What is meant by kubeconfig in k8s cluster?

In Kubernetes (K8s), a kubeconfig file is a configuration file used by the kubectl command-line tool (and other clients) to interact with a Kubernetes cluster.

Key Purpose of kubeconfig:

It tells kubectl:

* Which cluster to connect to
* Which user/credentials to use
* Which namespace to operate in
* What context to use by default

The default kubeconfig file is located at: **~/.kube/config**

# When Do You Use a Kubeconfig?

* Accessing a cluster from kubectl
* Switching between multiple clusters
* Automating interactions with the cluster via CI/CD
* Managing user authentication

If i want connect private end point eks cluster what do i need to do?

To connect to a private endpoint Amazon EKS (Elastic Kubernetes Service) cluster, there are a few important steps and requirements, since private EKS clusters do not expose the Kubernetes API publicly. You must access the cluster from within the VPC or via a secure channel to the VPC (like VPN or AWS Direct Connect).

### 1. ****Ensure EKS Cluster is Using a Private Endpoint****

In the AWS console or using the CLI, check:

* **Public access:** Disabled
* **Private access:** Enabled

aws eks describe-cluster --name your-cluster-name \

--query "cluster.resourcesVpcConfig"

### 2. ****Connect to the VPC****

Options:

* **EC2 Instance (Bastion host)** inside the VPC
* **AWS Systems Manager Session Manager (SSM)** (recommended, secure)
* **VPN or AWS Direct Connect** .

This is necessary because the EKS API server is **not reachable over the public internet.**

### 3. ****Generate**** kubeconfig ****for EKS****

Use the AWS CLI to update your kubeconfig:

aws eks update-kubeconfig --region your-region --name your-cluster

### 4. ****Security Group + NACL Configuration****

Ensure that:

* The **security group attached to the cluster’s control plane** allows inbound traffic on port **443** from the CIDR/IP of your connecting machine or VPC
* Your **EC2 instance (or VPN endpoint)** allows outbound HTTPS (port 443)

### 5. (Optional) ****SSM Tunnel or Port Forwarding****

If you're using SSM or a bastion, you can forward the EKS API server port locally:

**Using SSM:**

aws ssm start-session \

--target i-xxxxxxxxxxxxxxxxx \

--document-name AWS-StartPortForwardingSession \

--parameters '{"portNumber":["443"],"localPortNumber":["8443"]}'

Summary: What You Need to Do

1. Configure cluster endpoint access to be private
2. Ensure your client (e.g., laptop or CI/CD runner) is inside the VPC (or connected to it via VPN/Direct Connect)
3. Update your kubeconfig
4. Ensure network routes and security groups allow traffic
5. Use a bastion host or SSM session if remote