

# Kops vs EKS: what to choose?

Amet Umerov · Follow  
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managed Elastic Kubernetes Service (EKS) which generally available in the US since [Jun 5, 2018](#).

In this article, I'll describe the differences which I found while using them.



kops vs EKS: what to choose?

## Pricing

In both cases, you use EC2 instances for running workloads (workers, load balancers, VPCs, etc), so AWS doesn't charge you additionally for nodes. The only difference in pricing between kops and EKS — masters.

The master node in EKS calls Control Plane, it's a fixed price of \$0.2/hour (\$144/month).

With kops, you should **manage your master nodes yourself** (also it's better to have separate etcd nodes outside the master nodes). For example, you can use 3 t2.medium (or t3, they are cheaper) nodes for masters (\$108/month) + etcd nodes (if you want) + small price for EBS volumes.

For running small or even temporary clusters it could be easy to use kops because you don't have a huge load on master or you can even use spot instances for them. For large production clusters with a high load, it could be profitable to use EKS.

## Release cycle

If you read it after October 2019, versions 1.15 and 1.16 could be already supported:

Vanilla k8s version	Official release	kops support added	EKS support added
1.16	18 Sep 2019	-	-
1.15	19 Jun 2019	-	-
1.14	25 Mar 2018	01 Oct 2019	04 Sep 2019
1.13	04 Dec 2018	02 Aug 2019	19 Jun 2019
1.12	28 Sep 2018	15 May 2019	28 Mar 2019

From this table, we can see that **new version support comes to EKS earlier than kops**.

The time gap between official k8s release and EKS support is ~6 months, kops comes ~7–8 months after k8s release. I don't think that's a very important parameter, but nevertheless, EKS is the winner here. Usually, kops beta releases are good, so people can usually live with kops beta releases which come earlier than the stable releases.

## Cluster management

kops is excellent for the fast cluster creation in an imperative way, for example:

```
kops create cluster \
--name stage-1 \
--zones eu-west-1a,eu-west-1b,eu-west-1c \
--master-zones eu-west-1a,eu-west-1b,eu-west-1c \
--node-count 3 \
--master-count 3 \
--node-size t3.medium \
--master-size t3.medium \
--ssh-public-key ~/.ssh/k8s-stage-1.pub \
--topology private \
--networking calico \
--network-cidr 172.46.0.0/16
```

It creates a pool of resources for you include VPCs, subnets, autoscaling groups, etc.

BTW, there is a tool from Weaveworks called [eksctl](#) which also allows us to create a cluster so fast:

```
eksctl create cluster \
--name prod \
--version 1.14 \
--nodegroup-name standard-workers \
--node-type t3.medium \
--nodes 3 \
--nodes-min 1 \
--nodes-max 4 \
--node-ami auto
```

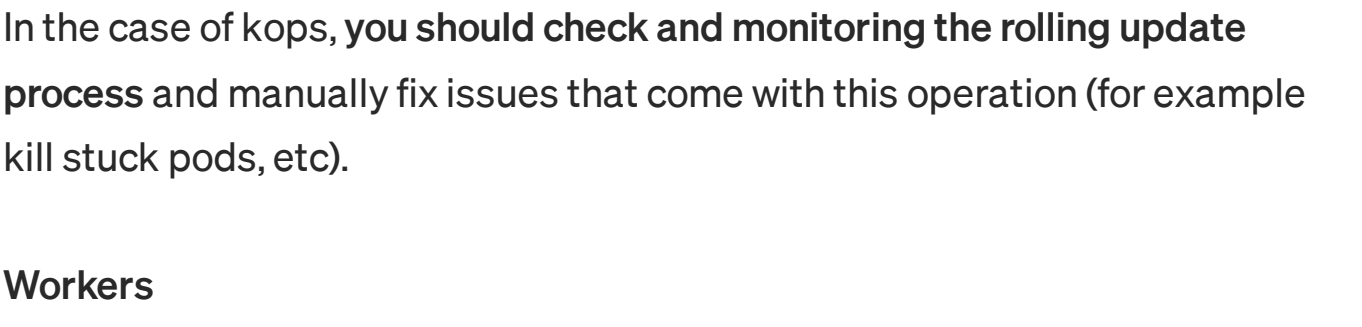
kops **allows you** to export the cluster state to terraform and then modify and deploy a cluster through it or even store **cluster configuration** in a declarative way.

It is also an available [EKS-module](#) for terraform.

## Rolling updates

### Masters

EKS cluster updates master nodes without downtime, it **automatically manages the master state**, rollbacks or **unexpected things** related to master's rolling updates.



In the case of kops, you should **check and monitoring the rolling update process** and manually fix issues that come with this operation (for example kill stuck pods, etc).

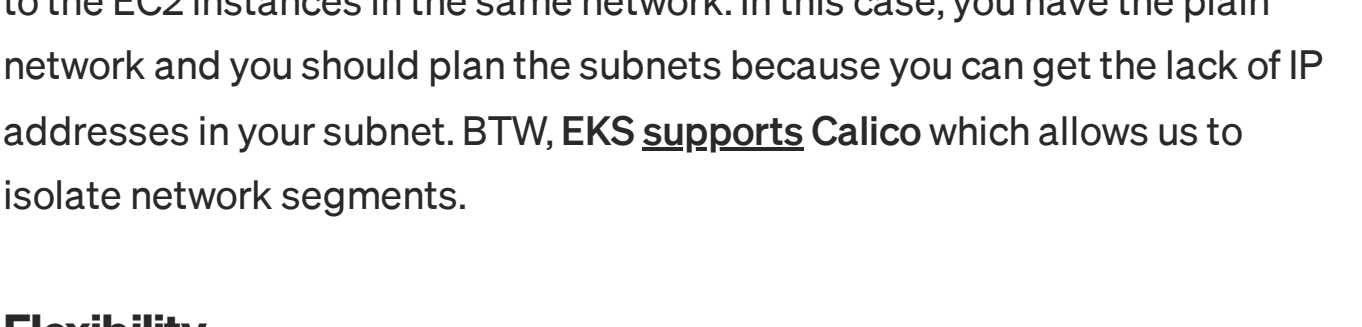
### Workers

In both cases, you should control the workers update. The flow is simple, just change the AMI for nodes and start the update (don't forget to **prepare deployments** for pods eviction).

For me, EKS is **better for master upgrades**, you won't worry about unexpected things during the rolling update.

## Network

kops **supports many different CNIs**, so you can have full access to the corner case in your network infrastructure.



EKS uses VPC ENI networking, it means that you can integrate k8s cluster to the existing networks through the native AWS network, for example, to access to the EC2 instances in the same network. In this case, you have the plain network and you should plan the subnets because you can get the lack of IP addresses in your subnet. BTW, EKS **supports** Calico which allows us to isolate network segments.

## Flexibility

EKS, as we don't have access to the master we **can't control ApiServer, ControllerManager, etcd, Scheduler**. It means that we can't use such things as:

- custom OIDC flags
- HPA settings (for example changing [downscale-stabilization](#) parameter)
- custom CRI (<https://github.com/aws/containers-roadmap/issues/313>)
- [etc](#)

We still can add external policies to AWS resources, manage instance groups, modify the images for nodes, DNS, etc. Control Plane logging is available in EKS, but it sends logs to CloudWatch.

kops **allows us to do what we want**, that's enough. Of course, Amazon is working on additional features, and we will see them in the future, here is a [roadmap](#) for it.

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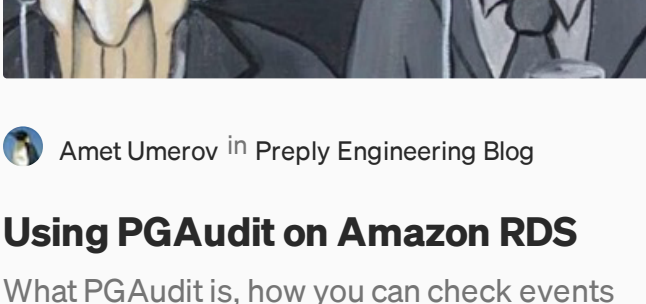
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Written by **Amet Umerov** · Follow

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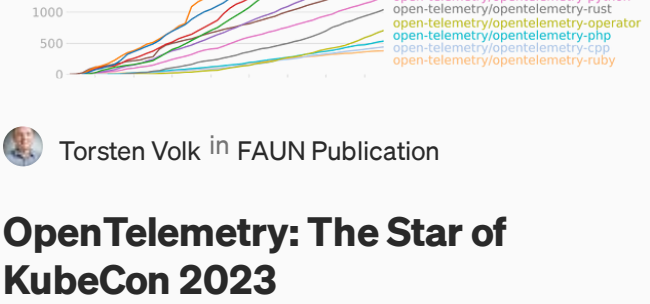
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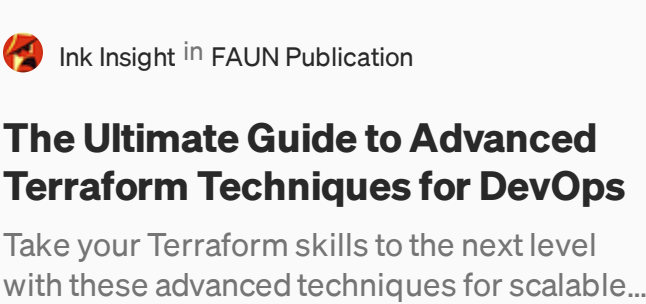
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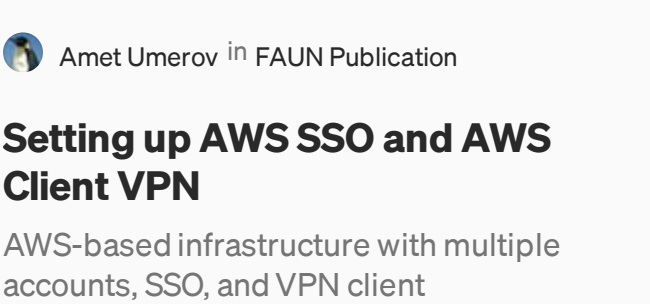
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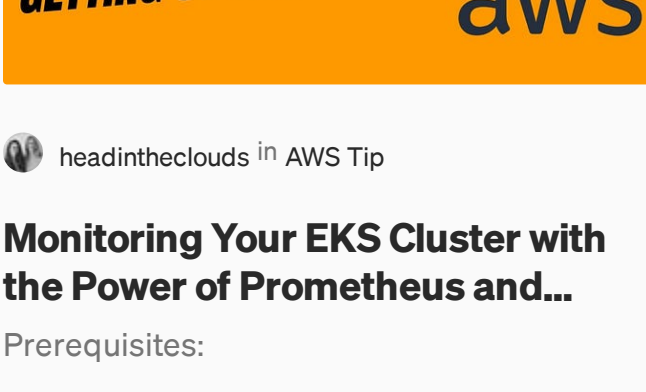
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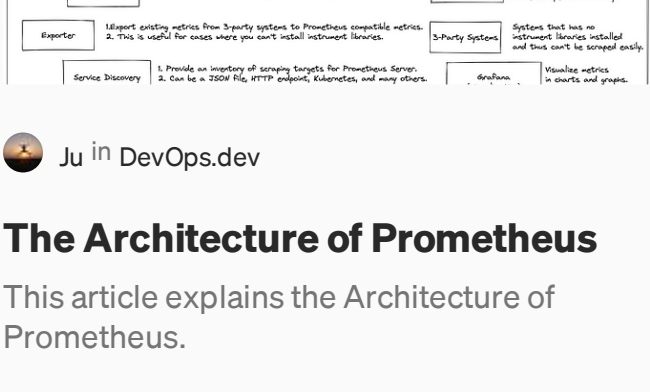


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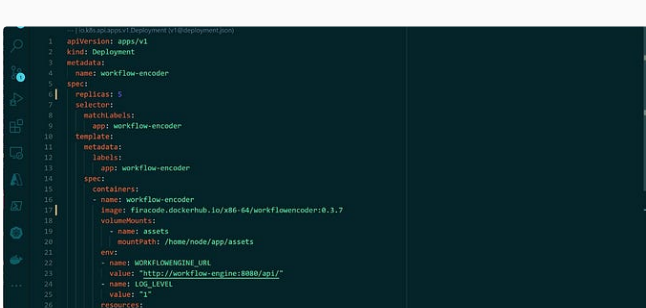


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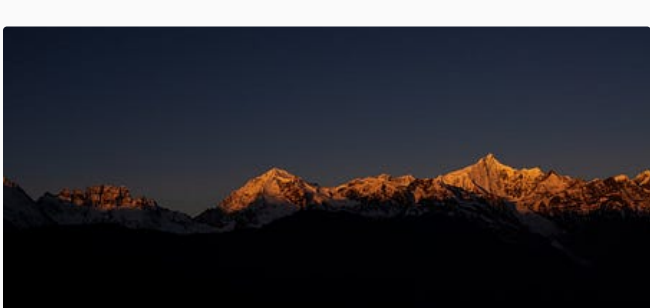


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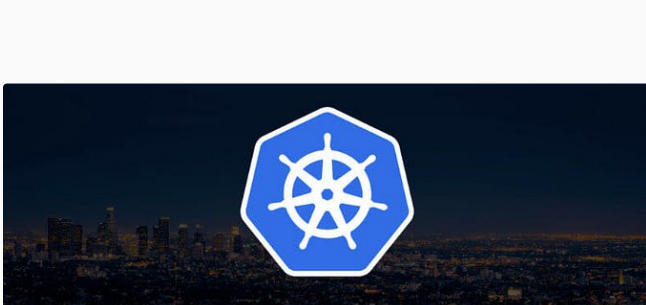


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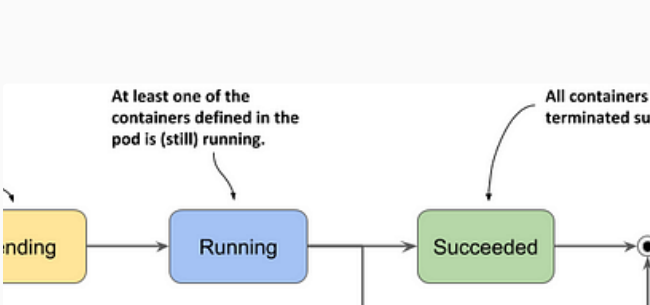
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