



# Move between backend management options

Astra Trident

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# Move between backend management options

Learn about the different ways of managing backends in Astra Trident. With the introduction of `TridentBackendConfig`, administrators now have two unique ways of managing backends. This poses the following questions:

- Can backends created using `tridentctl` be managed with `TridentBackendConfig`?
- Can backends created using `TridentBackendConfig` be managed using `tridentctl`?

## Manage `tridentctl` backends using `TridentBackendConfig`

This section covers the steps required to manage backends that were created using `tridentctl` directly through the Kubernetes interface by creating `TridentBackendConfig` objects.

This will apply to the following scenarios:

- Pre-existing backends, that don't have a `TridentBackendConfig` because they were created with `tridentctl`.
- New backends that were created with `tridentctl`, while other `TridentBackendConfig` objects exist.

In both scenarios, backends will continue to be present, with Astra Trident scheduling volumes and operating on them. Administrators have one of two choices here:

- Continue using `tridentctl` to manage backends that were created using it.
- Bind backends created using `tridentctl` to a new `TridentBackendConfig` object. Doing so would mean the backends will be managed using `kubectl` and not `tridentctl`.

To manage a pre-existing backend using `kubectl`, you will need to create a `TridentBackendConfig` that binds to the existing backend. Here is an overview of how that works:

1. Create a Kubernetes Secret. The secret contains the credentials Astra Trident needs to communicate with the storage cluster/service.
2. Create a `TridentBackendConfig` object. This contains specifics about the storage cluster/service and references the secret created in the previous step. Care must be taken to specify identical config parameters (such as `spec.backendName`, `spec.storagePrefix`, `spec.storageDriverName`, and so on). `spec.backendName` must be set to the name of the existing backend.

### Step 0: Identify the backend

To create a `TridentBackendConfig` that binds to an existing backend, you will need to obtain the backend's configuration. In this example, let us assume a backend was created using the following JSON definition:

```
$ tridentctl get backend ontap-nas-backend -n trident
+-----+-----+
+-----+-----+-----+-----+
|          NAME          | STORAGE DRIVER |          UUID          |
```

```

| STATE | VOLUMES |
+-----+-----+
+-----+-----+
| ontap-nas-backend | ontap-nas | 52f2eb10-e4c6-4160-99fc-
96b3be5ab5d7 | online | 25 |
+-----+-----+
+-----+-----+

```

```
$ cat ontap-nas-backend.json
```

```

{
  "version": 1,
  "storageDriverName": "ontap-nas",
  "managementLIF": "10.10.10.1",
  "dataLIF": "10.10.10.2",
  "backendName": "ontap-nas-backend",
  "svm": "trident_svm",
  "username": "cluster-admin",
  "password": "admin-password",

  "defaults": {
    "spaceReserve": "none",
    "encryption": "false"
  },
  "labels": {"store": "nas_store"},
  "region": "us_east_1",
  "storage": [
    {
      "labels": {"app": "msoffice", "cost": "100"},
      "zone": "us_east_1a",
      "defaults": {
        "spaceReserve": "volume",
        "encryption": "true",
        "unixPermissions": "0755"
      }
    },
    {
      "labels": {"app": "mysqldb", "cost": "25"},
      "zone": "us_east_1d",
      "defaults": {
        "spaceReserve": "volume",
        "encryption": "false",
        "unixPermissions": "0775"
      }
    }
  ]
}

```

```
}
```

## Step 1: Create a Kubernetes Secret

Create a Secret that contains the credentials for the backend, as shown in this example:

```
$ cat tbc-ontap-nas-backend-secret.yaml

apiVersion: v1
kind: Secret
metadata:
  name: ontap-nas-backend-secret
type: Opaque
stringData:
  username: cluster-admin
  password: admin-password

$ kubectl create -f tbc-ontap-nas-backend-secret.yaml -n trident
secret/backend-tbc-ontap-san-secret created
```

## Step 2: Create a TridentBackendConfig CR

The next step is to create a `TridentBackendConfig` CR that will automatically bind to the pre-existing `ontap-nas-backend` (as in this example). Ensure the following requirements are met:

- The same backend name is defined in `spec.backendName`.
- Configuration parameters are identical to the original backend.
- Virtual Storage Pools (if present) must retain the same order as in the original backend.
- Credentials are provided through a Kubernetes Secret and not in plain text.

In this case, the `TridentBackendConfig` will look like this:

```
$ cat backend-tbc-ontap-nas.yaml
apiVersion: trident.netapp.io/v1
kind: TridentBackendConfig
metadata:
  name: tbc-ontap-nas-backend
spec:
  version: 1
  storageDriverName: ontap-nas
  managementLIF: 10.10.10.1
  dataLIF: 10.10.10.2
  backendName: ontap-nas-backend
  svm: trident_svm
  credentials:
    name: mysecret
  defaults:
    spaceReserve: none
    encryption: 'false'
  labels:
    store: nas_store
  region: us_east_1
  storage:
  - labels:
    app: msoffice
    cost: '100'
    zone: us_east_1a
    defaults:
      spaceReserve: volume
      encryption: 'true'
      unixPermissions: '0755'
  - labels:
    app: mysqldb
    cost: '25'
    zone: us_east_1d
    defaults:
      spaceReserve: volume
      encryption: 'false'
      unixPermissions: '0775'

$ kubectl create -f backend-tbc-ontap-nas.yaml -n trident
tridentbackendconfig.trident.netapp.io/tbc-ontap-nas-backend created
```

### Step 3: Verify the status of the TridentBackendConfig CR

After the TridentBackendConfig has been created, its phase must be Bound. It should also reflect the same backend name and UUID as that of the existing backend.

```

$ kubectl -n trident get tbc tbc-ontap-nas-backend -n trident
NAME                                BACKEND NAME                BACKEND UUID
PHASE    STATUS
tbc-ontap-nas-backend  ontap-nas-backend          52f2eb10-e4c6-4160-99fc-
96b3be5ab5d7    Bound    Success

#confirm that no new backends were created (i.e., TridentBackendConfig did
not end up creating a new backend)
$ tridentctl get backend -n trident
+-----+-----+
+-----+-----+-----+-----+
|          NAME          | STORAGE DRIVER |          UUID          |
| STATE  | VOLUMES |          |
+-----+-----+-----+-----+
| ontap-nas-backend     | ontap-nas      | 52f2eb10-e4c6-4160-99fc-
96b3be5ab5d7 | online |          25 |
+-----+-----+-----+-----+
+-----+-----+

```

The backend will now be completely managed using the `tbc-ontap-nas-backend` `TridentBackendConfig` object.

## Manage `TridentBackendConfig` backends using `tridentctl`

`tridentctl` can be used to list backends that were created using `TridentBackendConfig`. In addition, administrators can also choose to completely manage such backends through `tridentctl` by deleting `TridentBackendConfig` and making sure `spec.deletionPolicy` is set to `retain`.

### Step 0: Identify the backend

For example, let us assume the following backend was created using `TridentBackendConfig`:

```

$ kubectl get tbc backend-tbc-ontap-san -n trident -o wide
NAME                                BACKEND NAME                BACKEND UUID
PHASE  STATUS  STORAGE DRIVER  DELETION POLICY
backend-tbc-ontap-san  ontap-san-backend  81abcb27-ea63-49bb-b606-
0a5315ac5f82  Bound  Success  ontap-san  delete

$ tridentctl get backend ontap-san-backend -n trident
+-----+-----+
+-----+-----+-----+-----+
|      NAME      | STORAGE DRIVER |                               UUID
| STATE  | VOLUMES |
+-----+-----+-----+-----+
| ontap-san-backend | ontap-san      | 81abcb27-ea63-49bb-b606-
0a5315ac5f82 | online |          33 |
+-----+-----+-----+-----+
+-----+-----+-----+-----+

```

From the output, it is seen that `TridentBackendConfig` was created successfully and is bound to a backend [observe the backend's UUID].

### Step 1: Confirm `deletionPolicy` is set to `retain`

Let us take a look at the value of `deletionPolicy`. This needs to be set to `retain`. This will ensure that when a `TridentBackendConfig` CR is deleted, the backend definition will still be present and can be managed with `tridentctl`.

```

$ kubectl get tbc backend-tbc-ontap-san -n trident -o wide
NAME                                BACKEND NAME                BACKEND UUID
PHASE  STATUS  STORAGE DRIVER  DELETION POLICY
backend-tbc-ontap-san  ontap-san-backend  81abcb27-ea63-49bb-b606-
0a5315ac5f82  Bound  Success  ontap-san  delete

# Patch value of deletionPolicy to retain
$ kubectl patch tbc backend-tbc-ontap-san --type=merge -p
 '{"spec":{"deletionPolicy":"retain"}}' -n trident
tridentbackendconfig.trident.netapp.io/backend-tbc-ontap-san patched

#Confirm the value of deletionPolicy
$ kubectl get tbc backend-tbc-ontap-san -n trident -o wide
NAME                                BACKEND NAME                BACKEND UUID
PHASE  STATUS  STORAGE DRIVER  DELETION POLICY
backend-tbc-ontap-san  ontap-san-backend  81abcb27-ea63-49bb-b606-
0a5315ac5f82  Bound  Success  ontap-san  retain

```





Do not proceed to the next step unless `deletionPolicy` is set to `retain`.

## Step 2: Delete the `TridentBackendConfig` CR

The final step is to delete the `TridentBackendConfig` CR. After confirming the `deletionPolicy` is set to `retain`, you can go ahead with the deletion:

```
$ kubectl delete tbc backend-tbc-ontap-san -n trident
tridentbackendconfig.trident.netapp.io "backend-tbc-ontap-san" deleted

$ tridentctl get backend ontap-san-backend -n trident
+-----+-----+
+-----+-----+-----+-----+
|          NAME          | STORAGE DRIVER |          UUID          |
| STATE  | VOLUMES |
+-----+-----+-----+-----+
+-----+-----+-----+-----+
| ontap-san-backend | ontap-san      | 81abcb27-ea63-49bb-b606-
0a5315ac5f82 | online |          33 |
+-----+-----+-----+-----+
+-----+-----+-----+-----+
```

Upon the deletion of the `TridentBackendConfig` object, Astra Trident simply removes it without actually deleting the backend itself.

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