



Concepts

Astra

NetApp
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Table of Contents

- Concepts 1
 - Storage classes and PV size for AKS clusters 1
 - Validated vs standard apps 1
 - Define a custom app 2

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.

Custom Application

SELECTED RESOURCES

Filter by name

Resources (1) ↑

Created

Pod (1)

nginx-pod0

2020/10/09 14:01 UTC

deployment: canary +1

UNSELECTED RESOURCES

Filter by name

Resources (2) ↑

Created

Pod (2)

nginx-pod1

2020/10/09 14:01 UTC

deployment: stable +1

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
:~$
```

3

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.

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