AWS ❯ Documentation ❯ Amazon EKS ❯ User Guide

What is Amazon EKS?

PDF (eks-ug.pdf#what-is-eks) | **RSS (doc-history.rss)**

Amazon Elastic Kubernetes Service (Amazon EKS) is a managed service that you can use to run Kubernetes on AWS without needing to install, operate, and maintain your own Kubernetes control plane or nodes. Kubernetes is an open-source system for automating the deployment, scaling, and management of containerized applications. Amazon EKS:

- Runs and scales the Kubernetes control plane across multiple AWS Availability Zones to ensure high availability.

- Automatically scales control plane instances based on load, detects and replaces unhealthy control plane instances, and it provides automated version updates and patching for them.

- Is integrated with many AWS services to provide scalability and security for your applications, including the following capabilities:

  - Amazon ECR for container images

  - Elastic Load Balancing for load distribution

  - IAM for authentication

  - Amazon VPC for isolation

- Runs up-to-date versions of the open-source Kubernetes software, so you can use all of the existing plugins and tooling from the Kubernetes community. Applications that are running on Amazon EKS are fully compatible with applications running on any standard Kubernetes environment, no matter whether they're running in on-premises data centers or public clouds. This means that you can easily migrate any standard Kubernetes application to Amazon EKS without any code modification.

## Amazon EKS control plane architecture

Amazon EKS runs a single tenant Kubernetes control plane for each cluster. The control plane infrastructure isn't shared across clusters or AWS accounts. The control plane consists of at least two API server instances and three `etcd` instances that run across three Availability Zones within an AWS Region. Amazon EKS:

- Actively monitors the load on control plane instances and automatically scales them to ensure high performance.

- Automatically detects and replaces unhealthy control plane instances, restarting them across the Availability Zones within the AWS Region as needed.

- Leverages the architecture of AWS Regions in order to maintain high availability. Because of this, Amazon EKS is able to offer an SLA for API server endpoint availability ⧉ (http://aws.amazon.com/eks/sla) .

Amazon EKS uses Amazon VPC network policies to restrict traffic between control plane components to within a single cluster. Control plane components for a cluster can't view or receive communication from other clusters or other AWS accounts, except as authorized with Kubernetes RBAC policies. This secure and highly available configuration makes Amazon EKS reliable and recommended for production workloads.

How does Amazon EKS work?
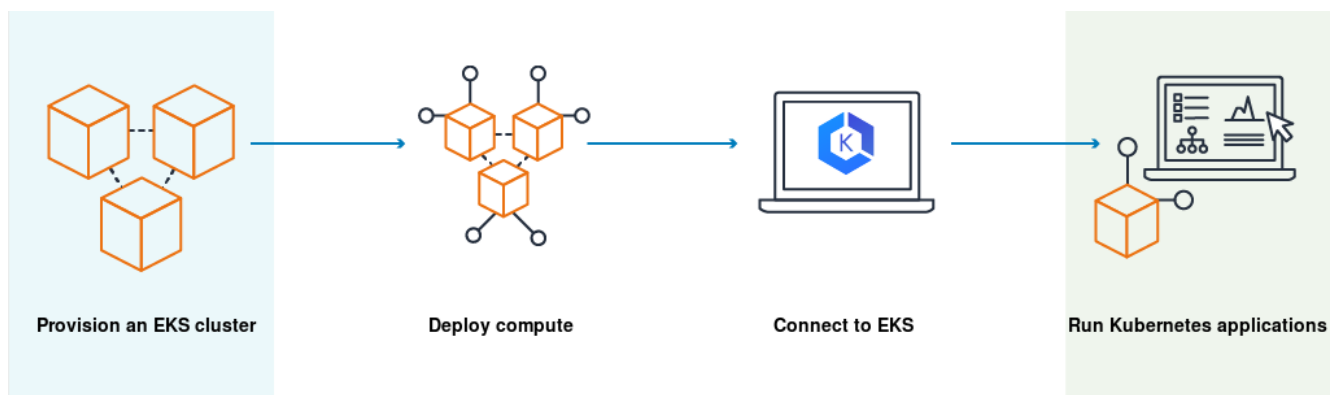
Getting started with Amazon EKS is easy:

1. Create an Amazon EKS cluster in the AWS Management Console or with the AWS CLI or one of the AWS SDKs.
2. Launch managed or self-managed Amazon EC2 nodes, or deploy your workloads to AWS Fargate.
3. When your cluster is ready, you can configure your favorite Kubernetes tools, such as `kubectl`, to communicate with your cluster.
4. Deploy and manage workloads on your Amazon EKS cluster the same way that you would with any other Kubernetes environment. You can also view information about your workloads using the AWS Management Console.

To create your first cluster and its associated resources, see Getting started with Amazon EKS (./getting-started.html) . To learn about other Kubernetes deployment options, see Deployment options (./eks-deployment-options.html) .

Pricing

An Amazon EKS cluster consists of a control plane and the Amazon EC2 or AWS Fargate compute that you run pods on. For more information about pricing for the control plane, see Amazon EKS pricing ⬚ (http://aws.amazon.com/eks/pricing) . Both Amazon EC2 and Fargate provide:

- **On-Demand Instances** – Pay for the instances that you use by the second, with no long-term commitments or upfront payments. For more information, see Amazon EC2 On-Demand Pricing ⬚ (http://aws.amazon.com/ec2/pricing/on-demand/) and AWS Fargate Pricing ⬚ (http://aws.amazon.com/fargate/pricing/) .

- **Savings Plans** – You can reduce your costs by making a commitment to a consistent amount of usage, in USD per hour, for a term of 1 or 3 years. For more information, see Pricing with Savings Plans ⬚ (http://aws.amazon.com/savingsplans/pricing/) .