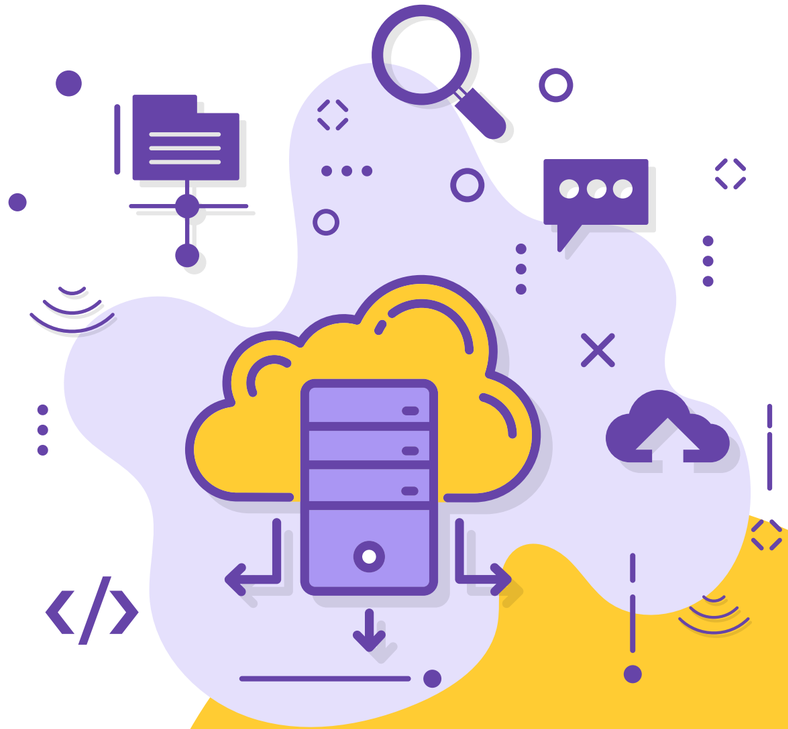
We can use the *--watch* flag to watch changes to a command output:

- *kubectl get pods --watch*
- *watch kubectl get pods*
  - Both commands will print a new line for every change in its output.

Important: You may need to install a watch in your system to be able to use it.

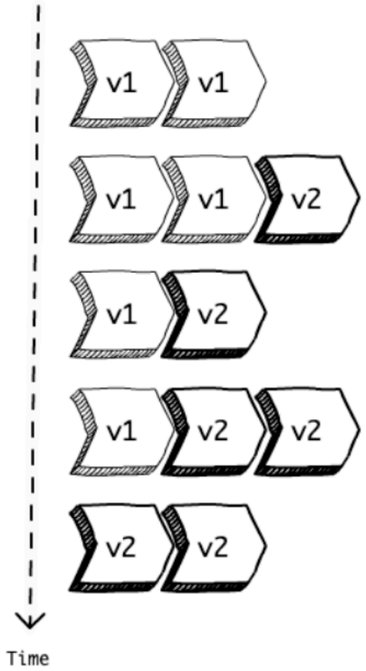
Practical Commands

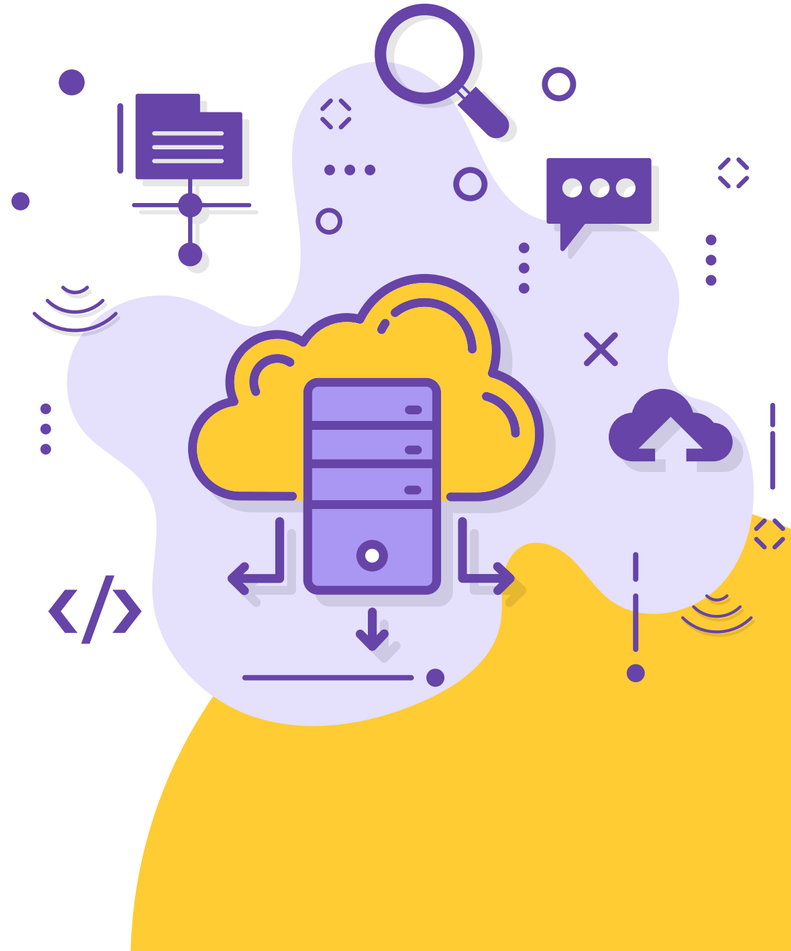
- *docker build . -t kirkgo/hellok8s:v2*
- *docker push kirkgo/hellok8s:v2*
- *kubectl apply -f deployment.yaml*
- *kubectl get pods*
- *curl http://localhost:3001*



Rolling Update

The kind of release that was done is called a RollingUpdate, which means we first create one pod with the new version. And after it’s running, we terminate one pod running the previous versions, and we keep doing that until all the pods running are using the desired version.





THANK YOU