MPRASHANT

Elastic Kubernetes Service (Amazon EKS)

Fully managed Kubernetes cluster infrastructure

What is Kubernetes?

An open-source platform for automating the deployment, scaling, and management of containerized applications.

- Automating Deployment
- Management of Containerized apps
- Scaling

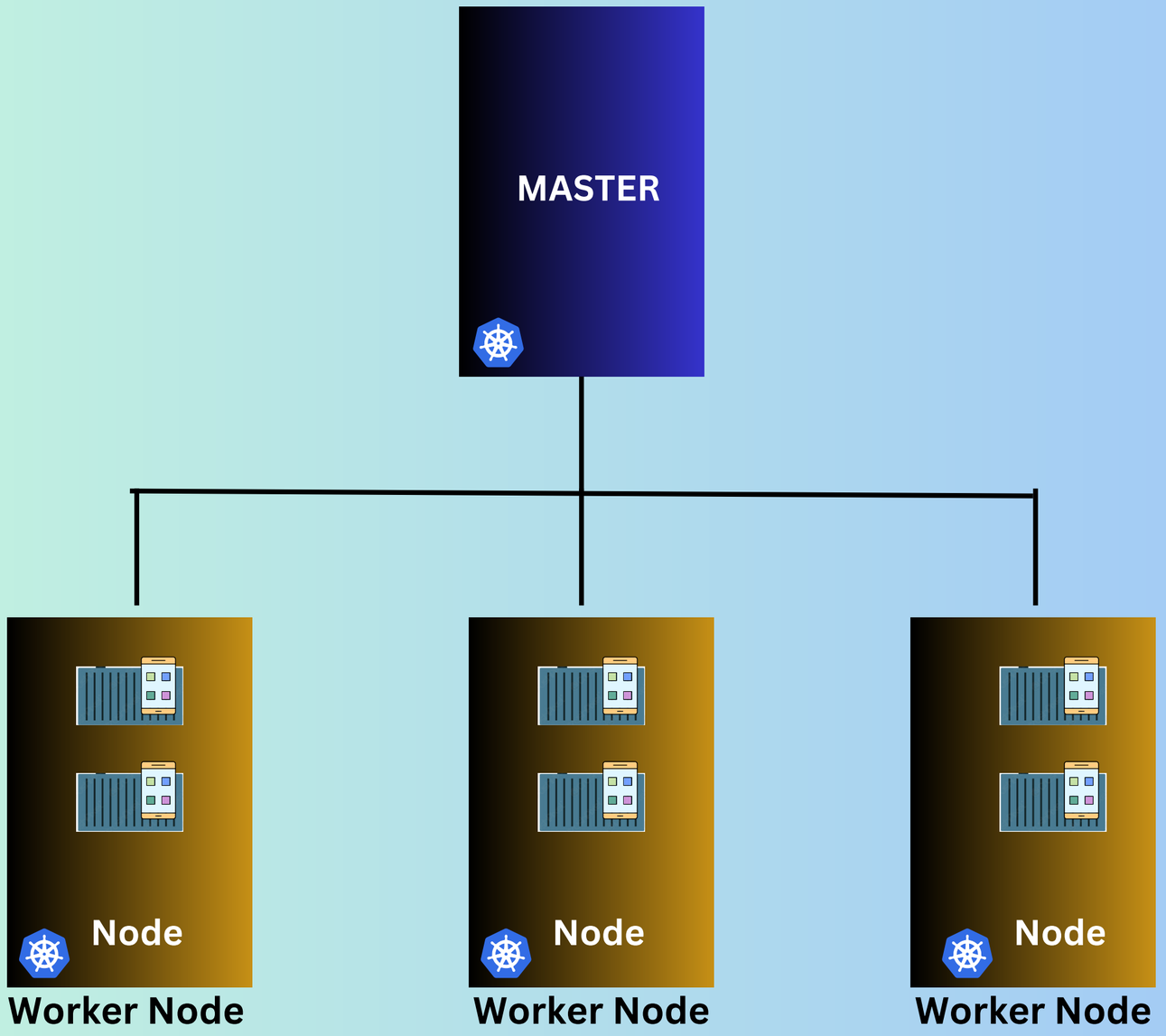
Kubernetes

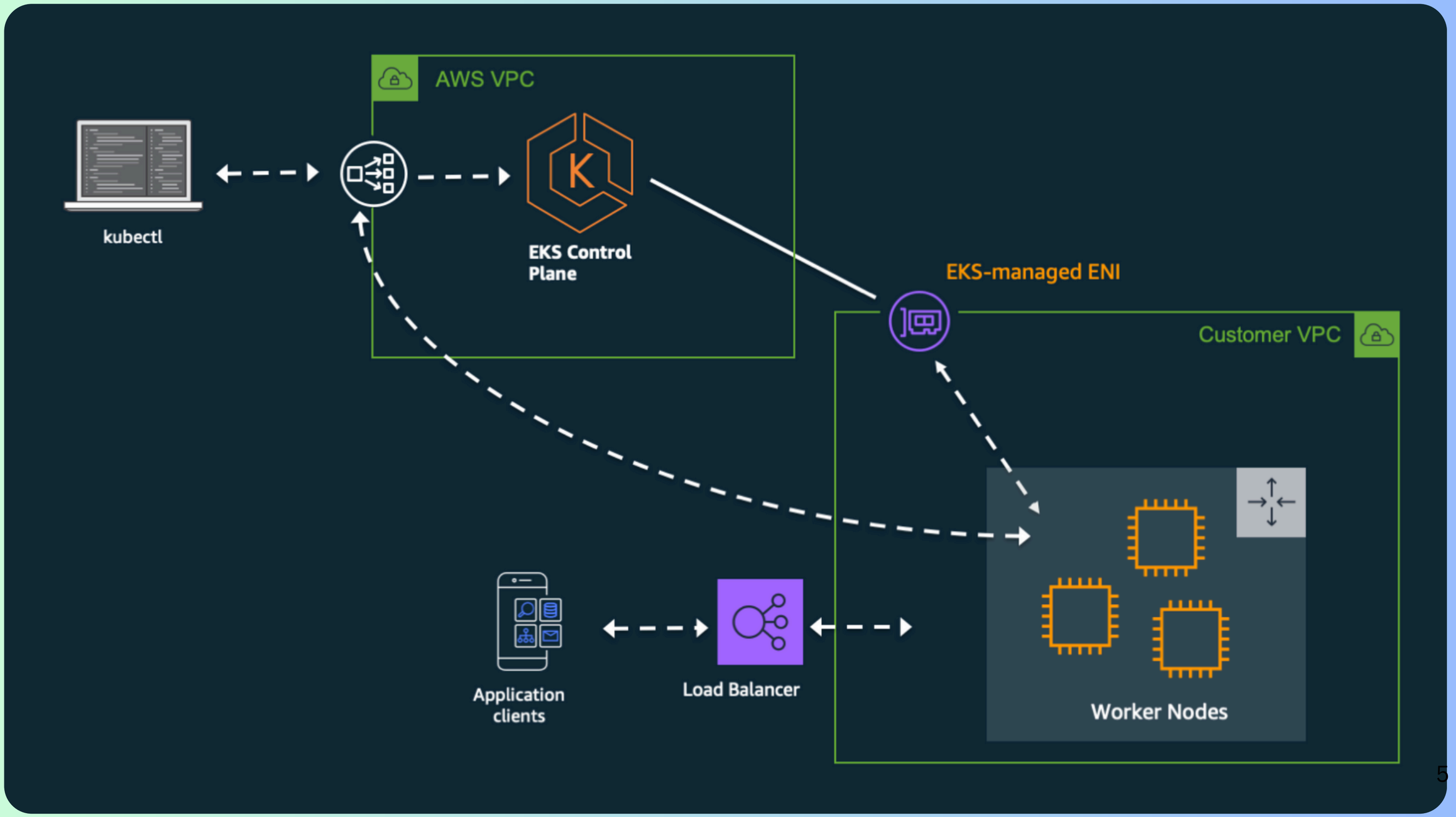
When you deploy Kubernetes, you get a cluster.

Two important parts are:

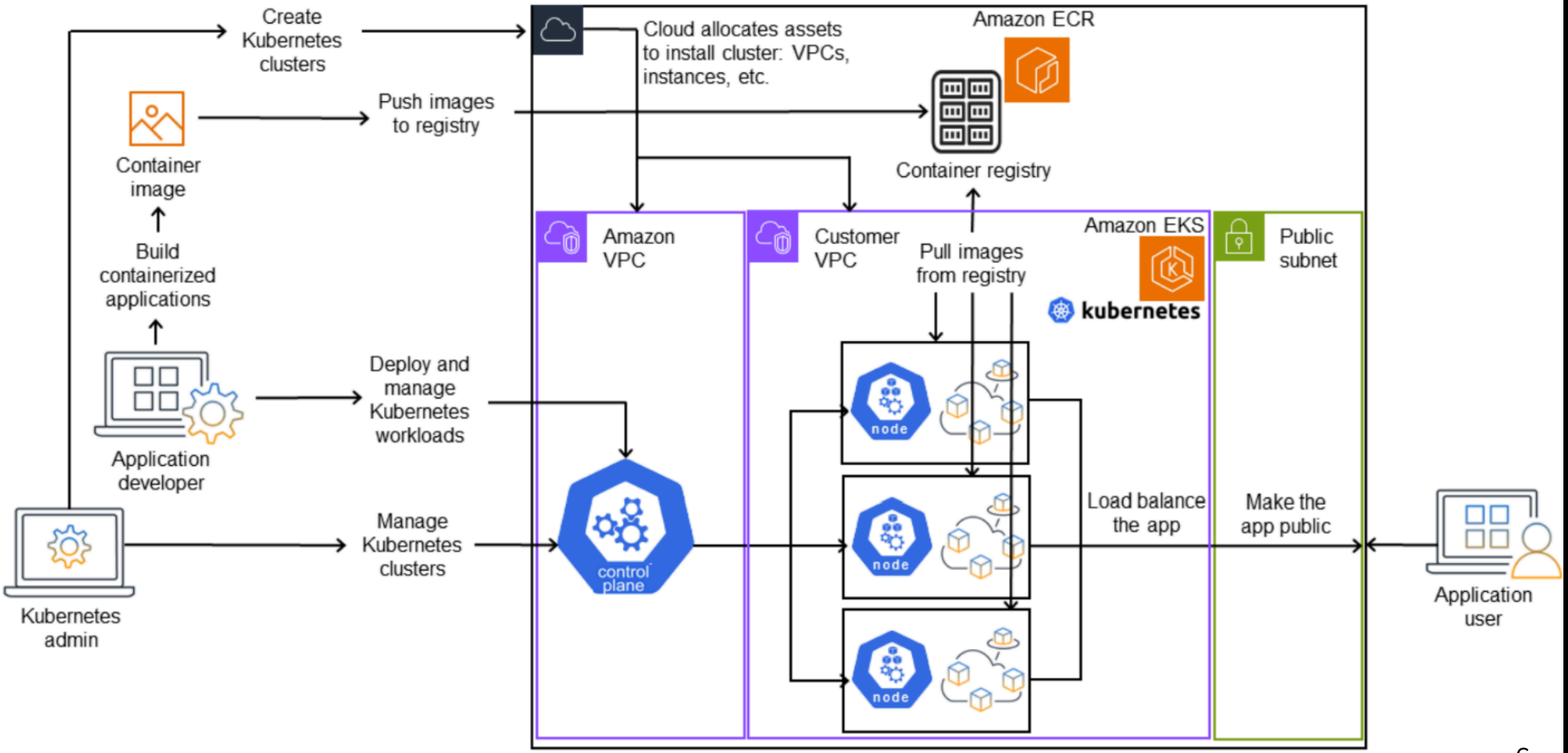
- Master (Control Plane) &
- Worker nodes.

Cluster




AWS VPC
kubectl
EKS Control Plane
EKS-managed ENI
Customer VPC
Application clients
Load Balancer
Worker Nodes

A Kubernetes cluster in action



Practical

Prerequisites

Before you begin, ensure you have the following prerequisites set up to use Amazon EKS:

- Set up AWS CLI and configure credentials
- Install eksctl
- Install kubectl

Installation of AWS CLI

https://docs.aws.amazon.com/cli/latest/userguide/getting-started-install.html

- Windows - install using msi
- MAC - install using pkg
- Verify using: aws --version

AWS Credential Setup

- Create a IAM user
- Provide sufficient permissions
- Create or generate Secret Keys
- AWS CONFIGURE - command to setup keys
- To verify user identity
  - aws sts get-caller-identity

Installation of eksctl

- Windows (using chocolatey)
  - https://chocolatey.org/install
  - $ choco (to verify)
  - choco install eksctl

- MAC (using homebrew)
  - https://brew.sh/
  - brew tap weaveworks/tap
  - brew install weaveworks/tap/eksctl

Installation of kubectl

https://kubernetes.io/docs/tasks/tools/

- **MAC - brew install kubectl**
- **Windows - choco install kubernetes-cli**

Creating EKS Cluster

To create EKS Cluster in AutoMode

- **eksctl create cluster --name=<cluster-name> --enable-auto-mode**

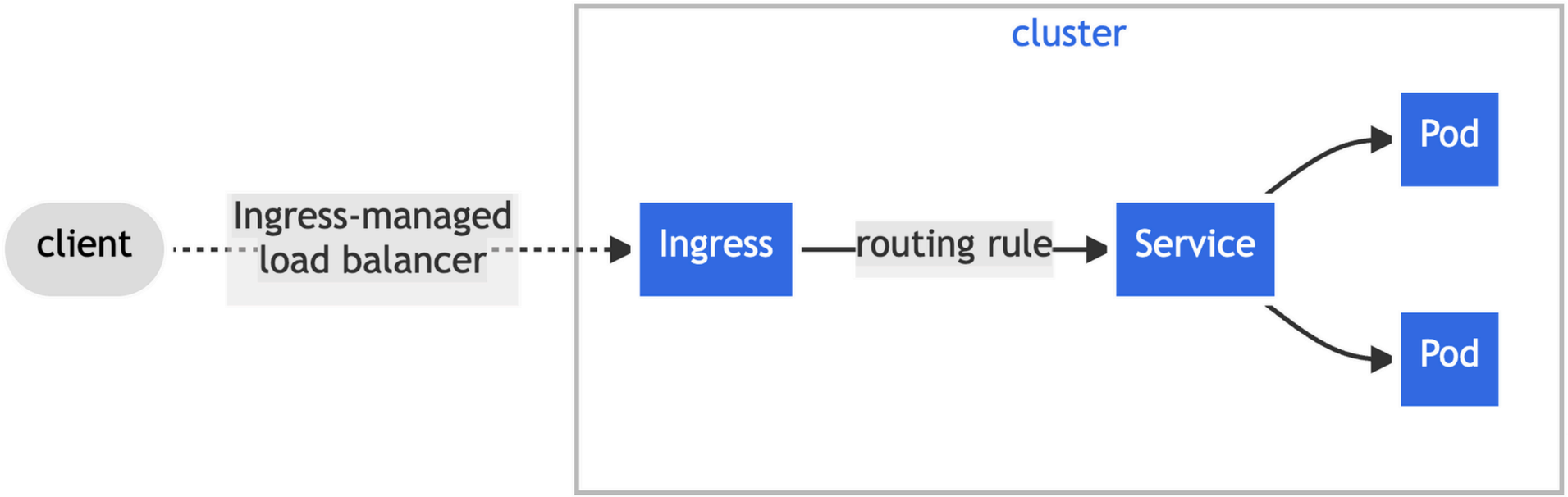
- We can also provide
  - --nodes=3
  - --nodes-min=2, --nodes-max=5
  - --region us-west-2
  - --node-type t3.medium
  - --managed/fargate

Cluster Type	Best For	Managed By AWS
EC2 Worker Nodes	Customizable, performance-intensive	Partially
Fargate	Serverless, lightweight workloads	Fully
Managed Node Groups	Simplified node management	Mostly
EKS Anywhere	Hybrid and on-premises deployments	No
Spot Instances	Cost-sensitive, fault-tolerant apps	Partially
Outposts	On-prem Kubernetes workloads	Mostly
Multi-Cluster	Large-scale, isolated environments	Partially

What is Ingress?

Ingress exposes HTTP and HTTPS routes from outside the cluster to services within the cluster. Traffic routing is controlled by rules defined on the Ingress resource.

Here is a simple example where an Ingress sends all its traffic to one Service:




aws
AWS
ZERO -> HERO
15+ Services
DevOPS HINDI

Clear Concepts like

- Website deployment
- DNS, Custom Domain
- Scaling
- Global Deployment
- CDN
- Load Balancing
- Firewall Rules
- Networking, IPs, Ports, Subnets, IG, Routing
- IAC
- Manage containers
- Deploy full stack webapp
- ETC.
- SSL/TLS Working

- What is virtualization
- What is Cloud Computing
- What is AWS
- Working with AWS Services
    - AWS Setup Lab
    - AWS Services like EC2, S3, RDS, VPC, Route53 and so on.