# Manage consistency groups

ASA r2

NetApp
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# Manage consistency groups

## Learn about ONTAP consistency groups on ASA r2 storage systems

A consistency group is a collection of storage units that are managed as a single unit. Use consistency groups for simplified storage management.

For example, suppose you have a database consisting of 10 storage units in a consistency group, and you need to back up the entire database. Instead of backing up each storage unit, you can back up the entire database by simply adding snapshot data protection to the consistency group. Backing up the storage units as a consistency group instead of individually also provides a consistent backup of all the units, while backing up units individually could potentially create inconsistencies.

Beginning with ONTAP 9.16.1, you can use System Manager to create hierarchical consistency groups on your ASA r2 system. In an hierarchical structure, one or more consistency groups are configured as children under a parent consistency group.

Hierarchical consistency groups allow you to apply individual snapshot policies to each child consistency group and to replicate the snapshots of all the child consistency groups to a remote cluster as a single unit by replicating the parent. This simplifies data protection and management for complex data structures. For example, suppose you create a parent consistency group called `SVM1_app` which contains two child consistency groups: `SVM1app_data` for application data and `SVM1app_logs` for application logs. Snapshots of `SVM1app_data` are taken every 15 minutes and snapshots of `SVM1app_logs` are taken every hour. The parent consistency group, `SVM1_app`, has a SnapMirror policy that replicates the snapshots of both `SVM1app_data` and `SVM1app_logs` to a remote cluster every 24 hours. The parent consistency group `SVM1_app` is managed as a single unit and the child consistency groups are managed as separate units.

### Consistency groups in replication relationships

Beginning with ONTAP 9.17.1, you can make the following geometry changes to consistency groups in an asynchronous replication relationship or in a SnapMirror active sync relationship without breaking or deleting the relationship. When a geometry change occurs on the primary consistency group, the change is replicated to the secondary consistency group.

- Modify the size of a storage unit by adding or removing storage units.
- Promote a single consistency group to a parent consistency group.
- Demote a parent consistency group to a single consistency group.
- Detach a child consistency group from a parent consistency group.
- Create a child consistency group using an existing consistency group.

In ONTAP 9.16.1, you must break the asynchronous replication relationship and delete the SnapMirror active sync relationship before making geometry changes to the consistency group.

## Protect consistency groups on your ASA r2 system with snapshots

Create snapshots of the consistency groups in your ASA r2 storage system to protect the

data in the storage units that are part of the consistency group. If you no longer need to protect the data in any of the storage units in the consistency group, you can remove snapshot protection from the consistency group.

If you no longer need to protect the data from specific storage units in the consistency group, you can remove those storage units from the consistency group.

## Add snapshot data protection to a consistency group

When you add snapshot data protection to a consistency group, local snapshots of the consistency group are taken at regular intervals based on a pre-defined schedule.

You can use snapshots to restore data that is lost or corrupted.

**Steps**

1. In System Manager, select **Protection > Consistency groups**.
2. Hover over the consistency group you want to protect.
3. Select ⋮; then select **Edit**.
4. Under **Local protection**, select **Schedule snapshots**.
5. Select a snapshot policy.

   Accept the default snapshot policy, select an existing policy, or create a new policy.

| Option | Steps |
|---|---|
| Select an existing snapshot policy | Select ⌄ next to the default policy; then select the existing policy that you want to use. |
| Create a new snapshot policy | a. Select + Add ; then enter the new policy name.<br>b. Select the policy scope.<br>c. Under **Schedules** select + Add .<br>d. Select the name that appears under **Schedule name**; then select ⌄.<br>e. Select the policy schedule.<br>f. Under **Maximum snapshots**, enter the maximum number of snapshots that you want to retain of the consistency group.<br>g. Optionally, under **SnapMirror label** enter a SnapMirror label.<br>h. Select **Save**. |

6. Select **Save**.

**What's next**

Now that your data is protected with snapshots, you should set up snapshot replication to copy your consistency groups to a geographically remote location for backup and disaster recovery.

## Remove snapshot data protection from a consistency group

When you remove snapshot data protection from a consistency group, snapshots are disabled for all the storage units in the consistency group.

### Steps

1. In System Manager, select **Protection > Consistency groups**.
2. Hover over the consistency group you want to stop protecting.
3. Select ⋮; then select **Edit**.
4. Under **Local protection**, deselect Schedule snapshots.
5. Select **Edit**.

### Result

Snapshots will not be taken for any of the storage units in the consistency group.

# Modify the size of consistency groups on your ASA r2 system

Increase or decrease the size of a consistency group by modifying the number of storage units in the consistency group.

## Add storage units to a consistency group

Expand the amount of storage managed by a consistency group by adding new or existing storage units to the consistency group.

Beginning with ONTAP 9.18.1, you can set snapshot reserve and automatic snapshot deletion to limit the amount of space used by snapshots in your storage units. When you add a storage unit to an existing consistency group, snapshot reserve and automatic snapshot deletion are set as follows by default.

| If you add… | The snapshot reserve percentage is set to… | Automatic snapshot deletion is… |
|---|---|---|
| New storage units | 0 | Disabled |
| Existing storage units | Unchanged | Unchanged |

You can modify the default settings for new storage units when you create the storage units. You can also modify existing storage units to update their current settings.

Learn more about snapshot reserve on ASA r2 storage systems.

### Before you begin

If you are running ONTAP 9.16.1 and the consistency group you want to expand is in an SnapMirror active sync relationship, you must delete the SnapMirror active sync relationship before you can add storage units. If you are running ONTAP 9.16.1 and the consistency group is in an asynchronous replication relationship, you must break the relationship before you can expand the consistency group. Deleting the SnapMirror active sync relationship or breaking the asynchronous relationship before expanding a consistency group is not required in ONTAP 9.17.1 and later releases.

**Add existing storage units**

**Steps**

1. In System Manager, select **Protection > Consistency groups**.
2. Hover over the consistency group you want to expand.
3. Select ⋮; then select **Expand**.
4. Select **Using existing storage units**.
5. Select the storage units to add to the consistency group; then select **Expand**.

**Add new storage units**

**Steps**

1. In System Manager, select **Protection > Consistency groups**.
2. Hover over the consistency group you want to expand.
3. Select ⋮; then select **Expand**.
4. Select **Using new storage units**.
5. Enter the number of units you want to create and the capacity per unit.

   If you create more than one unit, each unit is created with the same capacity and the same host operating system. To assign a different capacity to each unit, select **Add a different capacity** to assign a different capacity to each unit.

6. Select **Expand**.

**What's next**

After you create a new storage unit, you should add host initiators and map the newly created storage unit to a host. Adding host initiators makes hosts eligible to access the storage units and perform data operations. Mapping a storage unit to a hosts allows the storage unit to begin serving data to the host it is mapped to.

**What's next?**

Existing snapshots of the consistency group won't include your newly added storage units. You should create an immediate snapshot of your consistency group to protect your newly added storage units until the next scheduled snapshot is automatically created.

## Remove a storage unit from a consistency group

Remove a storage unit from a consistency group to delete it, manage it as part of a different consistency group, or stop protecting its data. Removing a storage unit from a consistency group breaks the relationship between the storage unit and the consistency group, but does not delete the storage unit.

**Steps**

1. In System Manager, select **Protection > Consistency groups**.
2. Double-click the consistency group from which you want to remove a storage unit.
3. In the **Overview** section, under **Storage units**, select the storage unit you want to remove; then select **Remove from consistency group**.

**Result**

The storage unit is no longer a member of the consistency group.

**What's next**

If you need to continue data protection for the storage unit, add the storage unit to another consistency group.

# Delete consistency groups on your ASA r2 system

If you no longer need to manage the members of a consistency group as a single unit, you can delete the consistency group. After a consistency group is deleted, the storage units previously in the group remain active on the cluster. If the consistency group was in a replication relationship, the replicated copies remain on the remote cluster.

**Before you begin**

If you are running ONTAP 9.16.1, and the consistency group you want to delete is in a SnapMirror active sync relationship, you must delete the SnapMirror active sync relationship before you delete the consistency group. Deleting this relationship before modifying a consistency group is not required in ONTAP 9.17.1 and later releases.

**Steps**

1. In System Manager, select **Protection > Consistency groups**.
2. Hover over the consistency group you want to delete.
3. Select ⋮; then select **Delete**.
4. Accept the warning, then select **Delete**.

**What's next?**

After you delete a consistency group, the storage units previously in the consistency group are no longer protected by snapshots. Consider adding these storage units to another consistency group to protect them against data loss.

# Manage hierarchical consistency groups on your ASA r2 system

Beginning with ONTAP 9.16.1, you can use System Manager to create hierarchical consistency groups on your ASA r2 system. In an hierarchical structure, one or more consistency groups are configured as children under a parent consistency group. You can apply individual snapshot policies to each child consistency group and replicate the snapshots of all the child consistency groups to a remote cluster as a single unit by replicating the parent. This simplifies data protection and management for complex data structures.

## Promote an existing consistency group into a parent consistency group

If you promote an existing consistency group to a parent, a new child consistency group is created and the storage units belonging to the promoted consistency group are moved to the new child consistency group. Storage units cannot be directly associated with a parent consistency group.

**Before you begin**

If you are running ONTAP 9.16.1 and the consistency group you want to promote is in a SnapMirror active sync

relationship, you must delete the SnapMirror active sync relationship before the consistency group can be promoted. If you are running ONTAP 9.16.1 and the consistency group is in an asynchronous replication relationship, you must break the relationship before you can promote the consistency group. Deleting the SnapMirror active sync relationship or breaking the asynchronous relationship before promoting a consistency group is not required in ONTAP 9.17.1 and later releases.

**Steps**

1. In System Manager, select **Protection > Consistency groups**.
2. Hover over the consistency group you want convert into a parent consistency group.
3. Select ⋮; then select **Promote to parent consistency group**.
4. Enter a name for the new child consistency group or accept the default name; then select the consistency group component type.
5. Select **Promote**.

**What's next?**

You can create additional child consistency groups under the parent consistency group. You can also set up snapshot replication to copy the parent and child consistency groups to a geographically remote location for backup and disaster recovery.

## Demote a parent consistency group to a single consistency group

When you demote a parent consistency group to a single consistency group, the storage units of the associated child consistency groups are added to the parent consistency group. The child consistency groups are deleted and the parent is then managed as a single consistency group.

**Before you begin**

If you are running ONTAP 9.16.1 and the consistency group you want to demote is in a SnapMirror active sync relationship, you must delete the SnapMirror active sync relationship before the consistency group can be demoted. If you are running ONTAP 9.16.1 and the consistency group is in an asynchronous replication relationship, you must break the relationship before you can demote the consistency group. Deleting the SnapMirror active sync relationship or breaking the asynchronous relationship before expanding a consistency group is not required in ONTAP 9.17.1 and later releases.

**Steps**

1. In System Manager, select **Protection > Consistency groups**.
2. Hover over the parent consistency group you want to demote.
3. Select ⋮; then select **Demote to a single consistency group**.
4. Select **Demote**

**What's next?**

Add a snapshot policy to the demoted consistency group to protect the storage units that were previously managed by the child consistency groups.

## Create a child consistency group

Creating child consistency groups allows you to apply individual snapshot policies to each child. Beginning with ONTAP 9.17.1, you can also apply individual replication policies directly to each child. In ONTAP 9.16.1, replication policies can be applied only at the parent level.

You can create a child consistency group from a new or existing consistency group.

**From a new consistency group**

**Steps**

1. In System Manager, select **Protection > Consistency groups**.
2. Hover over the parent consistency group you want to add a child consistency group to.
3. Select ⋮; then select **Add a new child consistency group**.
4. Enter a name for the child consistency group or accept the default name; then select the consistency group component type.
5. Select to add existing storage units to the child consistency group or to create new storage units.

   If you create new storage units, enter the number of units you want to create and the capacity per unit; then enter the host information.

   If you create more than one storage unit, each unit is created with the same capacity and the same host operating system. To assign a different capacity to each unit, select **Add a different capacity**.

6. Select **Add**.

**From an existing consistency group**

**Before you begin**

If the consistency group you would like to use is already the child of another consistency group, you must detach it from the existing parent consistency group before you can move it to a new parent consistency group.

**Steps**

1. In System Manager, select **Protection > Consistency groups**.
2. Select the existing consistency group that you would like to make a child consistency group.
3. Select ⋮; then select **Move under different consistency group**.
4. Enter a new name for the child consistency group or accept the default name; then select the consistency group component type.
5. Select the existing consistency group that you would like to make the parent consistency group or select to create a new parent consistency group.

   If you select to create a new parent consistency group, enter a name for the parent consistency group or accept the default name; then select the consistency application component type.

6. Select **Move**.

**What's next**

After you create a child consistency group, you can apply individual snapshot protection policies to each child consistency group. You can also set up replication policies on the parent and child consistency groups to replicate the consistency groups to a remote location.

## Detach a child consistency group from a parent consistency group

When you detach a child consistency group from a parent consistency group, the child consistency group is removed from the parent consistency group and is managed as a single consistency group. The replication policy applied to the parent is no longer applied to the detached child consistency group.

**Before you begin**

If you are running ONTAP 9.16.1 and the consistency group you want to detach is in a SnapMirror active sync relationship, you must delete the SnapMirror active sync relationship before the consistency group can be detached. If you are running ONTAP 9.16.1 and the consistency group is in an asynchronous replication relationship, you must break the relationship before you can detach the consistency group. Deleting the SnapMirror active sync relationship or breaking the asynchronous relationship before expanding a consistency group is not required in ONTAP 9.17.1 and later releases.

**Steps**

1. In System Manager, select **Protection > Consistency groups**.
2. Select the parent consistency group.
3. Select over the child consistency group you want to detach.
4. Select ⋮; then select **Detach from parent**.
5. Enter a new name for the consistency group you are detaching or accept the default name; then select the consistency group application type.
6. Select **Detach**.

**What's next?**

Set up a replication policy to replicate the snapshots of the detached child consistency group to a remote cluster.

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