

- Kubernetes is a container orchestration tool that manages applications at scale.
- Setting up a full Kubernetes cluster requires multiple nodes and complex configurations.
- Minikube provides a lightweight, single-node Kubernetes cluster for local testing and development.

- A cloud-based Kubernetes cluster (like GKE, AKS, or EKS).
- A multi-node Kubernetes setup, which is complex to manage on a local machine.

- This command starts a **Minikube cluster**.
- Minikube creates a **single-node Kubernetes cluster** in a **VM or container**.
- It's mainly used for local Kubernetes development and testing.

```
C:\Windows\System32>minikube start
* minikube v1.35.0 on Microsoft Windows 11 Home Single Language 10.0.26100.3037 Build 26100.3037
* Automatically selected the docker driver. Other choices: hyperv, virtualbox, ssh
* Using Docker Desktop driver with root privileges
* Starting "minikube" primary control-plane node in "minikube" cluster
* Pulling base image v0.0.46 ...
* Downloading Kubernetes v1.32.0 preload ...
   > preloaded-images-k8s-v18-v1...: 333.57 MiB / 333.57 MiB 100.00% 2.58 Mi
   > gcr.io/k8s-minikube/kicbase...: 500.31 MiB / 500.31 MiB 100.00% 2.43 Mi
* Creating docker container (CPUs=2, Memory=4000MB) ...
C:\Windows\System32>kubectl create deployment sankube --image=sanmathisedhupathi/guvi:taskmates --port=80
deployment.apps/sankube created

- Booting up control plane ...
- Configuring RBAC rules ...
* Configuring bridge CNI (Container Networking Interface) ...
* Verifying Kubernetes components...
- Using image gcr.io/k8s-minikube/storage-provisioner:v5
* Enabled addons: storage-provisioner, default-storageclass
```

Command	Description
kubectl expose deployment <name> --type=NodePort --port=80	Creates a service to expose a deployment.
kubectl get services	Lists all services.
kubectl describe service <service-name>	Shows details about a service.

The `kubectl expose` command is used to create a **Kubernetes Service** for an existing resource (Pod, Deployment, ReplicaSet, etc.), allowing network access.

- **Cluster-IP:** The internal IP assigned to the service.
- **External-IP:** Usually `<none>` for Minikube, as it's only accessible locally.
- **PORT(S):** Shows **service port : assigned NodePort**.

```
C:\Windows\System32>kubectl expose deployment sankube --type=NodePort --port=80
service/sankube exposed
```

`minikube service <service-name>`

Opens a service in a browser.

Finds the service and launches it.

```
Select Administrator: Command Prompt - minikube service sankube1
-----
|NAMESPACE|NAME|TARGET PORT|URL|
-----
|default|sankube|80|http://192.168.49.2:32248|
-----
X Exiting due to SVC_UNREACHABLE: service not available: no running pod for service sankube found

* If the above advice does not help, please let us know:
  https://github.com/kubernetes/minikube/issues/new/choose

* Please run 'minikube logs --file=logs.txt' and attach logs.txt to the GitHub issue.
* Please also attach the following file to the GitHub issue:
* - C:\Users\hp\AppData\Local\Temp\minikube_service_a32d5e52bd0bb25ec43ef9babd1e23302b09af71_0.log

C:\Windows\System32>kubectl create deployment sankube1 --image=sanmathisedhupathi/guvi:san-image --port=80
deployment.apps/sankube1 created

C:\Windows\System32>kubectl expose deployment sankube1 --type=NodePort --port=80
service/sankube1 exposed

C:\Windows\System32>minikube service sankube
-----
|NAMESPACE|NAME|TARGET PORT|URL|
-----
|default|sankube|80|http://192.168.49.2:32248|
-----
* Starting tunnel for service sankube.
-----
|NAMESPACE|NAME|TARGET PORT|URL|
-----
|default|sankube|http://127.0.0.1:51989|
-----
* Opening service default/sankube in default browser...
! Because you are using a Docker driver on windows, the terminal needs to be open to run it.
* Stopping tunnel for service sankube.

C:\Windows\System32>minikube service sankube1
-----
|NAMESPACE|NAME|TARGET PORT|URL|
-----
|default|sankube1|80|http://192.168.49.2:32593|
-----
X Exiting due to SVC_UNREACHABLE: service not available: no running pod for service sankube1 found
```

## Output in Chrome

