



# Installation and configuration

## FlexPod

NetApp  
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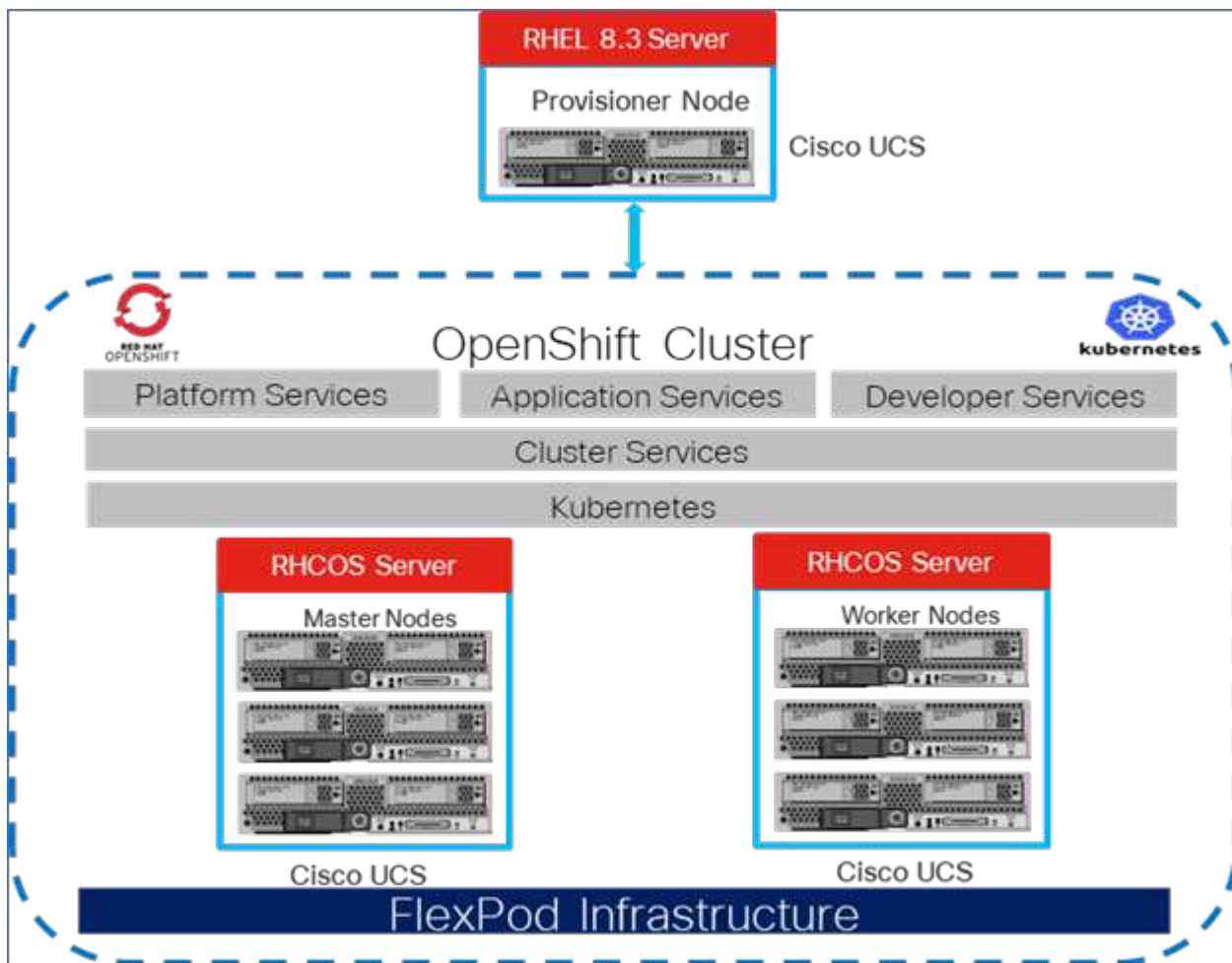
# Installation and configuration

## FlexPod for OpenShift Container Platform 4 bare-metal installation

Previous: [Solution components.](#)

To understand FlexPod for OpenShift Container Platform 4 bare-metal design, deployment details, and the NetApp Astra Trident installation and configuration, see [FlexPod with OpenShift Cisco Validated Design and Deployment guide \(CVD\)](#). This CVD covers FlexPod and OpenShift Container Platform deployment using Ansible. The CVD also provide detailed information about preparing worker nodes, Astra Trident installation, storage backend, and storage class configurations, which are the few prerequisites for deploying and configuring Astra Control Center.

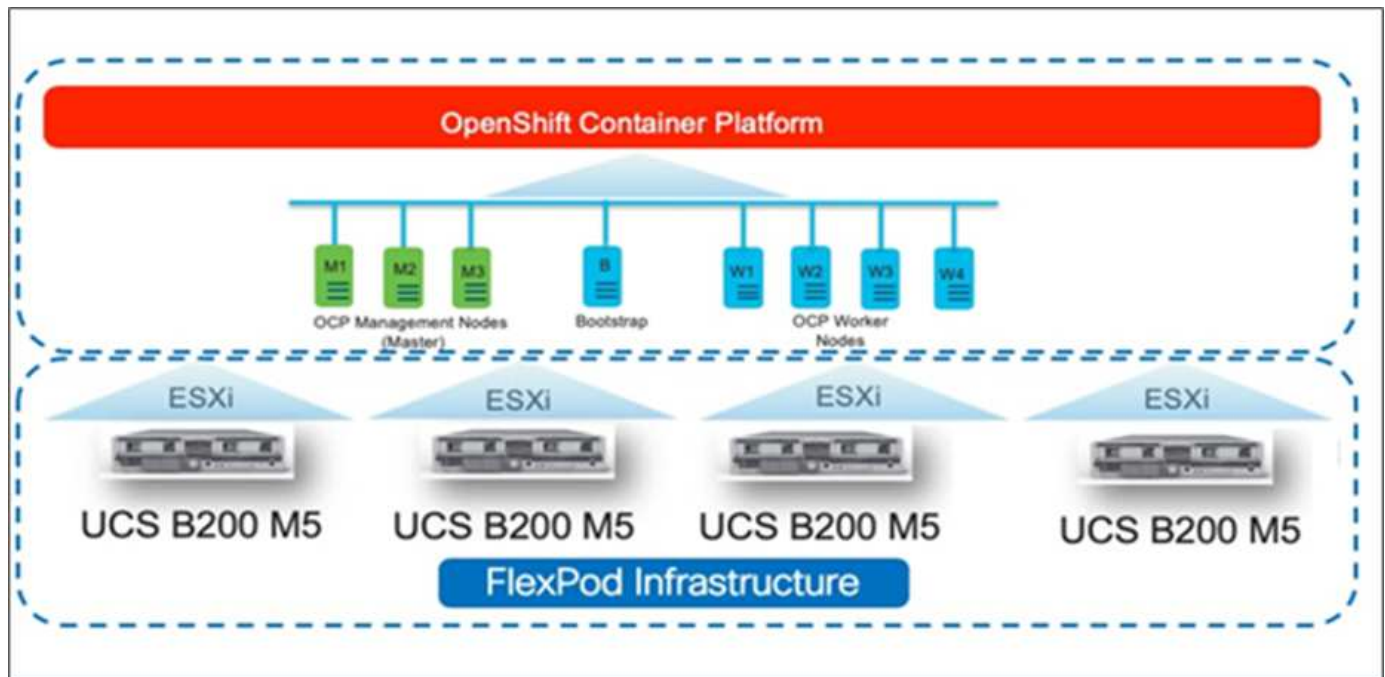
The following figure illustrates the OpenShift Container Platform 4 Bare Metal on FlexPod.



## FlexPod for OpenShift Container Platform 4 on VMware installation

For more information about deploying Red Hat OpenShift Container Platform 4 on FlexPod running VMware vSphere, see [FlexPod Datacenter for OpenShift Container Platform 4](#).

The following figure illustrates FlexPod for OpenShift Container Platform 4 on vSphere.



Next: [Red Hat OpenShift on AWS](#).

## Red Hat OpenShift on AWS

Previous: [FlexPod for OpenShift Container Platform 4 bare-metal installation](#).

A separate self-managed OpenShift Container Platform 4 cluster is deployed on AWS as a DR site. The master and worker nodes span across three availability zones for high availability.

Instances (6) <span>Info</span>							
<input type="text" value="Search"/>							
<span>ocp</span> <span>×</span> <span>Clear filters</span>							
<input type="checkbox"/>	Name	Instance ID	Instance state	Instance type	Availability Zone	Private IP a...	Key name
<input type="checkbox"/>	ocpaws-v58kn-master-0	i-0d2d81ca91a54276d	Running	m5.xlarge	us-east-1b	172.30.165.160	-
<input type="checkbox"/>	ocpaws-v58kn-master-1	i-0b161945421d2a23c	Running	m5.xlarge	us-east-1c	172.30.166.162	-
<input type="checkbox"/>	ocpaws-v58kn-master-2	i-0146a665e1060ea59	Running	m5.xlarge	us-east-1a	172.30.164.209	-
<input type="checkbox"/>	ocpaws-v58kn-worker-us-east-1a-zj8dj	i-05e6efa18d136c842	Running	m5.large	us-east-1a	172.30.164.128	-
<input type="checkbox"/>	ocpaws-v58kn-worker-us-east-1b-7nmbc	i-0879a088b50d2d966	Running	m5.large	us-east-1b	172.30.165.93	-
<input type="checkbox"/>	ocpaws-v58kn-worker-us-east-1c-96j6n	i-0c24ff3c2d701f82c	Running	m5.large	us-east-1c	172.30.166.51	-

```
[ec2-user@ip-172-30-164-92 ~]$ oc get nodes
```

NAME	STATUS	ROLES	AGE	VERSION
ip-172-30-164-128.ec2.internal	Ready	worker	29m	v1.22.8+f34b40c
ip-172-30-164-209.ec2.internal	Ready	master	36m	v1.22.8+f34b40c
ip-172-30-165-160.ec2.internal	Ready	master	33m	v1.22.8+f34b40c
ip-172-30-165-93.ec2.internal	Ready	worker	30m	v1.22.8+f34b40c
ip-172-30-166-162.ec2.internal	Ready	master	36m	v1.22.8+f34b40c
ip-172-30-166-51.ec2.internal	Ready	worker	28m	v1.22.8+f34b40c

OpenShift is deployed as a [private cluster](#) into an existing VPC on AWS. A private OpenShift Container Platform cluster does not expose external endpoints and is accessible from only an internal network and is not visible to the internet. A single-node NetApp Cloud Volumes ONTAP is deployed using NetApp Cloud Manager, which provides a storage backend to Astra Trident.

For more information about installing OpenShift on AWS, see [OpenShift documentation](#).

Next: [NetApp Cloud Volumes ONTAP](#).

## NetApp Cloud Volumes ONTAP

Previous: [Red Hat OpenShift on AWS](#).

The NetApp Cloud Volumes ONTAP instance is deployed on AWS, and it serves as backend storage to Astra Trident. Before adding a Cloud Volumes ONTAP working environment, a Connector must be deployed. The Cloud Manager prompts you if you try to create your first Cloud Volumes ONTAP working environment without a Connector in place. To deploy a Connector in AWS, see [Create a Connector](#).

To deploy Cloud Volumes ONTAP on AWS, see [Quick Start for AWS](#).

After Cloud Volumes ONTAP is deployed, you can install Astra Trident and configure the storage backend and snapshot class on the OpenShift Container Platform cluster.

Next: [Astra Control Center installation on OpenShift Container Platform](#).

## Astra Control Center installation on OpenShift Container Platform

Previous: [NetApp Cloud Volumes ONTAP](#).

You can install Astra Control Center either on OpenShift cluster running on FlexPod or on AWS with a Cloud Volumes ONTAP storage backend. In this solution, Astra Control Center is deployed on the OpenShift bare-metal cluster.

Astra Control Center can be installed using the standard process described [here](#) or from the Red Hat OpenShift OperatorHub. Astra Control Operator is a Red Hat certified operator. In this solution, Astra Control Center is installed using the Red Hat OperatorHub.

## Environment requirements

- Astra Control Center supports multiple Kubernetes distributions; for Red Hat OpenShift, the supported versions include Red Hat OpenShift Container Platform 4.8 or 4.9.
- Astra Control Center requires the following resources in addition to the environment's and the end-user's application resource requirements:

Components	Requirement
Storage backend capacity	At least 500GB available
Worker nodes	At least 3 worker nodes, with 4 CPU cores and 12GB RAM each
Fully qualified domain name (FQDN) address	An FQDN address for Astra Control Center
Astra Trident	Astra Trident 21.04 or newer installed and configured
Ingress controller or load balancer	Configure the ingress controller to expose Astra Control Center with a URL or load balancer to provide IP address which will resolve to the FQDN

- You must have an existing private image registry to which you can push the Astra Control Center build images. You need to provide the URL of the image registry where you upload the images.



Some images are pulled while executing certain workflows, and containers are created and destroyed when necessary.

- Astra Control Center requires that a storage class be created and set as the default storage class. Astra Control Center supports the following ONTAP drivers provided by Astra Trident:
  - ontap-nas
  - ontap-nas-flexgroup
  - ontap-san
  - ontap-san-economy



We assume that the deployed OpenShift clusters have Astra Trident installed and configured with an ONTAP backend, and a default storage class is also defined.

- For application cloning in OpenShift environments, Astra Control Center needs to allow OpenShift to mount volumes and change the ownership of files. To modify the ONTAP export policy to allow these operations, run the following commands:

```
export-policy rule modify -vserver <storage virtual machine name>  
-policyname <policy name> -ruleindex 1 -superuser sys  
export-policy rule modify -vserver <storage virtual machine name>  
-policyname <policy name> -ruleindex 1 -anon 65534
```



To add a second OpenShift operational environment as a managed compute resource, make sure that the Astra Trident Volume snapshot feature is enabled. To enable and test volume snapshots with Astra Trident, see the official [Astra Trident instructions](#).

- A [VolumeSnapClass](#) should be configured on all Kubernetes clusters from where the applications is managed. This could also include the K8s cluster on which Astra Control Center is installed. Astra Control Center can manage applications on the K8s cluster on which it is running.

## Application management requirements

- **Licensing.** To manage applications using Astra Control Center, you need an Astra Control Center license.
- **Namespaces.** A namespace is the largest entity that can be managed as an application by Astra Control Center. You can choose to filter out components based on the application labels and custom labels in an existing namespace and manage a subset of resources as an application.
- **StorageClass.** If you install an application with a StorageClass explicitly set and you need to clone the application, the target cluster for the clone operation must have the originally specified StorageClass. Cloning an application with an explicitly set StorageClass to a cluster that does not have the same StorageClass fails.
- **Kubernetes resources.** Applications that use Kubernetes resources not captured by Astra Control might not have full application data management capabilities. Astra Control can capture the following Kubernetes resources:

Kubernetes resources		
ClusterRole	ClusterRoleBinding	ConfigMap
CustomResourceDefinition	CustomResource	CronJob
DaemonSet	HorizontalPodAutoscaler	Ingress
DeploymentConfig	MutatingWebhook	PersistentVolumeClaim
Pod	PodDisruptionBudget	PodTemplate
NetworkPolicy	ReplicaSet	Role
RoleBinding	Route	Secret
ValidatingWebhook		

## Install Astra Control Center using OpenShift OperatorHub

The following procedure installs Astra Control Center using Red Hat OperatorHub. In this solution, Astra Control Center is installed on a bare-metal OpenShift cluster running on FlexPod.

1. Download the Astra Control Center bundle (`astra-control-center-[version].tar.gz`) from the [NetApp Support site](#).
2. Download the .zip file for the Astra Control Center certificates and keys from the [NetApp Support site](#).
3. Verify the signature of the bundle.

```
openssl dgst -sha256 -verify astra-control-center[version].pub
-signature <astra-control-center[version].sig astra-control-
center[version].tar.gz
```

4. Extract the Astra images.

```
tar -vxzf astra-control-center-[version].tar.gz
```

5. Change to the Astra directory.

```
cd astra-control-center-[version]
```

6. Add the images to your local registry.

```
For Docker:
docker login [your_registry_path]OR
For Podman:
podman login [your_registry_path]
```

7. Use the appropriate script to load the images, tag the images, and push them to your local registry.

For Docker:

```
export REGISTRY=[Docker_registry_path]
for astraImageFile in $(ls images/*.tar) ; do
    # Load to local cache. And store the name of the loaded image trimming
    the 'Loaded images: '
    astraImage=$(docker load --input ${astraImageFile} | sed 's/Loaded
image: //' )
    astraImage=$(echo ${astraImage} | sed 's!localhost/!!')
    # Tag with local image repo.
    docker tag ${astraImage} ${REGISTRY}/${astraImage}
    # Push to the local repo.
    docker push ${REGISTRY}/${astraImage}
done
```

For Podman:

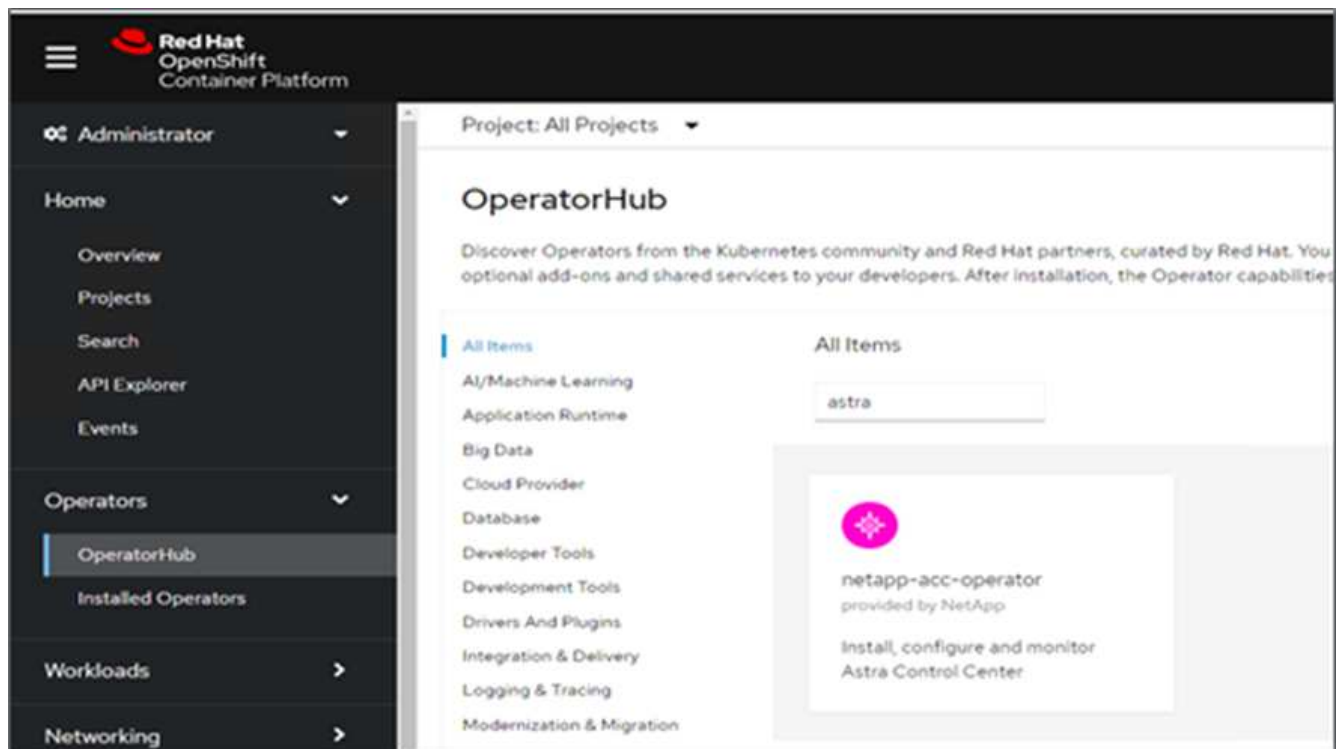


```

export REGISTRY=[Registry_path]
for astraImageFile in $(ls images/*.tar) ; do
    # Load to local cache. And store the name of the loaded image trimming
    the 'Loaded images: '
    astraImage=$(podman load --input ${astraImageFile} | sed 's/Loaded
image(s): //'')
    astraImage=$(echo ${astraImage} | sed 's!localhost/!!!')
    # Tag with local image repo.
    podman tag ${astraImage} ${REGISTRY}/${astraImage}
    # Push to the local repo.
    podman push ${REGISTRY}/${astraImage}
done


```

8. Log into the bare-metal OpenShift cluster web console. From the side menu, select Operators > OperatorHub. Enter astra to list the netapp-acc-operator.



netapp-acc-operator is a certified Red Hat OpenShift Operator and is listed under the OperatorHub catalogue.

9. Select netapp-acc-operator and click Install.



**netapp-acc-operator**  
 22.4.3 provided by NetApp

Install

**Latest version**  
 22.4.3

**Capability level**  
☒ Basic Install  
☐ Seamless Upgrades  
☐ Full Lifecycle  
☐ Deep Insights  
☐ Auto Pilot

**Source**  
 Certified

**Provider**  
 NetApp

Astra Control is an application-aware data management solution that manages, protects and moves data-rich Kubernetes workloads in both public clouds and on-premises.

Astra Control enables data protection, disaster recovery, and migration for your Kubernetes workloads, leveraging NetApp's industry-leading data management technology for snapshots, backups, replication and cloning.

**How to deploy Astra Control**

Refer to [Installation Procedure](#) to deploy Astra Control Center using the Operator.

**Documentation**

Refer to [Astra Control Center Documentation](#) to complete the setup and start managing applications.

**NOTE:** The version listed under *Latest version* on this page might not reflect the actual version of NetApp Astra Control Center you are installing. The version in the file name of the Astra Control Center bundle that you download from the NetApp Support Site is the version of Astra Control Center that will be installed.

10. Select the appropriate options and click Install.

OperatorHub > Operator Installation

## Install Operator

Install your Operator by subscribing to one of the update channels to keep the Operator up to date. The strategy determines either manual or automatic updates.


**Update channel \*** ⓘ
 

☐ alpha
 ☒ stable

**Installation mode \***


☒ All namespaces on the cluster (default)  
 Operator will be available in all Namespaces.
 ☐ A specific namespace on the cluster  
 This mode is not supported by this Operator

**Installed Namespace \***


 netapp-acc-operator (Operator recommended)

**Update approval \*** ⓘ
 

☐ Automatic
 ☒ Manual


**netapp-acc-operator**  
 provided by NetApp

**Provided APIs**

 **Astra Control Center**  
 AstraControlCenter is the Schema for the astracontrolcenters API.

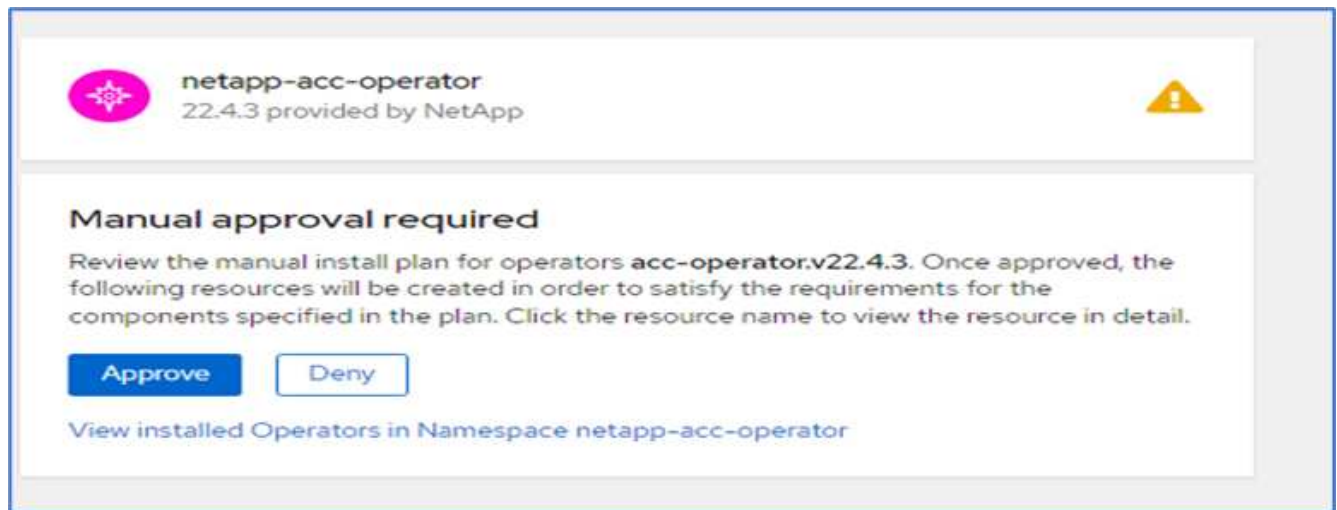
**Namespace creation**  
 Namespace **netapp-acc-operator** does not exist and will be created.

**Manual approval applies to all operators in a namespace**  
 Installing an operator with manual approval causes all operators installed in namespace **netapp-acc-operator** to function as manual approval strategy. To allow automatic approval, all operators installed in the namespace must use automatic approval strategy.

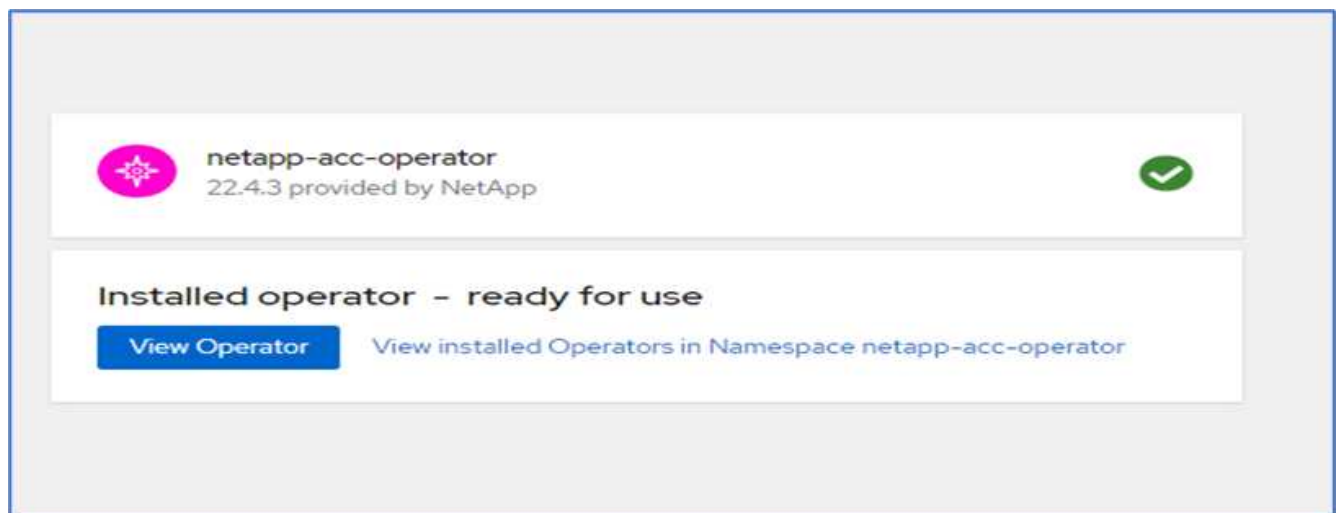
Install

Cancel

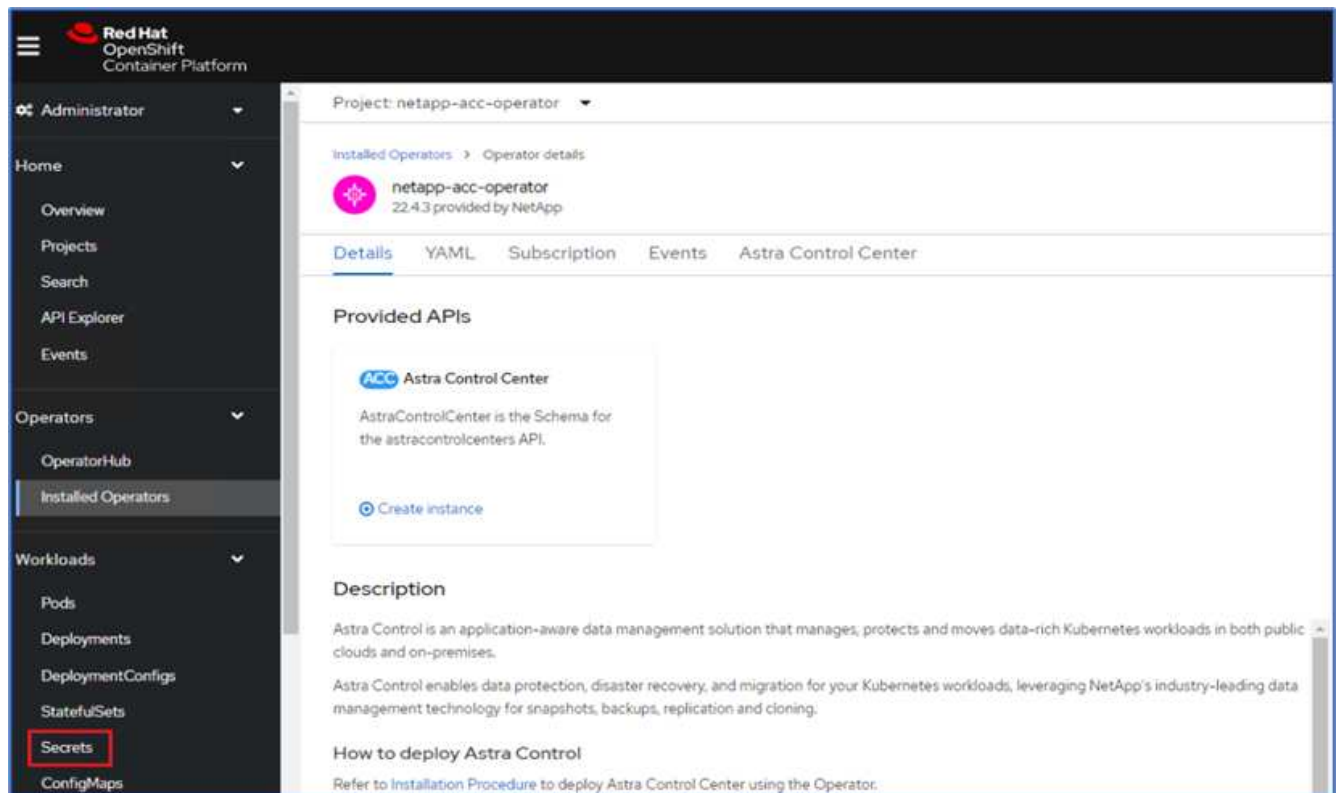
11. Approve the installation and wait for the operator to be installed.



- At this stage, the operator is installed successfully and ready for use. Click View Operator to start the installation of Astra Control Center.



- Before installing Astra Control Center, create the pull secret to download Astra images from the Docker registry that you pushed earlier.



14. To pull the Astra Control Center images from your Docker private repo, create a secret in the `netapp-acc-operator` namespace. This secret name is provided in the Astra Control Center YAML manifest in a later step.

Project: netapp-acc-operator ▼

## Create image pull secret

Image pull secrets let you authenticate against a private image registry.

**Secret name \***

Unique name of the new secret.

**Authentication type**

**Registry server address \***

For example quay.io or docker.io

**Username \***

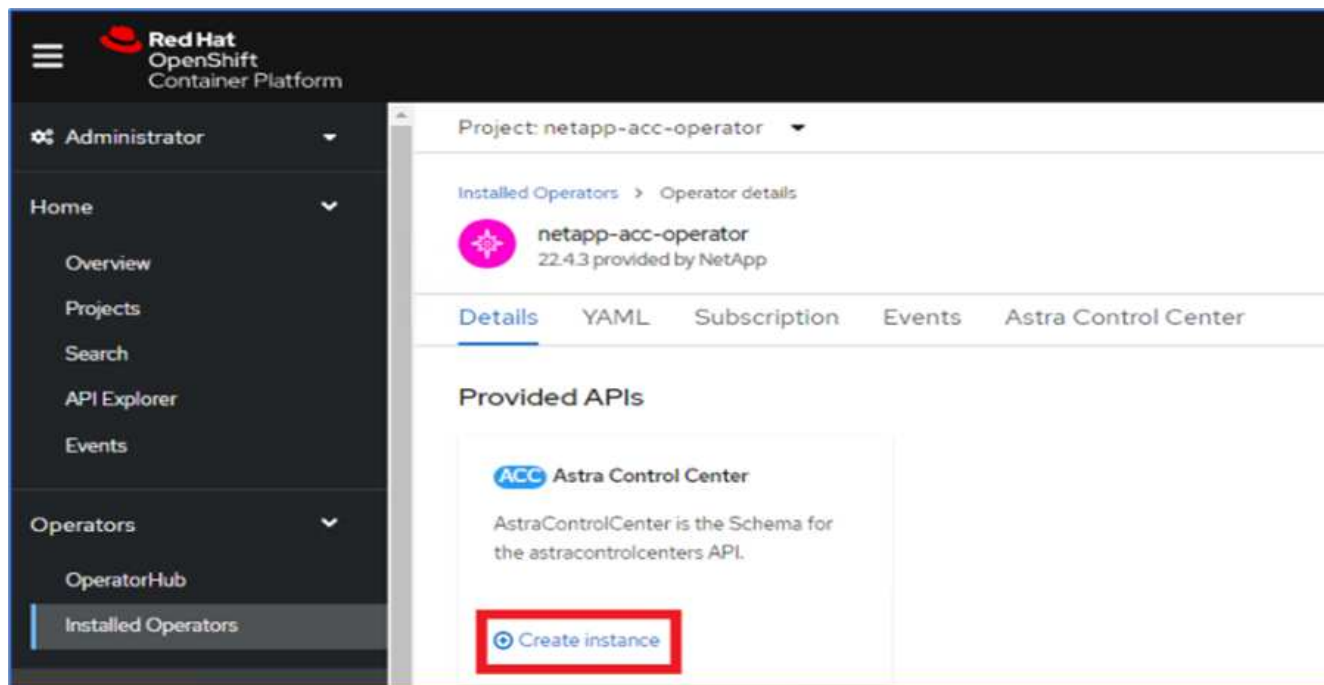
**Password \***

**Email**

[+ Add credentials](#)

CreateCancel

- From the side menu, select Operators > Installed Operators and click Create Instance under the provided APIs section.



16. Complete the Create AstraControlCenter form. Provide the name, Astra address, and Astra version.

The screenshot shows the 'Create AstraControlCenter' form in the Red Hat OpenShift Container Platform interface. The left navigation menu is the same as in the previous screenshot. The main content area is titled 'Project: netapp-acc-operator' and shows 'netapp-acc-operator > Create AstraControlCenter'. The form title is 'Create AstraControlCenter' with a subtitle 'Create by completing the form. Default values may be provided by the Operator authors.' Below the title are tabs for 'Form view' (selected) and 'YAML view'. A note states: 'Note: Some fields may not be represented in this form view. Please select "YAML view" for full control.' The form fields are:
 

- Name \***: acc
- Labels**: app=frontend
- Auto Support \***: A section with a right arrow, containing text about NetApp's proactive support application.
- Astra Address \***: acc.ocp.flexpod.netapp.com. Below this is a detailed explanation: 'AstraAddress defines how Astra will be found in the data center. This IP address and/or DNS A record must be created prior to provisioning Astra Control Center. Example - "astra.example.com" The A record and its IP address must be allocated prior to provisioning Astra Control Center.'
- Astra Version \***: 22.04.0. Below this is a note: 'Version of AstraControlCenter to deploy. You are provided a Helm repository with a corresponding version. Example - 1.5.2, 1.4.2-patch.'



Under Astra Address, provide the FQDN address for Astra Control Center. This address is used to access the Astra Control Center Web console. The FQDN should also resolve to a reachable IP network and should be configured in the DNS.

17. Enter an account name, email address, administrator last name, and retain the default volume reclaim policy. If you are using a load balancer, set the Ingress Type to AccTraefik. Otherwise, select Generic for

Ingress.Controller. Under Image Registry, enter the container image registry path and secret.

The screenshot shows the Astra Control Center configuration page for the 'netapp-acc-operator' project. The left sidebar contains a navigation menu with the following items: Administrator, Home, Operators, OperatorHub, Installed Operators (selected), Workloads, Networking, Storage, Builds, Observe, Compute, User Management, and Administration. The main form area contains the following fields and sections:

- Project:** netapp-acc-operator
- Account Name \***: ocp
- Email \***: abhinav3@netapp.com
- Last Name**: Singh
- Volume Reclaim Policy**: Retain
- Ingress Type**: AccTraefik
- Astra Kube Config Secret**: AstraKubeConfigSecret if present and secret exists operator will attempt to add KubeConfig to Managed Clusters.
- Image Registry**: The container image registry that is hosting the Astra application images, ACC Operator and ACC Helm Repository.
  - Name**: [Redacted]
  - Secret**: astra-registry-cred



In this solution, the Metallb load balancer is used. Therefore, the ingress type is AccTraefik. This exposes the Astra Control Center traefik gateway as a Kubernetes service of type LoadBalancer.

18. Enter the admin first name, configure the resource scaling, and provide the storage class. Click Create.

**Image Registry**

The container image registry that is hosting the Astra application images, ACC Operator and ACC Helm Repository.

**First Name**  
Abhinav  
The first name of the SRE supporting Astra

**Astra Resources Scaler**  
Default  
Scaling options for AstraControlCenter Resource limits.

**Storage Class**  
ocp-nas-sc-gold  
The storage class to be used for PVCs. If not set, default storage class will be used.

**Crds**  
Options for how ACC should handle CRDs. Options for how ACC should handle CRDs. Options for how ACC should handle CRDs. Options for how ACC should handle CRDs.

[Create](#) [Cancel](#)

The status of the Astra Control Center instance should change from Deploying to Ready.

Project: netapp-acc-operator

Installed Operators > Operator details

netapp-acc-operator  
22.43 provided by NetApp

Details | YAML | Subscription | Events | **Astra Control Center**

**AstraControlCenters** [Create AstraControlCenter](#)

Name Search by name...

Name	Kind	Status	Labels	Last updated
ACC-acc	AstraControlCenter	Conditions: Ready, PostinstallComplete, Deployed	appacc	8 minutes ago

19. Verify that all system components have been installed successfully and that all pods are running.

```
root@abhinav-ansible# oc get pods -n netapp-acc-operator
```

NAME	READY	STATUS
acc-helm-repo-77745b49b5-7zg2v	1/1	Running
acc-operator-controller-manager-5c656c44c6-tqnmn	2/2	Running
activity-589c6d59f4-x2sfs	1/1	Running



6m4s			
api-token-authentication-4q5lj	1/1	Running	0
5m26s			
api-token-authentication-pzptd	1/1	Running	0
5m27s			
api-token-authentication-tbtg6	1/1	Running	0
5m27s			
asup-669df8d49-qps54	1/1	Running	0
5m26s			
authentication-5867c5f56f-dnpp2	1/1	Running	0
3m54s			
bucket-service-85495bc475-5zcc5	1/1	Running	0
5m55s			
cert-manager-67f486bbc6-txhh6	1/1	Running	0
9m5s			
cert-manager-cainjector-75959db744-4l5p5	1/1	Running	0
9m6s			
cert-manager-webhook-765556b869-g6wdf	1/1	Running	0
9m6s			
cloud-extension-5d595f85f-txrfl	1/1	Running	0
5m27s			
cloud-insights-service-674649567b-5s4wd	1/1	Running	0
5m49s			
composite-compute-6b58d48c69-46vhc	1/1	Running	0
6m11s			
composite-volume-6d447fd959-chnrt	1/1	Running	0
5m27s			
credentials-66668f8ddd-8qc5b	1/1	Running	0
7m20s			
entitlement-fd6fc5c58-wxnmh	1/1	Running	0
6m20s			
features-756bbb7c7c-rgcrm	1/1	Running	0
5m26s			
fluent-bit-ds-278pg	1/1	Running	0
3m35s			
fluent-bit-ds-5pqc6	1/1	Running	0
3m35s			
fluent-bit-ds-8l7cq	1/1	Running	0
3m35s			
fluent-bit-ds-9qbft	1/1	Running	0
3m35s			
fluent-bit-ds-nj475	1/1	Running	0
3m35s			
fluent-bit-ds-x9pd8	1/1	Running	0
3m35s			
graphql-server-698d6f4bf-kftwc	1/1	Running	0

3m20s			
identity-5d4f4c87c9-wjz6c	1/1	Running	0
6m27s			
influxdb2-0	1/1	Running	0
9m33s			
krakend-657d44bf54-8cb56	1/1	Running	0
3m21s			
license-594bbdc-rghdg	1/1	Running	0
6m28s			
login-ui-6c65fbbbd4-jg8wz	1/1	Running	0
3m17s			
loki-0	1/1	Running	0
9m30s			
metrics-facade-75575f69d7-hnlk6	1/1	Running	0
6m10s			
monitoring-operator-65dff79cfb-z78vk	2/2	Running	0
3m47s			
nats-0	1/1	Running	0
10m			
nats-1	1/1	Running	0
9m43s			
nats-2	1/1	Running	0
9m23s			
nautilus-7bb469f857-4hlc6	1/1	Running	0
6m3s			
nautilus-7bb469f857-vz94m	1/1	Running	0
4m42s			
openapi-8586db4bcd-gwwvf	1/1	Running	0
5m41s			
packages-6bdb949cfb-nrq8l	1/1	Running	0
6m35s			
polaris-consul-consul-server-0	1/1	Running	0
9m22s			
polaris-consul-consul-server-1	1/1	Running	0
9m22s			
polaris-consul-consul-server-2	1/1	Running	0
9m22s			
polaris-mongodb-0	2/2	Running	0
9m22s			
polaris-mongodb-1	2/2	Running	0
8m58s			
polaris-mongodb-2	2/2	Running	0
8m34s			
polaris-ui-5df7687dbd-trcnf	1/1	Running	0
3m18s			
polaris-vault-0	1/1	Running	0

9m18s			
polaris-vault-1	1/1	Running	0
9m18s			
polaris-vault-2	1/1	Running	0
9m18s			
public-metrics-7b96476f64-j88bw	1/1	Running	0
5m48s			
storage-backend-metrics-5fd6d7cd9c-vc4j	1/1	Running	0
5m59s			
storage-provider-bb85ff965-m7qrq	1/1	Running	0
5m25s			
telegraf-ds-4zqgz	1/1	Running	0
3m36s			
telegraf-ds-cp9x4	1/1	Running	0
3m36s			
telegraf-ds-h4n59	1/1	Running	0
3m36s			
telegraf-ds-jnp2q	1/1	Running	0
3m36s			
telegraf-ds-pdz5j	1/1	Running	0
3m36s			
telegraf-ds-znqtp	1/1	Running	0
3m36s			
telegraf-rs-rt64j	1/1	Running	0
3m36s			
telemetry-service-7dd9c74bfc-sfkzt	1/1	Running	0
6m19s			
tenancy-d878b7fb6-wf8x9	1/1	Running	0
6m37s			
traefik-6548496576-5v2g6	1/1	Running	0
98s			
traefik-6548496576-g82pq	1/1	Running	0
3m8s			
traefik-6548496576-psn49	1/1	Running	0
38s			
traefik-6548496576-qrkfd	1/1	Running	0
2m53s			
traefik-6548496576-srs6r	1/1	Running	0
98s			
trident-svc-679856c67-78kbt	1/1	Running	0
5m27s			
vault-controller-747d664964-xmn6c	1/1	Running	0
7m37s			

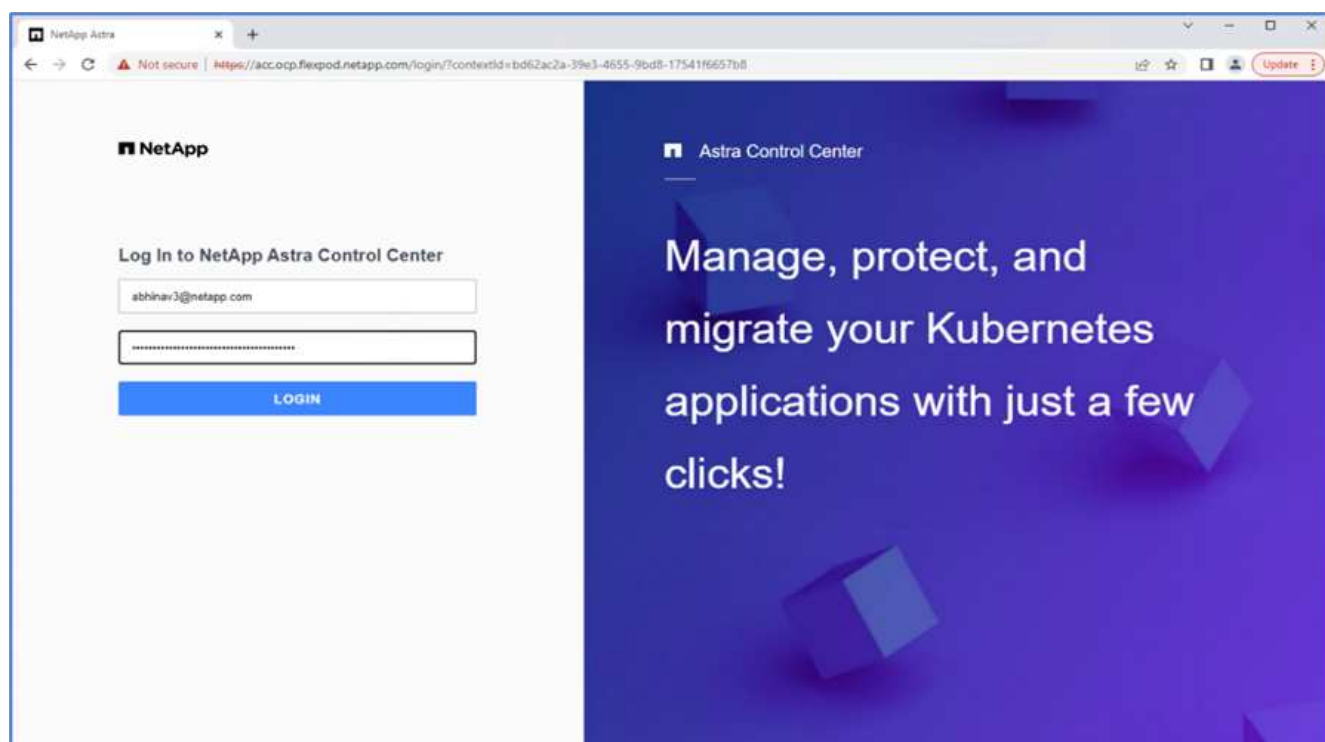


Each pod should have a status of Running. It might take several minutes before the system pods are deployed.

20. When all pods are running, run the following command to retrieve the one-time password. In the YAML version of the output, check the `status.deploymentState` field for the deployed value, and then copy the `status.uuid` value. The password is ACC- followed by the UUID value. (ACC-[UUID]).

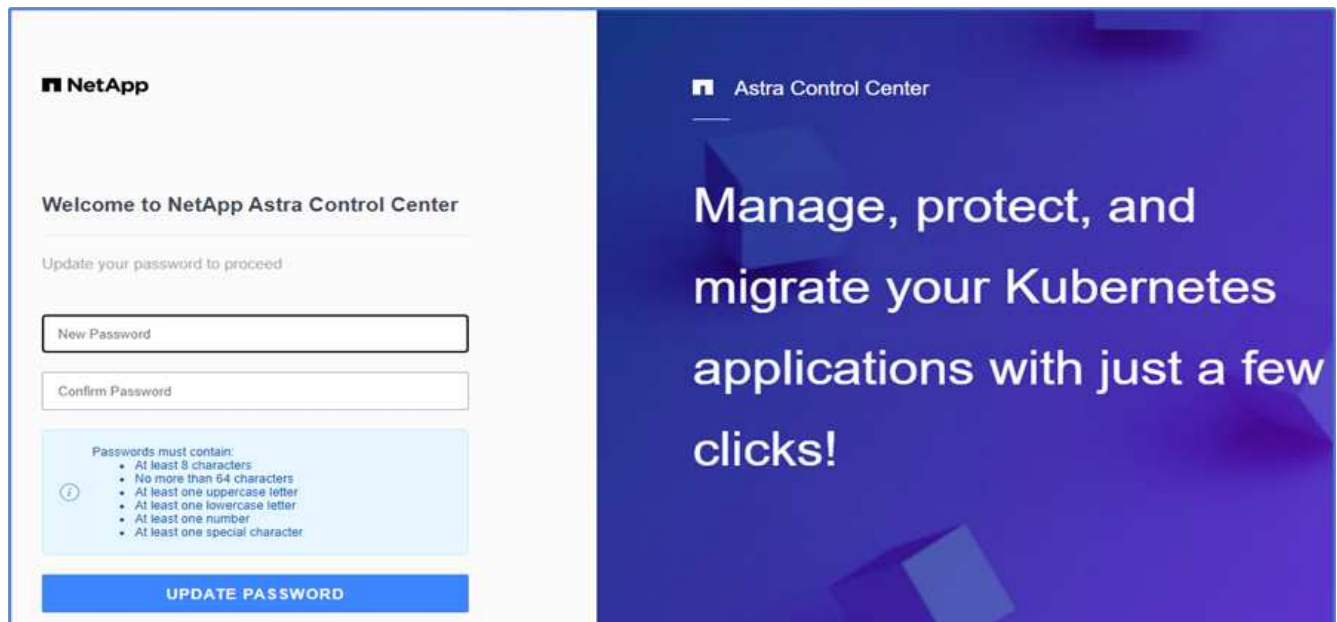
```
root@abhinav-ansible# oc get acc -o yaml -n netapp-acc-operator
```

21. In a browser, navigate to the URL by using the FQDN that you had provided.
22. Log in using the default user name, which is the email address provided during the installation and the one-time password ACC-[UUID].



If you enter an incorrect password three times, then the administrator account is locked for 15 minutes.

23. Change the password and proceed.

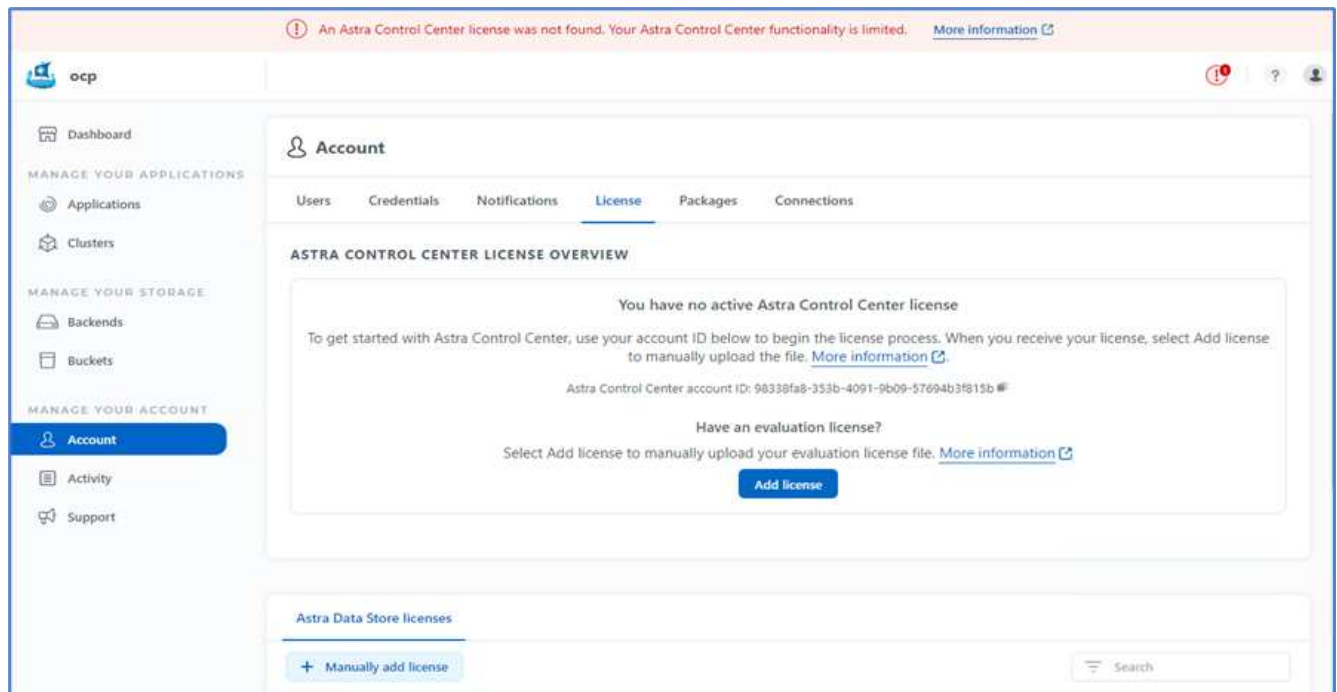


For more information about the Astra Control Center installation, see the [Astra Control Center Installation overview](#) page.

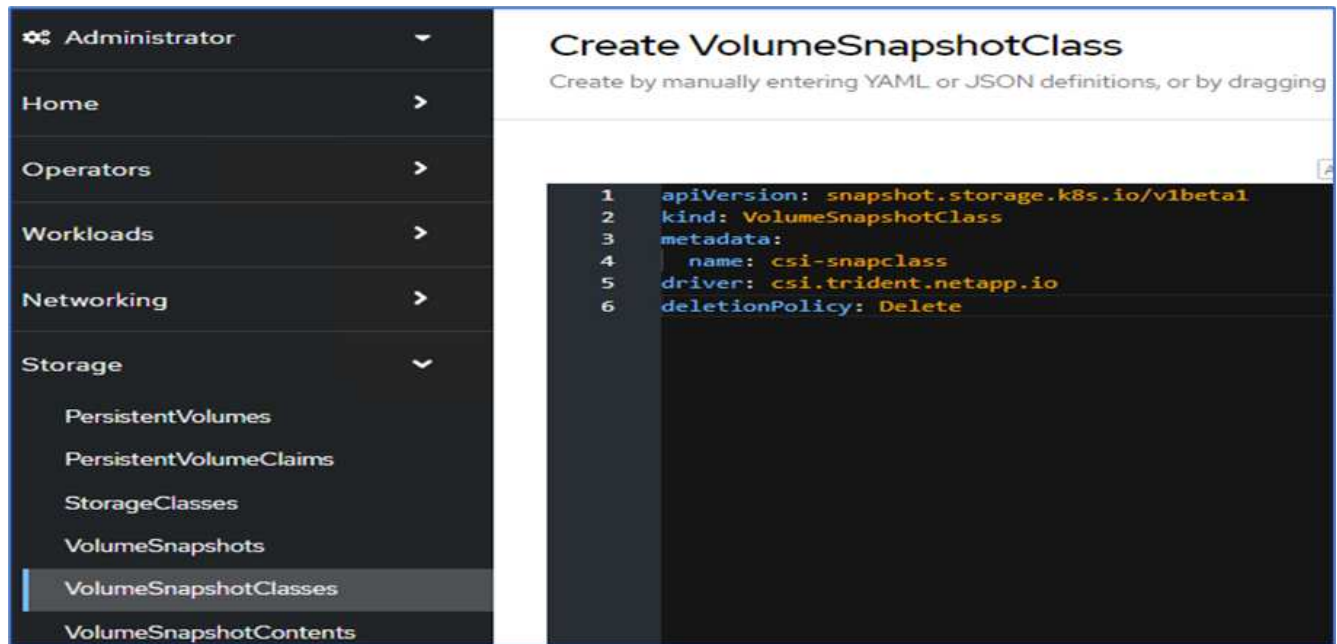
## Set up Astra Control Center

After you install Astra Control Center, log into the UI, upload the license, add clusters, manage storage, and add buckets.

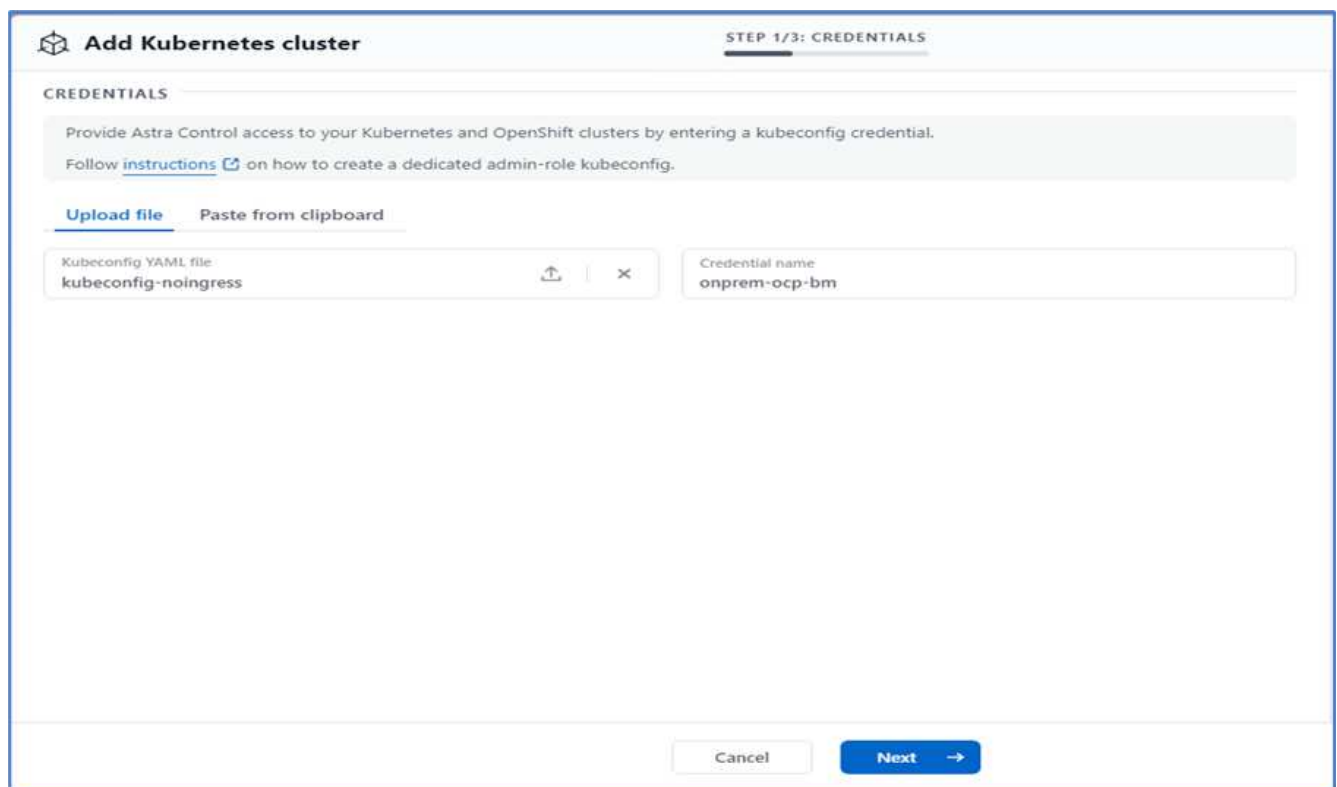
1. On the home page under Account, go to the License tab and select Add License to upload the Astra license.



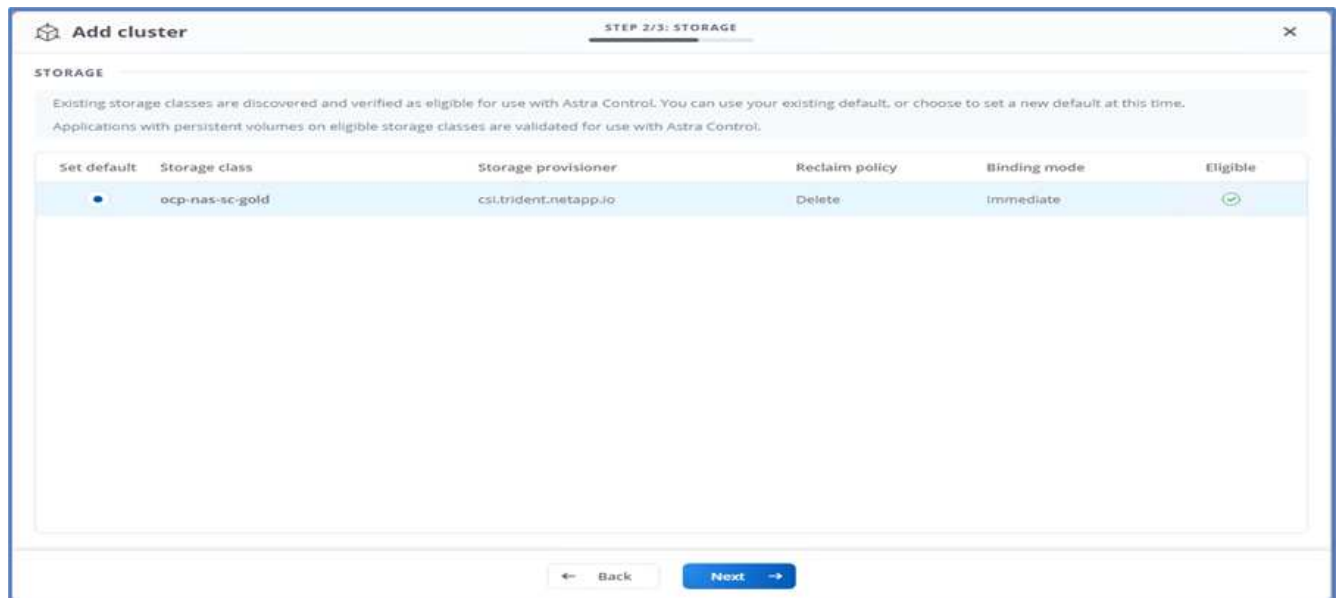
2. Before adding the OpenShift cluster, create an Astra Trident Volume snapshot class from the OpenShift web console. The Volume snapshot class is configured with the `csi.trident.netapp.io` driver.



3. To add the Kubernetes cluster, go to Clusters on the home page and click Add Kubernetes Cluster. Then upload the kubeconfig file for the cluster and provide a credential name. Click Next.



4. The existing storage classes are discovered automatically. Select the default storage class, click Next, and then click Add cluster.

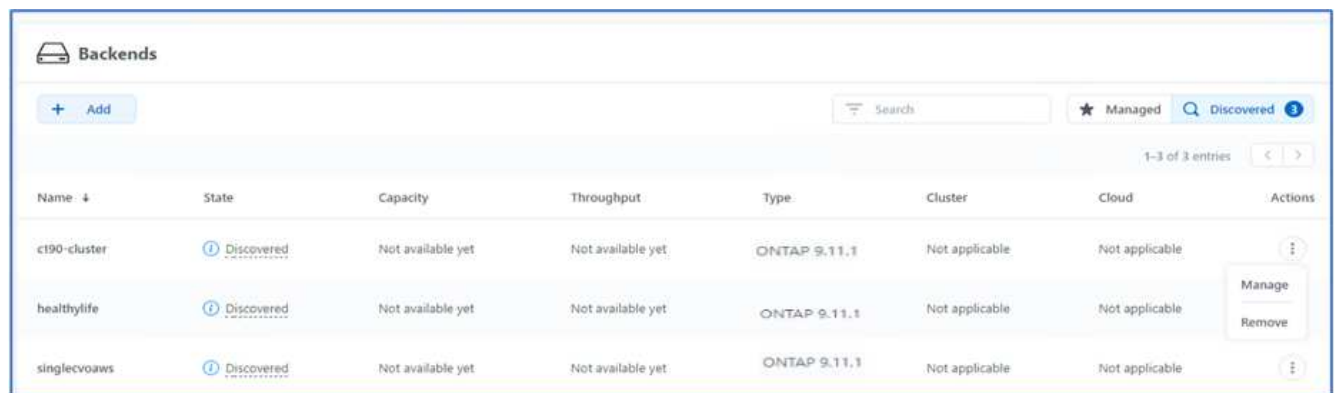


- The cluster is added in few minutes. To add additional OpenShift Container Platform clusters, repeat steps 1–4.



To add an additional OpenShift operational environment as a managed compute resource, make sure that the Astra Trident [VolumeSnapshotClass](#) objects are defined.

- To manage the storage, go to Backends, click the three dots under Actions against the backend that you would like to manage. Click Manage.



- Provide the ONTAP credentials and click Next. Review the information and click Managed. The backends should look like the following example.

Backends

+ Add

Search

★ Managed

Discovered

1-3 of 3 entries

Name ↓	State	Capacity	Throughput	Type	Cluster	Cloud	Actions
<a href="#">c190-cluster</a>	<div><div></div><div>Available</div></div>	<div><div></div><div>0.4/10.64 TiB: 3.8%</div></div>	Not available yet	ONTAP 9.11.1	Not applicable	Not applicable	<div><div></div></div>
<a href="#">healthylife</a>	<div><div></div><div>Available</div></div>	<div><div></div><div>5.16/106.42 TiB: 4.8%</div></div>	Not available yet	ONTAP 9.11.1	Not applicable	Not applicable	<div><div></div></div>
<a href="#">singlecvoaws</a>	<div><div></div><div>Available</div></div>	<div><div></div><div>0.07/0.62 TiB: 11.9%</div></div>	Not available yet	ONTAP 9.11.1	Not applicable	Not applicable	<div><div></div></div>

8. To add a bucket to Astra Control, select Buckets and click Add.

Dashboard

MANAGE YOUR APPLICATIONS

Applications

Clusters

MANAGE YOUR STORAGE

Backends

**Buckets**

MANAGE YOUR ACCOUNT

Account

Activity

Buckets

+ Add

Name ↓	Description	State	Type
--------	-------------	-------	------

9. Select the bucket type and provide the bucket name, S3 server name, or IP address and S3 credential. Click Update.

Edit bucket

×

STORAGE BUCKET

Edit the access details of your existing object store bucket.

Type

Generic S3

Existing bucket name

acc-aws-bucket

Description (optional)

S3 server name or IP address

s3.us-east-1.amazonaws.com

☐

Make this bucket the default bucket for this cloud

SELECT CREDENTIALS

Astra Control requires S3 access credentials with the roles necessary to facilitate Kubernetes application data management.

Add

Use existing

Access ID

Secret key

Credential name

EDITING STORAGE BUCKETS

Edit your existing object store bucket. If the selected bucket is not currently defined as the default bucket for the cloud, you can replace the currently defined default bucket. Read more in [Storage buckets](#).

Cancel

Update ✓





In this solution, AWS S3 and ONTAP S3 buckets are both used. You can also use StorageGRID.

The Bucket state should be Healthy.

The screenshot shows the 'Buckets' page in the Astra Control interface. It features a table with columns for Name, Description, State, Type, and Actions. Two buckets are listed: 'acc-aws-bucket' (Generic S3) and 'astra-bucket' (NetApp ONTAP S3). Both are in a 'Healthy' state. The 'astra-bucket' is marked as the 'Default' bucket.

Name	Description	State	Type	Actions
acc-aws-bucket		Healthy	Generic S3	
astra-bucket	On Prem S3 Bucket	Healthy	NetApp ONTAP S3	

As a part of Kubernetes cluster registration with Astra Control Center for application-aware data management, Astra Control automatically creates role bindings and a NetApp monitoring namespace to collect metrics and logs from the application pods and worker nodes. Make one of the supported ONTAP-based storage classes the default.

After you [add a cluster to Astra Control management](#), you can install apps on the cluster (outside of Astra Control) and then go to the Apps page in Astra Control to manage the apps and their resources. For more information about managing apps with Astra, see the [App management requirements](#).

Next: [Solution validation overview](#).

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