

Kubernetes Cluster Setup Guide

1. Prerequisite

- AWS instance (1) - Ubuntu 22.04
- Instance type: t2.medium
- Network setting: Allow all traffic, anywhere
- Storage: 20GB
- **NOTE:** All commands should be executed as a regular user, not root.

2. Update System Packages

```
sudo apt update -y
```

3. Install Docker

Add Docker's official GPG key:

```
sudo apt-get update
```

```
sudo apt-get install ca-certificates curl
```

```
sudo install -m 0755 -d /etc/apt/keyrings
```

```
sudo curl -fsSL https://download.docker.com/linux/ubuntu/gpg -o /etc/apt/keyrings/docker.asc
```

```
sudo chmod a+r /etc/apt/keyrings/docker.asc
```

Add the repository to Apt sources:

```
echo \
```

```
"deb [arch=$(dpkg --print-architecture) signed-by=/etc/apt/keyrings/docker.asc]  
https://download.docker.com/linux/ubuntu \
```

```
$(. /etc/os-release && echo "$VERSION_CODENAME") stable" | \
```

```
sudo tee /etc/apt/sources.list.d/docker.list > /dev/null
```

```
sudo apt-get update
```

Install Docker:

```
sudo apt install docker.io
```

```
docker version
```

4. Enable and Verify Docker Service

```
sudo systemctl status docker
```

5. Add User to Docker Group

```
sudo groupadd docker
```

```
sudo usermod -aG docker ubuntu
```

6. Install kubectl

Download the latest release:

```
curl -LO "https://dl.k8s.io/release/$(curl -L -s  
https://dl.k8s.io/release/stable.txt)/bin/linux/amd64/kubectl"
```

Validate the binary (optional):

```
curl -LO "https://dl.k8s.io/release/$(curl -L -s  
https://dl.k8s.io/release/stable.txt)/bin/linux/amd64/kubectl.sha256"
```

Validate the kubectl binary against the checksum file:

```
echo "$(cat kubectl.sha256) kubectl" | sha256sum --check
```

Install kubectl:

```
sudo install -o root -g root -m 0755 kubectl /usr/local/bin/kubectl
```

7. Verify kubectl Installation

```
kubectl version --client
```

8. Install Additional Dependencies

```
sudo apt-get install -y conntrack
```

9. Install Minikube

```
curl -LO https://storage.googleapis.com/minikube/releases/latest/minikube-linux-amd64
```

```
sudo install minikube-linux-amd64 /usr/local/bin/minikube && rm minikube-linux-amd64
```

10. Start Minikube

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

11. Verify Cluster Setup

```
minikube status
```

```
kubectl get nodes
```

```
minikube node list
```