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EMB020

Amazon EKS Distro: An open-source distribution of Kubernetes

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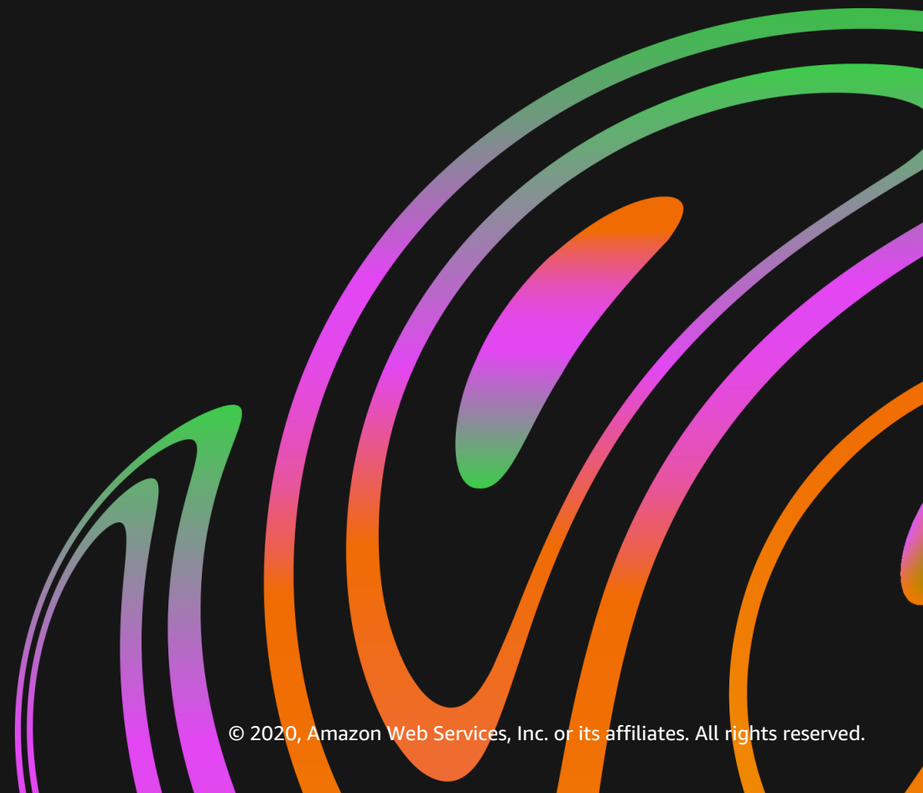
Agenda

The Amazon EKS approach

Our Kubernetes releases

Amazon EKS Distro: Productizing the process

How to run EKS Distro



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Kubernetes on AWS



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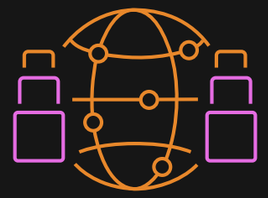
Why customers love Amazon EKS



Deeply integrated with AWS



Open flexibility



Security and compliance

Amazon EKS



Amazon EKS

Amazon EKS is an upstream and certified conformant version of Kubernetes

Amazon EKS



Amazon EKS

AWS supports 4 versions of Kubernetes, including backported patches

Amazon EKS



Amazon EKS

Managed Kubernetes experience for performant, reliable, and secure Kubernetes clusters

Amazon EKS



Amazon EKS

We want Kubernetes operations, administration, and management to be simple and boring

Amazon EKS handles tactical operations

Strategic operations

Tactical operations



Kubernetes testing



Control plane monitoring



Uptime and SLA



Security patching



Etcd backups

You focus on strategic operations

Strategic operations



Application upgrades



Cluster tenancy



Organizational structures



GitOps pipelines



Connectivity patterns

Tactical operations



Kubernetes testing



Control plane monitoring



Uptime and SLA



Security patching



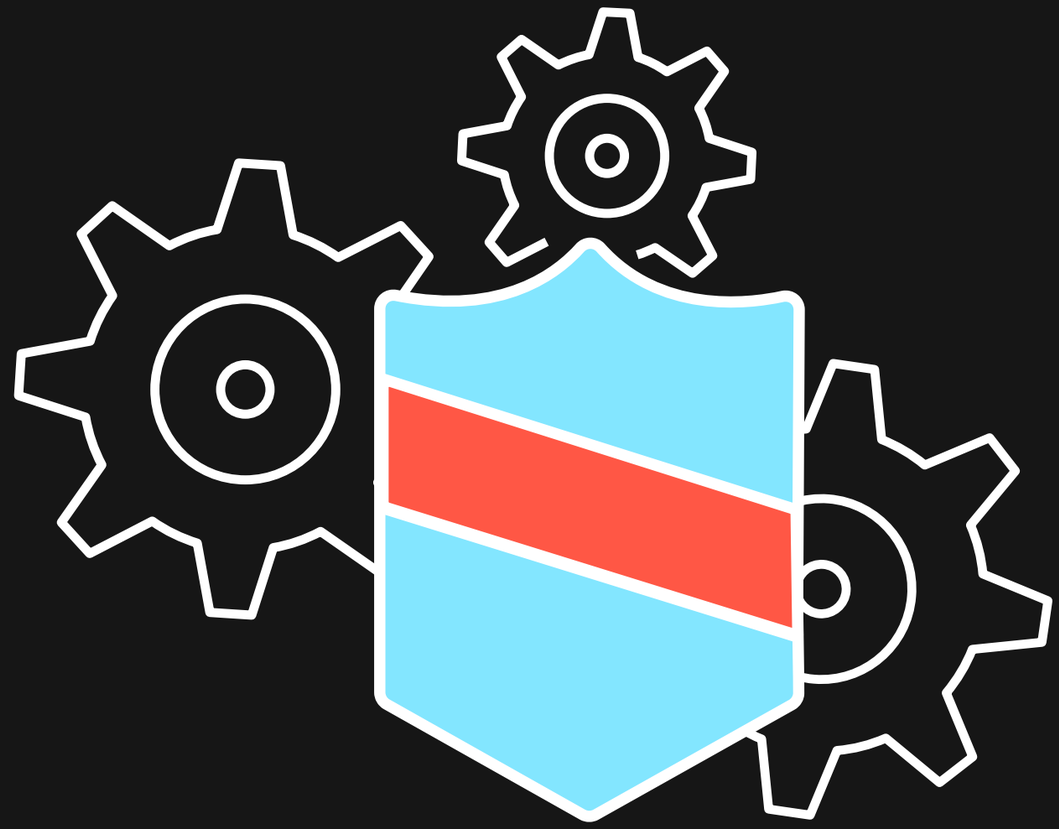
Etcd backups

p0

Security

p1

Reliability



What does AWS contribute and deploy with Amazon EKS?



Security patches!

What does AWS contribute and deploy with Amazon EKS?



Patches and client versions where we expect eventual convergence

Patches for opinionated configuration:

- Etcd logging partition cap:
- Ability to allow list IPs for kube-proxy

What else do we deploy?



AWS Fargate patches

Admissions webhook for scheduler controller manager to prevent cluster lockout

Our vision



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But what about self-managed clusters?



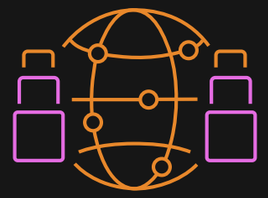
Custom tooling and configuration



Customers migrating Kubernetes apps to AWS



Unique hardware and compute requirements



Self-managing Kubernetes on Amazon EC2


Compatibility
Security
Versioning
Configuration
Alignment
Distribution
Patching
Tracking
Backporting
Testing
Conformance
Consistency
Alignment
Updates
Security
Testing
Distribution
Backporting
Versioning
Tracking
Building
Conformance
Distribution
Patching
Updates
Compatibility

We’ll give it to you!



Amazon EKS Distro

Available now!



Amazon EKS Anywhere

Estimated launch H2 2021

Amazon EKS Distro

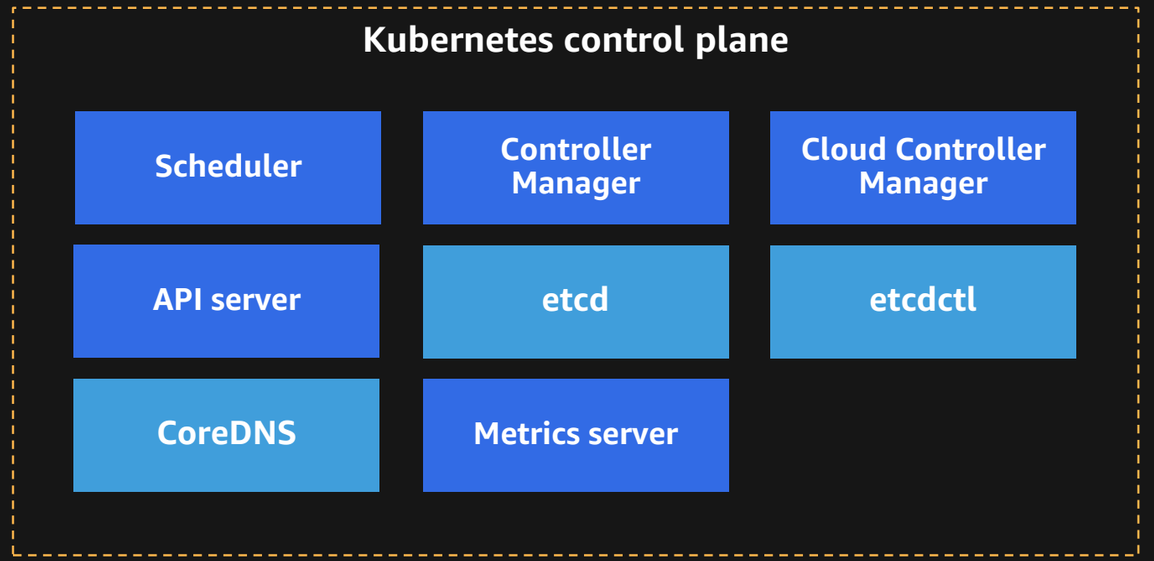


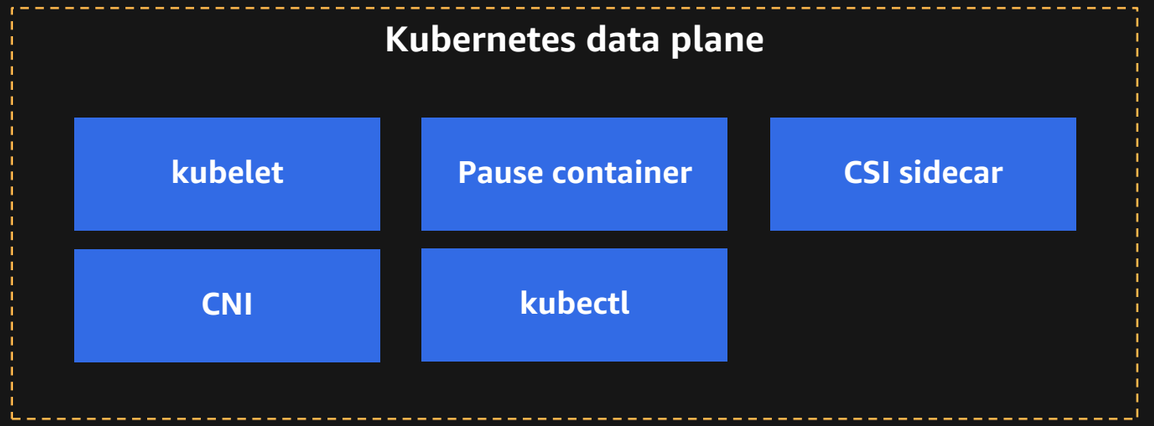
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What is Amazon EKS Distro?

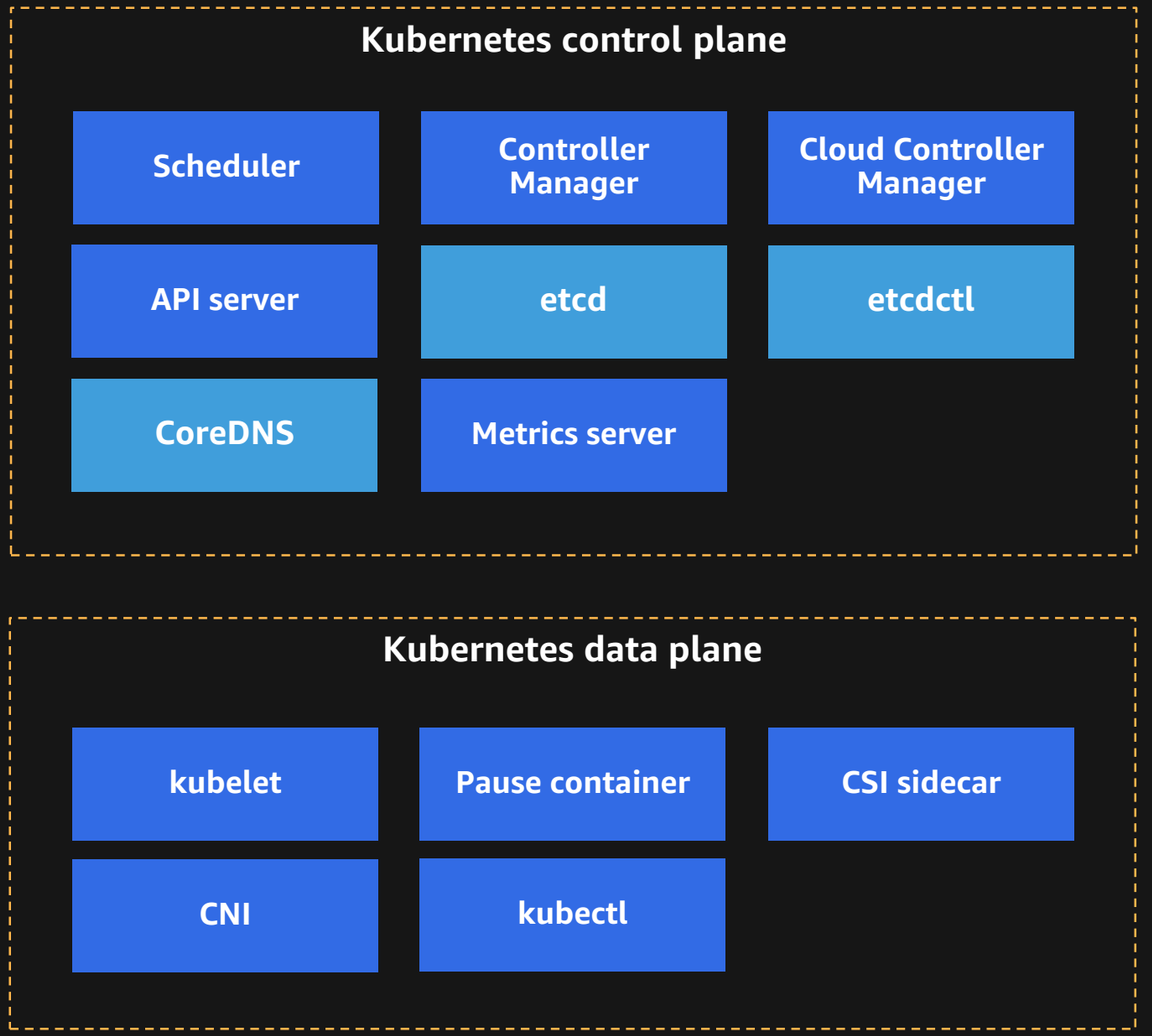
Kubernetes components used by Amazon EKS and powers EKS Anywhere





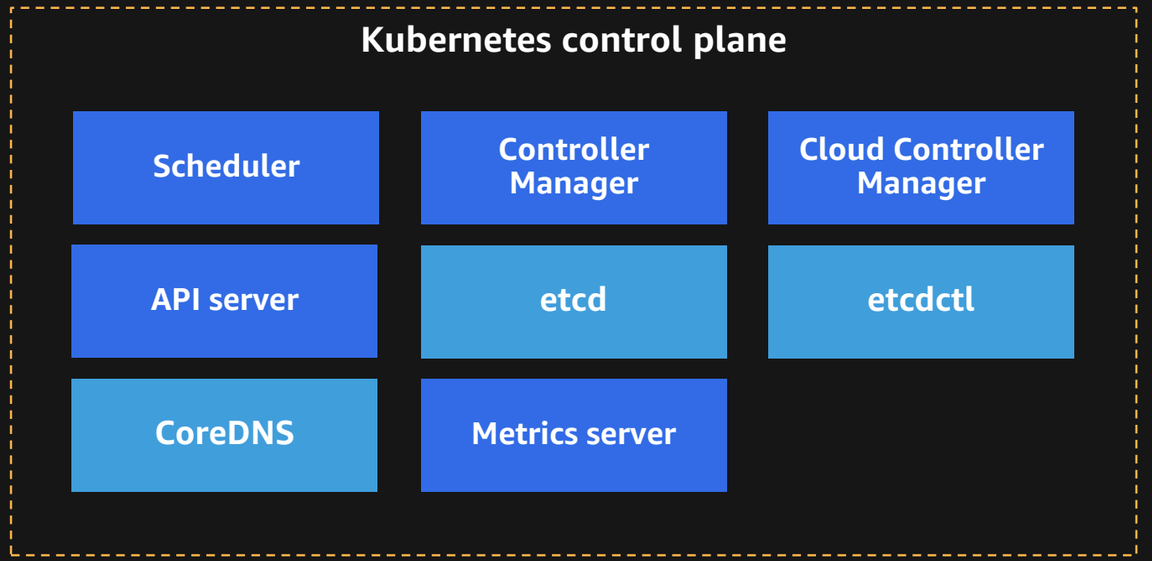
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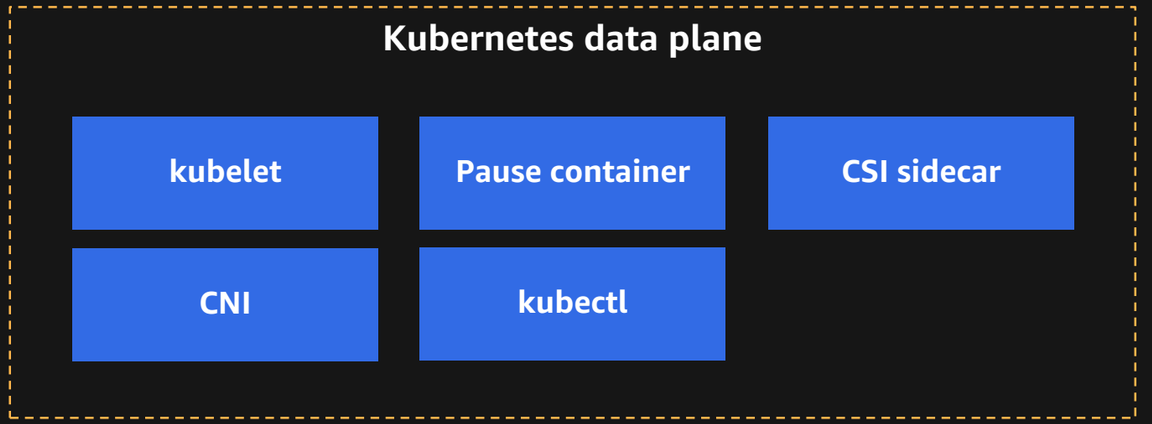
Security patches, tooling, and configs that will be adopted by upstream



What is Amazon EKS Distro?

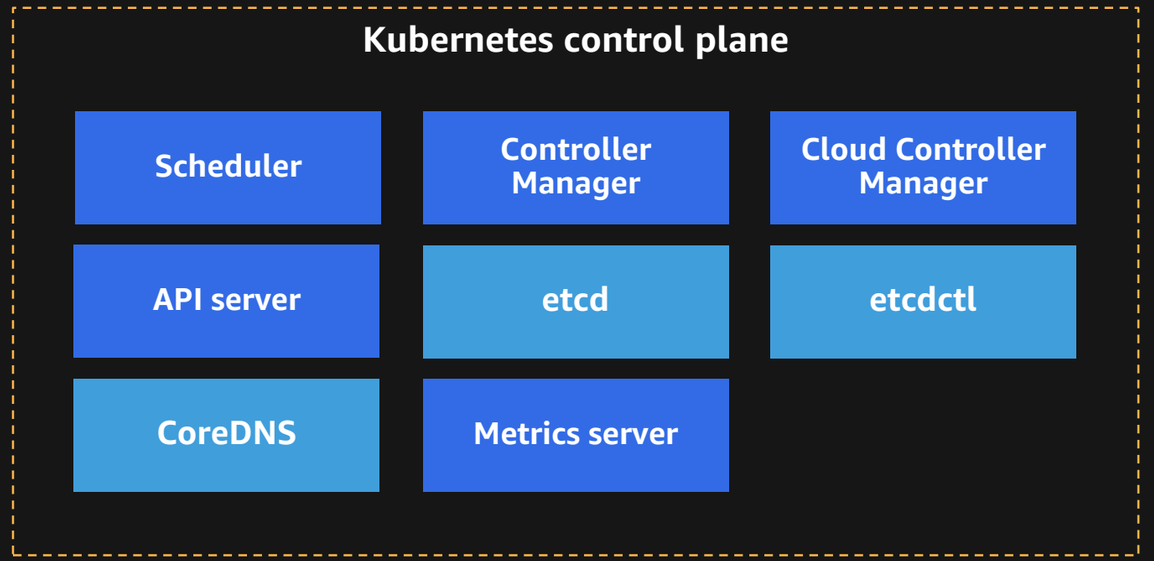
Backport fixes to versions supported by Amazon EKS

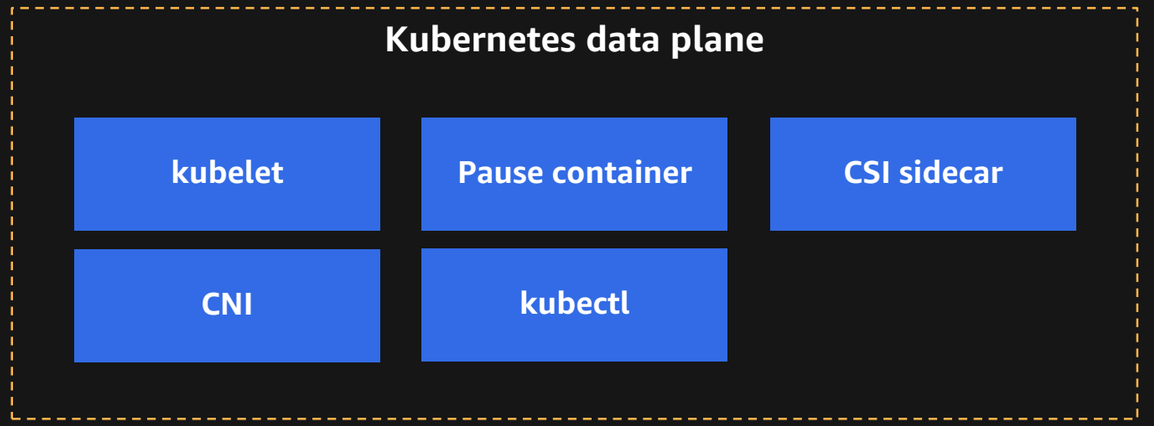




What is Amazon EKS Distro?

EKS Distro builds are reproducible using the published tools and environment variables





Is Amazon EKS Distro a fork of upstream Kubernetes?

NO!

What's included in EKS Distro?



Upstream Kubernetes



etcd & etcdctl



CoreDNS



Upstream CNI



CSI sidecar container

What’s NOT included in EKS Distro?

eksctl

AWS official Kubernetes plugins: CNI and CSI

Amazon Controllers for Kubernetes (ACK)

Additional release details

- Our container images are based on Amazon Linux 2
- … except CoreDNS on scratch
- Container images (e.g., CoreDNS) in AMD64, ARM64, and AMD64 multi-platform OCI images
- AWS will provide manifests for releases formatted as a Kubernetes CRD

Weaveworks: Provisioning EKS Distro with WKP and GitOps



Weaveworks coined the phrase GitOps and provides tools to make it fast and simple for developers and DevOps teams to build and operate containerized applications. Weave contributes several open source projects to the CNCF including Weave Flux, Scope, and Cortex.

How Weave integrates EKS Distro: Weave Kubernetes Platform enables customers to accelerate cluster delivery and security while leveraging developer best practices and policy management with GitOps workflows. Now, Weave Kubernetes Platform leverages EKS Distro as the source for Kubernetes builds to provision Kubernetes clusters consistent with Amazon EKS in AWS.

“EKS Distro is a game changer for enterprises running Kubernetes who want a verified, consistent experience across their clouds and data centers.”

Alexis Richardson

Weaveworks, Founder and CEO



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Rafay: Provision and manage Amazon EKS Distro with Rafay

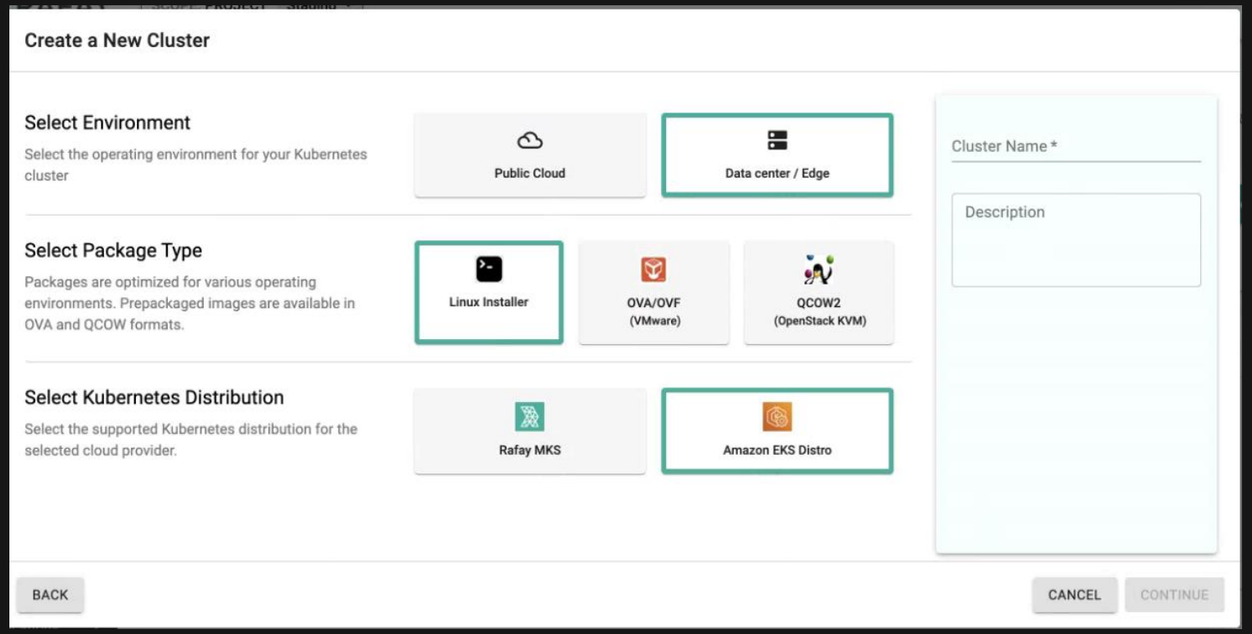


Rafay Managed Kubernetes Platform provides an open platform to enable customers to use their preferred Kubernetes distribution in their operating environments.

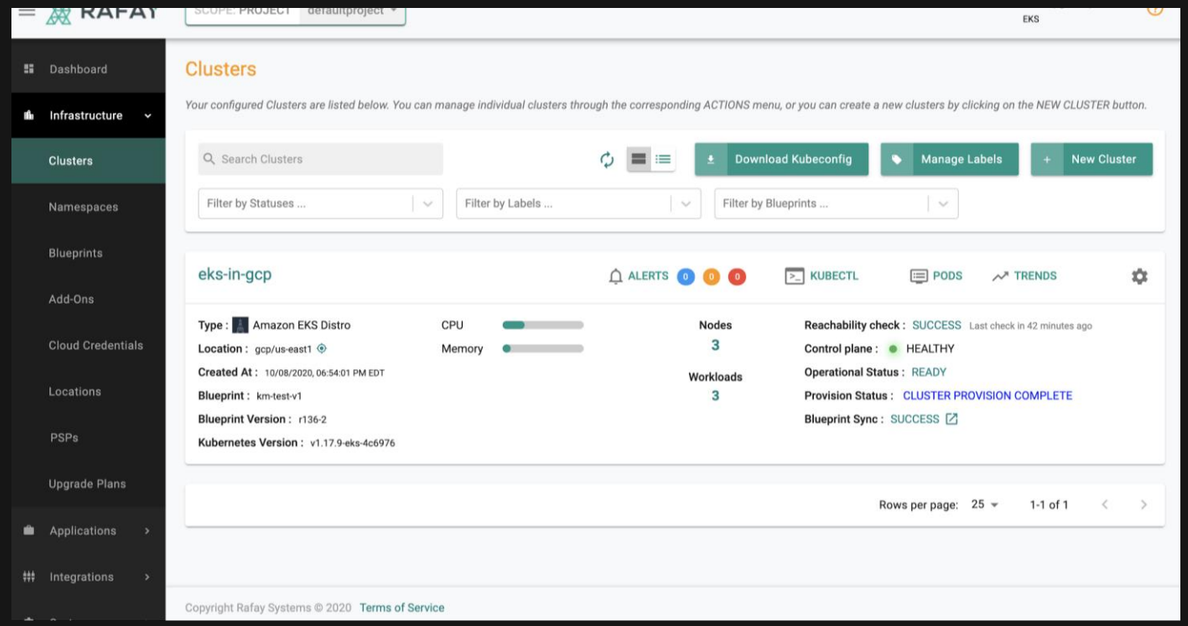
How Rafay integrates EKS Distro: Using Rafay MKP customers can easily provision and manage the lifecycle of EKS Distro on-premises or in AWS on bare metal, VM, and cloud environments. Customers can use MKP's declarative or wizard-based approach to automate the provisioning and ongoing lifecycle of EKS Distro.

Rafay: Provision and manage Amazon EKS Distro with Rafay (cont'd)

Create



Deploy



Kubestack: Localhost Amazon EKS development environments with EKS Distro



Kubestack provides the best GitOps developer experience for Terraform and Kubernetes, from local development, all the way to production by integrating Terraform providers, resources, and modules into a GitOps workflow

How Kubestack uses EKS Distro: Using Kubestack's local development environment, you can iterate on the same manifests that will later be used in production, and it automatically updates as you make changes. With EKS-D the local environment is closer to the EKS production environment, reducing the risk that promoting a change fails.

How to run EKS Distro



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How to run EKS Distro

If you have kops:

- Run the kops.sh script, and when prompted, supply an FQDN name for your cluster
- Run the export KOPS_STATE_STORE=... command and edit yaml file
- Run the following commands:

```
CLUSTER_NAME=my-super-cool-cluster.mydomain.com
kops create -f ./$CLUSTER_NAME.yaml
kops create secret --name $CLUSTER_NAME sshpublickey admin -i ~/.ssh/id_rsa.pub
kops update cluster $CLUSTER_NAME --yes
kops validate cluster --wait 5m
cat << EOF > aws-iam-authenticator.yaml apiVersion: v1 kind: ConfigMap
metadata:
        name: aws-iam-authenticator
        namespace: kube-system
        labels: k8s-app: aws-iam-authenticator
data: config.yaml: | clusterID: $CLUSTER_NAME
EOF
kubectl apply -f aws-iam-authenticator.yaml
```



Thank you!



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