

Service Name

Amazon EKS Anywhere

Service Overview

Amazon EKS Anywhere is a deployment option for Amazon EKS that enables customers to create and operate Kubernetes clusters on their own infrastructure. It is a customer-managed product built on the Kubernetes sub-project Cluster API (CAPI) that simplifies Kubernetes cluster management through automation of infrastructure setup and cluster lifecycle operations in on-premises and edge environments. Unlike Amazon EKS, customers are responsible for cluster lifecycle operations and maintenance. EKS Anywhere uses Amazon EKS Distro, the same Kubernetes distribution deployed by Amazon EKS, providing consistent tooling and software updates. It can run in air-gapped environments with optional AWS service integrations for observability and identity management.

Key Use Cases

- Deploying across hybrid environments: Running Kubernetes workloads consistently across on-premises data centers and AWS cloud environments
- Deploying high-performing large language models (LLMs): Supporting AI/ML workloads that require on-premises compute resources
- Maintaining data sovereignty: Keeping sensitive data and workloads within specific geographic boundaries or regulatory jurisdictions
- Air-gapped environments: Operating Kubernetes clusters in secure, disconnected environments without internet connectivity
- Edge computing: Managing containerized applications at edge locations with limited connectivity to cloud services

Features

- **Infrastructure Support:** Supports various infrastructure types including VMware vSphere, bare metal, Nutanix, Apache CloudStack, and AWS Snow
- **Operating System Options:** Provides Bottlerocket as default OS with Ubuntu and Red Hat Enterprise Linux (RHEL) alternatives
- **Air-gapped Operation:** Can run disconnected from AWS Regions in secure, isolated environments
- **AWS Service Integration:** Optional integrations with AWS IAM, Certificate Manager, CloudWatch Logs, and Managed Prometheus
- **EKS Connector:** Software agent enabling cluster registration and management through Amazon EKS console

- **Curated Packages:** AWS-vended software add-ons for load balancing, observability, and auto-scaling capabilities
- **Extended Kubernetes Support:** Provides extended support for Kubernetes versions after community support expires

Value Proposition

Amazon EKS Anywhere eliminates the complexity of managing multiple third-party tools and separate support contracts required for on-premises Kubernetes deployments. It provides consistent operational tooling with Amazon EKS in the cloud, using the same Kubernetes distribution (EKS Distro) with latest security patches and updates:

- Customers can consolidate support costs through AWS support agreements, reduce operational overhead through automation of undifferentiated heavy lifting, and maintain consistency between cloud and on-premises environments
- The service offers flexibility to run in various infrastructure environments while providing optional AWS service integrations for enhanced capabilities
- This approach accelerates implementation time and reduces the fragmentation typically associated with multi-vendor Kubernetes solutions

Service Integration

Amazon EKS Anywhere integrates with several core AWS services through optional connections when not running in air-gapped mode. Key integrations include AWS Identity and Access Management (IAM) for cluster authentication and IAM Roles for Service Accounts (IRSA), Amazon Certificate Manager for certificate management, Amazon CloudWatch Logs for centralized logging via FluentBit, Amazon Managed Service for Prometheus for metrics collection using AWS Distro for OpenTelemetry, and Amazon EKS console for cluster visualization and management through the EKS Connector:

- The service also leverages Amazon EKS Distro for consistent Kubernetes distribution, Amazon S3 and Amazon ECR for secure access to releases and container images, and AWS License Manager for subscription management
- These integrations enable unified management and observability across hybrid environments

Onboarding and Offboarding

Customers begin by downloading and running the EKS Anywhere installer from the official documentation. The process involves three main steps: installing the eksctl-anywhere CLI tool, creating cluster configurations for their chosen infrastructure provider (vSphere, bare metal, etc.), and deploying clusters using the installer:

- After initial deployment, customers can optionally install the EKS Connector to view and manage clusters through the Amazon EKS console

- For enhanced support and access to curated packages, customers can purchase Amazon EKS Anywhere Enterprise Subscriptions through the AWS console, which requires AWS Enterprise Support or Enterprise On-Ramp Support plans
- The service provides integrated tooling for ongoing cluster inspection, upgrades, and scaling operations

Getting Started Guide: <https://anywhere.eks.amazonaws.com/docs/getting-started/install/>

Data Removal

Amazon EKS Anywhere is a customer-managed service where customers maintain full control over their data and cluster infrastructure. Data removal involves deleting cluster resources, persistent volumes, and associated storage according to standard Kubernetes deletion procedures. Since clusters run on customer-owned infrastructure, customers are responsible for securely wiping underlying storage systems and ensuring complete data removal from their hardware. Subscription cancellation can be done through the AWS console within 7 days without charge, or by contacting AWS account teams thereafter.

Backup/Restore and Disaster Recovery

Amazon EKS Anywhere relies on customer-implemented backup and disaster recovery solutions since it operates on customer-managed infrastructure. Customers can implement standard Kubernetes backup tools like Velero or other third-party solutions for cluster state and persistent volume backups. The service itself does not provide built-in backup capabilities, requiring customers to design and implement their own backup strategies using available Kubernetes ecosystem tools and infrastructure-specific backup solutions.

Backup Capabilities

Amazon EKS Anywhere does not provide native backup capabilities as it is a customer-managed service. Customers must implement their own backup solutions using standard Kubernetes tools and ecosystem solutions. The service does not integrate directly with AWS Backup, requiring customers to use third-party backup tools like Velero, or infrastructure-specific backup solutions depending on their underlying platform (vSphere, bare metal, etc.).

Disaster Recovery

Amazon EKS Anywhere does not provide built-in disaster recovery capabilities or direct integration with AWS Elastic Disaster Recovery. Customers are responsible for implementing their own disaster recovery strategies using standard Kubernetes patterns like multi-cluster deployments, data replication, and infrastructure-level disaster recovery solutions. Recovery planning must account for the underlying infrastructure platform and customer-specific requirements.

Recovery Objectives

Amazon EKS Anywhere supports customer-defined RPO and RTO objectives through architectural flexibility rather than built-in features. Customers can achieve specific recovery objectives by implementing multi-cluster deployments, configuring appropriate data replication strategies, and designing infrastructure redundancy. The service's support for various infrastructure types enables customers to design geographically distributed deployments that align with their recovery requirements and business continuity needs.

Service Constraints

Service Quotas: <https://docs.aws.amazon.com/general/latest/gr/eks.html>

FAQ: <https://aws.amazon.com/eks/eks-anywhere/faqs/>

Technical Requirements

Service Documentation: <https://anywhere.eks.amazonaws.com/docs/>

User Guide: <https://anywhere.eks.amazonaws.com/docs/getting-started/install/>

API Reference: <https://docs.aws.amazon.com/eks/latest/APIReference/Welcome.html>

Pricing Overview

Please see the AWS UK G Cloud 15 Pricing Document accompanying this service in the Digital Marketplace.

Public Pricing: <https://aws.amazon.com/eks/eks-anywhere/pricing/>

Cost Optimization

Amazon EKS Anywhere offers several cost optimization opportunities through its flexible deployment model. The core software is available as open source at no cost, with optional Enterprise Subscriptions providing additional value through support and curated packages:

- Customers can optimize infrastructure costs by rightsizing clusters to actual workload requirements and leveraging existing on-premises hardware investments
- The flat per-cluster pricing model (\$24,000 annually for 1-year terms, \$18,000 annually for 3-year terms) doesn't scale with cluster size, making it cost-effective for larger deployments
- Multi-year subscriptions provide 25% cost savings compared to annual terms
- Customers can also optimize by sharing curated package access across AWS accounts within their organization and implementing efficient resource utilization strategies across their infrastructure

Savings Considerations

Primary cost savings come from leveraging existing on-premises infrastructure investments rather than migrating everything to cloud-based solutions. The 3-year subscription term provides 25% savings over 1-year terms, while the flat per-cluster pricing model benefits larger cluster deployments:

- Organizations can consolidate support costs by replacing multiple vendor contracts with unified AWS support
- Operational efficiency gains through consistent tooling and automation reduce administrative overhead costs
- By running workloads on-premises, customers can avoid cloud egress charges and optimize for workloads with predictable, long-term compute requirements
- The ability to share curated packages across AWS accounts enables cost sharing within large organizations, further reducing per-application costs