

EKS Cluster Upgrade

Enterprise Zero Downtime Kubernetes Upgrade

General Info

- **New version release frequency:** Every 3 months
- **Kubernetes version support:** Only latest 3 versions
Example: If latest is v1.33, then supported: v1.33, v1.32, v1.31

Pre-Upgrade Checklist

- ☐ Nodes cordoned
- ☐ Release notes reviewed (e.g., v1.30 → v1.31)
- ☐ Upgrade tested in lower environment
- ☐ Control plane and data plane versions match
- ☐ Cluster Autoscaler matches cluster version
- ☐ At least 5 available IP addresses in subnets
- ☐ Kubelet version matches control plane






Pre-requisites (Details)

Important

1. **Cordon Nodes** – Doesn't affect current app uptime, but new deployments are blocked
2. **Review Release Notes** – e.g., v1.30 → v1.31
3. **Cluster updates are irreversible** – No downgrade supported
4. Validate upgrade in **non-prod environment** before Production
5. **Control Plane** and **Data Plane** must be same version
6. **Cluster Autoscaler** version must match the cluster
7. Ensure **minimum 5 free IP addresses** in each subnet

8. **Kubelet version** on worker nodes must match control plane

Upgrade Process

 Component	 Estimated Duration
 Control Plane	30–40 minutes
 Node Groups / Fargate	Depends on number of nodes
 Add-ons	Depends on specific Add-on

Managed Control Plane – Capabilities

What does the Managed Control Plane provide?

- High Availability
- Disaster Recovery
- Security
- Auto-scaling (API Server scales with request load)

What it doesn't do:

- Cluster upgrades must be initiated and managed by the **client/user**

Things to Keep in Mind During Upgrade Process

- The control plane upgrade (Process 1) can be triggered via a single command or UI; the provider handles this.
- **However, the data plane (nodes) is managed by the user/client.**

☰ Depends on Node Management Strategy:

1. **Managed Node Groups (Launch Template)**
 - Node-by-node rolling upgrade
 - Optionally forceful
2. **Self-managed Nodes (Custom Launch Template, AMI, or EC2)**
 - Manually cordon and drain each node
3. **Hybrid Approach**
 - Mix of both managed and self-managed nodes



Associate an IAM role with a Kubernetes service account to allow it to access AWS services directly.

#oidc

Hands-On Guide

Before Upgrading the Cluster

Be sure you know what controllers, networking components, and add-ons are present in the cluster.

Create EKS Cluster

```
# Create EKS Cluster

eksctl create cluster --name=demo-cluster \
                    --region=us-east-1 \
                    --zones=us-east-1a,us-east-1b \
```

```
--without-nodegroup
```

```
# Enable ODIC
```

```
eksctl utils associate-iam-oidc-provider \  
    --region us-east-1 \  
    --cluster demo-cluster \  
    --approve
```

```
# Create Nodegroup
```

```
eksctl create nodegroup --cluster=demo-cluster \  
    --region=us-east-1 \  
    --name=demo-cluster-ng-private \  
    --node-type=t3.medium \  
    --nodes-min=2 \  
    --nodes-max=3 \  
    --node-volume-size=20 \  
    --managed \  
    --asg-access \  
    --external-dns-access \  
    --full-ecr-access \  
    --appmesh-access \  
    --alb-ingress-access \  
    --node-private-networking
```

```
# Update ./kube/config file
```

```
aws eks update-kubeconfig --name demo-cluster
```

```
# Delete the EKS Cluster
```

```
eksctl delete cluster --name demo-cluster
```

1. Update Cluster Version

Amazon Elastic Kubernetes Service > Clusters > demo-cluster

Amazon Elastic Kubernetes Service

Clusters

Settings

Console settings

Amazon EKS Anywhere

Enterprise Subscriptions

Related services

Amazon ECR

AWS Batch

Documentation

demo-cluster

Delete cluster Upgrade version View dashboard

⚠ Your cluster's Kubernetes version (1.30) will reach the end of standard support on July 23, 2025. On that date, your cluster will enter the extended support period with additional fees. For more information, see the [pricing page](#).

Upgrade now

Cluster info

Status Active

Kubernetes version 1.30

Support period ⚠ Standard support until July 23, 2025

Provider EKS

Cluster health issues 0

Upgrade insights 3

Node health issues 0

Overview Resources Compute Networking Add-ons 1 Access Observability Update history Tags

Details

API server endpoint <https://BEB2F1F90540CB9C997174F8903A087C.gr7.us-east-1.eks.amazonaws.com>

OpenID Connect provider URL <https://oidc.eks.us-east-1.amazonaws.com/id/BEB2F1F90540CB9C997174F8903A087C>

Created 41 minutes ago

```
eksctl upgrade cluster --name demo-cluster --region us-east-1 --version 1.31 --approve
```

```
Yan@Igris ~ $ eksctl upgrade cluster --name demo-cluster --region us-east-1 --version 1.31 --approve
2025-05-20 15:25:07 [i] will upgrade cluster "demo-cluster" control plane from current version "1.30" to "1.31"
2025-05-20 15:34:37 [✓] cluster "demo-cluster" control plane has been upgraded to version "1.31"
2025-05-20 15:34:37 [i] you will need to follow the upgrade procedure for all of nodegroups and add-ons
2025-05-20 15:34:45 [i] re-building cluster stack "eksctl-demo-cluster-cluster"
2025-05-20 15:34:45 [✓] all resources in cluster stack "eksctl-demo-cluster-cluster" are up-to-date
2025-05-20 15:34:47 [i] checking security group configuration for all nodegroups
2025-05-20 15:34:47 [i] all nodegroups have up-to-date cloudformation templates
```

Amazon Elastic Kubernetes Service > Clusters > demo-cluster

Amazon Elastic Kubernetes Service

Clusters

Settings

Console settings

Amazon EKS Anywhere

Enterprise Subscriptions

Related services

Amazon ECR

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Documentation

demo-cluster

Delete cluster Upgrade version View dashboard

ⓘ End of standard support for Kubernetes version 1.31 is November 26, 2025. On that date, your cluster will enter the extended support period with additional fees. For more information, see the [pricing page](#).

Upgrade now

Cluster info

Status Active

Kubernetes version 1.31

Support period ⓘ Standard support until November 26, 2025

Provider EKS

Cluster health issues 0

Upgrade insights 3

Node health issues 0

Overview Resources Compute 1 Networking Add-ons 1 Access Observability Update history Tags

Details

API server endpoint <https://BEB2F1F90540CB9C997174F8903A087C.gr7.us-east-1.eks.amazonaws.com>

OpenID Connect provider URL <https://oidc.eks.us-east-1.amazonaws.com/id/BEB2F1F90540CB9C997174F8903A087C>


Created an hour ago

Note:

You cannot skip versions during upgrades.

Example:

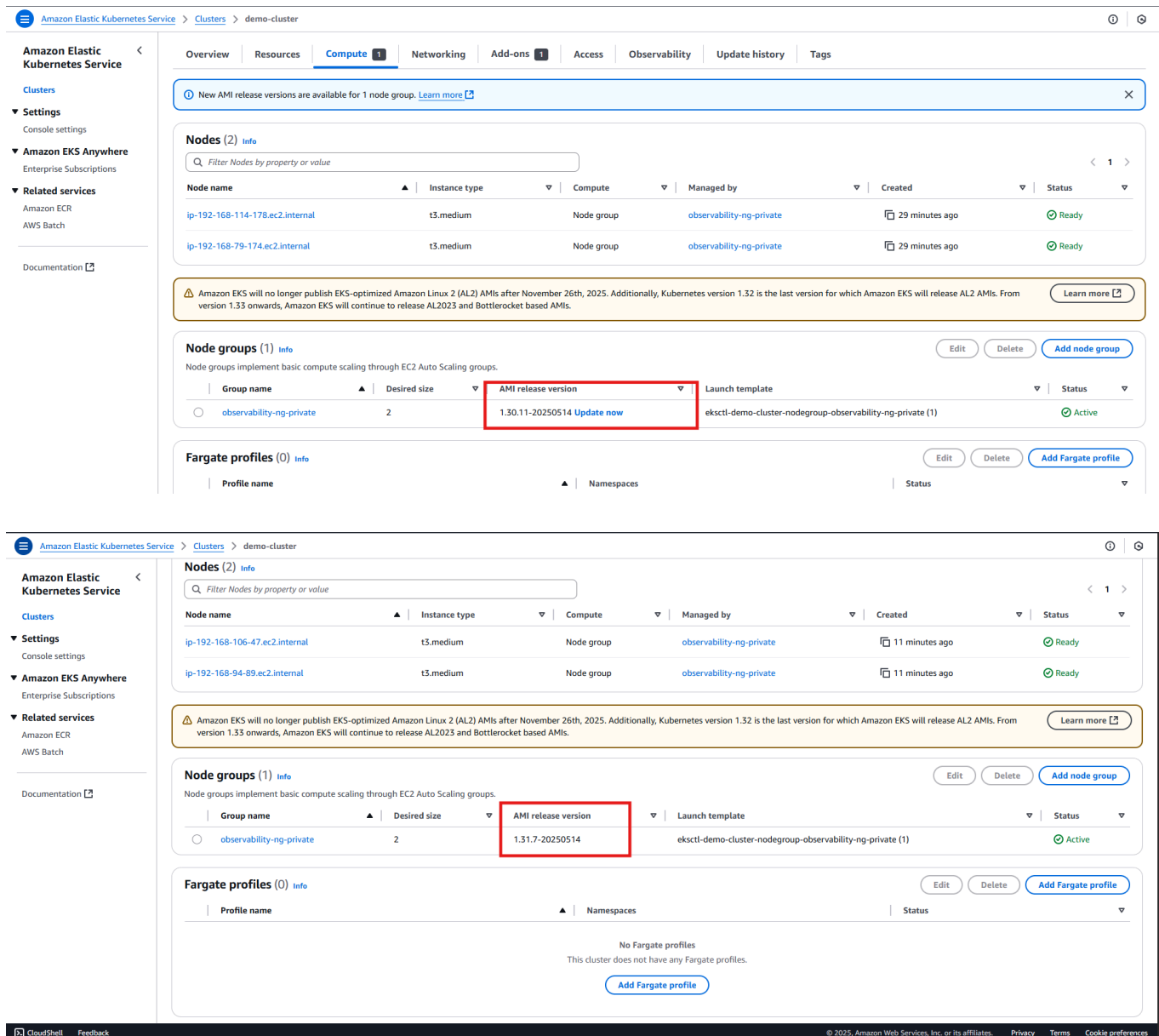
- ✗ v1.30 → v1.33

-  v1.30 → v1.31 → v1.32 → v1.33

2. Node Group Update

Method 1 – Update Existing Group (via AWS UI)

- Rolling Update (zero downtime)



The screenshot displays the Amazon Elastic Kubernetes Service (EKS) console for a cluster named 'demo-cluster'. The 'Compute' tab is selected, showing a notification about new AMI release versions available for one node group. Below this, the 'Nodes (2)' section lists two nodes, both in a 'Ready' state. The 'Node groups (1)' section shows a single node group named 'observability-ng-private' with a desired size of 2. The 'AMI release version' column for this node group is highlighted with a red box, showing the current version '1.30.11-20250514' and an 'Update now' link. The 'Launch template' is 'eksctl-demo-cluster-nodegroup-observability-ng-private (1)' and the status is 'Active'. The 'Fargate profiles (0)' section is empty, indicating no Fargate profiles are configured for this cluster.

Amazon Elastic Kubernetes Service > Clusters > demo-cluster

Overview Resources **Compute** Networking Add-ons Access Observability Update history Tags

New AMI release versions are available for 1 node group. [Learn more](#)

Nodes (2) [Info](#)

Filter Nodes by property or value

Node name	Instance type	Compute	Managed by	Created	Status
ip-192-168-114-178.ec2.internal	t3.medium	Node group	observability-ng-private	29 minutes ago	Ready
ip-192-168-79-174.ec2.internal	t3.medium	Node group	observability-ng-private	29 minutes ago	Ready

Amazon EKS will no longer publish EKS-optimized Amazon Linux 2 (AL2) AMIs after November 26th, 2025. Additionally, Kubernetes version 1.32 is the last version for which Amazon EKS will release AL2 AMIs. From version 1.33 onwards, Amazon EKS will continue to release AL2023 and Bottlerocket based AMIs. [Learn more](#)

Node groups (1) [Info](#)

Node groups implement basic compute scaling through EC2 Auto Scaling groups.

Group name	Desired size	AMI release version	Launch template	Status
observability-ng-private	2	1.30.11-20250514 Update now	eksctl-demo-cluster-nodegroup-observability-ng-private (1)	Active

Fargate profiles (0) [Info](#)

No Fargate profiles
This cluster does not have any Fargate profiles.

[Add Fargate profile](#)

- Forceful Update (When - Pod Disruption Budget)

Method 2 – Add New Node Group

- More flexible but higher cost and slower


3. Add-Ons Update

- Can be updated via AWS Console UI

Amazon Elastic Kubernetes Service > Clusters > demo-cluster > vpc-cni > Edit add-on

Configure Amazon VPC CNI

Amazon VPC CNI info

Listed by


Category
networking

Status
Active

Version
Select the version for this add-on.
v1.19.5-eksbuild.1

Add-on access
☒ EKS Pod Identity ☐ IAM roles for service accounts (RSA)

Pod Identity IAM role for service account: aws-node
Select an IAM role to use with this add-on. This dropdown only contains IAM roles with the pods.eks.amazonaws.com service principal in the trust policy of the IAM role.
Not set [Create recommended role](#)

Optional configuration settings

[Cancel](#) [Save changes](#)

- Review compatibility with Kubernetes version