Managing Kubernetes Cluster with AWS EKS

Kubernetes Installation

minikube

kubeadm

amazon web services

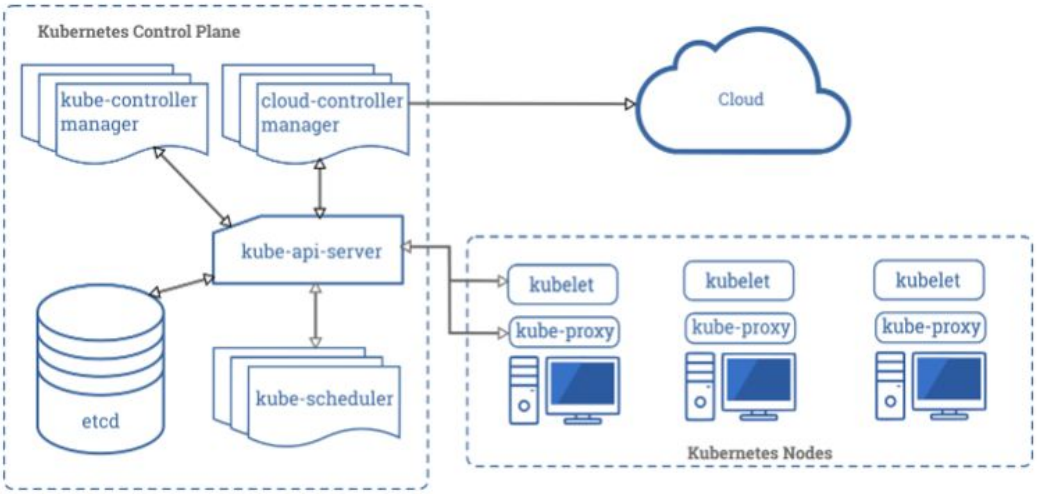
Google Cloud

Container Orchestration on AWS

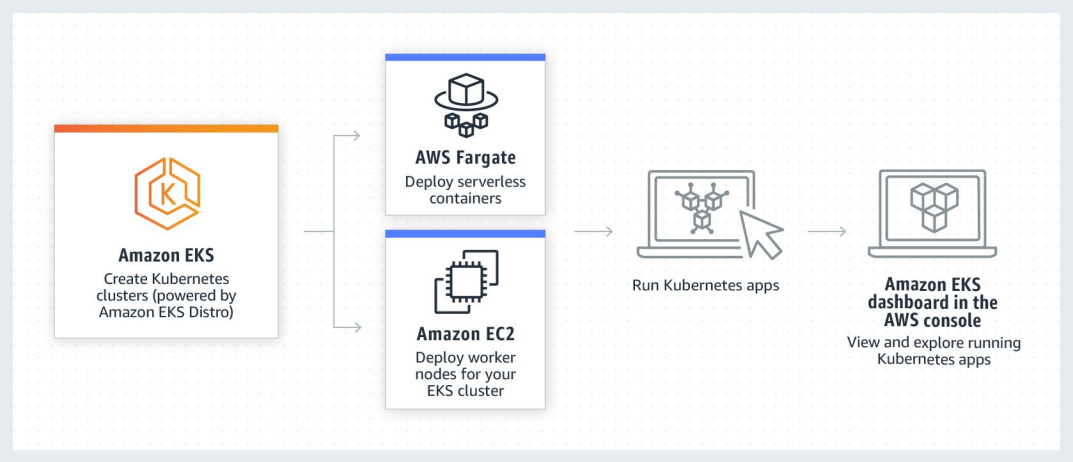
Amazon EKS is a managed service that makes it easy for you to use Kubernetes on AWS without needing to install and operate your own Kubernetes control plane.

Amazon ECS is a fully managed container orchestration service that makes it easy for you to deploy, manage, and scale containerized applications.

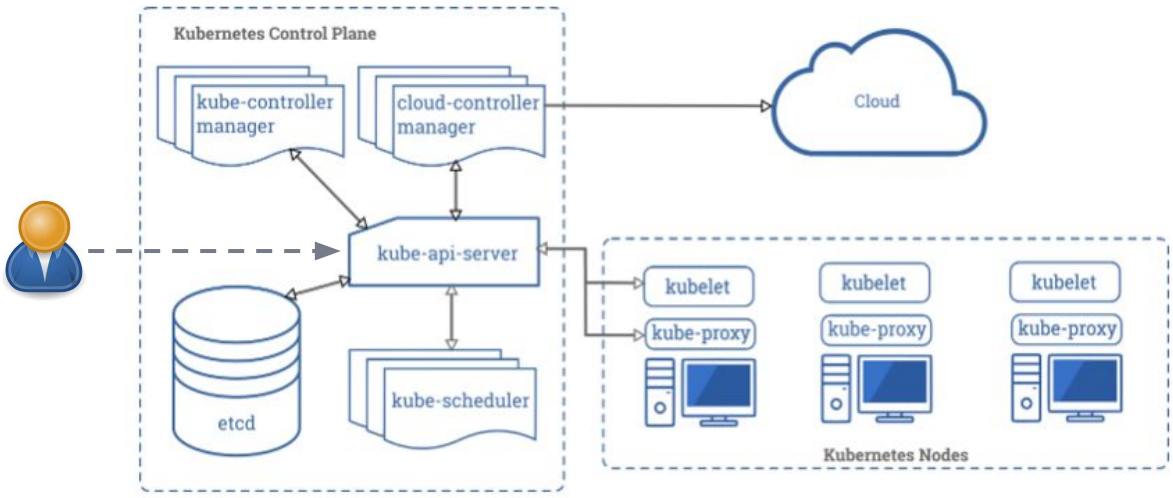
Control Plane Components



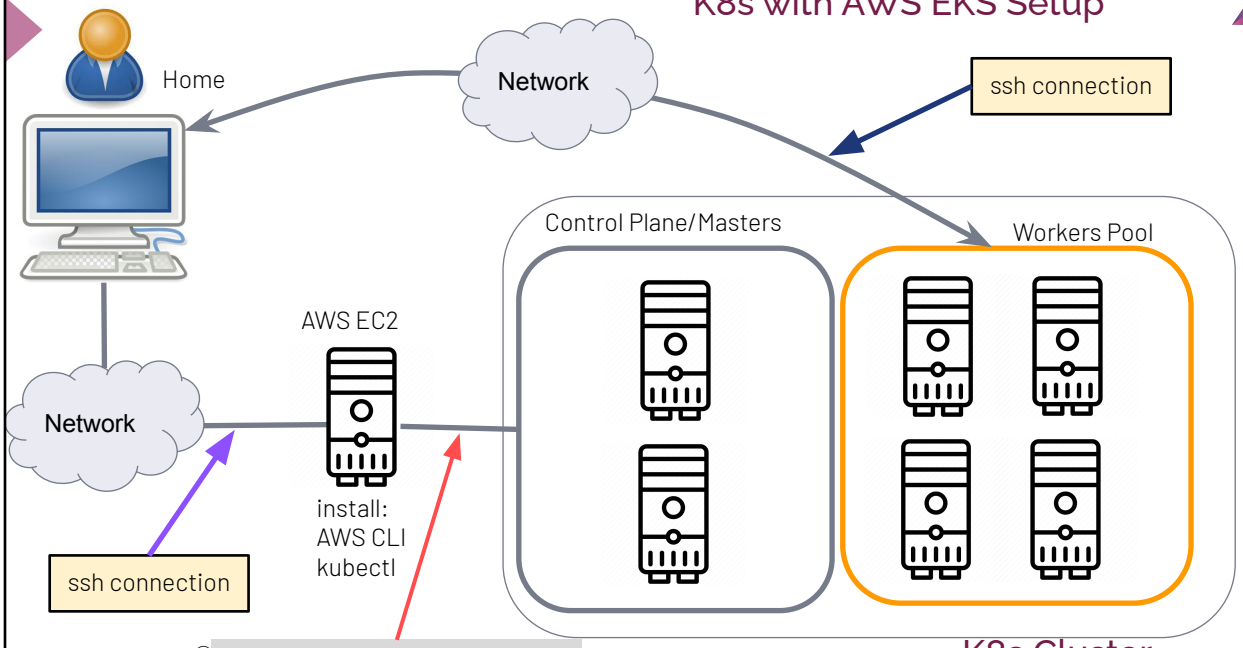
Container Orchestration on AWS



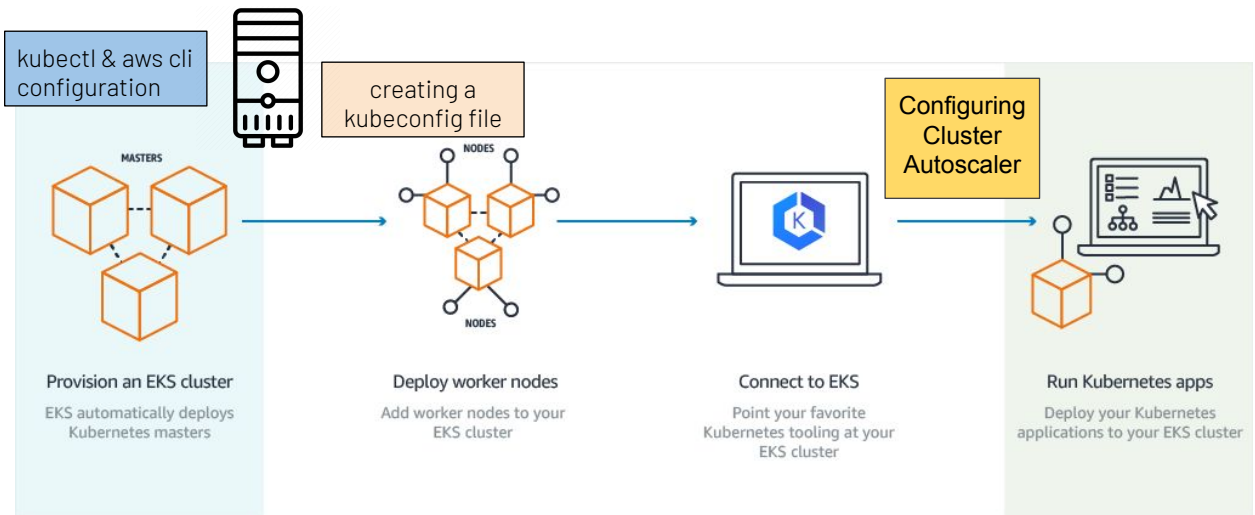
Control Plane Components



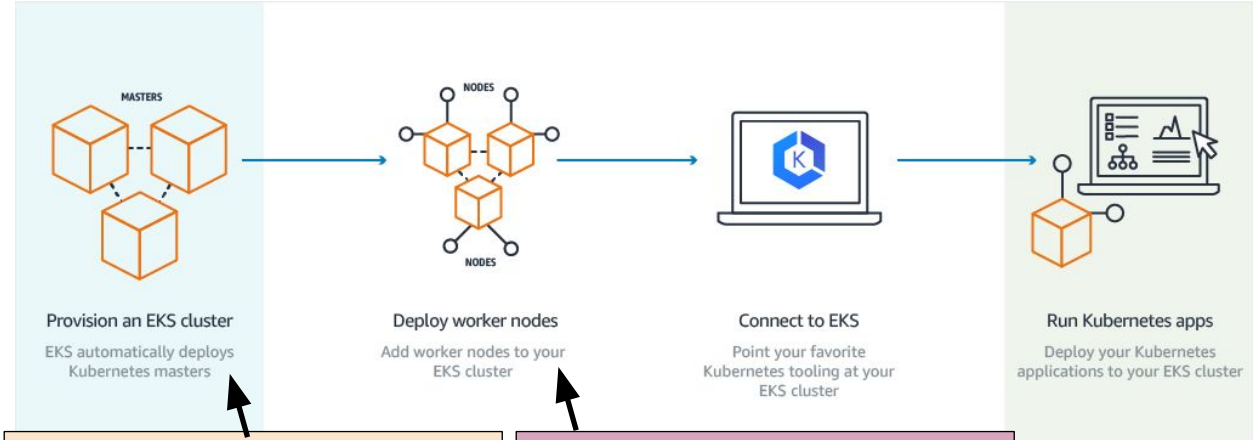
K8s with AWS EKS Setup



Provision of K8s with AWS EKS



Role & Policies

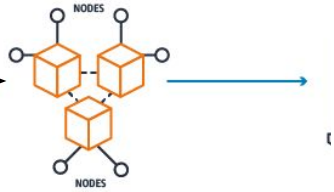


IAM Role: (jb-eks-cluster)
EKS - Cluster policy:
- AmazonEKSClusterPolicy

IAM Role: (jb-k8s-worker-pool)
EC2 - Common policies
- AmazonEKSWorkerNodePolicy
- AmazonEC2ContainerRegistryReadOnly
- AmazonEKS_CNI_Policy

Attach ClusterAutoscalerPolicy to Role

IAM Role: (jb-k8s-worker-pool)
EC2 - Common policies
- AmazonEKSWorkerNodePolicy
- AmazonEC2ContainerRegistryReadOnly
- AmazonEKS_CNI_Policy



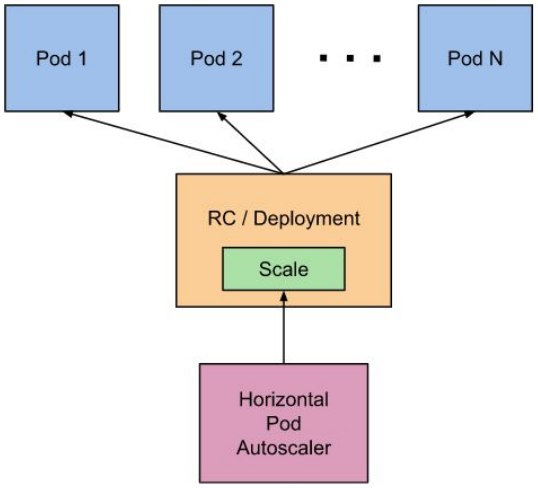
Deploy worker nodes

Attach this policy to the IAM Worker Node Role

```
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Action": [
                "autoscaling:DescribeAutoScalingGroups",
                "autoscaling:DescribeAutoScalingInstances",
                "autoscaling:DescribeLaunchConfigurations",
                "autoscaling:DescribeTags",
                "autoscaling:SetDesiredCapacity",
                "autoscaling:TerminateInstanceInAutoScalingGroup",
                "ec2:DescribeLaunchTemplateVersions"
            ],
            "Resource": "*",
            "Effect": "Allow"
        }
    ]
}
```

ClusterAutoscalerPolicy

HorizontalPodAutoscaler



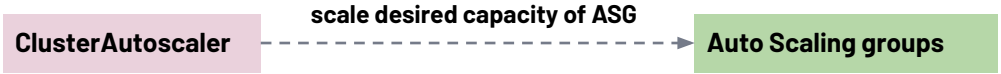

```
apiVersion: autoscaling/v1
kind: HorizontalPodAutoscaler
metadata:
  name: php-apache
spec:
  scaleTargetRef:
    apiVersion: apps/v1
    kind: Deployment
    name: php-apache
  minReplicas: 2
  maxReplicas: 10
    targetCPUUtilizationPercentage:
```

HorizontalPodAutoscaler controls the scale of a Deployment and its ReplicaSet.

Cluster Autoscaler

Cluster Autoscaler is a tool that automatically adjusts the size of the Kubernetes cluster when one of the following conditions is true:

- there are pods that failed to run in the cluster due to insufficient resources.
- there are nodes in the cluster that have been underutilized for an extended period of time and their pods can be placed on other existing nodes.



THANKS!

Any questions?

You can find me at:

- joe@clarusway.com