



# **Astra: protect, recover, and manage your AKS workloads on ANF**

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## **Abstract**

This document describes how to use NetApp's Astra service to manage Azure Kubernetes Service (AKS) clusters with Azure NetApp Files as the persistent storage provider backing containerized applications.

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# Get started

## Set up Microsoft Azure

A few steps are required to prepare your Microsoft Azure subscription before you can manage Azure Kubernetes Service clusters with Astra Control Service.

### Quick start for setting up Azure

Get started quickly by following these steps or scroll down to the remaining sections for full details.



#### Review Astra Control Service requirements for Azure Kubernetes Service

Ensure that clusters are healthy and running Kubernetes version 1.17 or later, that node pools are online and running **Linux**, and more. [Learn more about this step.](#)



#### Register for Azure NetApp Files

Request access to the Azure NetApp Files service and then register the NetApp Resource Provider. [Learn more about this step.](#)



#### Create a NetApp account

In the Azure portal, go to Azure NetApp Files and create a NetApp account. [Learn more about this step.](#)



#### Set up capacity pools

Set up one or more capacity pools for your persistent volumes. [Learn more about this step.](#)



#### Delegate a subnet to Azure NetApp Files

Delegate a subnet to Azure NetApp Files so that Astra Control Service can create persistent volumes in that subnet. [Learn more about this step.](#)



#### Create an Azure service principal

Create an Azure service principal that has the Contributor role. [Read step-by-step instructions.](#)

### AKS cluster requirements

A Kubernetes cluster must meet the following requirements so you can discover and manage it from Astra Control Service.

## Kubernetes version

Clusters must be running Kubernetes version 1.17 or later.

## Image type

The image type for all node pools must be Linux.

## Cluster state

Clusters must be running in a healthy state and have at least one online worker node with no worker nodes in a failed state.

## Azure region

Clusters must reside in a region where Azure NetApp Files is available. [View Azure products by region.](#)

## Subscription

Clusters must reside in a subscription where Azure NetApp Files is enabled. You'll choose a subscription when you [register for Azure NetApp Files](#).

## VNet

- Clusters must reside in a VNet that has direct access to an Azure NetApp Files delegated subnet. [Learn how to set up a delegated subnet.](#)
- If your Kubernetes clusters are in a VNet that's peered to the Azure NetApp Files delegated subnet that's in another VNet, then both sides of the peering connection must be online.
- Be aware that the default limit for the number of IPs used in a VNet (including immediately peered VNets) with Azure NetApp Files is 1,000. [View Azure NetApp Files resource limits.](#)

If you're close to the limit, you have two options:

- You can [submit a request for a limit increase](#). Contact your NetApp representative if you need help.
- When creating a new AKS cluster, specify a new network for the cluster. Once the new network is created, provision a new subnet and delegate the subnet to Azure NetApp Files.

## Private networking

Private networking must not be enabled on a cluster.

## External volume snapshot controller

Clusters must have a CSI volume snapshot controller installed. This controller is installed by default starting with K8s version 1.21, but you'll need to check on clusters running versions 1.17, 1.18, 1.19, or 1.20. [Learn more about an external snapshot controller for on-demand volume snapshots.](#)

## Install a CSI volume snapshot controller

As noted in the list of requirements, Kubernetes clusters must have a CSI volume snapshot controller installed. Follow these steps to install the controller on your clusters.

### Steps for K8s versions 1.17, 1.18, and 1.19

1. Install volume snapshot CRDs.

```
kubectl apply -f https://raw.githubusercontent.com/kubernetes-csi/external-snapshotter/release-3.0/client/config/crd/snapshot.storage.k8s.io_volumesnapshotclasses.yaml
kubectl apply -f https://raw.githubusercontent.com/kubernetes-csi/external-snapshotter/release-3.0/client/config/crd/snapshot.storage.k8s.io_volumesnapshotcontents.yaml
kubectl apply -f https://raw.githubusercontent.com/kubernetes-csi/external-snapshotter/release-3.0/client/config/crd/snapshot.storage.k8s.io_volumesnapshots.yaml
```

## 2. Create the snapshot controller.

If you want the snapshot controller in a specific namespace, download and edit the following files before you apply them.

```
kubectl apply -f https://raw.githubusercontent.com/kubernetes-csi/external-snapshotter/release-3.0/deploy/kubernetes/snapshot-controller/rbac-snapshot-controller.yaml
kubectl apply -f https://raw.githubusercontent.com/kubernetes-csi/external-snapshotter/release-3.0/deploy/kubernetes/snapshot-controller/setup-snapshot-controller.yaml
```

## Steps for K8s version 1.20

### 1. Install volume snapshot CRDs.

```
kubectl apply -f https://raw.githubusercontent.com/kubernetes-csi/external-snapshotter/v4.0.0/client/config/crd/snapshot.storage.k8s.io_volumesnapshotclasses.yaml
kubectl apply -f https://raw.githubusercontent.com/kubernetes-csi/external-snapshotter/v4.0.0/client/config/crd/snapshot.storage.k8s.io_volumesnapshotcontents.yaml
kubectl apply -f https://raw.githubusercontent.com/kubernetes-csi/external-snapshotter/v4.0.0/client/config/crd/snapshot.storage.k8s.io_volumesnapshots.yaml
```

### 2. Create the snapshot controller.

If you want the snapshot controller in a specific namespace, download and edit the following files before you apply them.

```
kubectl apply -f https://raw.githubusercontent.com/kubernetes-csi/external-snapshotter/v4.0.0/deploy/kubernetes/snapshot-controller/rbac-snapshot-controller.yaml
kubectl apply -f https://raw.githubusercontent.com/kubernetes-csi/external-snapshotter/v4.0.0/deploy/kubernetes/snapshot-controller/setup-snapshot-controller.yaml
```

## Register for Azure NetApp Files

Get access to Azure NetApp Files by submitting a waitlist request. After you're approved, you'll need to register the NetApp Resource Provider.

### Steps

1. [Submit a waitlist request to access Azure NetApp Files.](#)
2. Wait for a confirmation email from the Azure NetApp Files team.
3. [Follow Azure NetApp Files documentation to register the NetApp Resource Provider.](#)

## Create a NetApp account

After you've been granted access, create a NetApp account in Azure NetApp Files.

### Step

1. [Follow Azure NetApp Files documentation to create a NetApp account from the Azure portal.](#)

## Set up a capacity pool

One or more capacity pools are required so that Astra Control Service can provision persistent volumes in a capacity pool. Astra Control Service doesn't create capacity pools for you.

Take the following into consideration as you set up capacity pools for your Kubernetes apps:

- A capacity pool can have an Ultra, Premium, or Standard service level. Each of these service levels are designed for different performance needs. Astra Control Service supports all three.

You need to set up a capacity pool for each service level that you want to use with your Kubernetes clusters.

[Learn more about service levels for Azure NetApp Files.](#)

- Before you create a capacity pool for the apps that you intend to protect with Astra Control Service, choose the required performance and capacity for those apps.

Provisioning the right amount of capacity ensures that users can create persistent volumes as they are needed. If capacity isn't available, then the persistent volumes can't be provisioned.

- An Azure NetApp Files capacity pool can use the manual or auto QoS type. Astra Control Service supports auto QoS capacity pools. Manual QoS capacity pools aren't supported.

### Step

1. [Follow Azure NetApp Files documentation to set up an auto QoS capacity pool.](#)

## Delegate a subnet to Azure NetApp Files

You need to delegate a subnet to Azure NetApp Files so that Astra Control Service can create persistent volumes in that subnet. Note that Azure NetApp Files enables you to have only one delegated subnet in a VNet.

If you're using peered VNets, then both sides of the peering connection must be online: the VNet where your Kubernetes clusters reside and the VNet that has the Azure NetApp Files delegated subnet.

### Step

1. [Follow the Azure NetApp Files documentation to delegate a subnet to Azure NetApp Files.](#)

### After you're done

Wait about 10 minutes before discovering the compute running in the delegated subnet.

## Create an Azure service principal

Astra Control Service requires a Azure service principal that is assigned the Contributor role. Astra Control Service uses this service principal to facilitate Kubernetes application data management on your behalf.

A service principal is an identity created specifically for use with applications, services, and tools. Assigning a role to the service principal restricts access to specific Azure resources.

Follow the steps below to create a service principal using the Azure CLI. You'll need to save the output in a JSON file and provide it to Astra Control Service later on. [Refer to Azure documentation for more details about using the CLI.](#)

The following steps assume that you have permission to create a service principal and that you have the Microsoft Azure SDK (az command) installed on your machine.

### Requirements

- The service principal must use regular authentication. Certificates aren't supported.
- The service principal must be granted Contributor or Owner access to your Azure subscription.
- The Azure subscription must contain the AKS clusters and your Azure NetApp Files account.

### Steps

1. Identify the subscription and tenant ID where your AKS clusters reside (these are the clusters that you want to manage in Astra Control Service).

```
az configure --list-defaults
az account list --output table
```

2. Create the service principal, assign the Contributor role, and specify the scope to the entire subscription where the clusters reside.

```
az ad sp create-for-rbac --name http://sp-astra-service-principal --role contributor --scopes /subscriptions/SUBSCRIPTION-ID
```

3. Store the resulting Azure CLI output as a JSON file.

You'll need to provide this file so that Astra Control Service can discover your AKS clusters and manage Kubernetes data management operations. [Learn about managing credentials in Astra Control Service.](#)

4. Optional: Add the subscription ID to the JSON file so that Astra Control Service automatically populates the ID when you select the file.

Otherwise, you'll need to enter the subscription ID in Astra Control Service when prompted.

#### Example

```
{
  "appId": "0db3929a-bfb0-4c93-baee-aaf8",
  "displayName": "sp-example-dev-sandbox",
  "name": "http://sp-example-dev-sandbox",
  "password": "mypassword",
  "tenant": "011cdf6c-7512-4805-aaf8-7721afd8ca37",
  "subscriptionId": "99ce999a-8c99-99d9-a9d9-99cce99f99ad"
}
```

5. Optional: Test your service principal.

```
az login --service-principal --username APP-ID-SERVICEPRINCIPAL
--password PASSWORD --tenant TENANT-ID
az group list --subscription SUBSCRIPTION-ID
az aks list --subscription SUBSCRIPTION-ID
az storage container list --subscription SUBSCRIPTION-ID
```

## Register for an Astra Control account

Sign up to NetApp Cloud Central and then complete the registration process to obtain an Astra Control account.

### Sign up to Cloud Central

Astra Control Service is integrated within NetApp Cloud Central's authentication service. Sign up to Cloud Central so you can access Astra Control Service and NetApp's other cloud services.



You can use single sign-on to log in to Cloud Central using credentials from your corporate directory (federated identity). To learn more, go to the [Cloud Central Help Center](#) and then click **Cloud Central sign-in options**.

#### Steps

1. Open your web browser and go to [NetApp Cloud Central](#).
2. In the top right, click **Sign up**.



3. Fill out the form and click **Sign up**.



The email address that you enter in this form is for your NetApp Cloud Central user ID. Use this Cloud Central user ID when you sign up for a new Astra Control account, or when an Astra Control admin invites you to an existing Astra Control account.

## Log In to NetApp Cloud Central

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Already signed up? [Login](#)

  
  
  
  
*\*optional*  
  
 I accept the [terms and conditions](#).

4. Wait for an email from NetApp Cloud Central.

5. Click the link in the email to verify your email address.

### Result

You now have an active Cloud Central user login.

### Register for an account

Before you can log in to Astra Control, you need to complete a registration process to obtain an Astra Control account.

When you use Astra Control, you'll manage your apps from within an account. An account includes users who can view and manage the apps within the account, as well as your billing details.

## Steps

1. [Go to the Astra Control page on Cloud Central](#).
2. Click **Sign up for the Free Plan**.
3. Provide the required information in the form.

A few important things to note as you fill out the form:

- Your business name and address must be accurate because we verify them to meet the requirements of Global Trade Compliance.
  - The **Astra Account Name** is the name of your business's Astra Control account. You'll see this name in the Astra Control user interface. Note that you can create additional accounts (up to 5), if that's required for your needs.
4. Click **Submit**.

If you're logged in to Cloud Central already, you'll see a registration status and then you'll be redirected to the Astra Control Dashboard. Otherwise, you'll be prompted to log in first.

Now that you're registered, you can access Astra Control directly from <https://astra.netapp.io>.

# Start managing Kubernetes compute from Astra Control Service

After you set up your environment, you're ready to create a Kubernetes cluster and then add it to Astra Control Service.

## Create a Kubernetes cluster

If you don't have a cluster yet, create one that meets [Astra Control Service requirements for Azure Kubernetes Service \(AKS\)](#).

## Start managing Kubernetes compute

After you log in to Astra Control Service, your first step is to start managing compute.

### What you'll need

or AKS, you should have the JSON file that contains the output from the Azure CLI when you created the service principal. [Learn how to set up a service principal](#).

You'll also need your Azure subscription ID, if you didn't add it to the JSON file.

## Steps

1. On the Dashboard, click **Manage Kubernetes compute**.

Follow the prompts to add the compute.

2. **Provider:** Select your cloud provider and then provide the required credentials.
  - a. **Microsoft Azure:** Provide details about your Azure service principal by uploading a JSON file or by pasting the contents of that JSON file from your clipboard.

The JSON file should contain the output from the Azure CLI when you created the service principal. It

can also include your subscription ID so it's automatically added to Astra. Otherwise, you need to manually enter the ID after providing the JSON.

3. **Compute:** Select the compute that you'd like to add.

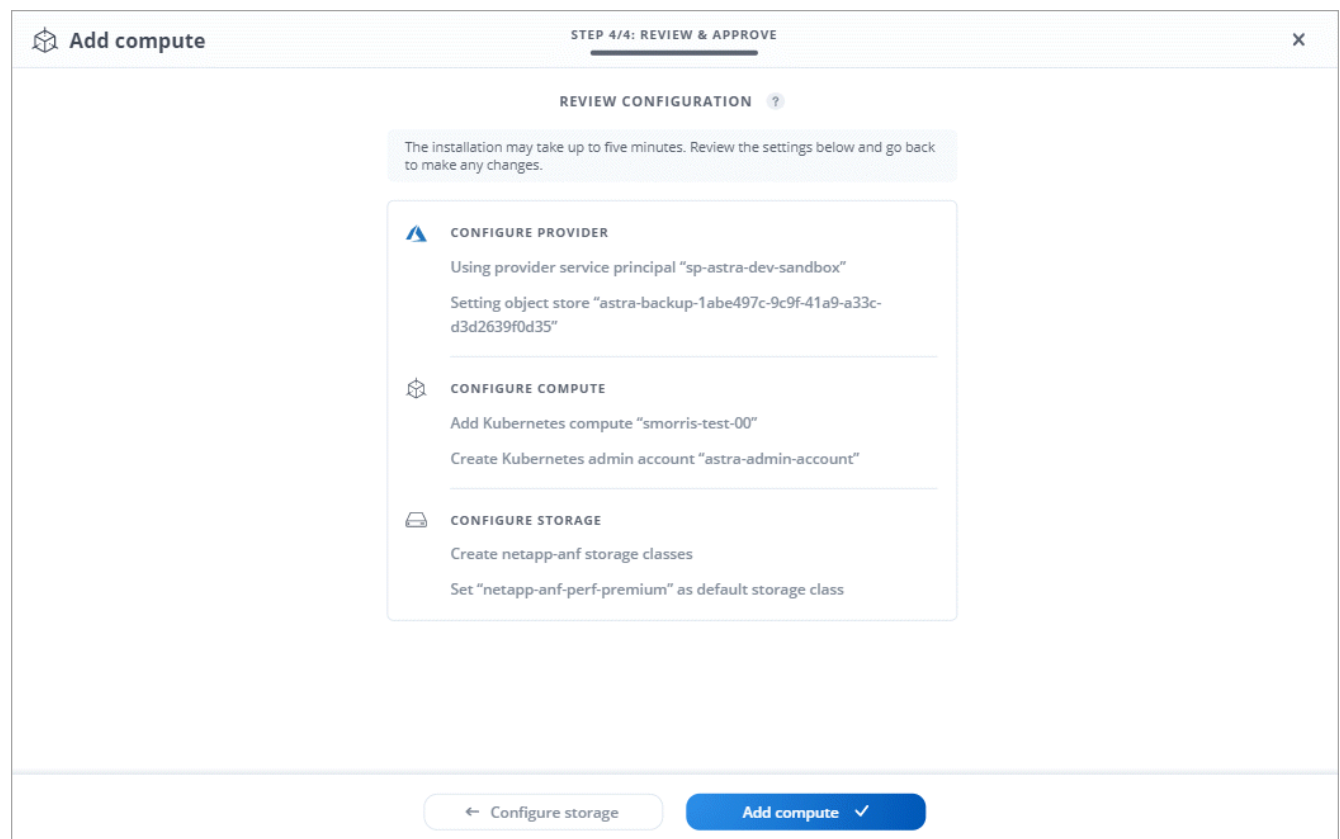
Pay careful attention to the Eligible tab. If a warning appears, hover over the warning to determine if there's an issue with the compute. For example, it might identify that the cluster doesn't have a worker node.

4. **Storage:** Select the storage class that you'd like Kubernetes applications deployed to this compute to use by default.

Each storage class utilizes [Azure NetApp Files](#).

[Learn about storage classes for AKS clusters.](#)

5. **Review & Approve:** Review the configuration details and click **Add compute**.



## Result

Astra Control Service creates an object store for application backups, creates an admin account on the cluster, and sets the default storage class that you specified. This process can take up to 5 minutes.

## What's next?

Now that you've logged in and added compute to Astra Control, you're ready to start using Astra Control's application data management features.

- [Start managing apps](#)

- [Protect apps](#)
- [Clone apps](#)
- [Set up billing](#)
- [Invite and manage users](#)
- [Manage cloud provider credentials](#)
- [Manage notifications](#)

# Use Astra Control Service

## Log in to Astra Control Service

Astra Control Service is accessible through a SaaS-based user interface by going to <https://astra.netapp.io>.



You can use single sign-on to log in using credentials from your corporate directory (federated identity). To learn more, go to the [Cloud Central Help Center](#) and then click **Cloud Central sign-in options**.

### What you'll need

- A [Cloud Central user ID](#).
- A [new Astra Control account](#) or [an invitation to an existing account](#).
- A supported web browser.

Astra Control Service supports recent versions of Firefox, Safari, and Chrome with a minimum resolution of 1280 x 720.

### Steps

1. Open a web browser and go to <https://astra.netapp.io>.
2. Log in using your NetApp Cloud Central credentials.

## Manage and protect apps

### Start managing apps

After you [add Kubernetes compute to Astra Control](#), you can install apps on the cluster (outside of Astra Control), and then go to the Apps page in Astra Control to start managing the apps.

### Install apps on your cluster

Now that you've added your compute to Astra Control, you can install apps on the cluster. Persistent volumes will be provisioned on the new storage classes by default. After the pods are online, you can manage the app with Astra Control.

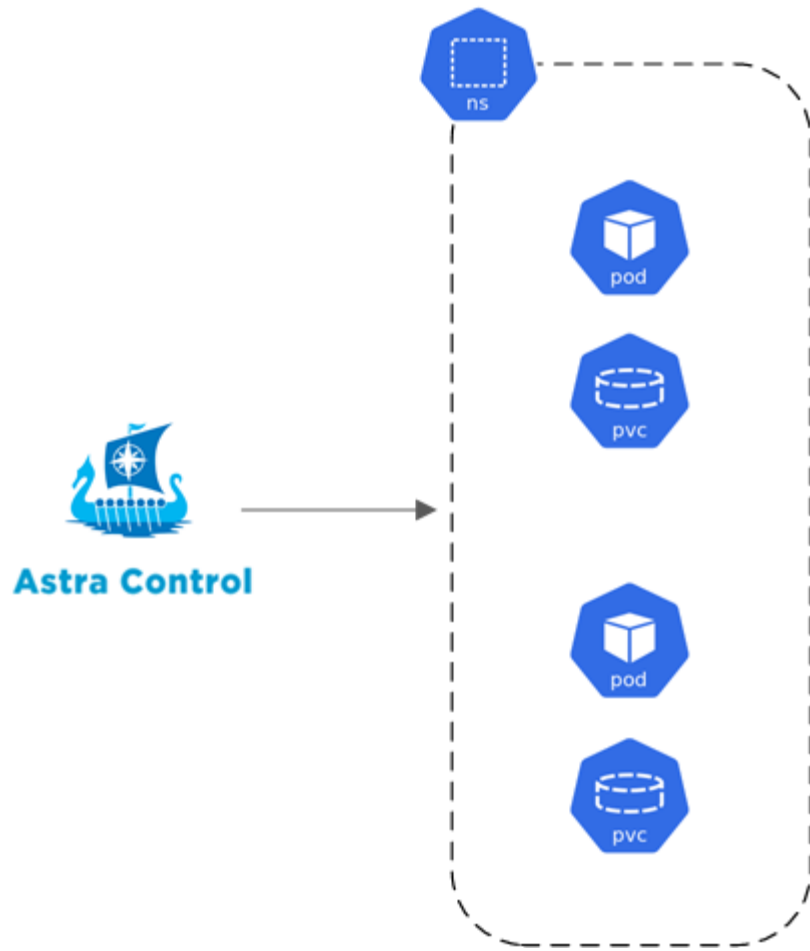
Astra Control will manage stateful apps only if the storage is on a storage class installed by Astra Control.

[Learn about storage classes for AKS clusters](#)

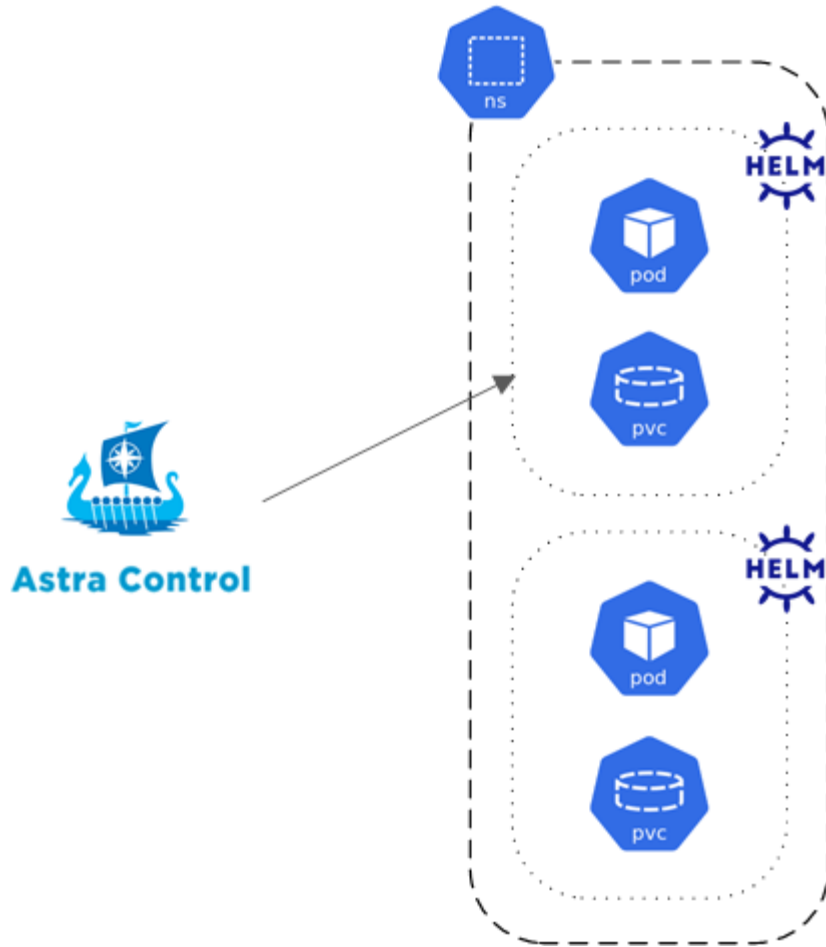
### Manage apps

When Astra Control discovers the apps running on your clusters, they are unmanaged until you choose how you want to manage them. A managed application in Astra Control can be any of the following:

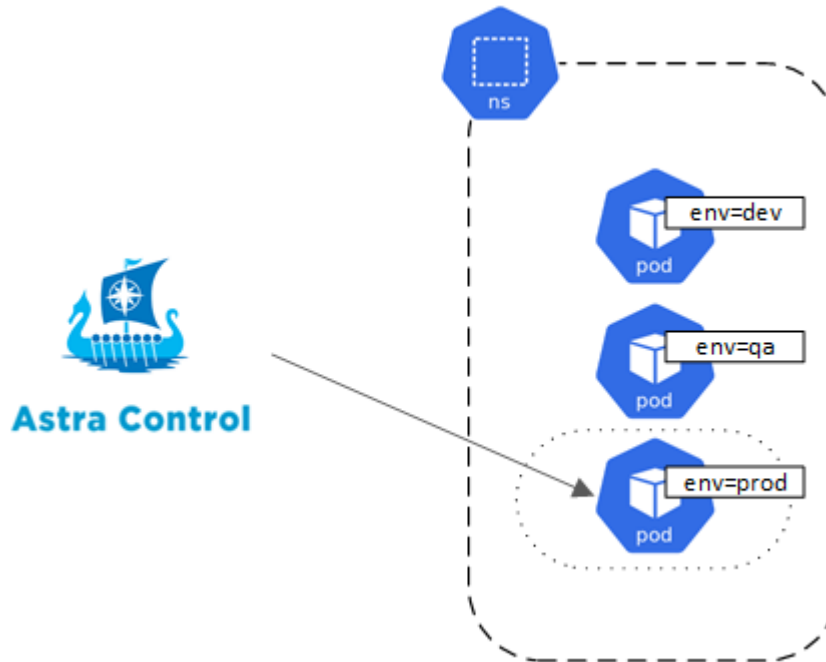
- A namespace, including all resources in that namespace



- An individual application deployed with helm3 within a namespace



- A group of resources that are identified by a Kubernetes label (this is called a *custom app* in Astra Control)



The sections below describe how to manage your apps using these options.

## Manage apps by namespace

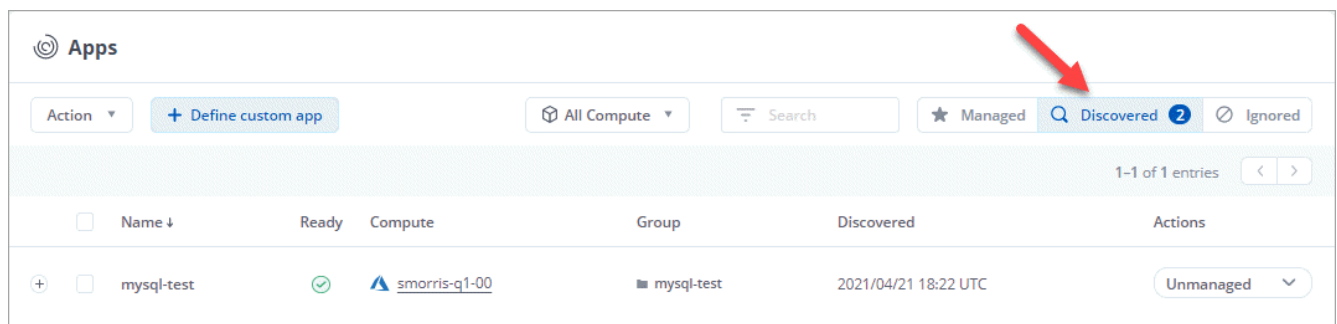
The **Discovered** section of the Apps page shows namespaces and the Helm-installed apps or custom-labeled apps in those namespaces. You can choose to manage each app individually or at the namespace level. It all comes down to the level of granularity that you need for data protection operations.

For example, you might want to set a backup policy for "maria" that has a weekly cadence, but you might need to back up "mariadb" (which is in the same namespace) more frequently than that. Based on those needs, you would need to manage the apps separately and not under a single namespace.

While Astra Control allows you to separately manage both levels of the hierarchy (the namespace and the apps in that namespace), the best practice is to choose one or the other. Actions that you take in Astra Control can fail if the actions take place at the same time at both the namespace and app level.

### Steps

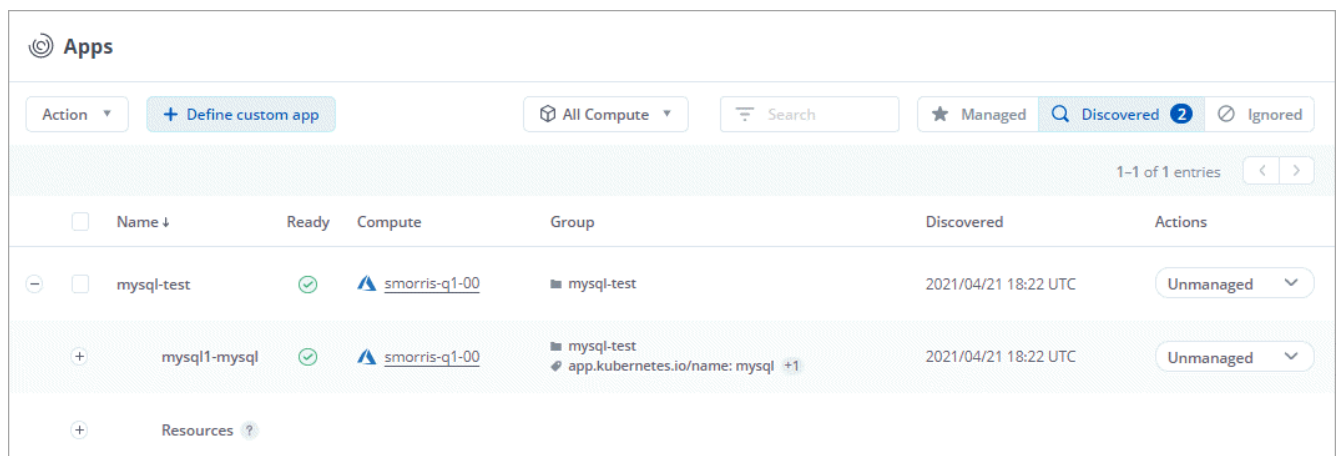
1. Click **Apps** and then click **Discovered**.



2. View the list of discovered namespaces and expand a namespace to view the apps and associated resources.

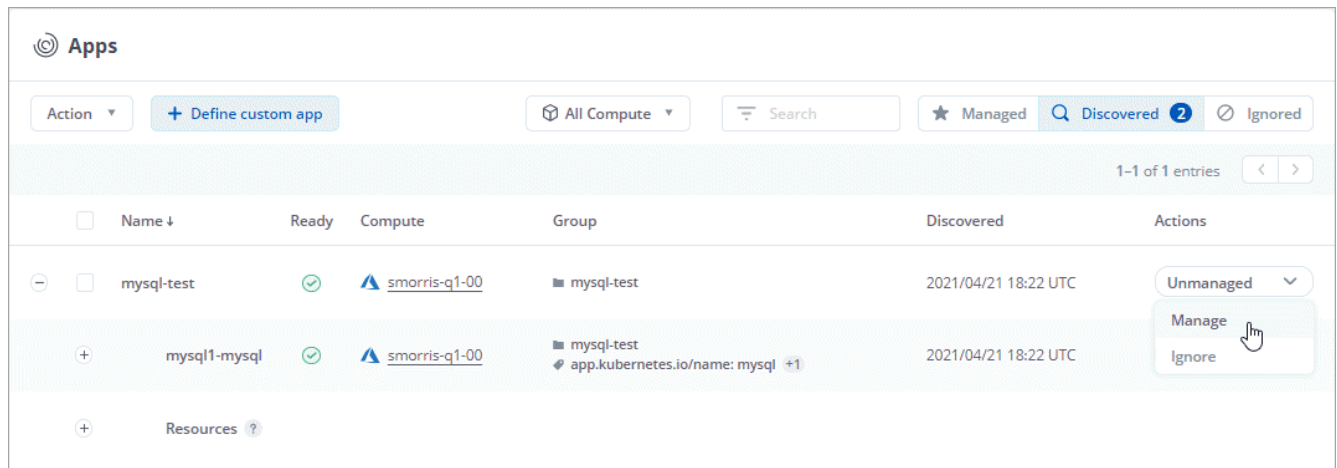
Astra Control shows you Helm apps and custom-labeled apps in namespace. If Helm labels are available, they're designated with a tag icon.

Here's an example with one app in a namespace:



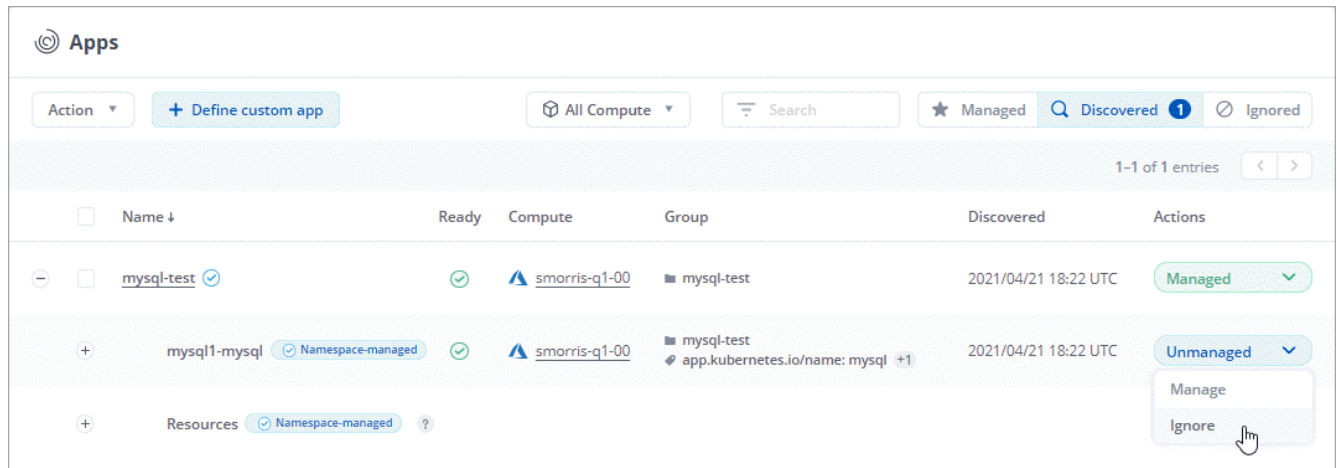
3. Decide whether you want to manage each app individually or at the namespace level.
4. At the desired level in the hierarchy, click the drop-down list in the **Actions** column and click **Manage**.





5. If you don't want to manage an app, click the drop-down list in the **Actions** column for the desired app and click **Ignore**.

For example, if you wanted to manage all apps under the "mysql-test" namespace together so that they have the same snapshot and backup policies, you would manage the namespace and ignore the apps in the namespace:



## Result

Apps that you chose to manage are now available from the **Managed** tab. Any ignored apps will move to the **Ignored** tab. Ideally, the Discovered tab will show zero apps, so that as new apps are installed, they are easier to find and manage.

## Manage apps by Kubernetes label

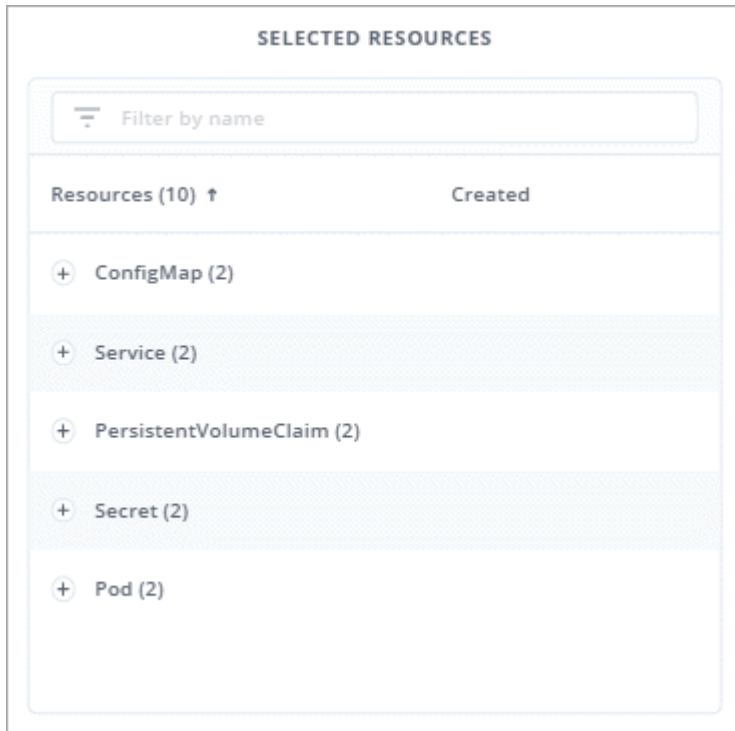
Astra Control includes an action at the top of the Apps page named **Define custom app**. You can use this action to manage apps that are identified with a Kubernetes label. [Learn more about defining apps by Kubernetes label.](#)

## Steps

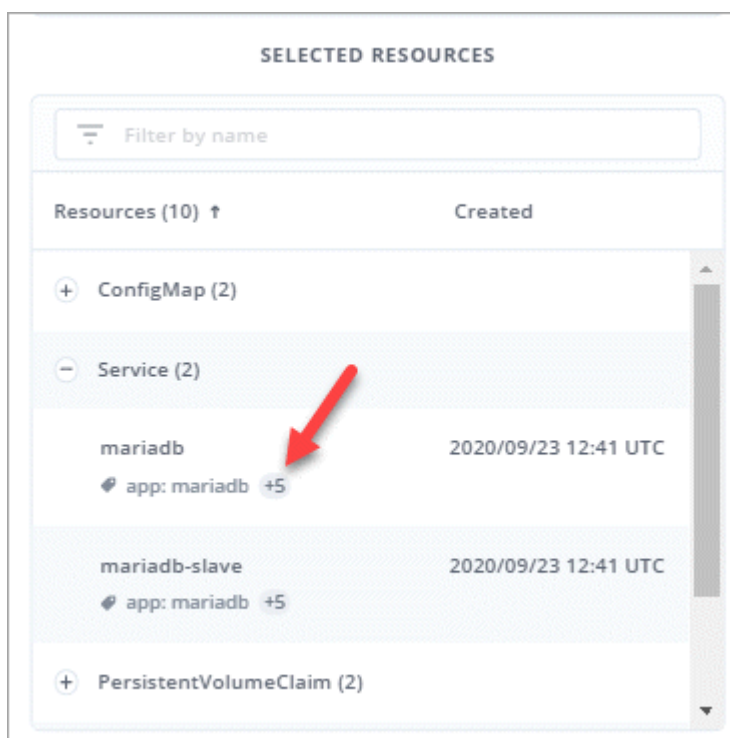
1. Click **Apps > Define custom app**.
2. In the **Define Custom Application** dialog box, provide the required information to manage the app:
  - a. **New App**: Enter the display name of the app.
  - b. **Compute**: Select the compute where the app resides.

- c. **Namespace:** Select the namespace for the app.
- d. **Label:** Enter a label or select a label from the resources below.
- e. **Selected Resources:** View and manage the selected Kubernetes resources that you'd like to protect (pods, secrets, persistent volumes, and more).

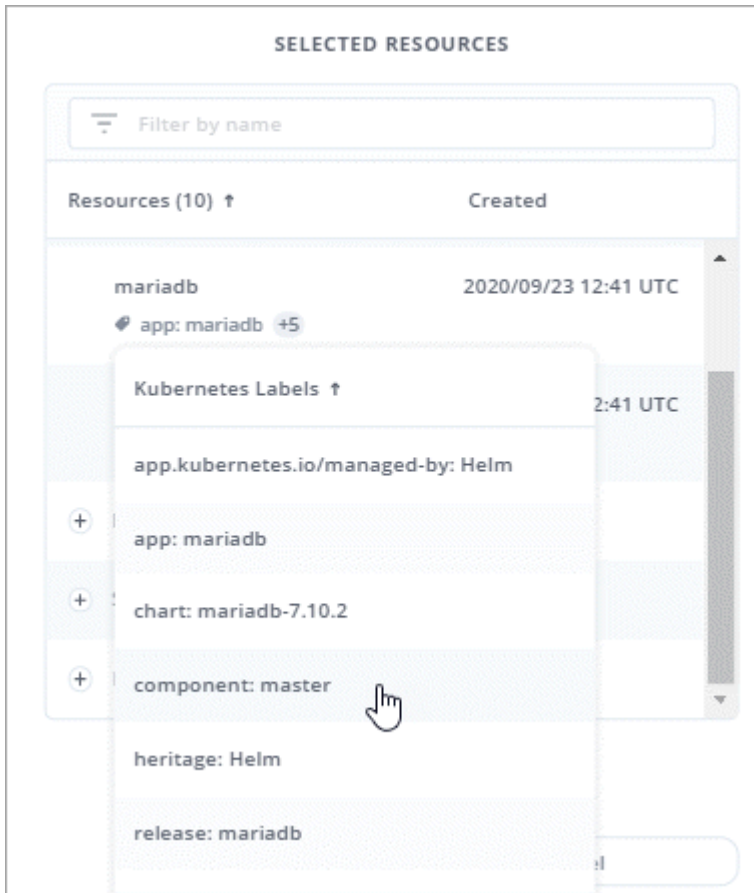
Here's an example:



- View the available labels by expanding a resource and clicking the number of labels.

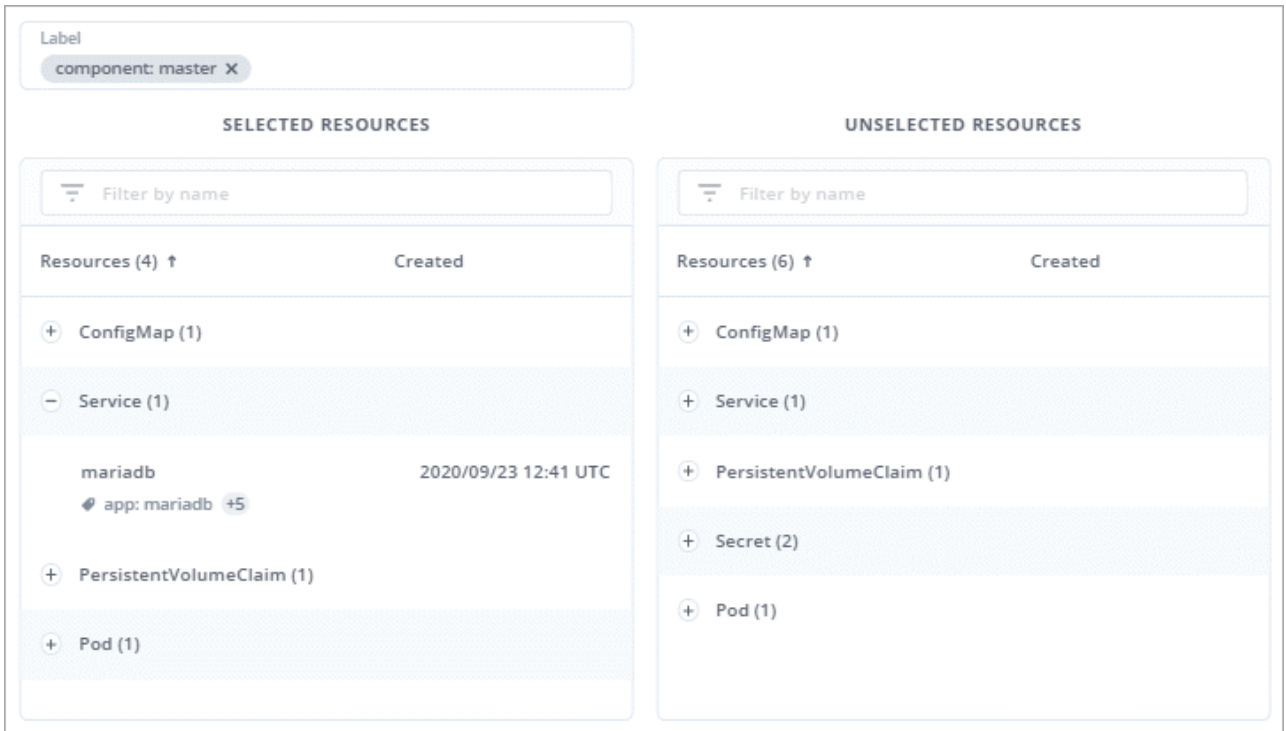


- Select one of the labels.



After you choose a label, it displays in the **Label** field. Astra Control also updates the **Unselected Resources** section to show the resources that don't match the selected label.

- f. **Unselected Resources:** Verify the app resources that you don't want to protect.



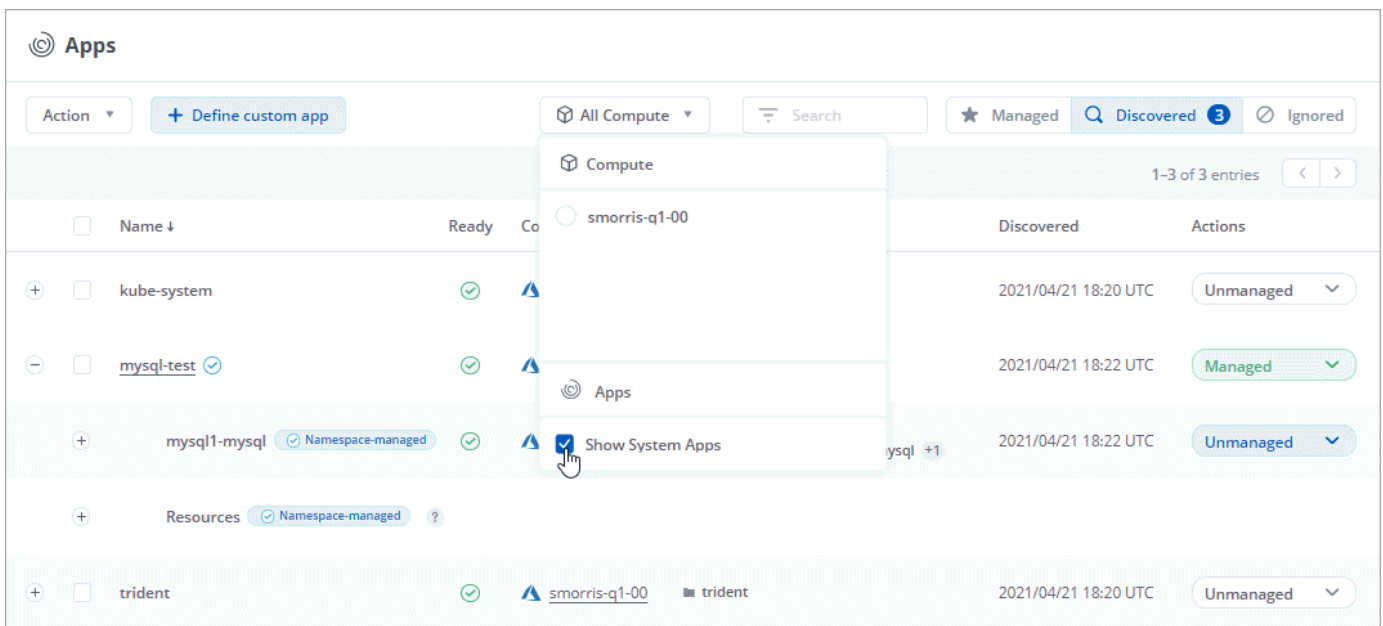
3. Click **Define Custom App**.

### Result

Astra Control enables management of the app. You can now find it in the **Managed** tab.

### What about system apps?

Astra Control also discovers the system apps running on a Kubernetes cluster. You can view them by filtering the Apps list.



We don't show you these system apps by default because it's rare that you'd need to back them up.

## Protect apps with snapshots and backups

Protect your apps by taking snapshots and backups using an automated protection policy or on an ad-hoc basis.

### Snapshots and backups

A *snapshot* is a point-in-time copy of an app that's stored on the same provisioned volume as the app. They are usually fast. Local snapshots are used to restore the application to an earlier point in time.

A *backup* is stored on object storage in the cloud. A backup can be slower to take compared to the local snapshots. But they can be accessed across regions in the cloud to enable app migrations. You can also choose a longer retention period for backups.



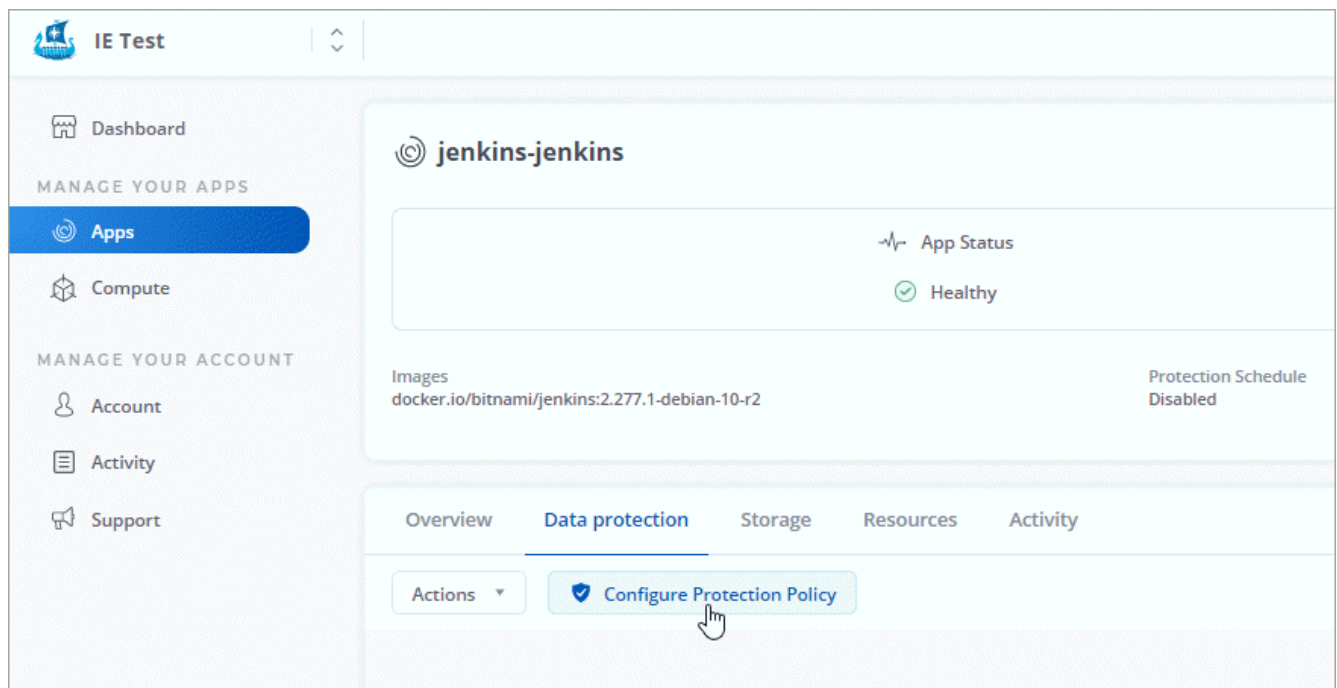
*You can't be fully protected until you have a recent backup.* This is important because backups are stored in an object store away from the persistent volumes. If a failure or accident wipes out the cluster and its persistent storage, then you need a backup to recover. A snapshot wouldn't enable you to recover.

### Configure a protection policy

A protection policy protects an app by creating snapshots, backups, or both at a defined schedule. You can choose to create snapshots and backups hourly, daily, weekly, and monthly, and you can specify the number of copies to retain.

#### Steps

1. Click **Apps** and then click the name of a managed app.
2. Click **Data Protection**.
3. Click **Configure Protection Policy**.



4. Define a protection schedule by choosing the number of snapshots and backups to keep for the hourly, daily, weekly, and monthly schedules.

You can define the hourly, daily, weekly, and monthly schedules concurrently. A schedule won't turn active until you set a retention level for snapshots and backups.

When you set a retention level for backups, you can choose the bucket where you'd like to store the backups.

5. Click **Review**.
6. Click **Configure**.

## Result

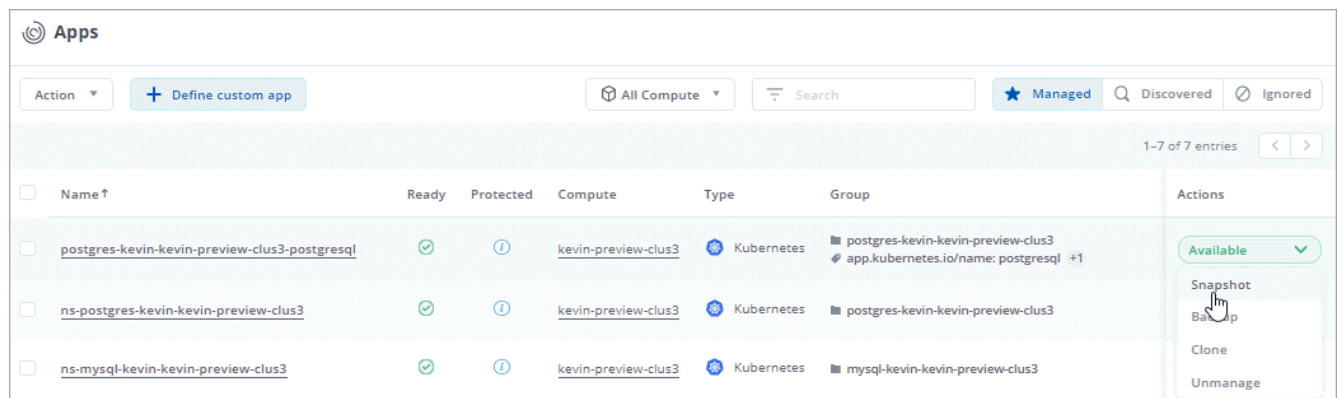
Astra Control implements the data protection policy by creating and retaining snapshots and backups using the schedule and retention policy that you defined.

## Create a snapshot

You can create an on-demand snapshot at any time.

### Steps

1. Click **Apps**.
2. Click the drop-down list in the **Actions** column for the desired app.
3. Click **Snapshot**.



4. Customize the name of the snapshot and then click **Review Information**.
5. Review the snapshot summary and click **Snapshot App**.

## Result

Astra Control creates a snapshot of the apps.

## Create a backup

You can also back up an app at any time.

### Steps

1. Click **Apps**.
2. Click the drop-down list in the **Actions** column for the desired app.
3. Click **Backup**.

Name	Ready	Protected	Compute	Type	Group	Actions
mariadb-kevin-kevin-preview-clus3-mariadb	✓	✓	kevin-preview-clus3	Kubernetes	mariadb-kevin-kevin-preview-clus3 app.kubernetes.io/name: mariadb +1	Available Snapshot Backup Clone Unmanage
mariadb-kevin-kevin-preview-clus3-mariadb-e2f76	✓	⚠	kevin-preview-clus3	Kubernetes	mariadb-kevin-kevin-preview-clus3-mariadb-e2f76 app.kubernetes.io/name: mariadb +1	Available Snapshot Backup Clone Unmanage
mysql-kevin-kevin-preview-clus3-mysql	✓	✓	kevin-preview-clus3	Kubernetes	mysql-kevin-kevin-preview-clus3 app.kubernetes.io/name: mysql +1	Available Snapshot Backup Clone Unmanage

4. Customize the name of the backup, choose whether to back up the app from an existing snapshot, and then click **Review Information**.

5. Review the backup summary and click **Backup App**.

## Result

Astra Control creates a backup of the app.

## View snapshots and backups

You can view the snapshots and backups of an app from the Data Protection tab.

## Steps

1. Click **Apps** and then click the name of a managed app.
2. Click **Data Protection**.

The snapshots display by default.

Name	Ready	On-Schedule/On-Demand	Created ↑	Actions
ns-maria-snapshot-20200923235241	✓	⌚ On-Demand	2020/09/23 23:52 UTC	Available
ns-maria-snapshot-20200923195151	✓	⌚ On-Demand	2020/09/23 23:51 UTC	Available

3. Click **Backups** to see the list of backups.

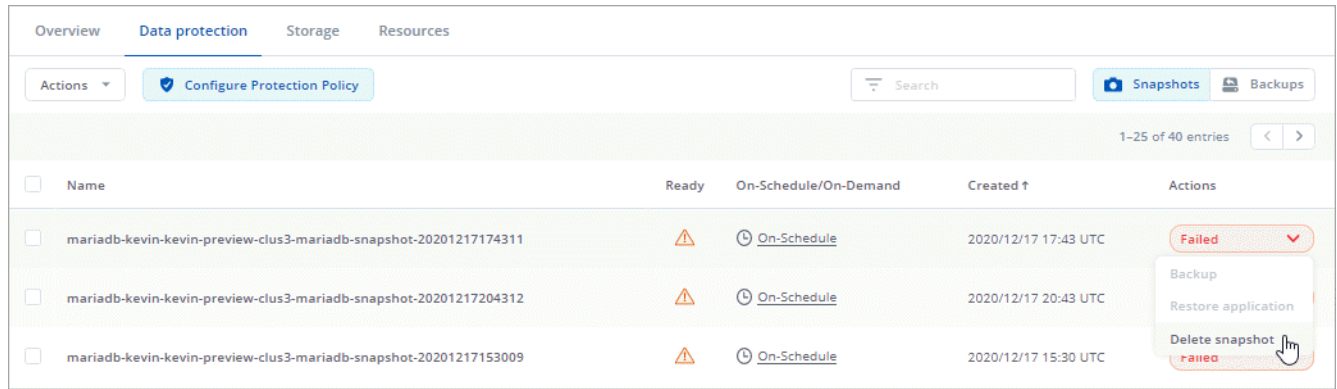
## Delete snapshots

Delete the scheduled or on-demand snapshots that you no longer need.

## Steps

1. Click **Apps** and then click the name of a managed app.
2. Click **Data Protection**.
3. Click the drop-down list in the **Actions** column for the desired snapshot.

4. Click **Delete snapshot**.



5. Type the name of the snapshot to confirm deletion and then click **Yes, Delete snapshot**.

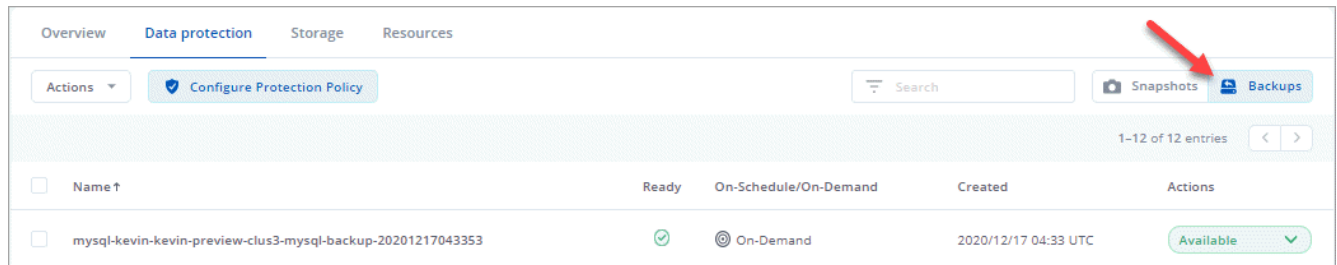
**Result**

Astra Control deletes the snapshot.

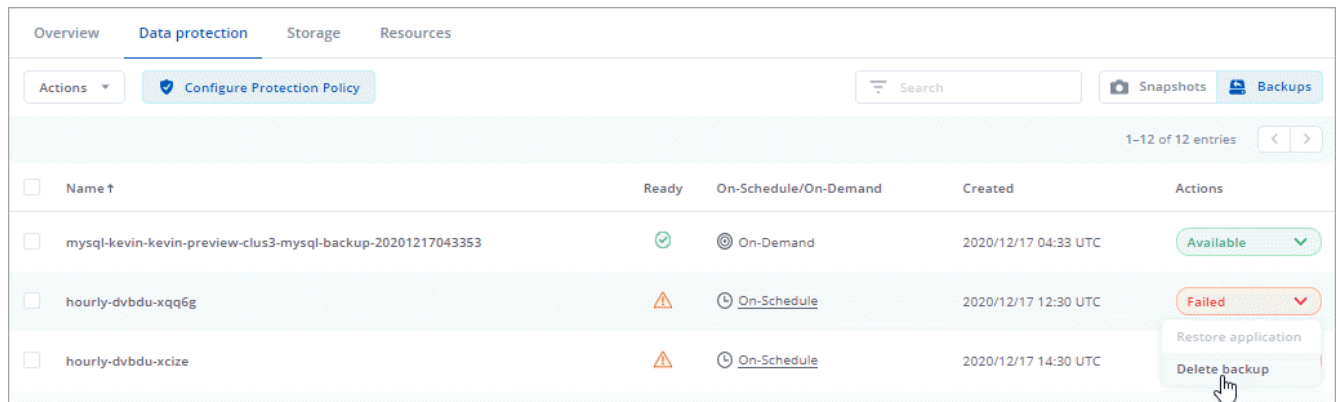
**Delete backups**

Delete the scheduled or on-demand backups that you no longer need.

1. Click **Apps** and then click the name of a managed app.
2. Click **Data Protection**.
3. Click **Backups**.



4. Click the drop-down list in the **Actions** column for the desired backup.
5. Click **Delete backup**.



6. Type the name of the backup to confirm deletion and then click **Yes, Delete backup**.



## Result

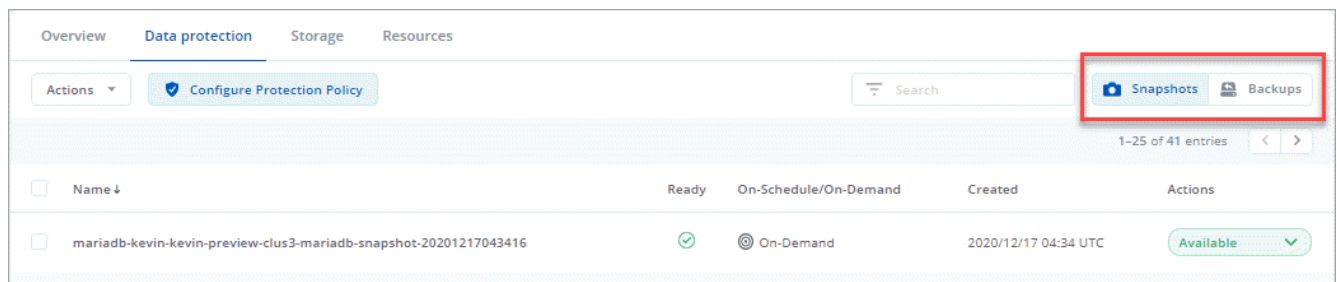
Astra Control deletes the backup.

## Restore apps

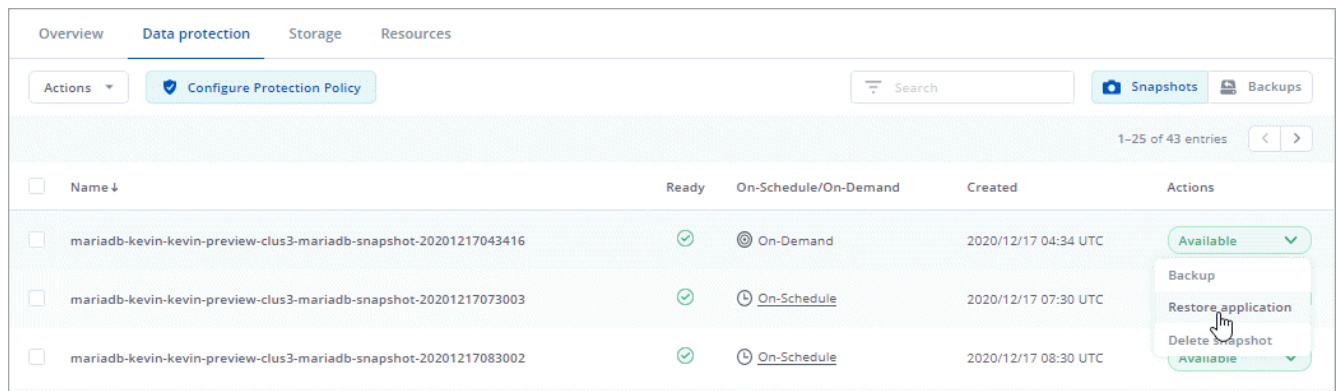
Astra Control can restore your application configuration and persistent storage from a snapshot or backup. Persistent storage backups are transferred from your object store, so restoring from an existing backup will complete the fastest.

### Steps

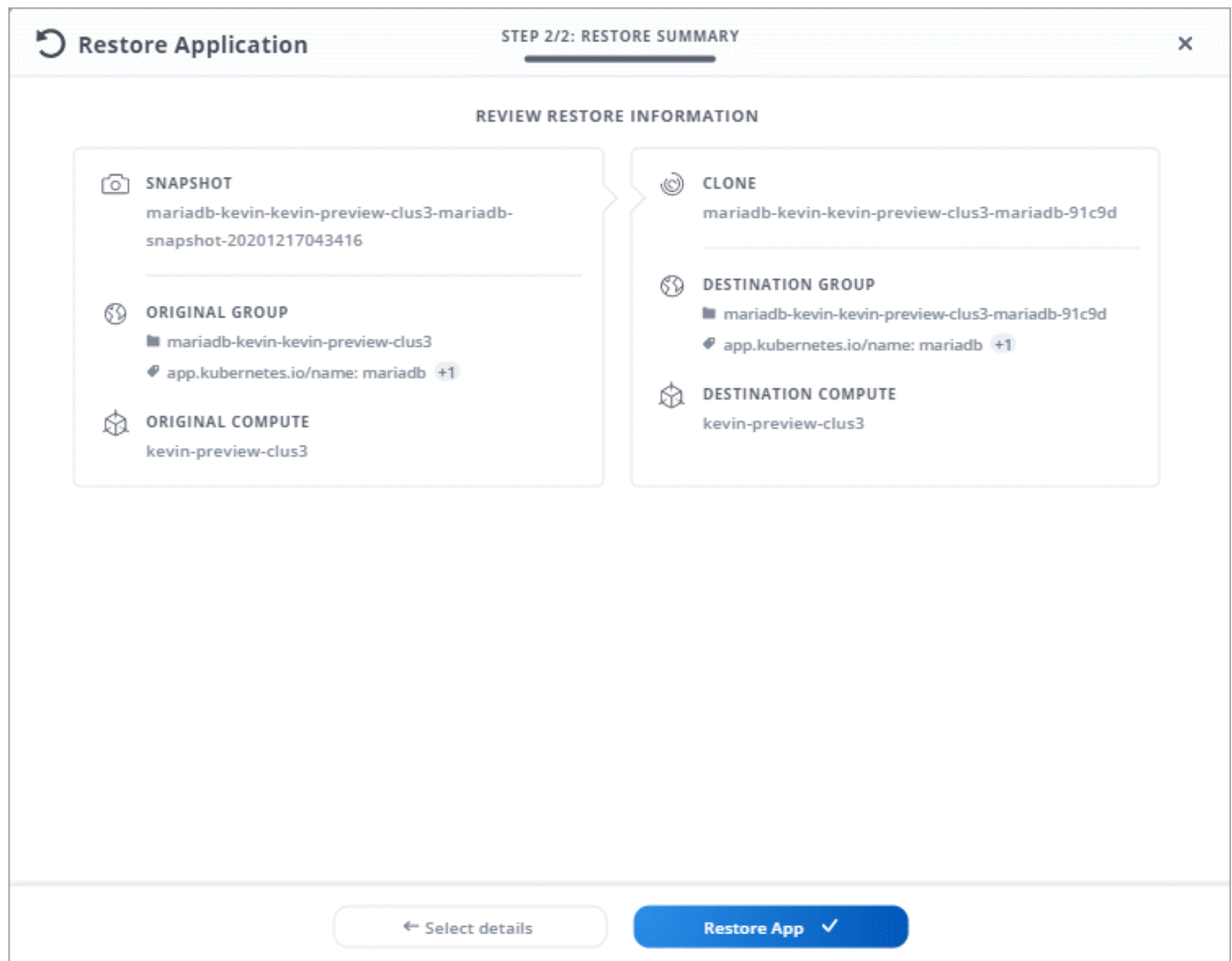
1. Click **Apps** and then click the name of a managed app.
2. Click **Data protection**.
3. If you want to restore from a snapshot, keep **Snapshots** selected. Otherwise, click **Backups** to restore from a backup.



4. Click the drop-down list in the **Actions** column for the snapshot or backup from which you want to restore.
5. Click **Restore application**.



6. **Restore details:** Specify details for the clone:
  - Enter a name and namespace for the app.
  - Choose the destination compute for the app.
  - Click **Review information**.
7. **Restore Summary:** Review details about the restore action and click **Restore App**.



## Result

Astra Control restores the app based on the information that you provided.

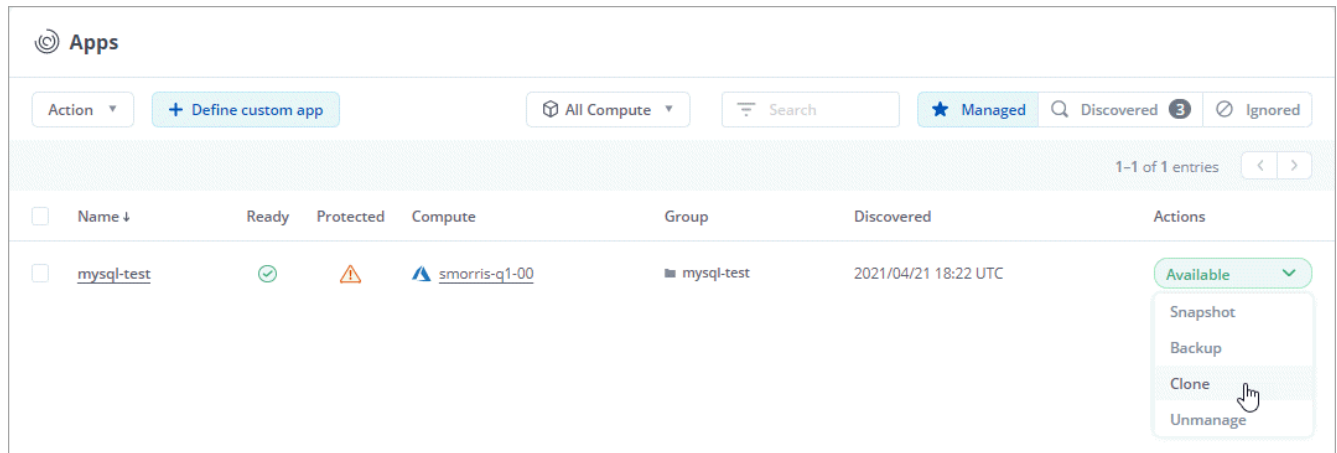
## Clone and migrate apps

Clone an existing app to create a duplicate app on the same Kubernetes cluster or on another cluster. Cloning can help if you need to move applications and storage from one Kubernetes cluster to another. For example, you might want to move workloads through a CI/CD pipeline and across Kubernetes namespaces.

When Astra Control clones an app, it creates a clone of your application configuration and persistent storage.

## Steps

1. Click **Apps**.
2. Click the drop-down list in the **Action** column for the desired app.
3. Click **Clone**.



4. **Clone details:** Specify details for the clone:

- Keep the default name and namespace, or edit them.
- Choose a destination compute for the clone.
- Choose whether you want to create the clone from an existing snapshot or backup. If you don't select this option, Astra Control creates the clone from the app's current state.

5. **Clone Summary:** Review the details about the clone and click **Clone App**.




**Result**

Astra Control clones that app based on the information that you provided.

## View app and compute health

### View a summary of app and compute health

Click the **Dashboard** to see a high-level view of your apps, compute, and their health.

 **Welcome to LongBoat IE**



You are currently on the Free Plan and your limit is set to 10 applications. If you want to upgrade to the Premium Plan, please click the button below. ✕


[Manage Plans →](#)


### Resources summary

**Apps**

**4/10**  
Managed



 All Healthy 

 Not Fully Protected **4**





 Discovered **0**

**Compute**

**1**  
Managed

 All Healthy 

### Getting started

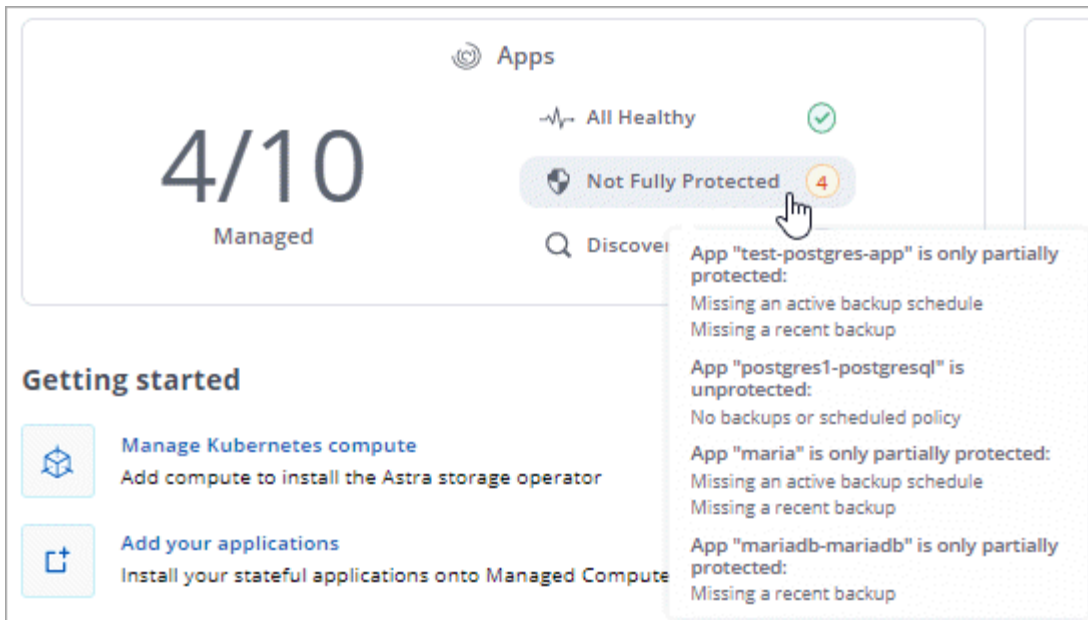
-  **Manage Kubernetes compute**  
Add compute to install the Astra storage operator
-  **Add your applications**  
Install your stateful applications onto Managed Compute and Astra storage classes
-  **Manage applications**  
Enable your applications to be protected and cloned
-  **Invite users**  
Share access to your account with colleagues

The Apps tile helps you identify the following:

- How many apps you're currently managing.
- Whether those managed apps are healthy.
- Whether the apps are fully protected (they're protected if recent backups are available).
- The number of apps that were discovered, but are not yet managed.

Ideally, this number would be zero because you would either manage or ignore apps after they're discovered. And then you would monitor the number of discovered apps on the Dashboard to identify when developers add new apps to a cluster.

Note that these aren't just numbers or statuses—you can drill down from each of these. For example, if apps aren't fully protected, you can hover over the icon to identify which apps aren't fully protected, which includes a reason why.



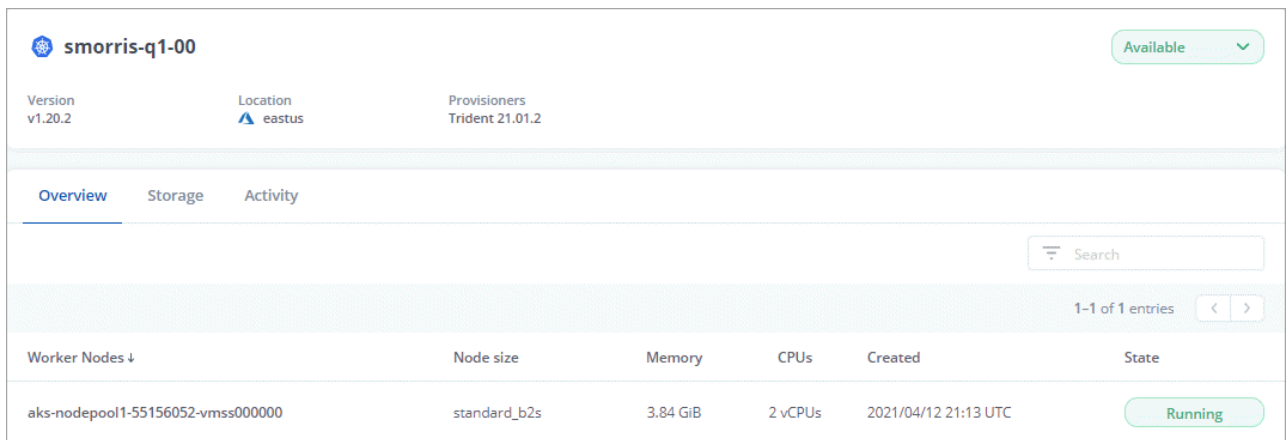
The Compute tile provides similar details about the health of the compute and you can drill down to get more details just like you can with an app.

## View the health and details of compute

After you add Kubernetes compute to Astra Control, you can view details about the compute, such as its location, the worker nodes, persistent volumes, and storage classes.

### Steps

1. Click **Compute**.
2. Click the compute name.
3. View the information in the **Overview** and **Storage** tabs to find the information that you're looking for.
  - **Overview**: Details about the worker nodes, including their state.
  - **Storage**: The persistent volumes associated with the compute, including the storage class and state.
  - **Activity**: The Astra activities related to the compute.



## View the health and details of an app

After you start managing an app, Astra Control provides details about the app that enables you to identify its status (whether it's healthy), its protection status (whether it's fully protected in case of failure), the pods, persistent storage, and more.

The screenshot shows the Astra Control interface for an application named 'mysql-test'. At the top right, there is a status indicator 'Available' with a dropdown arrow. Below this, there are two main status boxes: 'App Status' which is 'Healthy' with a green checkmark, and 'App Protection Status' which is 'Partially Protected' with an information icon. Below these are four key details: 'Images' (docker.io/bitnami/mysql:8.0.23-debian-10-r57), 'Protection Schedule' (Every hour on the 30th min... Daily at 04:00 (UTC)), 'Group' (mysql-test), and 'Compute' (smorris-q1-00). A navigation bar below contains 'Overview', 'Data protection', 'Storage', 'Resources', and 'Activity', with 'Overview' selected. A search bar is on the right. Below the navigation is a table with 1-1 of 1 entries. The table has columns: Pod, Ready, Node, Created, and State. The entry shows 'mysql1-0' with a green checkmark in the Ready column, 'aks-nodepool1-55156052-vmss000000' in the Node column, '2021/04/21 18:20 UTC' in the Created column, and 'Available' in the State column. A tooltip for the pod shows 'app.kubernetes.io/instance: mysql1, app.kubernetes.io/managed-by: Helm +4'.

### Steps

1. Click **Apps** and then click the name of an app.
2. Click around to find the information that you're looking for:

#### App Status

Provides a status that reflects the app's state in Kubernetes. For example, are pods and persistent volumes online? If an app is unhealthy, you'll need to go and troubleshoot the issue on the cluster by looking at Kubernetes logs. Astra Control doesn't provide information to help you fix a broken app.

#### App Protection Status

Provides a status of how well the app is protected:

- **Fully protected:** The app has an active backup schedule and a successful backup that's less than a week old
- **Partially protected:** The app has an active backup schedule, an active snapshot schedule, or a successful backup or snapshot
- **Unprotected:** Apps that are neither fully protected or partially protected.

*You can't be fully protected until you have a recent backup.* This is important because backups are stored in an object store away from the persistent volumes. If a failure or accident wipes out the cluster and it's persistent storage, then you need a backup to recover. A snapshot wouldn't enable you to recover.

#### Overview

Information about the state of the pods that are associated with the app.

## Data protection

Enables you to configure a data protection policy and to view the existing snapshots and backups.

## Storage

Shows you the app-level persistent volumes. The state of a persistent volume is from the perspective of the Kubernetes cluster.

## Resources

Enables you to verify which resources are being backed up and managed.

## Activity

The Astra Control activities related to the app.

# Manage buckets

Manage the buckets that Astra uses for backups and clones by adding additional buckets and by changing the default bucket for the Kubernetes clusters in your cloud provider.

Only Admins can add and modify buckets.

## How Astra Control uses buckets

When you start managing your first Kubernetes cluster, Astra Control Service creates the default bucket for your cloud provider in the same geography as the managed cluster.

Astra Control Service uses this default bucket for the backups and clones that you create. You can then use the backups to restore and clone apps between clusters.

If you add additional buckets to Astra Control Service, you can select from those buckets when you create a protection policy. You can also change the default bucket that Astra Control Service uses for ad-hoc backups and clones.



Astra Control Service checks whether a destination bucket is accessible prior to starting a backup or a clone.

## View existing buckets

View the list of buckets that are available to Astra Control Service to determine their status and to identify the default bucket for your cloud provider.

A bucket can have any of the following states:

### Pending

After you add a bucket, it starts in the pending state while Astra Control looks at it for the first time.

### Available

The bucket is available for use by Astra Control.

### Removed

The bucket isn't operational at the moment. Hover your mouse over the status icon to identify what the problem is.

If a bucket is in the Removed state, you can still set it as the default bucket and assign it to a protection schedule. But if the bucket isn't in the Available state by the time a data protection operation starts, then that operation will fail.

## Step

1. Under **Manage your storage**, click **Buckets**.

The list of buckets available to Astra Control Service displays.

## Add an additional bucket

After you start managing a cluster in your cloud provider, you can add additional buckets at any time. This enables you to choose between buckets when creating a protection policy and to change the default bucket for ad-hoc backups and clones.

Note that Astra Control Service doesn't enable you to remove a bucket after you've added it.

## What you'll need

- The name of an existing bucket in your cloud provider.
- If your bucket is in Azure, it must belong to the resource group named *astra-backup-rg*.

## Steps

1. Under **Manage your storage**, click **Buckets**.
2. Click **Add** and follow the prompts to add the bucket.

- **Type:** Choose your cloud provider.

Your cloud provider is available only after Astra Control Service has started managing a cluster that's running in that cloud provider.

- **Existing bucket name:** Enter the name of the bucket.
- **Description:** Optionally enter a description of the bucket.
- **Make this bucket the default bucket for this cloud:** Choose whether you would like to use this bucket as the default bucket for ad-hoc backups and clones.
- **Select credentials:** Choose the credentials that provide Astra Control Service with the permissions that it needs to manage the bucket.

3. Click **Add** to add the bucket.

## Result

Astra Control Service adds the additional bucket. You can now choose the bucket when creating a protection policy.

## Change the default bucket

Change the default bucket that Astra Control Service should use for backups and clones. Each cloud provider has its own default bucket.

Astra Control Service uses the default bucket for a cloud provider for ad-hoc backups and for ad-hoc clones when you don't choose to clone from an existing backup.

## Steps



1. Under **Manage your storage**, click **Buckets**.
2. Click the drop-down list in the **Actions** column for the bucket that you want to edit.
3. Select **Make this bucket the default bucket for this cloud**.
4. Click **Update**.

## Manage your account

### Set up billing

Astra Control's Free Plan enables you to manage up to 10 apps in your account. If you want to manage more than 10 apps, then you'll need to set up billing by upgrading from the Free Plan to the Premium Plan.

### Billing overview

There are two types of costs associated with using Astra Control Service: charges from NetApp for the Astra Control Service and charges from your cloud provider for persistent volumes and object storage.

### Astra Control Service billing

Astra Control Service offers three plans:

#### Free Plan

Manage up to 10 apps for free.

#### Premium PayGo


Manage an unlimited amount of apps at a rate of \$.005 per minute, per app.

#### Premium Subscription

Pre-pay at a discounted rate with an annual subscription that enables you to manage up to 10 apps per *application pack*. Contact NetApp Sales to purchase as many packs as needed for your organization—for example, purchase 3 packs to manage 30 apps from Astra Control Service. If you manage more apps than allowed by your annual subscription, then you'll be charged at the overage rate of \$0.005 per minute, per application (the same as Premium PayGo).

If you don't have an Astra Control account yet, purchasing the Premium Subscription automatically creates an Astra Control account for you. If you have an existing Free Plan, then you're automatically converted to the Premium Subscription.


When you create an Astra Control account, you're automatically signed up for the Free Plan. Astra Control's Dashboard shows you how many apps you're currently managing out of the 10 free apps that you're allowed:

 **Welcome to LongBoat IE**


You are currently on the Free Plan and your limit is set to 10 applications. If you want to upgrade to the Premium Plan, please click the button below. ✕


[Manage Plans →](#)


### Resources summary


 **Apps**

**4/10**  
Managed


- All Healthy 

Not Fully Protected  4





Discovered  0

 **Compute**

**1**  
Managed

- All Healthy 

### Getting started

-  [Manage Kubernetes compute](#)  
Add compute to install the Astra storage operator
-  [Add your applications](#)  
Install your stateful applications onto Managed Compute and Astra storage classes
-  [Manage applications](#)  
Enable your applications to be protected and cloned
-  [Invite users](#)  
Share access to your account with colleagues

If you try to manage an 11th app, Astra Control notifies you that you've reached the limit of the Free Plan. It then prompts you to upgrade from the Free Plan to a Premium Plan.

You can upgrade to a Premium Plan at any time. After you upgrade, Astra Control starts charging you for *all* managed apps in the account. The first 10 apps don't stay in the Free Plan.

### Microsoft Azure billing

When you manage AKS clusters with Astra Control Service, persistent volumes are backed by Azure NetApp Files and backups of your apps are stored in an Azure Blob container.

- [View pricing details for Azure NetApp Files.](#)
- [View pricing details for Microsoft Azure Blob storage.](#)

### Important notes

- Your billing plan is per Astra Control account.

If you have multiple accounts, then each has its own billing plan.

- Your Astra Control bill includes charges for managing your Kubernetes apps. You're charged separately by your cloud provider for the backend storage for persistent volumes.

[Learn more about Astra Control pricing.](#)

- Each billing period ends on the last day of the month.
- You can't downgrade from a Premium Plan to the Free Plan.

## Upgrade from the Free Plan to the Premium PayGo Plan

Upgrade your billing plan at any time to start managing more than 10 apps from Astra Control by paying as you go. All you need is a valid credit card.

### Steps

1. Click **Account** and then click **Billing**.
2. Under **Plans**, go to **Premium PayGo** and click **Upgrade Now**.
3. Provide payment details for a valid credit card and click **Upgrade to Premium Plan**.



Astra Control will email you if the credit card is nearing expiration.

### Result

You can now manage more than 10 apps. Astra Control starts charging you for *all* apps that you're currently managing.

## Upgrade from the Free Plan to the Premium Subscription

Contact NetApp Sales to pre-pay at a discounted rate with an annual subscription.

### Steps

1. Click **Account** and then click **Billing**.
2. Under **Plans**, go to **Premium Subscription** and click **Contact Sales**.
3. Provide details to the sales team to start the process.

### Result

A NetApp Sales representative will contact you to process your purchase order. After the order is complete, Astra Control will reflect your current plan on the Billing tab.

A screenshot of the Astra Control user interface. At the top, there is a navigation bar with 'Account' selected. Below it, a sub-navigation bar shows 'Users', 'Credentials', 'Notifications', and 'Billing' (which is underlined). The main content area is titled 'BILLING OVERVIEW' and contains two panels. The left panel, titled 'Premium Subscription', displays '10/10 Managed Apps'. The right panel, titled 'Current Cost', contains the text 'You have the Premium Subscription. You have no payments due.' Below this, another navigation bar shows 'Plans', 'Billing history', and 'Payment method'. The 'Plans' section is active, showing a blue card for 'Premium Subscription' with the text 'PRE-PAY ANNUAL SUBSCRIPTION' and 'Discounted rates with annual subscriptions'.

## View your current costs and billing history

Astra Control shows you your current monthly costs, as well as a detailed billing history by app.

### Steps

1. Click **Account** and then click **Billing**.

Your current costs appear under the billing overview.

2. To view the billing history by app, click **Billing history**.

Astra Control shows you the usage minutes and cost for each app. A usage minute is how many minutes Astra Control managed your app during a billing period.

3. Click the drop-down list to select a previous month.

## Change the credit card for Premium PayGo

If needed, you can change the credit card that Astra Control has on file for billing.

### Steps

1. Click **Account > Billing > Payment method**.
2. Click the configure icon.
3. Modify the credit card.

## Invite and remove users

Invite users to join your Astra Control account and remove users that should no longer have access to the account.

### Invite users

Account Owners and Admins can invite other users to join the Astra Control account.

### Steps

1. Make sure that the user has a [Cloud Central login](#).
2. Click **Account**.
3. In the **Users** tab, click **+ Invite users**.
4. Enter the user's name, email address, and their role.

Note the following:

- The email address must match the email address that the user used to sign up to Cloud Central.
- Each role provides the following permissions:
  - An **Owner** has Admin permissions and can delete accounts.
  - An **Admin** has Member permissions and can invite other users.
  - A **Member** can fully manage apps and compute.
  - A **Viewer** can view resources.

5. Click **Send invite(s)**.

### **Result**

The user will receive an email that invites them to join your account.

### **Change a user's role**

An Account Owner can change the role of all users, while an Account Admin can change the role of users who have the Admin, Member, or Viewer role.

### **Steps**

1. Click **Account**.
2. In the **Users** tab, select the drop-down list in the **Role** column for the user.
3. Select a new role and then click **Change Role** when prompted.

### **Result**

Astra Control updates the user's permissions based on the new role that you selected.

### **Remove users**

An Account Owner can remove other users from the account at any time.

### **Steps**

1. Click **Account**.
2. In the **Users** tab, select the users that you want to remove.
3. Click **Actions** and select **Remove user/s**.
4. When you're prompted, confirm deletion by typing the user's name and then click **Yes, Remove User**.

### **Result**

Astra Control removes the user from the account.

### **View account activity**

You can view details about the activities in your Astra Control account. For example, when new users were invited, when compute was added, or when a snapshot was taken. You also have the ability to export your account activity to a CSV file.

#### **Steps to view all account activity in Astra Control**

1. Click **Activity**.
2. Use the filters to narrow down the list of activities or use the search box to find exactly what you're looking for.
3. Click **Export to CSV** to download your account activity to a CSV file.

#### **Steps to view account activity for a specific app**

1. Click **Apps** and then click the name of an app.
2. Click **Activity**.

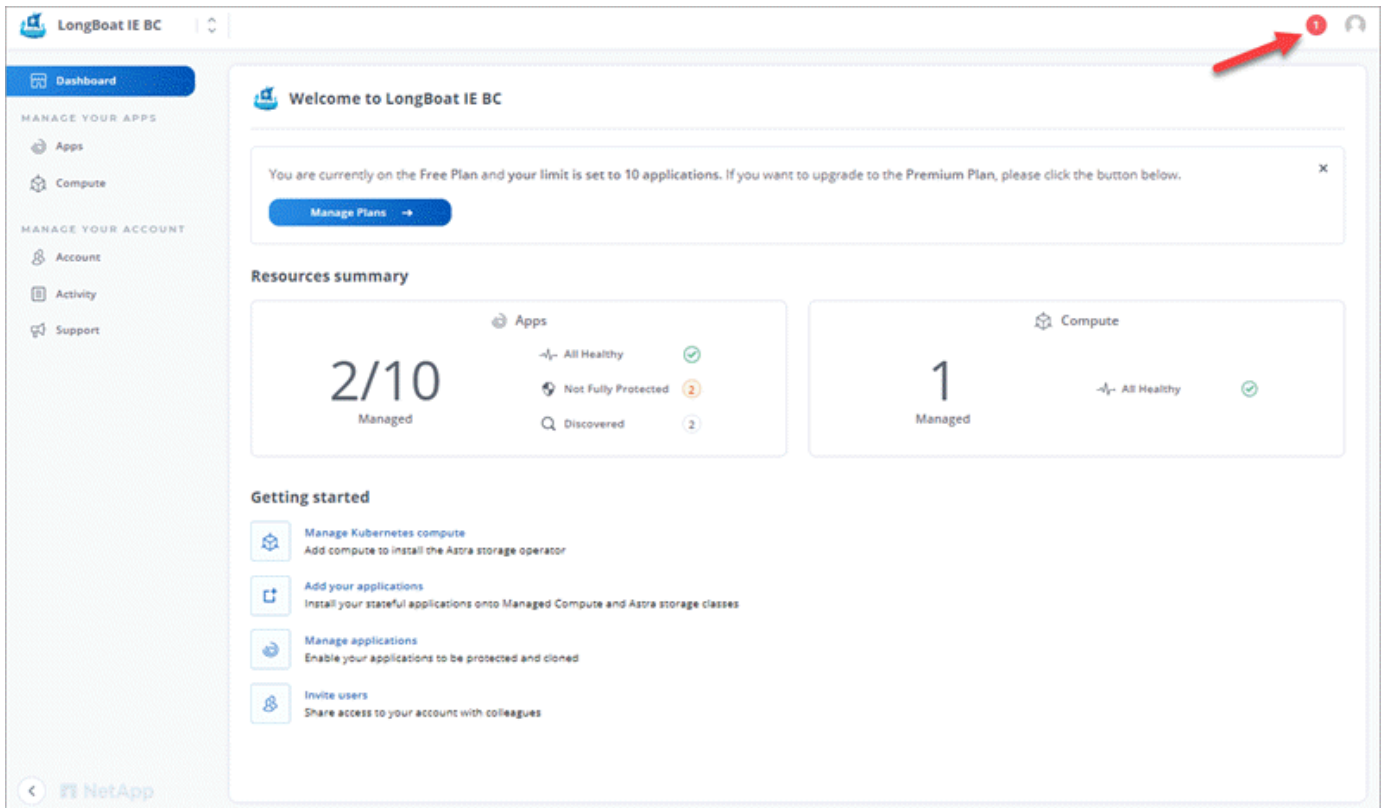
#### **Steps to view account activity for compute**

1. Click **Compute** and then click the name of the compute.
2. Click **Activity**.

## View and manage notifications

Astra Control notifies you when actions have completed or failed. For example, you'll see a notification if a backup of an app completed successfully.

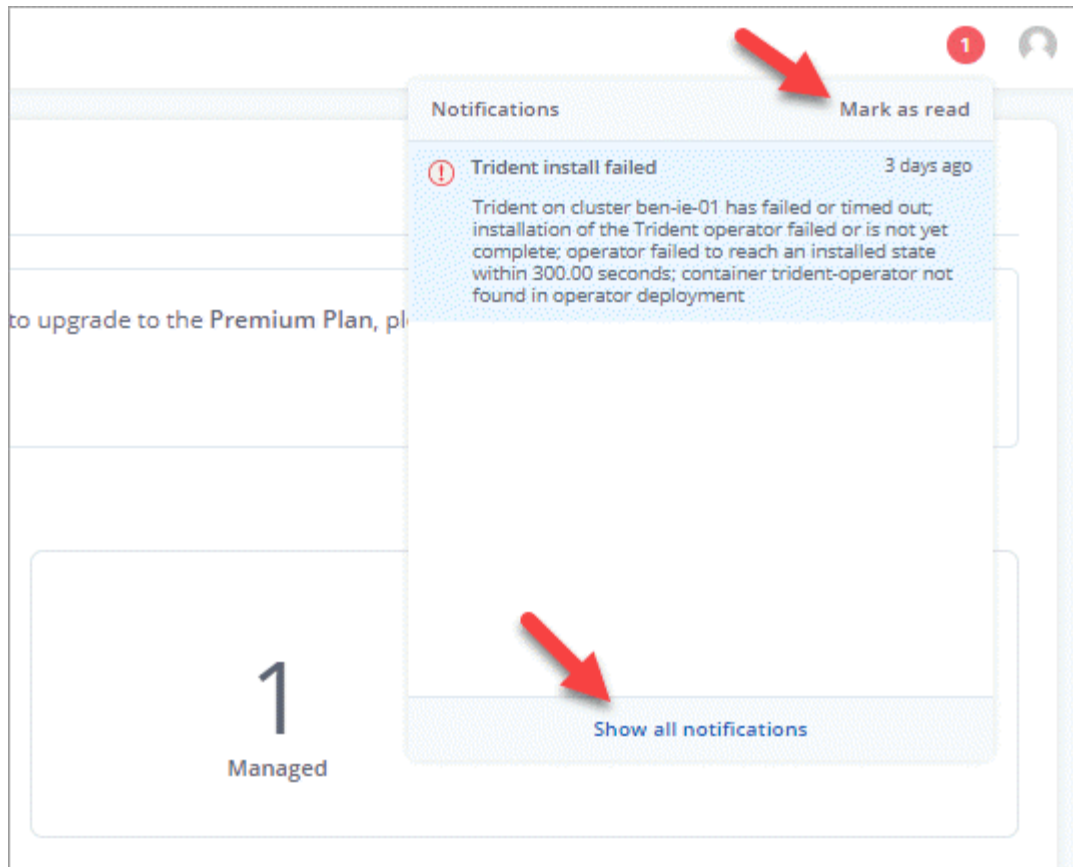
The number of unread notifications is available in the top right of the interface:



You can view these notifications and mark them as read (this can come in handy if you like to clear unread notifications like we do).

### Steps

1. Click the number of unread notifications in the top right.



2. Review the notifications and then click **Mark as read** or **Show all notifications**.

If you clicked **Show all notifications**, the Notifications page loads.

3. On the **Notifications** page, view the notifications, select the ones that you want to mark as read, click **Action** and select **Mark as read**.

## Close your account

If you no longer need your Astra Control account, you can close it at any time.



Buckets that Astra Control automatically created will be automatically deleted when you close your account.

### Steps

1. [Unmanage all apps and compute](#).
2. [Remove credentials from Astra Control](#).
3. Click **Account > Billing > Payment method**.
4. Click **Close Account**.
5. Enter your account name and confirm to close the account.

## Unmanage apps and compute

Remove any apps or compute that you no longer want to manage from Astra Control.

## Stop managing an app

Stop managing apps that you no longer want to back up, snapshot, or clone from Astra Control.

- Any existing backups and snapshots will be deleted.
- Applications and data remain available.

### Steps

1. Click **Apps**.
2. Click the checkbox for the apps that you no longer want to manage.
3. Click the **Action** drop-down and select **Unmanage application/s**.
4. Confirm that you want to unmanage the apps and then click **Yes, Unmanage Applications**.

### Result

Astra Control stops managing the app.

## Stop managing compute

Stop managing the compute that you no longer want to manage from Astra Control. As a best practice, we recommend that you remove compute from Astra Control before you delete it through your cloud provider.

- This action stops your compute from being managed by Astra Control. It doesn't make any changes to the cluster's configuration and it doesn't delete the cluster.
- Trident won't be uninstalled from the cluster. [Learn how to uninstall Trident](#).

### Steps

1. Click **Compute**.
2. Click the checkbox for the compute that you no longer want to manage.
3. Click the **Actions** drop-down and select **Unmanage compute/s**.
4. Confirm that you want to unmanage the compute and then click **Yes, Unmanage Compute**.

### Result

Astra Control stops managing the compute.

## Deleting clusters from your cloud provider

Before you delete a Kubernetes cluster that has persistent volumes (PV) residing on NetApp storage classes, you need to first delete the persistent volume claims (PVC) following one of the methods below. Deleting the PVC and PV before deleting the cluster ensures that you don't receive unexpected bills from your cloud provider.

- **Method #1:** Delete the application workload namespaces from the cluster. Do *not* delete the Trident namespace.
- **Method #2:** Delete the PVCs and the pods, or the deployment where the PVs are mounted.

When you manage a Kubernetes cluster from Astra Control, applications on that cluster use Cloud Volumes Service or Azure NetApp Files as the backend storage for persistent volumes. If you delete the cluster from your cloud provider without first removing the PVs, the backend volumes are *not* deleted along with the cluster.



Using one of the above methods will delete the corresponding PVs from your cluster. Make sure that there are no PVs residing on NetApp storage classes on the cluster before you delete it.

If you didn't delete the persistent volumes before you deleted the cluster, then you'll need to manually delete the backend volumes from Azure NetApp Files.

# Automation using the Astra Control REST API

Astra Control has a REST API that enables you to directly access the Astra Control functionality using a programming language or utility such as Curl. You can also manage Astra Control deployments using Ansible and other automation technologies.

To learn more, [go to the Astra automation docs](#).

# Concepts

## Storage classes and PV size for AKS clusters

Astra Control Service uses Azure NetApp Files as the backend storage for Azure Kubernetes Service (AKS) clusters. You should understand how choosing a storage class and persistent volume size can help you meet your performance objectives.

### Service levels and storage classes

Azure NetApp Files supports three service levels: Ultra storage, Premium storage, and Standard storage. Each of these service levels are designed for different performance needs:

#### Ultra storage

Provides up to 128 MiB/s of throughput per 1 TiB.

#### Premium storage

Provides up to 64 MiB/s of throughput per 1 TiB.

#### Standard storage

Provides up to 16 Mib/s of throughput per 1 TiB.

These service levels are an attribute of a capacity pool. You need to set up a capacity pool for each service level that you want to use with your Kubernetes clusters. [Learn how to set up capacity pools.](#)

Astra Control Service uses these service levels as storage classes for your persistent volumes. When you add Kubernetes compute to Astra Control Service, you're prompted to choose either Ultra, Premium, or Standard as the default storage class. The names of the storage classes are *netapp-anf-perf-ultra*, *netapp-anf-perf-premium*, and *netapp-anf-perf-standard*.

[Learn more about these service levels in the Azure NetApp Files docs.](#)

### Persistent volume size and performance

As described above, the throughput for each service level is per 1 TiB of provisioned capacity. That means larger volumes provide better performance. So you should take both capacity and performance needs into consideration when provisioning volumes.

### Minimum volume size

Astra Control Service provisions persistent volumes using a minimum volume size of 100 GiB, even if the PVC asks for a smaller volume size. For example, if the PVC in a Helm chart asks for 6 GiB, Astra Control Service automatically provisions a 100 GiB volume.

## Validated vs standard apps

There are two types of applications you can bring to Astra Control: Validated and Standard. Learn the difference between these two categories, and the potential impacts on your projects and strategy.



It's tempting to think of these two categories as "supported" and "unsupported." But as you will see, there is no such thing as an "unsupported" app in Astra Control. You can add any app to Astra Control, although validated apps have more infrastructure built around their Astra Control workflows compared to standard apps.

## Validated Apps

Validated apps for Astra Control include the following:

- MySQL 0.3.22
- MariaDB 14.14
- PostgreSQL 11.7
- Jenkins 2.249.1 LTS

The short list of validated apps represents applications that Astra Control recognizes. The Astra Control QA team has analyzed and confirmed these apps to be fully tested to restore.

Validated apps have also been checked by the Astra Control Development team, which creates custom workflows to help ensure the safety and consistency of your data. For example, when Astra Control takes a backup of a PostgreSQL database, it first quiesces the database. After the backup is complete, Astra Control restores the database to normal operation.

No matter which type of app you use with Astra Control, always test the backup and restore workflow yourself to ensure that you can meet your disaster recovery requirements.

Let us know what apps you would like to see validated in the future. [Contact us through the Feedback email address on the Support page.](#)

## Standard Apps

Any other app, including custom programs, is considered a standard app. You can add and manage standard apps through Astra Control. You can also create basic crash-consistent Snapshots and Backups of a standard app. However, these have not been QA-tested to restore the app to its original state.

## Define a custom app

Creating a custom app lets you group elements of your Kubernetes cluster into a single app.

A custom app gives you more granular control over what to include in an Astra Control operation, including:

- Clone
- Snapshot
- Backup
- Protection policy

In most cases you will want to use Astra Control's features on your entire app. However, you can also create a custom app to use these features by the labels you assign to Kubernetes objects in a namespace.

To create a custom app, go to the Apps page and click **+ Define custom app**.

As you make your selections, the Custom App window will show you which resources will be included or excluded from your custom app. This helps you make sure you are choosing the correct criteria for defining your custom app.

The screenshot shows a 'Custom Application' window with two columns: 'SELECTED RESOURCES' and 'UNSELECTED RESOURCES'. Each column has a 'Filter by name' input field and a table of resources. The 'SELECTED RESOURCES' table shows one pod, 'nginx-pod0', with the label 'deployment: canary'. The 'UNSELECTED RESOURCES' table shows two pods, 'nginx-pod1' and 'nginx-pod2', both with the label 'deployment: stable'.

SELECTED RESOURCES		UNSELECTED RESOURCES	
Resources (1) ↑	Created	Resources (2) ↑	Created
Pod (1)		Pod (2)	
nginx-pod0 deployment: canary +1	2020/10/09 14:01 UTC	nginx-pod1 deployment: stable +1	2020/10/09 14:01 UTC
		nginx-pod2	2020/10/09 14:01 UTC

In the above example, one resource (the pod `nginx-pod0` labeled `deployment:canary`) will be included in the custom app. Two pods (`nginx-pod1` and `nginx-pod2` both labeled `deployment:stable`) will be excluded.



Custom apps can only be created within a specified namespace on a single cluster. Astra Control does not support the ability for a custom app to span multiple namespaces or clusters.

A label is a key/value pair you can assign to Kubernetes objects for identification. Labels make it easier to sort, organize, and find your Kubernetes objects. To learn more about Kubernetes labels, [see the official Kubernetes documentation](#).



Overlapping policies for the same resource under different names can cause data conflicts. If you create a custom app for a resource, be sure it's not being cloned or backed up under any other policies.

## Example: Separate Protection Policy for canary release

In this example, the DevOps team is managing a canary release deployment. Their cluster has three pods running NginX. Two of the pods are dedicated to the stable release. The third pod is for the canary release.

The team's Kubernetes admin adds the label `deployment=stable` to the stable release pods. The admin also adds the label `deployment=canary` to the canary release pod.

```
~$ kubectl get pods --namespace=nginx-app --show-labels
NAME          READY   STATUS    RESTARTS   AGE   LABELS
nginx-pod0    1/1     Running   0           50s   deployment=canary,run=nginx-pod0
nginx-pod1    1/1     Running   0           45s   deployment=stable,run=nginx-pod1
nginx-pod2    1/1     Running   0           41s   deployment=stable,run=nginx-pod2
~$
```

The team's stable release includes a requirement for hourly snapshots and daily backups. The canary release is more ephemeral, so they want to create a less aggressive, short-term protection policy for anything labeled `deployment=canary`.

In order to avoid possible data conflicts, the admin creates two custom apps: one for the canary release, and one for the stable release. This keeps the backups, snapshots, and clone operations separate for the two groups of Kubernetes objects.

After the admin adds the cluster to Astra Control, the next step is to define a custom app. To do this, the admin clicks the **+ Define custom app** button on the Apps page.

In the pop-up window which appears, the admin sets `devops-canary-deployment` as the app name. The admin then chooses the cluster in the **Compute** drop-down, then the app's namespace from the **Namespace** drop-down.

At this point, the admin can either type `deployment=canary` in the **Labels** field, or select that label from the resources listed below.

After defining the custom app for the canary deployment, the admin repeats the process for the stable deployment.

After creating the two custom apps, the admin can treat these resources as any other Astra Control application. The admin can clone them, create backups and snapshots, and create a custom protection policy for each group of resources based on the Kubernetes labels.

# Knowledge and support

## Register for support

Astra Control attempts to automatically register your account for support when you set up your account. If it can't, then you can manually register for support yourself. Support registration is required to obtain help from NetApp technical support.

## Verify your support registration

Astra Control includes a Support Status field that enables you to confirm your support registration.

### Steps

1. Click **Support**.
2. Take a look at the Support Status field.

The Support Status starts off as "Not Registered" but then moves to "In-Progress" and finally to "Registered" once complete.

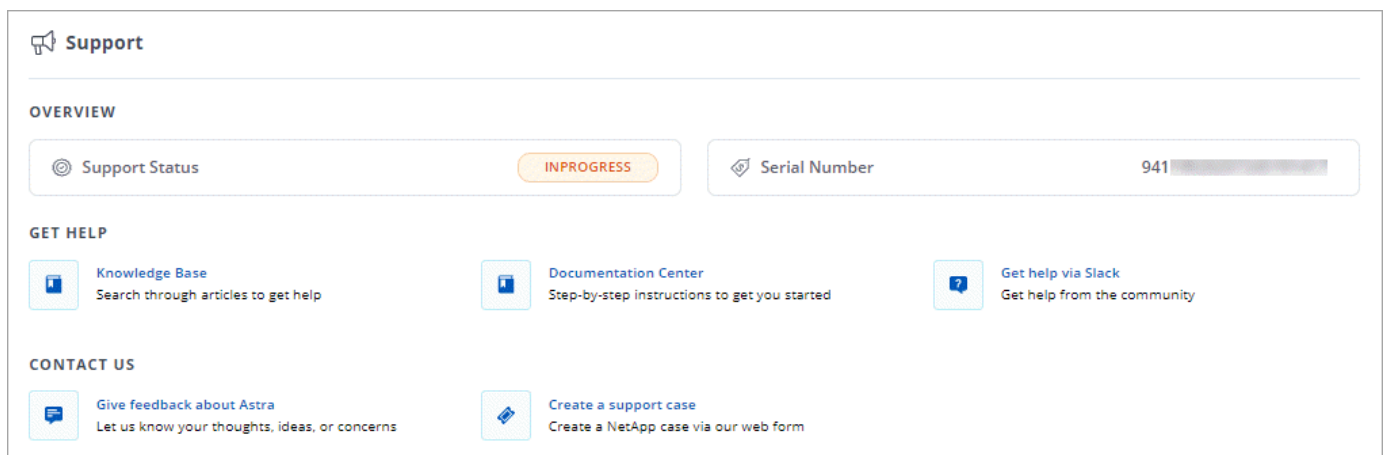
This support registration status is polled every 15 minutes. New NetApp customers could take up to next business day to complete onboarding and support registration. If the serial number doesn't show "Registered" within 48 hours, you can reach out to NetApp using [astra.feedback@netapp.com](mailto:astra.feedback@netapp.com) or register manually from <https://register.netapp.com>.

## Obtain your serial number

When you register for an account, Astra Control uses the information that you provided about your company to generate a 20-digit NetApp serial number that starts with "941."

The NetApp serial number represents your Astra Control account. You'll need to use this serial number when opening a web ticket.

You can find your serial number in the Astra Control interface from the **Support** page.



The screenshot shows the Astra Control Support page. At the top, there is a 'Support' header with a megaphone icon. Below this is an 'OVERVIEW' section containing two main items: 'Support Status' with a status indicator 'INPROGRESS' in an orange pill, and 'Serial Number' with the value '941' followed by a masked area. Underneath is a 'GET HELP' section with three options: 'Knowledge Base' (Search through articles to get help), 'Documentation Center' (Step-by-step instructions to get you started), and 'Get help via Slack' (Get help from the community). At the bottom is a 'CONTACT US' section with two options: 'Give feedback about Astra' (Let us know your thoughts, ideas, or concerns) and 'Create a support case' (Create a NetApp case via our web form).

## Activate support entitlement

If Astra Control was unable to automatically register your account for support, then you must register the

NetApp serial number associated with Astra Control to activate support entitlement. We offer 2 options for support registration:

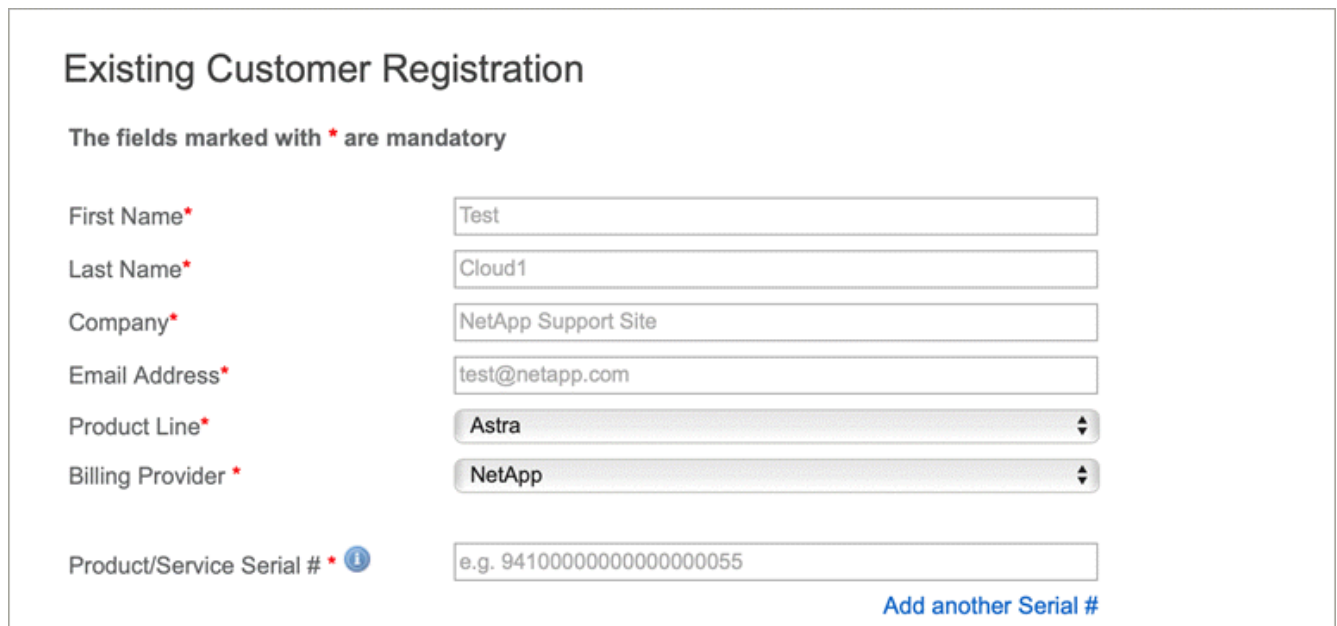
1. Current NetApp customer with existing NetApp Support Site (NSS) SSO account
2. New NetApp customer with no existing NetApp Support Site (NSS) SSO account

### Option 1: Current NetApp customer with an existing NetApp Support Site (NSS) account

#### Steps

1. Navigate to the [Cloud Data Services Support Registration](#) page to create an NSS account.
2. Click **I am already registered as a NetApp customer**.
3. Enter your NetApp Support Site credentials to log in.

The Existing Customer Registration page displays.



The screenshot shows a web form titled "Existing Customer Registration". Below the title is a note: "The fields marked with \* are mandatory". The form contains the following fields:

- First Name\*: Text input with "Test" entered.
- Last Name\*: Text input with "Cloud1" entered.
- Company\*: Text input with "NetApp Support Site" entered.
- Email Address\*: Text input with "test@netapp.com" entered.
- Product Line\*: Dropdown menu with "Astra" selected.
- Billing Provider\*: Dropdown menu with "NetApp" selected.
- Product/Service Serial #: Text input with a placeholder "e.g. 9410000000000000055" and an information icon.

At the bottom right of the form, there is a blue link that says "Add another Serial #".

4. Complete the required information on the form:
  - a. Enter your name, company, and email address.
  - b. Select **Astra** as the product line.
  - c. Enter your serial number.
  - d. Click **Submit Registration**.

#### Result

You should be redirected to a "Registration Submitted Successfully" page. The email address associated with your registration will receive an email within a couple minutes stating that "your product is now eligible for support."

This is a one-time support registration for the applicable serial number.

### Option 2: New NetApp customer with no existing NetApp Support Site (NSS) account

#### Steps




1. Navigate to the [Cloud Data Services Support Registration](#) page to create an NSS account.
2. Click **I am not a registered NetApp Customer**.

The New Customer Registration page displays.

## New Customer Registration

**IMPORTANT:** After submitting, a confirmation email will be sent to the email address filled-in the form. Please click the validation link in that email to complete the registration.

The fields marked with \* are mandatory

First Name*	<input type="text"/>
Last Name*	<input type="text"/>
Company*	<input type="text"/>
Email Address*	<input type="text"/>
Office Phone*	<input type="text"/>
Alternate Phone	<input type="text"/>
Address Line 1*	<input type="text"/>
Address Line 2	<input type="text"/>
Postal Code / City*	<input type="text"/>
State/Province / Country*	<input type="text" value="- Select -"/>
NetApp Reference SN	<input type="text"/>
Product Line*	<input type="text" value="Astra"/>
Billing Provider*	<input type="text" value="NetApp"/>
Product/Service Serial #* 	<input type="text" value="e.g. 9410000000000000055"/>

If you currently own any other NetApp product, please provide the Serial Number for that product here in order to help speed-up the validation process.

[Add another Serial #](#)

3. Complete the required information on the form:
  - a. Enter your name and company information.
  - b. Select **Astra** as the Product Line.
  - c. Enter your serial number.
  - d. Click **Submit Registration**.

You will receive a confirmation email from your submitted registration. If no errors occur, you will be re-directed to a "Registration Submitted Successfully" page. You will also receive an email within an hour stating that "your product is now eligible for support".

This is a one-time support registration for the applicable serial number.

4. As a new NetApp customer, you also need to create a NetApp Support Site (NSS) user account for future support activations and for access to the support portal for technical support chat and web ticketing.

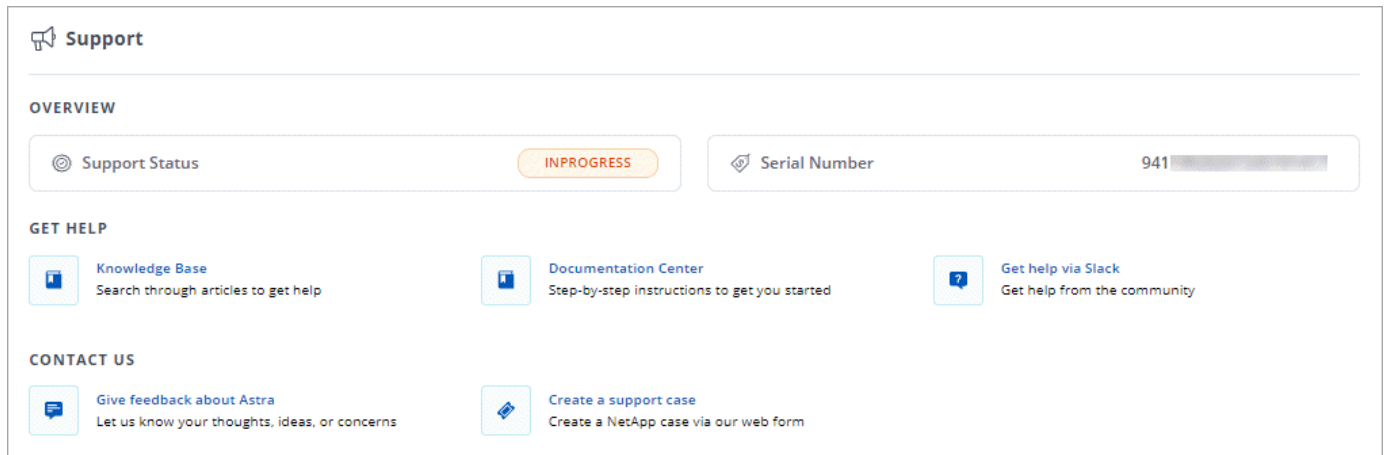
Go to the [NetApp Support Registration site](#) to perform this task. You can provide your newly registered Astra Control serial number to expedite the process.

# Get help

NetApp provides support for Astra Control in a variety of ways. Extensive free self-support options are available 24x7, such as knowledgebase (KB) articles and a Slack channel. Your Astra Control account includes remote technical support via web ticketing.

You must first [activate support for your NetApp serial number](#) in order to use these non self-service support options. A NetApp Support Site (NSS) SSO account is required for chat and web ticketing along with case management.

You can access support options from the Astra Control UI by selecting the **Support** tab from the main menu.



## Self support

These options are available for free 24x7:

- [Knowledge base](#)

Search for articles, FAQ's, or Break Fix information related to Astra Control.

- [Documentation](#)

This is the doc site that you're currently viewing.

- [Slack](#)

Go to the containers channel in thePub workspace to connect with peers and experts.

- [Feedback email](#)

Send an email to [astra.feedback@netapp.com](mailto:astra.feedback@netapp.com) to let us know your thoughts, ideas, or concerns.

## Subscription support

In addition to the self-support options above, you can work with a NetApp Support Engineer to resolve any issues after you [activate support for your NetApp serial number](#).

Once your Astra Control serial number is activated, you can access NetApp technical support resources by creating a [Support ticket](#).

Select **Cloud Data Services > Astra**.

Use your "941" serial number to open the web ticket. [Learn more about your serial number.](#)

# Create Case

- 1 Select System
- 2 Problem Details
- 3 Contact Info

SERIAL NUMBER	SYSTEM NAME	MODEL	PRODUCT SERIES
941999999999999999997		SREG-ASTRA-SAAS	CLOUD

PRIORITY ?

P4 - General Technical questions or request for information

P3 - Occasional disruption or problem

P2 - Serious or repetitive disruption/very poor performance  P1 - System not serving data

PROBLEM CATEGORY ?

Cloud Services > Project Astra

PROBLEM DESCRIPTION

Please briefly describe your problem here (2000 characters maximum), you will have the opportunity to fully define and add more details to your problem later in the case creation process

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