Manage Trident protect

Trident

NetApp

February 20, 2025

This PDF was generated from https://docs.netapp.com/us-en/trident/trident-protect/manage-authorization-access-control.html on February 20, 2025. Always check docs.netapp.com for the latest.

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Manage Trident protect

Manage Trident protect authorization and access control

Trident protect uses the Kubernetes model of role-based access control (RBAC). By default, Trident protect provides a single system namespace and its associated default service account. If you have an organization with many users or specific security needs, you can use the RBAC features of Trident protect to gain more granular control over access to resources and namespaces.

The cluster administrator always has access to resources in the default `trident-protect` namespace, and can also access resources in all other namespaces. To control access to resources and applications, you need to create additional namespaces and add resources and applications to those namespaces.

Note that no users can create application data management CRs in the default `trident-protect` namespace. You need to create application data management CRs in an application namespace (as a best practice, create application data management CRs in the same namespace as their associated application).

> Only administrators should have access to privileged Trident protect custom resource objects, which include:
>
> - **AppVault**: Requires bucket credential data
> - **AutoSupportBundle**: Collects metrics, logs, and other sensitive Trident protect data
> - **AutoSupportBundleSchedule**: Manages log collection schedules
>
> As a best practice, use RBAC to restrict access to privileged objects to administrators.

For more information about how RBAC regulates access to resources and namespaces, refer to the Kubernetes RBAC documentation.

Fore information about service accounts, refer to the Kubernetes service account documentation.

Example: Manage access for two groups of users

For example, an organization has a cluster administrator, a group of engineering users, and a group of marketing users. The cluster administrator would complete the following tasks to create an environment where the engineering group and the marketing group each have access to only the resources assigned to their respective namespaces.

Step 1: Create a namespace to contain resources for each group

Creating a namespace enables you to logically separate resources and better control who has access to those resources.

Steps

1. Create a namespace for the engineering group:

```
kubectl create ns engineering-ns
```

2. Create a namespace for the marketing group:

```
kubectl create ns marketing-ns
```

Step 2: Create new service accounts to interact with resources in each namespace

Each new namespace you create comes with a default service account, but you should create a service account for each group of users so that you can further divide privileges between groups in the future if necessary.

Steps

1. Create a service account for the engineering group:

```
apiVersion: v1
kind: ServiceAccount
metadata:
  name: eng-user
  namespace: engineering-ns
```

2. Create a service account for the marketing group:

```
apiVersion: v1
kind: ServiceAccount
metadata:
  name: mkt-user
  namespace: marketing-ns
```

Step 3: Create a secret for each new service account

A service account secret is used to authenticate with the service account, and can easily be deleted and recreated if compromised.

Steps

1. Create a secret for the engineering service account:

```
apiVersion: v1
kind: Secret
metadata:
  annotations:
    kubernetes.io/service-account.name: eng-user
  name: eng-user-secret
  namespace: engineering-ns
type: kubernetes.io/service-account-token
```

2. Create a secret for the marketing service account:

```
apiVersion: v1
kind: Secret
metadata:
  annotations:
    kubernetes.io/service-account.name: mkt-user
  name: mkt-user-secret
  namespace: marketing-ns
type: kubernetes.io/service-account-token
```

Step 4: Create a RoleBinding object to bind the ClusterRole object to each new service account

A default ClusterRole object is created when you install Trident protect. You can bind this ClusterRole to the service account by creating and applying a RoleBinding object.

Steps

1. Bind the ClusterRole to the engineering service account:

```
apiVersion: rbac.authorization.k8s.io/v1
kind: RoleBinding
metadata:
  name: engineering-ns-tenant-rolebinding
  namespace: engineering-ns
roleRef:
  apiGroup: rbac.authorization.k8s.io
  kind: ClusterRole
  name: trident-protect-tenant-cluster-role
subjects:
- kind: ServiceAccount
  name: eng-user
  namespace: engineering-ns
```

2. Bind the ClusterRole to the marketing service account:

```
apiVersion: rbac.authorization.k8s.io/v1
kind: RoleBinding
metadata:
  name: marketing-ns-tenant-rolebinding
  namespace: marketing-ns
roleRef:
  apiGroup: rbac.authorization.k8s.io
  kind: ClusterRole
  name: trident-protect-tenant-cluster-role
subjects:
- kind: ServiceAccount
  name: mkt-user
  namespace: marketing-ns
```

Step 5: Test permissions

Test that the permissions are correct.

Steps

1. Confirm that engineering users can access engineering resources:

```
kubectl auth can-i --as=system:serviceaccount:engineering-ns:eng-user
get applications.protect.trident.netapp.io -n engineering-ns
```

2. Confirm that engineering users cannot access marketing resources:

```
kubectl auth can-i --as=system:serviceaccount:engineering-ns:eng-user
get applications.protect.trident.netapp.io -n marketing-ns
```

Step 6: Grant access to AppVault objects

To perform data management tasks such as backups and snapshots, the cluster administrator needs to grant access to AppVault objects to individual users.

Steps

1. Create and apply an AppVault and secret combination YAML file that grants a user access to an AppVault. For example, the following CR grants access to an AppVault to the user `eng-user`:

```
apiVersion: v1
data:
  accessKeyID: <ID_value>
  secretAccessKey: <key_value>
kind: Secret
metadata:
  name: appvault-for-eng-user-only-secret
  namespace: trident-protect
type: Opaque
---
apiVersion: protect.trident.netapp.io/v1
kind: AppVault
metadata:
  name: appvault-for-eng-user-only
  namespace: trident-protect # Trident protect system namespace
spec:
  providerConfig:
    azure:
      accountName: ""
      bucketName: ""
      endpoint: ""
    gcp:
      bucketName: ""
      projectID: ""
    s3:
      bucketName: testbucket
      endpoint: 192.168.0.1:30000
      secure: "false"
      skipCertValidation: "true"
  providerCredentials:
    accessKeyID:
      valueFromSecret:
        key: accessKeyID
        name: appvault-for-eng-user-only-secret
    secretAccessKey:
      valueFromSecret:
        key: secretAccessKey
        name: appvault-for-eng-user-only-secret
  providerType: GenericS3
```

2. Create and apply a Role CR to enable cluster administrators to grant access to specific resources in a namespace. For example:

```
apiVersion: rbac.authorization.k8s.io/v1
kind: Role
metadata:
  name: eng-user-appvault-reader
  namespace: trident-protect
rules:
- apiGroups:
  - protect.trident.netapp.io
  resourceNames:
  - appvault-for-enguser-only
  resources:
  - appvaults
  verbs:
  - get
```

3. Create and apply a RoleBinding CR to bind the permissions to the user eng-user. For example:

```
apiVersion: rbac.authorization.k8s.io/v1
kind: RoleBinding
metadata:
  name: eng-user-read-appvault-binding
  namespace: trident-protect
roleRef:
  apiGroup: rbac.authorization.k8s.io
  kind: Role
  name: eng-user-appvault-reader
subjects:
- kind: ServiceAccount
  name: eng-user
  namespace: engineering-ns
```

4. Verify that the permissions are correct.
   a. Attempt to retrieve AppVault object information for all namespaces:

   ```
   kubectl get appvaults -n trident-protect
   --as=system:serviceaccount:engineering-ns:eng-user
   ```

   You should see output similar to the following:

```
Error from server (Forbidden): appvaults.protect.trident.netapp.io is
forbidden: User "system:serviceaccount:engineering-ns:eng-user"
cannot list resource "appvaults" in API group
"protect.trident.netapp.io" in the namespace "trident-protect"
```

b. Test to see if the user can get the AppVault information that they now have permission to access:

```
kubectl auth can-i --as=system:serviceaccount:engineering-ns:eng-user
get appvaults.protect.trident.netapp.io/appvault-for-eng-user-only -n
trident-protect
```

You should see output similar to the following:

```
yes
```

Result

The users you have granted AppVault permissions to should be able to use authorized AppVault objects for application data management operations, and should not be able to access any resources outside of the assigned namespaces or create new resources that they do not have access to.

Generate a Trident protect support bundle

Trident protect enables administrators to generate bundles that include information useful to NetApp Support, including logs, metrics, and topology information about the clusters and apps under management. If you are connected to the Internet, you can upload support bundles to the NetApp Support Site (NSS) using a custom resource (CR) file.

Create a support bundle using a CR

Steps

1. Create the custom resource (CR) file and name it (for example, `trident-protect-support-bundle.yaml`).
2. Configure the following attributes:
   - **metadata.name**: (*Required*) The name of this custom resource; choose a unique and sensible name for your environment.
   - **spec.triggerType**: (*Required*) Determines whether the support bundle is generated immediately, or scheduled. Scheduled bundle generation happens at 12AM UTC. Possible values:
     - Scheduled
     - Manual
   - **spec.uploadEnabled**: (*Optional*) Controls whether the support bundle should be uploaded to the NetApp Support Site after it is generated. If not specified, defaults to `false`. Possible values:
     - true
     - false (default)
   - **spec.dataWindowStart**: (*Optional*) A date string in RFC 3339 format that specifies the date and time that the window of included data in the support bundle should begin. If not specified, defaults to 24 hours ago. The earliest window date you can specify is 7 days ago.

     Example YAML:

     ```yaml
     ---
     apiVersion: protect.trident.netapp.io/v1
     kind: AutoSupportBundle
     metadata:
       name: trident-protect-support-bundle
     spec:
       triggerType: Manual
       uploadEnabled: true
       dataWindowStart: 2024-05-05T12:30:00Z
     ```

3. After you populate the `astra-support-bundle.yaml` file with the correct values, apply the CR:

   ```
   kubectl apply -f trident-protect-support-bundle.yaml
   ```

Create a support bundle using the CLI

Steps

1. Create the support bundle, replacing values in brackets with information from your environment. The `trigger-type` determines whether the bundle is created immediately or if creation time is dictated by the schedule, and can be `Manual` or `Scheduled`. The default setting is `Manual`.

   For example:

```
tridentctl-protect create autosupportbundle <my_bundle_name>
--trigger-type <trigger_type>
```

Upgrade Trident protect

You can upgrade Trident protect to the latest version to take advantage of new features or bug fixes.

To upgrade Trident protect, perform the following steps.

Steps

1. Update the Trident Helm repository:

   ```
   helm repo update
   ```

2. Upgrade the Trident protect CRDs:

   ```
   helm upgrade trident-protect-crds netapp-trident-protect/trident-
   protect-crds --version 100.2410.1  --namespace trident-protect
   ```

3. Upgrade Trident protect:

   ```
   helm upgrade trident-protect netapp-trident-protect/trident-protect
   --version 100.2410.1 --namespace trident-protect
   ```

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