



# Installation and configuration

## FlexPod

NetApp  
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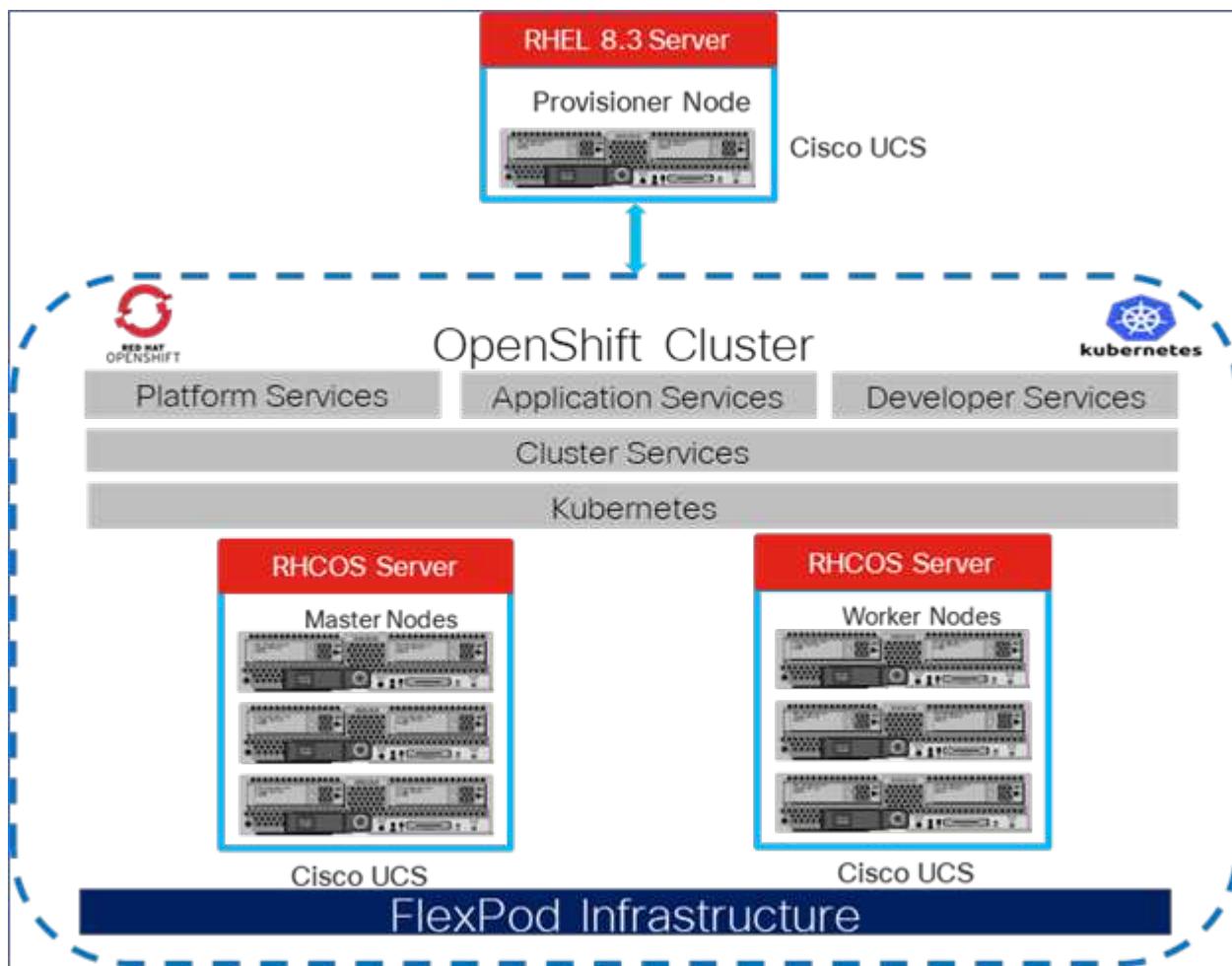
# Installation and configuration

## 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.

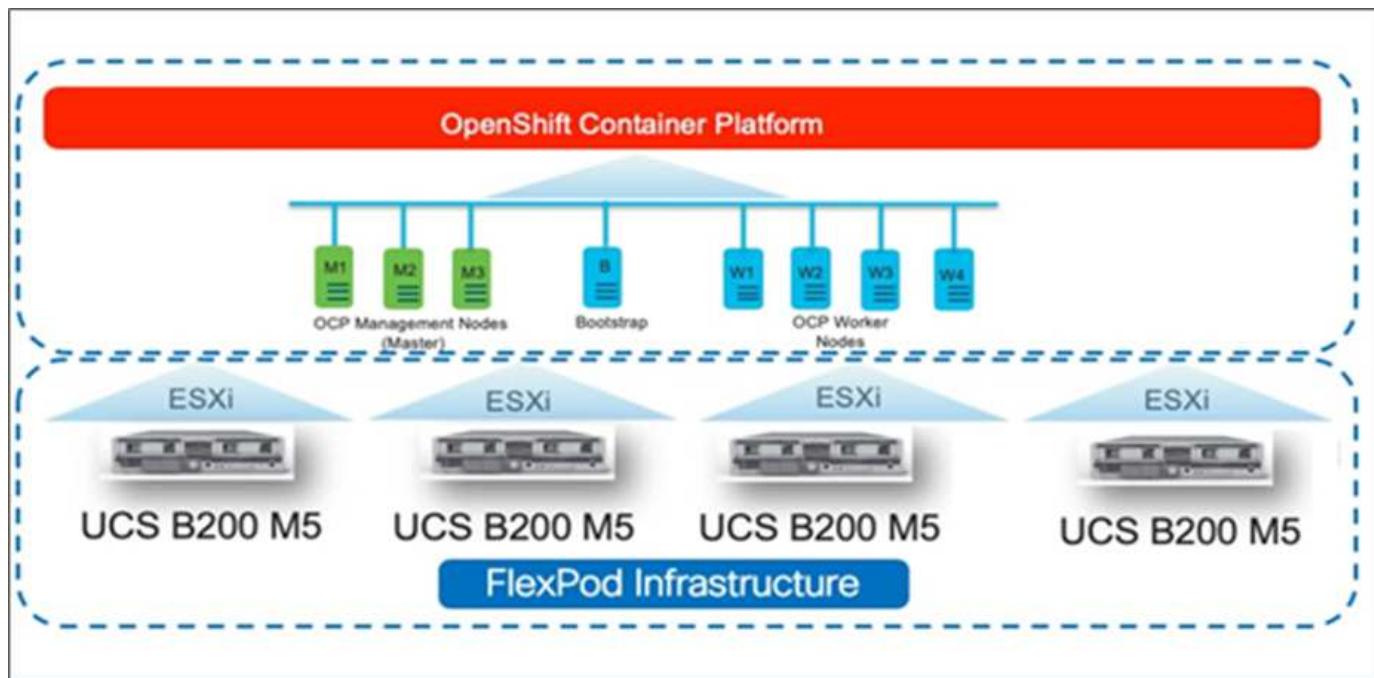
The following figure illustrates the OpenShift Container Platform 4 Bare Metal on FlexPod.



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

```
[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

```

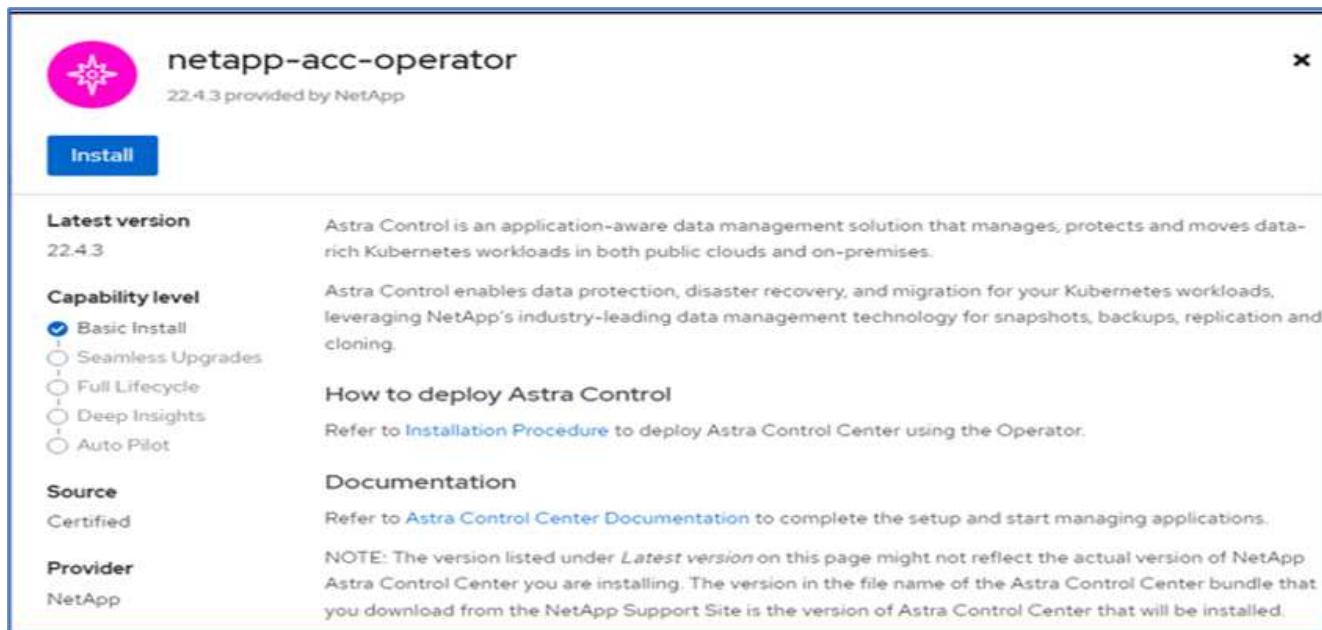
8. Log into the bare-metal OpenShift cluster web console. From the side menu, select Operators > OperatorHub. Enter `astra` to list the `netapp-acc-operator`.

The screenshot shows the Red Hat OpenShift Container Platform web console. The sidebar on the left has a 'Administrator' dropdown, followed by 'Home' with 'Overview', 'Projects', 'Search', 'API Explorer', and 'Events'. Below that is an 'Operators' section with 'OperatorHub' (which is selected and highlighted in blue) and 'Installed Operators'. The main content area has a header 'Project: All Projects'. Below it is the 'OperatorHub' section with a search bar containing 'astra'. A list of categories is on the left: 'All Items', 'AI/Machine Learning', 'Application Runtime', 'Big Data', 'Cloud Provider', 'Database', 'Developer Tools', 'Development Tools', 'Drivers And Plugins', 'Integration & Delivery', 'Logging & Tracing', and 'Modernization & Migration'. On the right, a box highlights the 'netapp-acc-operator' entry, which is provided by NetApp and describes it as 'Install, configure and monitor Astra Control Center'.



`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`.



**Latest version**  
22.4.3

**Capability level**

- Basic Install
- Seamless Upgrades
- Full Lifecycle
- Deep Insights
- Auto Pilot

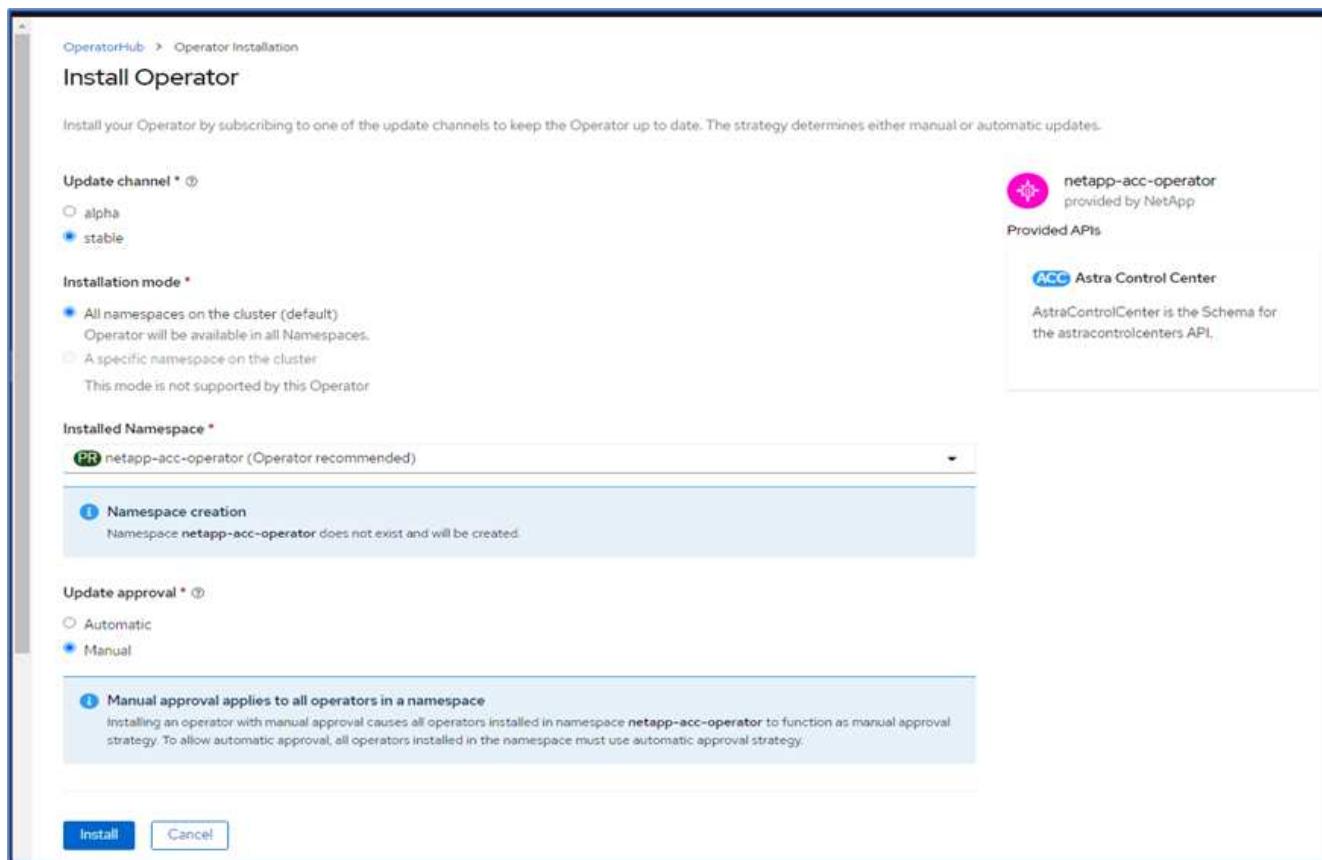
**How to deploy Astra Control**  
Refer to [Installation Procedure](#) to deploy Astra Control Center using the Operator.

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

**Provider**  
NetApp

**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.



**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)

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

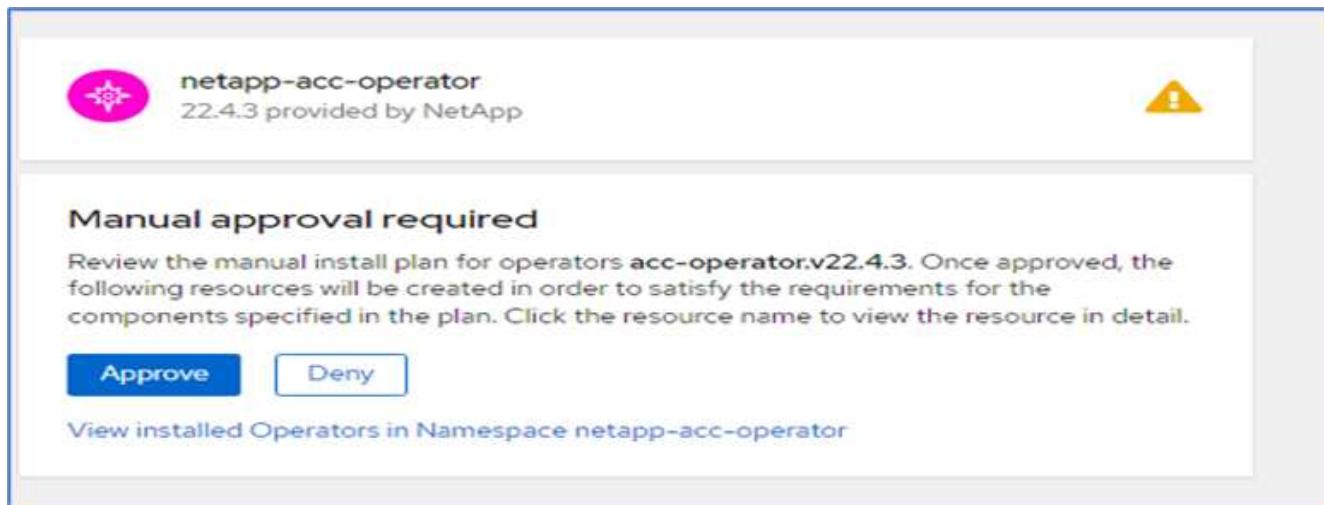
**Update approval \*** ⓘ

- Automatic
- Manual

**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.



netapp-acc-operator  
22.4.3 provided by NetApp

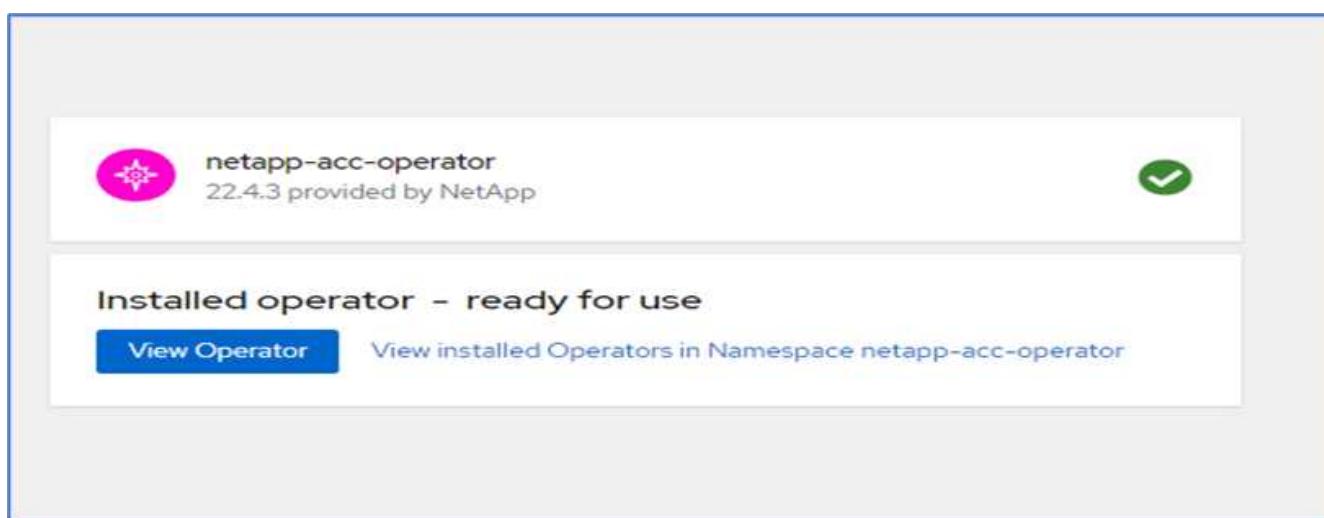
**Manual approval required**

Review the manual install plan for operators **acc-operator.v22.4.3**. Once approved, the following resources will be created in order to satisfy the requirements for the components specified in the plan. Click the resource name to view the resource in detail.

**Approve** **Deny**

[View installed Operators in Namespace netapp-acc-operator](#)

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

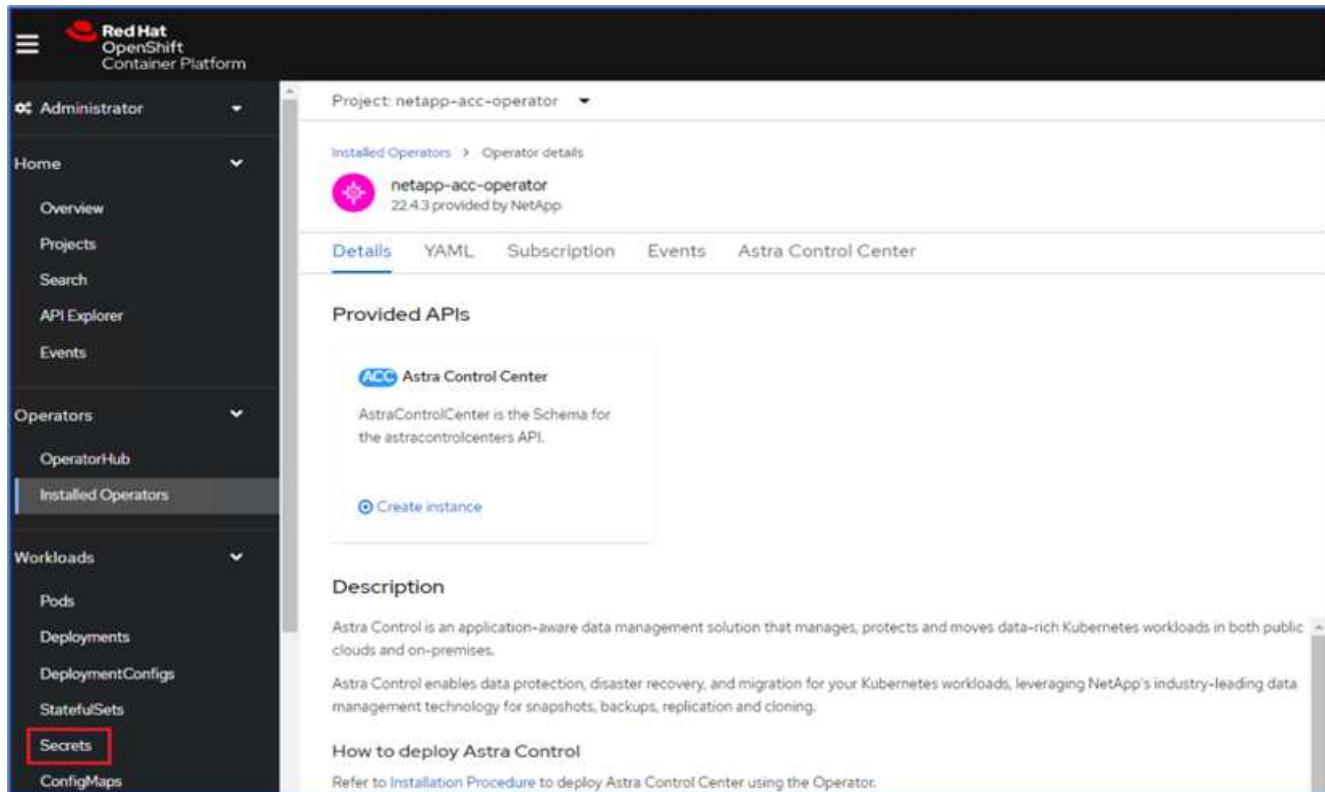


netapp-acc-operator  
22.4.3 provided by NetApp

**Installed operator - ready for use**

**View Operator** [View installed Operators in Namespace netapp-acc-operator](#)

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



The screenshot shows the Red Hat OpenShift Container Platform web interface. The left sidebar is dark-themed and includes sections for Home, Operators, Workloads, and a Secrets section which is highlighted with a red box. The main content area shows the 'netapp-acc-operator' details page. The top navigation bar shows 'Project: netapp-acc-operator'. Below it, the 'Installed Operators' section lists 'netapp-acc-operator' (version 22.4.3 provided by NetApp). The 'Details' tab is selected, showing the 'Provided APIs' section which includes the 'Astra Control Center' API. The 'Description' section explains that Astra Control is an application-aware data management solution. The 'How to deploy Astra Control' section provides a link to the installation procedure. The 'Events' and 'Astra Control Center' tabs are also visible in the navigation bar.

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 \***  
astra-registry-cred

Unique name of the new secret.

**Authentication type**  
Image registry credentials

**Registry server address \***  
[REDACTED]  
For example quay.io or docker.io

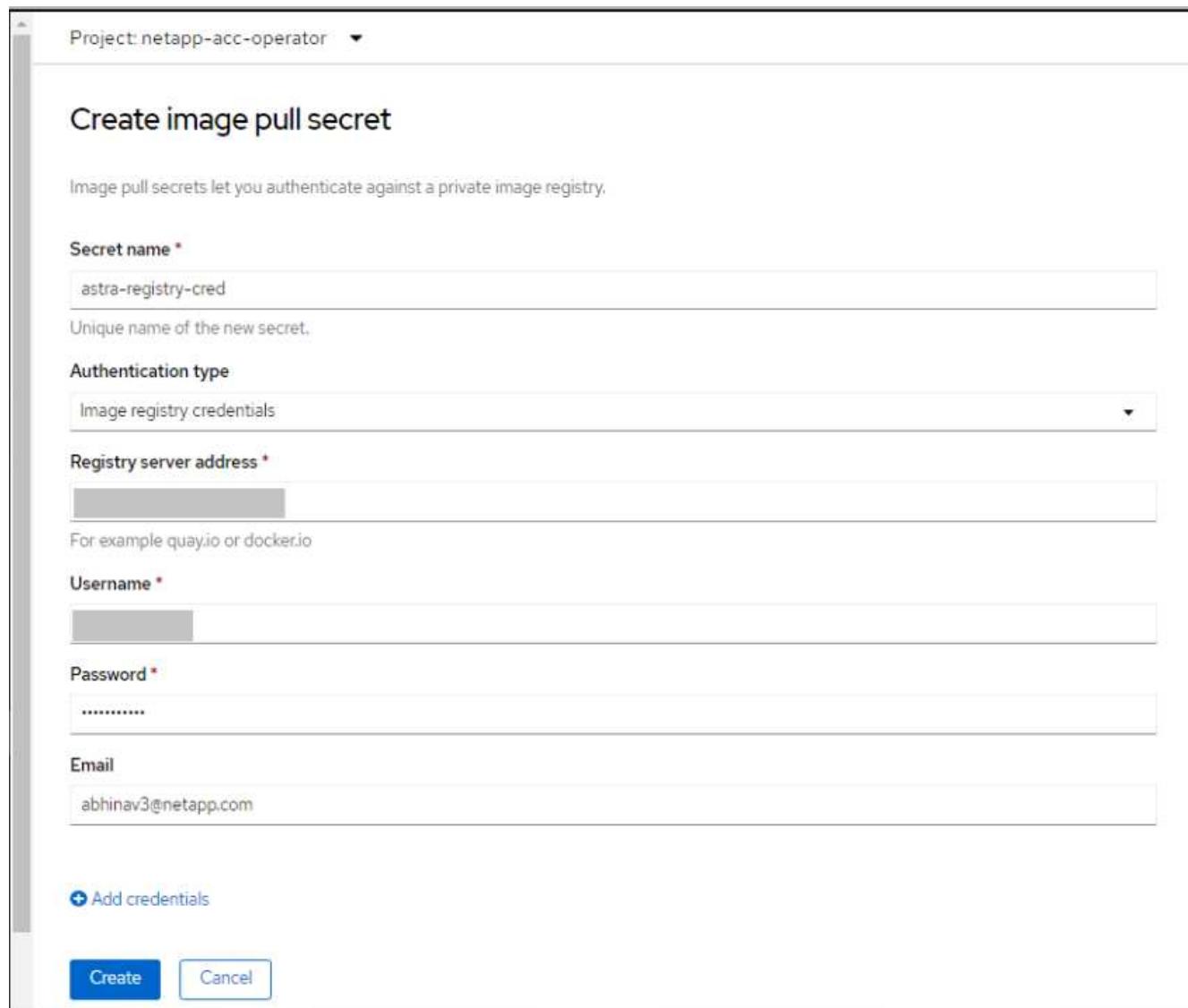
**Username \***  
[REDACTED]

**Password \***  
[REDACTED]  
.....

**Email**  
abhinav3@netapp.com

[+ Add credentials](#)

**Create** **Cancel**



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

The screenshot shows the Red Hat OpenShift Container Platform web interface. The left sidebar is titled 'Administrator' and includes 'Home', 'Overview', 'Projects', 'Search', 'API Explorer', 'Events', 'Operators', 'OperatorHub', and 'Installed Operators'. The 'Installed Operators' option is selected. The main content area is titled 'Project: netapp-acc-operator' and shows 'Installed Operators > Operator details' for 'netapp-acc-operator' (version 22.4.3 provided by NetApp). It includes tabs for 'Details', 'YAML', 'Subscription', 'Events', and 'Astra Control Center'. The 'Astra Control Center' tab is selected. Below it, a section titled 'Provided APIs' shows 'Astra Control Center' with the description 'AstraControlCenter is the Schema for the astracontrolcenters API.' A red box highlights the 'Create instance' button.

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

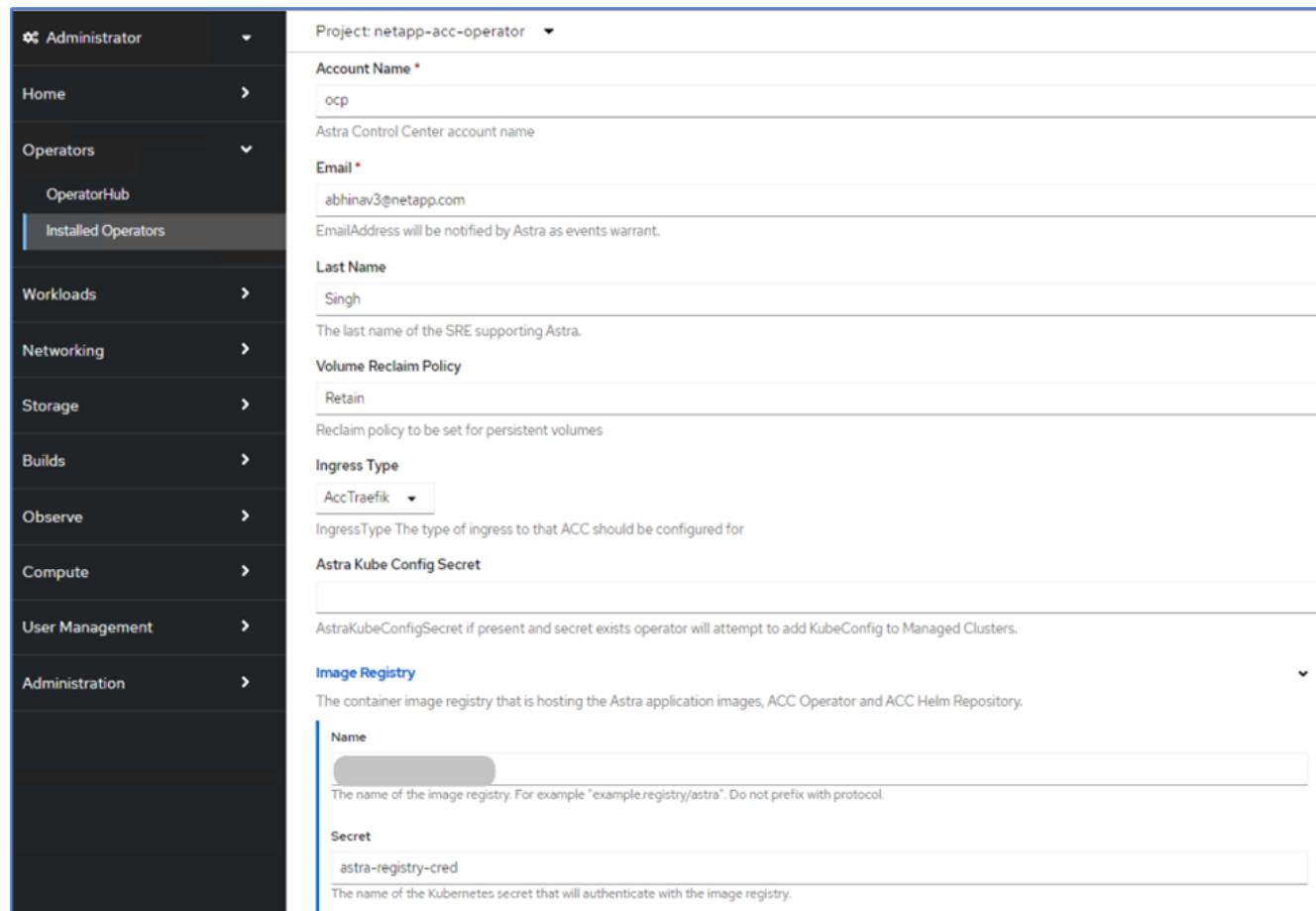
The screenshot shows the 'Create AstraControlCenter' form. The left sidebar is the same as the previous screenshot. The main form has a heading 'Create AstraControlCenter' with the sub-instruction 'Create by completing the form. Default values may be provided by the Operator authors.' Below this, it says 'Configure via:  Form view  YAML view'. A note at the top of the form says 'Note: Some fields may not be represented in this form view. Please select "YAML view" for full control.' The form fields are: 'Name \*' (value: 'acc'), 'Labels' (value: 'app=frontend'), 'Auto Support \*' (with a detailed description of AutoSupport), 'Astra Address \*' (value: 'acc.ocp.flexpod.netapp.com'), 'Astra Version \*' (value: '22.04.0'), and a note at the bottom: '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 OperatorHub interface. The left sidebar shows navigation options like Home, Operators, Workloads, Networking, Storage, Builds, Observe, Compute, User Management, and Administration. The 'Installed Operators' section is currently selected. On the right, a configuration form is displayed for an operator account named 'ocp'. The 'Image Registry' section is expanded, showing fields for 'Name' (with a placeholder 'example.registry/astra') and 'Secret' (with a placeholder '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

Actions

Astra Control Center

Create AstraControlCenter

AstraControlCenters

Name: acc

Kind: AstraControlCenter

Status: Conditions: Ready, PostInstallComplete, Deployed

Labels: app=acc

Last updated: 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   0
acc-operator-controller-manager-5c656c44c6-tqnmn  2/2    Running   0
activity-589c6d59f4-x2sfs       1/1    Running   0
```

6m4s				
api-token-authentication-4q51j	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				
bucketservice-85495bc475-5zcc5	1/1	Running	0	
5m55s				
cert-manager-67f486bbc6-txhh6	1/1	Running	0	
9m5s				
cert-manager-cainjector-75959db744-415p5	1/1	Running	0	
9m6s				
cert-manager-webhook-765556b869-g6wdf	1/1	Running	0	
9m6s				
cloud-extension-5d595f85f-txrf1	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-817cq	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-6c65fbdd4-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-vcb4j	1/1	Running	0	
5m59s				
storage-provider-bb85ff965-m7qrg	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				

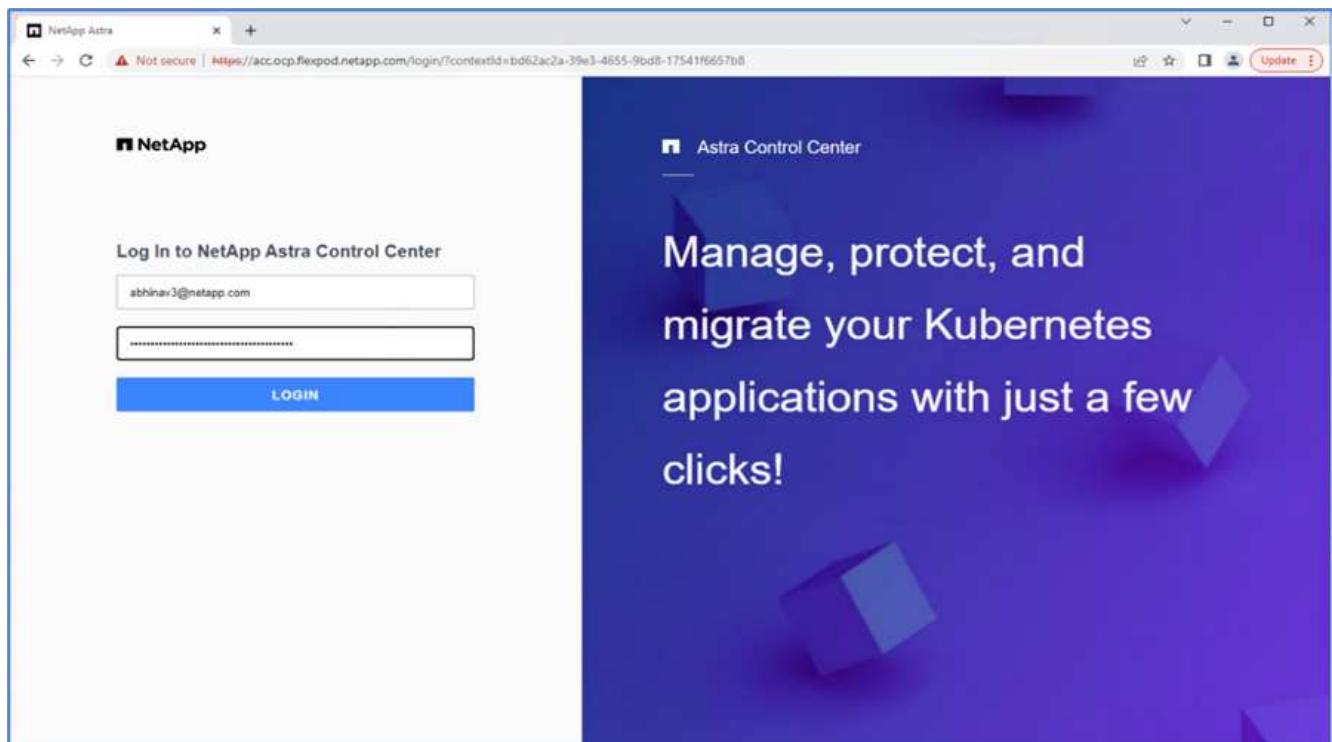


Each pod should have a status of Running. It might take several minutes before the system pods are deployed.

- 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
```

- In a browser, navigate to the URL by using the FQDN that you had provided.
- 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.

- Change the password and proceed.

NetApp

Welcome to NetApp Astra Control Center

Update your password to proceed

New Password

Confirm Password

>Passwords must contain:  

- At least 8 characters
- No more than 64 characters
- At least one uppercase letter
- At least one lowercase letter
- At least one number
- At least one special character

UPDATE PASSWORD

Astra Control Center

Manage, protect, and migrate your Kubernetes applications with just a few clicks!

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.

An Astra Control Center license was not found. Your Astra Control Center functionality is limited. [More information](#)

Dashboard Applications Clusters Backends Buckets Account Activity Support

Account

Users Credentials Notifications License Packages Connections

ASTRA CONTROL CENTER LICENSE OVERVIEW

You have no active Astra Control Center license

To get started with Astra Control Center, use your account ID below to begin the license process. When you receive your license, select Add license to manually upload the file. [More information](#)

Astra Control Center account ID: 98338fa8-353b-4091-9b09-57694b3f815b

Have an evaluation license?

Select Add license to manually upload your evaluation license file. [More information](#)

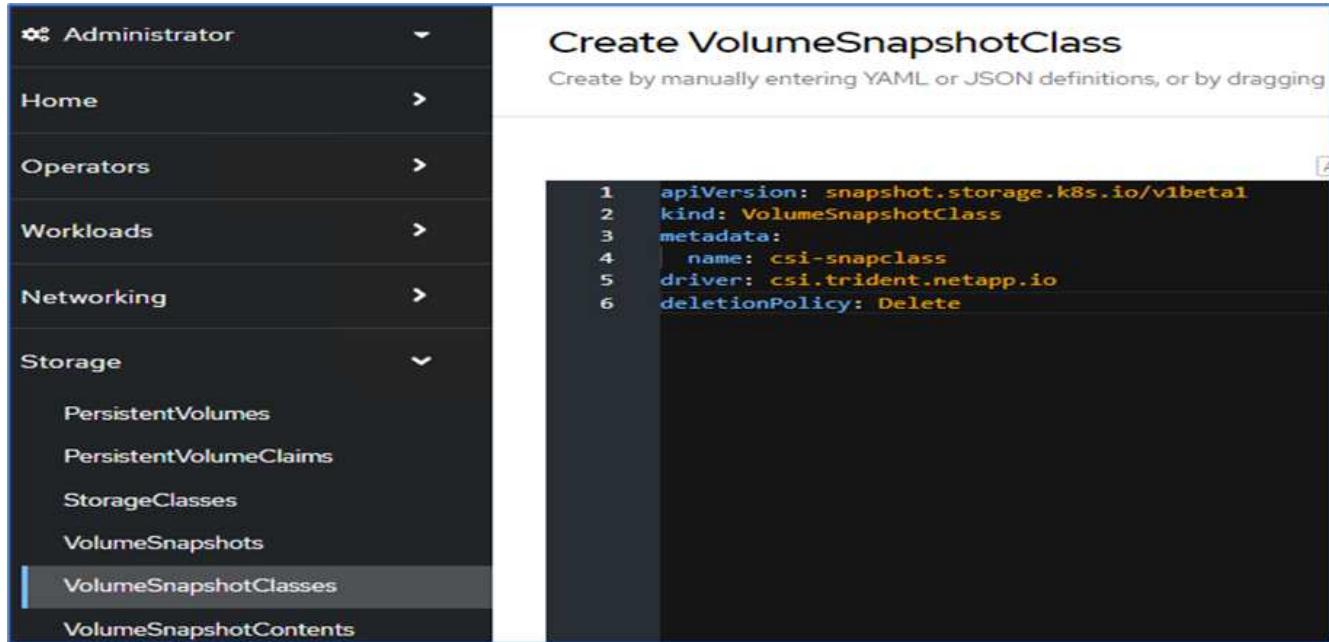
Add license

Astra Data Store licenses

+ Manually add license

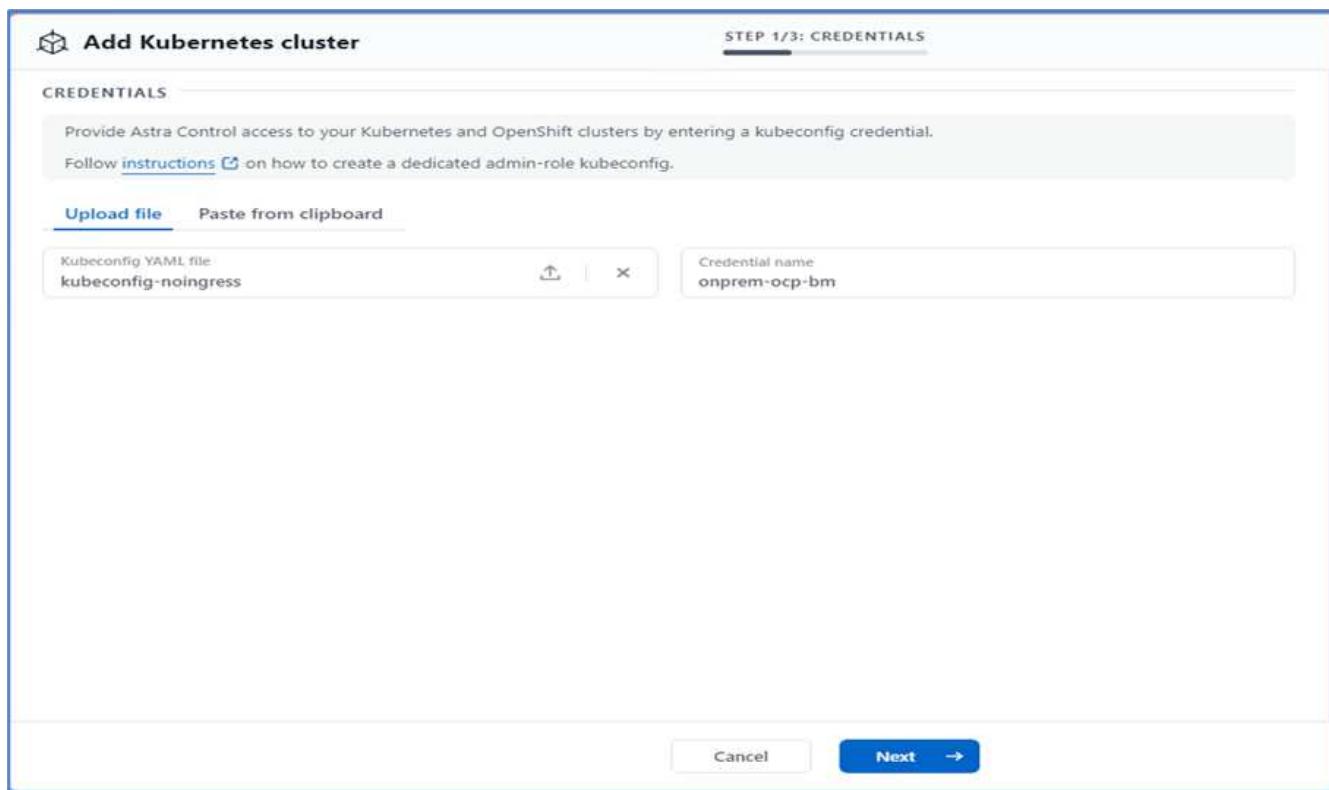
Search

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.



```
1  apiVersion: snapshot.storage.k8s.io/v1beta1
2  kind: VolumeSnapshotClass
3  metadata:
4    name: csi-snapclass
5  driver: csi.trident.netapp.io
6  deletionPolicy: Delete
```

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.



STEP 1/3: CREDENTIALS

CREDENTIALS

Provide Astra Control access to your Kubernetes and OpenShift clusters by entering a kubeconfig credential.

Follow [instructions](#) on how to create a dedicated admin-role kubeconfig.

Upload file   Paste from clipboard

Kubeconfig YAML file: kubeconfig-noingress

Credential name: onprem-ocp-bm

Cancel   Next →

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

Set default	Storage class	Storage provisioner	Reclaim policy	Binding mode	Eligible
•	ocp-nas-sc-gold	csi.trident.netapp.io	Delete	Immediate	<input checked="" type="checkbox"/>

5. 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.

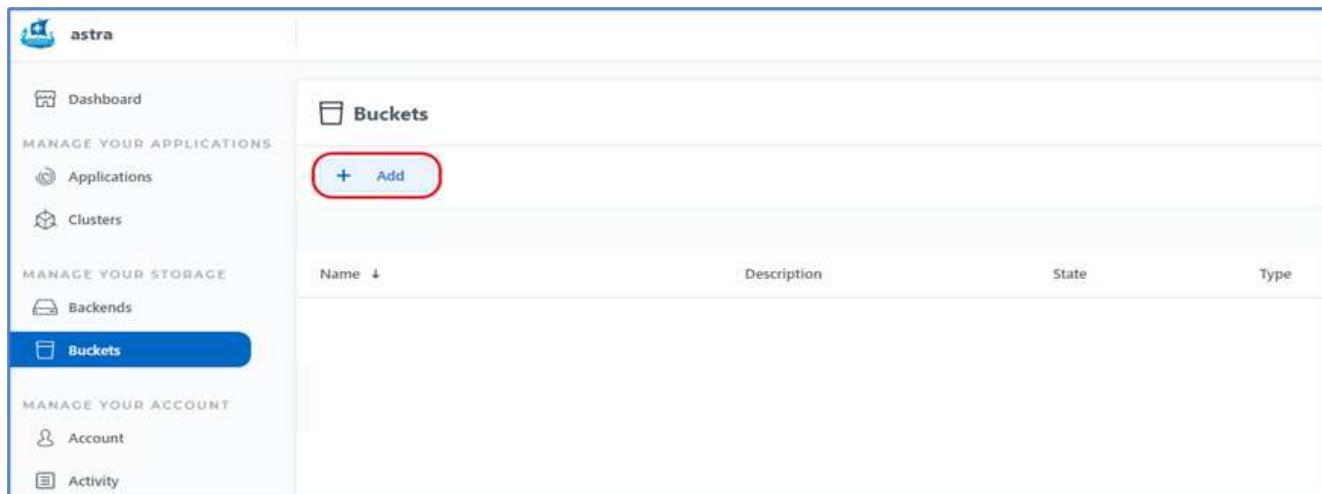
6. To manage the storage, go to Backends, click the three dots under Actions against the backend that you would like to manage. Click Manage.

Name	State	Capacity	Throughput	Type	Cluster	Cloud	Actions
ct90-cluster	Discovered	Not available yet	Not available yet	ONTAP 9.11.1	Not applicable	Not applicable	<button>Manage</button>
healthylife	Discovered	Not available yet	Not available yet	ONTAP 9.11.1	Not applicable	Not applicable	<button>Manage</button>
singlecvoaws	Discovered	Not available yet	Not available yet	ONTAP 9.11.1	Not applicable	Not applicable	<button>Manage</button>

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

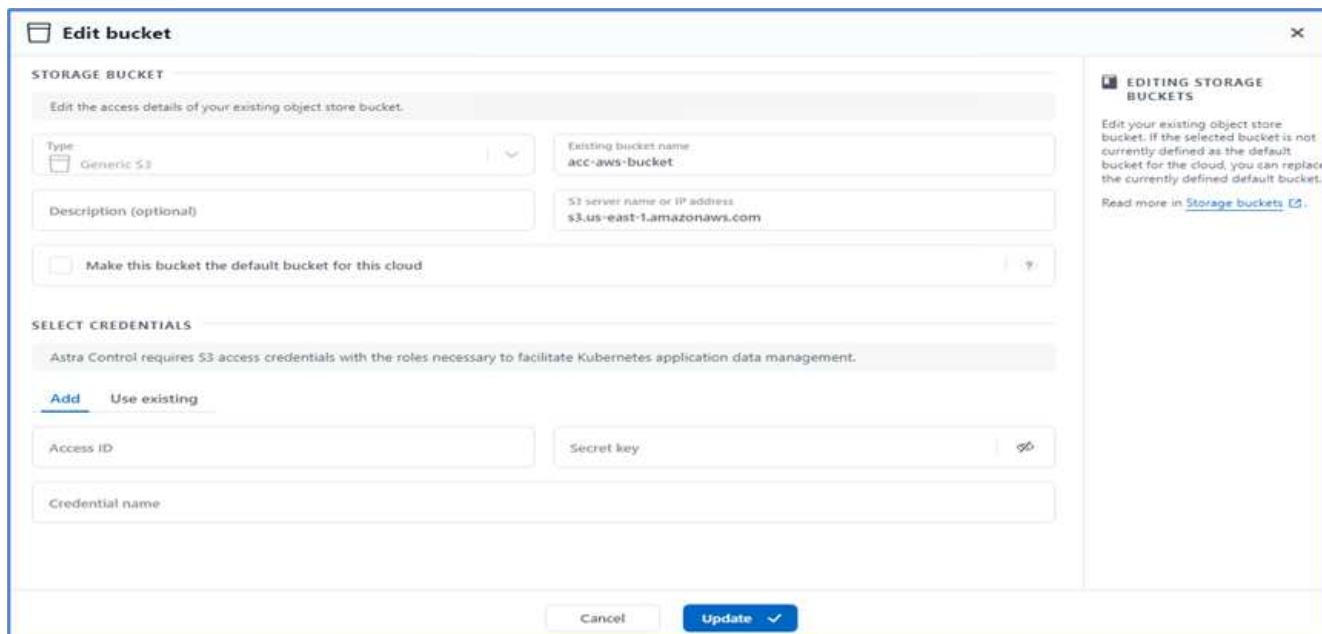
Backends							
Actions		Search		Managed		Discovered	
Name	State	Capacity	Throughput	Type	Cluster	Cloud	Actions
c190-cluster	Available	0.4/10.64 TiB: 3.8%	Not available yet	ONTAP 9.11.1	Not applicable	Not applicable	<input type="button" value="⋮"/>
healthylife	Available	5.16/106.42 TiB: 4.8%	Not available yet	ONTAP 9.11.1	Not applicable	Not applicable	<input type="button" value="⋮"/>
singlecvoaws	Available	0.07/0.62 TiB: 11.9%	Not available yet	ONTAP 9.11.1	Not applicable	Not applicable	<input type="button" value="⋮"/>

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



The screenshot shows the Astra Control dashboard. On the left, there is a sidebar with links for Dashboard, Applications, Clusters, Backends (which is selected and highlighted in blue), Buckets (which is also selected and highlighted in blue), Account, and Activity. The main content area is titled 'Buckets' and shows a table with columns: Name, Description, State, and Type. A red box highlights the 'Add' button at the top of the table.

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



The screenshot shows the 'Edit bucket' dialog box. It has sections for 'STORAGE BUCKET' and 'SELECT CREDENTIALS'. In the 'STORAGE BUCKET' section, the 'Type' dropdown is set to 'Generic S3', the 'Existing bucket name' field contains 'acc-aws-bucket', and the 'S3 server name or IP address' field contains 's3.us-east-1.amazonaws.com'. The 'Description (optional)' field is empty. A checkbox for 'Make this bucket the default bucket for this cloud' is unchecked. In the 'SELECT CREDENTIALS' section, there are buttons for 'Add' and 'Use existing', and fields for 'Access ID', 'Secret key', and 'Credential name'. A note on the right says 'Editing storage buckets'.



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

The Bucket state should be Healthy.

Name	Description	State	Type	Actions
acc-aws-bucket		<span>Healthy</span>	Generic S3	<span>⋮</span>
astra-bucket	On Prem S3 Bucket	<span>Healthy</span>	NetApp ONTAP S3	<span>⋮</span>

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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