How to Install Minikube on Ubuntu 22.04 | 20.04

Last Updated: September 18, 2022 by Pradeep Kumar

In this article, we will cover how to install of Minikube on Ubuntu 22.04 | 20.04 LTS.

As the name suggests, minikube is a single node Kubernetes (k8s) cluster. Anyone who is new to the Kubernetes and wants to learn and try deploying application on it, then minikube is the solution. It provides a command line interface to manage Kubernetes (k8s) cluster and its component.

Minikube System Requirements

- 2 GB RAM or more
- 2 CPU / vCPU or more
- 20 GB free hard disk space or more
- Docker / Virtual Machine Manager – KVM & VirtualBox

Note: In this article, we will be using Docker container as a base for minikube. In case, docker is not installed on your Ubuntu system then use following URL to install it.

- How to Install Docker on Ubuntu 22.04 / 20.04 LTS

Prerequisites for minikube

- Minimal Ubuntu 20.04 LTS / 21.04
- Sudo User with root privileges
- Stable Internet Connection

Without any further delay, let's deep dive into the Minikube Installation steps on Ubuntu 22.04 | 20.04

Step 1) Apply updates

Apply all updates of existing packages of your system by executing the following apt commands,

```
$ sudo apt update -y
$ sudo apt upgrade -y
```

Once all the updates are installed then reboot your system once.

```
$ sudo reboot
```

Step 2) Install Minikube dependencies

Install the following minikube dependencies by running beneath command,

```
$ sudo apt install -y curl wget apt-transport-https
```

Step 3) Download Minikube Binary

Use the following wget command to download latest minikube binary,

```
$ wget https://storage.googleapis.com/minikube/releases/latest/minikube-linux-amd64
```

Once the binary is downloaded, copy it to the path /usr/local/bin and set the executable permissions on it

```
$ sudo cp minikube-linux-amd64 /usr/local/bin/minikube
$ sudo chmod +x /usr/local/bin/minikube
```

Verify the minikube version

```
$ minikube version
minikube version: v1.27.0
commit: 4243041b7a72319b9be7842a7d34b6767bbdac2b
$
```

Note: At the time of writing this tutorial, latest version of minikube is v1.27.0.

Step 4) Install Kubectl utility

Kubectl is a command line utility which is used to interact with Kubernetes cluster. It is used for managing deployments, service and pods etc. Use below curl command to download latest version of kubectl.

```
$ curl -LO https://storage.googleapis.com/kubernetes-release/release/`curl -s https://storag
```

Once kubectl is downloaded then set the executable permissions on kubectl binary and move it to the path /usr/local/bin.

```
$ chmod +x kubectl
$ sudo mv kubectl /usr/local/bin/
```

Now verify the kubectl version

```
$ kubectl version -o yaml
```

```
pkumar@linuxtechi:~$ kubectl version -o yaml
clientVersion:
  buildDate: "2022-09-14T19:49:27Z"
  compiler: gc
  gitCommit: e4d4e1ab7cf1bf15273ef97303551b279f0920a9
  gitTreeState: clean
  gitVersion: v1.25.1
  goVersion: go1.19.1
  major: "1"
  minor: "25"
  platform: linux/amd64
kustomizeVersion: v4.5.7

The connection to the server localhost:8080 was refused - did you specify the right host or port?
pkumar@linuxtechi:~$
```

Step 5) Start minikube

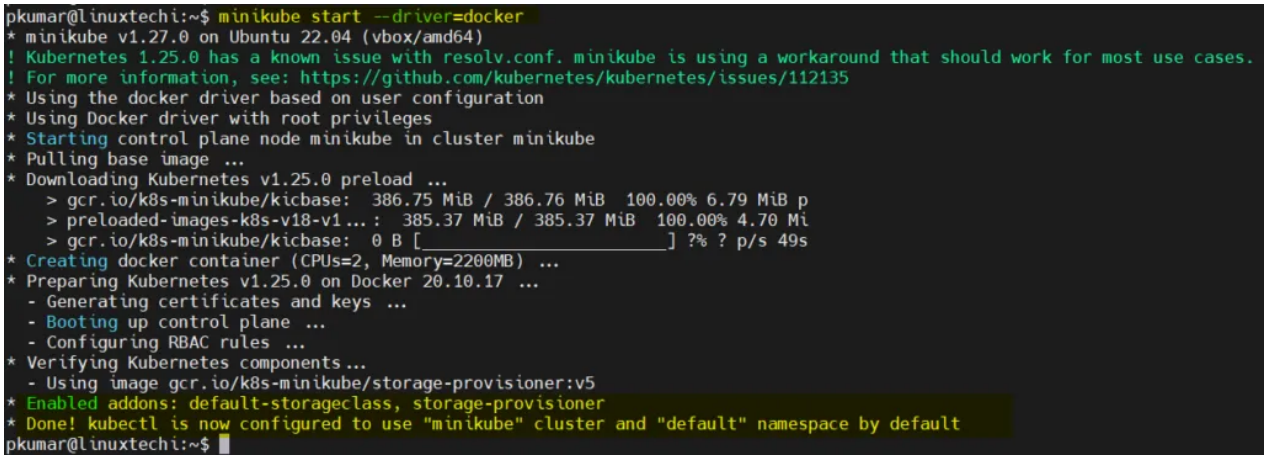
As we are already stated in the beginning that we would be using docker as base for minikue, so start the minikube with the docker driver, run

```
$ minikube start --driver=docker
```

In case you want to start minikube with customize resources and want installer to automatically select the driver then you can run following command,

```
$ minikube start --addons=ingress --cpus=2 --cni=flannel --install-addons=true --kubernetes-
```

Output would like below,



Perfect, above confirms that minikube cluster has been configured and started successfully.

Run below minikube command to check status,

```
pkumar@linuxtechi:~$ minikube status
minikube
type: Control Plane
host: Running
kubelet: Running
apiserver: Running
kubeconfig: Configured
pkumar@linuxtechi:~$
```

Run following kubectl command to verify the Kubernetes version, node status and cluster info.

```
$ kubectl cluster-info
$ kubectl get nodes
```

Output of above commands would like below:

```
pkumar@linuxtechi:~$ kubectl cluster-info
Kubernetes control plane is running at https://192.168.49.2:8443
CoreDNS is running at https://192.168.49.2:8443/api/v1/namespaces/kube-system/services/kube-dns:dns/proxy

To further debug and diagnose cluster problems, use 'kubectl cluster-info dump'.
pkumar@linuxtechi:~$
pkumar@linuxtechi:~$ kubectl get nodes
NAME       STATUS   ROLES           AGE     VERSION
minikube   Ready    control-plane   3m17s   v1.25.0
pkumar@linuxtechi:~$
```

Step 6) Managing Addons on minikube

By default, only couple of addons are enabled during minikube installation, to see the addons of minikube, run the below command.

```
$ minikube addons list
```

```
pkumar@linuxtechi:~$ minikube addons list
|-----------------------------|----------|--------------|--------------------------------|
|         ADDON NAME          | PROFILE  |    STATUS    |           MAINTAINER           |
|-----------------------------|----------|--------------|--------------------------------|
| ambassador                  | minikube | disabled     | 3rd party (Ambassador)         |
| auto-pause                  | minikube | disabled     | Google                         |
| csi-hostpath-driver         | minikube | disabled     | Kubernetes                     |
| dashboard                   | minikube | disabled     | Kubernetes                     |
| default-storageclass        | minikube | enabled ☑    | Kubernetes                     |
| efk                         | minikube | disabled     | 3rd party (Elastic)            |
| freshpod                    | minikube | disabled     | Google                         |
| gcp-auth                    | minikube | disabled     | Google                         |
| gvisor                      | minikube | disabled     | Google                         |
| headlamp                    | minikube | disabled     | 3rd party (kinvolk.io)         |
| helm-tiller                 | minikube | disabled     | 3rd party (Helm)               |
| inaccel                     | minikube | disabled     | 3rd party (InAccel             |
|                             |          |              | [info@inaccel.com])            |
| ingress                     | minikube | disabled     | Kubernetes                     |
| ingress-dns                 | minikube | disabled     | Google                         |
| istio                       | minikube | disabled     | 3rd party (Istio)              |
| istio-provisioner           | minikube | disabled     | 3rd party (Istio)              |
| kong                        | minikube | disabled     | 3rd party (Kong HQ)            |
| kubevirt                    | minikube | disabled     | 3rd party (KubeVirt)           |
| logviewer                   | minikube | disabled     | 3rd party (unknown)            |
| metallb                     | minikube | disabled     | 3rd party (MetalLB)            |
| metrics-server              | minikube | disabled     | Kubernetes                     |
| nvidia-driver-installer     | minikube | disabled     | Google                         |
| nvidia-gpu-device-plugin    | minikube | disabled     | 3rd party (Nvidia)             |
| olm                         | minikube | disabled     | 3rd party (Operator Framework) |
| pod-security-policy         | minikube | disabled     | 3rd party (unknown)            |
| portainer                   | minikube | disabled     | 3rd party (Portainer.io)       |
| registry                    | minikube | disabled     | Google                         |
| registry-aliases            | minikube | disabled     | 3rd party (unknown)            |
| registry-creds              | minikube | disabled     | 3rd party (UPMC Enterprises)   |
| storage-provisioner         | minikube | enabled ☑    | Google                         |
| storage-provisioner-gluster | minikube | disabled     | 3rd party (Gluster)            |
| volumesnapshots             | minikube | disabled     | Kubernetes                     |
|-----------------------------|----------|--------------|--------------------------------|
pkumar@linuxtechi:~$
```

If you wish to enable any addons run the below minikube command,

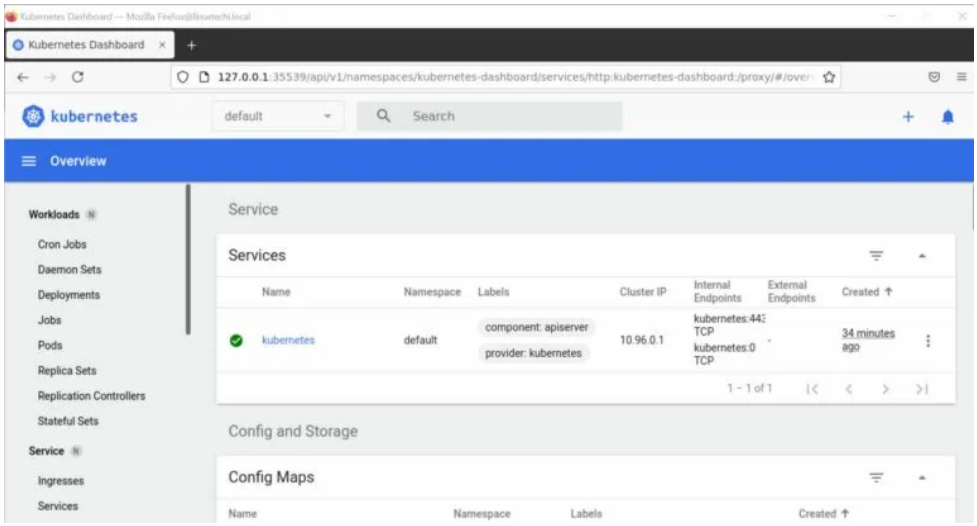
$ minikube addons enable <addon-name>

Let's assume we want to enable and access kubernetes dashboard , run

```
$ minikube dashboard
```

It will open the Kubernetes dashboard in the web browser.

```
pkumar@linuxtechi:~$ minikube dashboard
* Enabling dashboard ...
  - Using image docker.io/kubernetesui/dashboard:v2.6.0
  - Using image docker.io/kubernetesui/metrics-scraper:v1.0.8
* Verifying dashboard health ...
* Launching proxy ...
* Verifying proxy health ...
* Opening http://127.0.0.1:45315/api/v1/namespaces/kubernetes-dashboard/services/http:kubernetes-dashboard:/proxy/ in your default browser...
```



To enable Ingress controller addon, run

```
$ minikube addons enable ingress
```

```
pkumar@linuxtechi:~$ minikube addons enable ingress
* ingress is an addon maintained by Kubernetes. For any concerns contact minikube on GitHub.
You can view the list of minikube maintainers at: https://github.com/kubernetes/minikube/blob/master/OWNERS
  - Using image k8s.gcr.io/ingress-nginx/kube-webhook-certgen:v1.1.1
  - Using image k8s.gcr.io/ingress-nginx/kube-webhook-certgen:v1.1.1
  - Using image k8s.gcr.io/ingress-nginx/controller:v1.2.1
* Verifying ingress addon...
* The 'ingress' addon is enabled
pkumar@linuxtechi:~$
```

Step 7) Verify Minikube Installation

To verify the minikube installation, let's try to deploy nginx based deployment.

Run below kubectl command to install nginx based deployment.

```
$ kubectl create deployment my-nginx --image=nginx
```

Run following kubectl command to verify deployment status

```
$ kubectl get deployments.apps my-nginx
$ kubectl get pods
```

Output of above commands would look like below:

```
pkumar@linuxtechi:~$ kubectl create deployment my-nginx --image=nginx
deployment.apps/my-nginx created
pkumar@linuxtechi:~$ kubectl get deployments.apps my-nginx
NAME       READY   UP-TO-DATE   AVAILABLE   AGE
my-nginx   1/1     1            1           55s
pkumar@linuxtechi:~$ kubectl get pods
NAME                        READY   STATUS    RESTARTS   AGE
my-nginx-6b74b79f57-6qcnd   1/1     Running   0          62s
pkumar@linuxtechi:~$
```

Expose the deployment using following command,

```
$ kubectl expose deployment my-nginx --name=my-nginx-svc --type=NodePort --port=80
$ kubectl get svc my-nginx-svc
```

Use below command to get your service url,

```
$ minikube service my-nginx-svc --url
http://192.168.49.2:31895
$
```

Now try to access your nginx based deployment using above url,

```
$ curl http://192.168.49.2:31895
```

Output,

```
pkumar@linuxtechi:~$ curl http://192.168.49.2:31895
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
    body {
        width: 35em;
        margin: 0 auto;
        font-family: Tahoma, Verdana, Arial, sans-serif;
    }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>

<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>

<p><em>Thank you for using nginx.</em></p>
</body>
</html>
pkumar@linuxtechi:~$
```

Great, above confirms that NGINX application is accessible.

Step 8) Managing Minikube Cluster

To stop the minikube, run

```
$ minikube stop
```

To delete the minikube, run

```
$ minikube delete
```

To Start the minikube, run

```
$ minikube start
```

In case you want to start the minikube with higher resource like 8 GB RM and 4 CPU then execute following commands one after the another.

```
$ minikube config set cpus 4
$ minikube config set memory 8192
$ minikube delete
$ minikube start
```

That's all from this tutorial, I hope you have learned how to install Minikube on Ubuntu 22.04 & 22.04. Please don't hesitate to share your feedback and comments.

Also Read: How to Configure Static IP Address on Ubuntu 22.04 LTS

2 thoughts on "How to Install Minikube on Ubuntu 22.04 | 20.04"

Ram

October 28, 2022 at 8:35 pm

Very detailed installation and setup about minikube. This helped me lot to run minikube on ubuntu Hypervision. Thanks a lot for stepwise detail explanation. please also add either do we also need to install docker and drivers,podman,vmware separately?

I got these below errors before setup is completed.

raj@raj1:~/Desktop$ minikube start –driver=docker
minikube v1.27.1 on Ubuntu 20.04 (hyperv/amd64)
✨ Using the docker driver based on user configuration

Exiting due to PROVIDER_DOCKER_NOT_FOUND: The 'docker' provider was not found: exec: "docker": executable file not found in $PATH
Suggestion: Install Docker
Documentation: 'https://minikube.sigs.k8s.io/docs/drivers/docker/'

raj@raj1:~/Desktop$ minikube start –addons=ingress –cpus=2 –cni=flannel –install-addons=true –kubernetes-version=stable –memory=6g
minikube v1.27.1 on Ubuntu 20.04 (hyperv/amd64)
Unable to pick a default driver. Here is what was considered, in preference order:
Alternatively you could install one of these drivers:
▪ docker: Not installed: exec: "docker": executable file not found in $PATH
▪ kvm2: Not installed: exec: "virsh": executable file not found in $PATH
▪ vmware: Not installed: exec: "docker-machine-driver-vmware": executable file not found in $PATH
▪ podman: Not installed: exec: "podman": executable file not found in $PATH
▪ virtualbox: Not installed: unable to find VBoxManage in $PATH
▪ qemu2: Not installed: exec: "qemu-system-x86_64": executable file not found in $PATH

❌ Exiting due to DRV_NOT_DETECTED: No possible driver was detected. Try specifying –driver, or see 'https://minikube.sigs.k8s.io/docs/start/'

Reply

Ram
October 28, 2022 at 9:07 pm

errors got resolved after installing docker. based on your first step. Thanks a lot Pradeep.

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