Replicate SVM configurations

ONTAP 9

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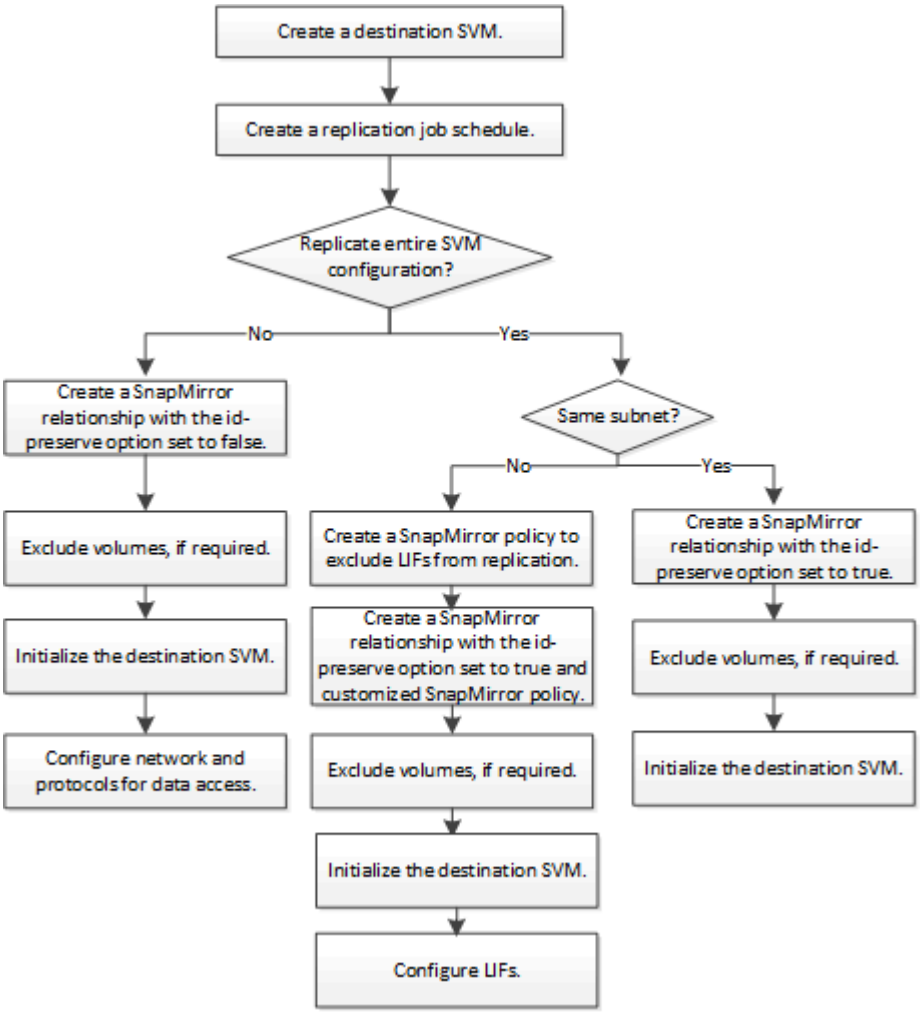
Replicate SVM configurations

SnapMirror SVM replication workflow

SnapMirror SVM replication involves creating the destination SVM, creating a replication job schedule, and creating and initializing a SnapMirror relationship.

This workflow assumes that you are already using a default policy or a custom replication policy.



Criteria for placing volumes on destination SVMs

When replicating volumes from the source SVM to the destination SVM, it's important to know the criteria for selecting aggregates.

Aggregates are selected based on the following criteria:

- Volumes are always placed on non-root aggregates.
- Non-root aggregates are selected based on the available free space and the number of volumes already hosted on the aggregate.

Aggregates with more free space and fewer volumes are given priority. The aggregate with the highest priority is selected.

- Source volumes on FabricPool aggregates are placed on FabricPool aggregates on the destination with the same tiering-policy.
- If a volume on the source SVM is located on a Flash Pool aggregate, then the volume is placed on a Flash Pool aggregate on the destination SVM, if such an aggregate exists and has enough free space.
- If the `-space-guarantee` option of the volume that is replicated is set to `volume`, only aggregates with free space greater than the volume size are considered.
- The volume size grows automatically on the destination SVM during replication, based on the source volume size.

  If you want to pre-reserve the size on the destination SVM, you must resize the volume. The volume size does not shrink automatically on the destination SVM based on the source SVM.

If you want to move a volume from one aggregate to another, you can use the `volume move` command on the destination SVM.

Replicate an entire SVM configuration

You can use the `-identity-preserve true` option of the `snapmirror create` command to replicate an entire SVM configuration.

What you'll need

The source and destination clusters and SVMs must be peered. For more information, see Create a cluster peer relationship (ONTAP 9.3 and later) and Create an SVM intercluster peer relationship (ONTAP 9.3 and later).

For complete command syntax, see the man page.

About this task

This workflow assumes that you are already using a default policy or a custom replication policy.

Beginning with ONTAP 9.9.1, when you use the mirror-vault policy, you can create different Snapshot policies on the source and destination SVM, and the Snapshot copies on the destination are not overwritten by Snapshot copies on the source. For more information, see Understanding SnapMirror SVM replication.

Steps

1. Create a destination SVM:

   `vserver create -vserver` *`SVM_name`* `-subtype dp-destination`

   The SVM name must be unique across the source and destination clusters.

   The following example creates a destination SVM named `svm_backup`:

   ```
   cluster_dst:> vserver create -vserver svm_backup -subtype dp-destination
   ```

2. From the destination cluster, create an SVM peer relationship using the `vserver peer create`

command.

For more information, see Create an SVM intercluster peer relationship (ONTAP 9.3 and later).

3. Create a replication job schedule:

   `job schedule cron create -name job_name -month month -dayofweek day_of_week -day day_of_month -hour hour -minute minute`

   For `-month`, `-dayofweek`, and `-hour`, you can specify `all` to run the job every month, day of the week, and hour, respectively.

   The following example creates a job schedule named `my_weekly` that runs on Saturdays at 3:00 a.m.:

   ```
   cluster_dst::> job schedule cron create -name my_weekly -dayofweek
   saturday -hour 3 -minute 0
   ```

4. From the destination SVM or the destination cluster, create a replication relationship:

   `snapmirror create -source-path SVM_name: -destination-path SVM_name: -type DP|XDP -schedule schedule -policy policy -identity-preserve true`

   > You must enter a colon (:) after the SVM name in the `-source-path` and `-destination-path` options.

   The following example creates a SnapMirror DR relationship using the default `MirrorAllSnapshots` policy:

   ```
   cluster_dst::> snapmirror create -source-path svm1: -destination-path
   svm_backup: -type XDP -schedule my_daily -policy MirrorAllSnapshots
   -identity-preserve true
   ```

   The following example creates a unified replication relationship using the default `MirrorAndVault` policy:

   ```
   cluster_dst:> snapmirror create -source-path svm1: -destination-path
   svm_backup: -type XDP -schedule my_daily -policy MirrorAndVault
   -identity-preserve true
   ```

   Assuming you have created a custom policy with the policy type `async-mirror`, the following example creates a SnapMirror DR relationship:

   ```
   cluster_dst::> snapmirror create -source-path svm1: -destination-path
   svm_backup: -type XDP -schedule my_daily -policy my_mirrored -identity
   -preserve true
   ```

Assuming you have created a custom policy with the policy type `mirror-vault`, the following example creates a unified replication relationship:

```
cluster_dst::> snapmirror create -source-path svm1: -destination-path
svm_backup: -type XDP -schedule my_daily -policy my_unified -identity
-preserve true
```

5. Stop the destination SVM:

   `vserver stop`

   `SVM name`

   The following example stops a destination SVM named dvs1:

   ```
   cluster_dst::> vserver stop -vserver dvs1
   ```

6. From the destination SVM or the destination cluster, initialize the SVM replication relationship:

   `snapmirror initialize -source-path` *`SVM_name`*`: -destination-path` *`SVM_name`*`:`

   The following example initializes the relationship between the source SVM, `svm1`, and the destination SVM, `svm_backup`:

   ```
   cluster_dst::> snapmirror initialize -source-path svm1: -destination
   -path svm_backup:
   ```

Exclude LIFs and related network settings from SVM replication

If the source and destination SVMs are in different subnets, you can use the `-discard -configs network` option of the `snapmirror policy create` command to exclude LIFs and related network settings from SVM replication.

What you'll need

The source and destination clusters and SVMs must be peered.

For more information, see Create a cluster peer relationship (ONTAP 9.3 and later) and Create an SVM intercluster peer relationship (ONTAP 9.3 and later).

About this task

The `-identity-preserve` option of the `snapmirror create` command must be set to `true` when you create the SVM replication relationship.

For complete command syntax, see the man page.

Steps

1. Create a destination SVM:

   `vserver create -vserver SVM -subtype dp-destination`

   The SVM name must be unique across the source and destination clusters.

   The following example creates a destination SVM named `svm_backup`:

   ```
   cluster_dst:> vserver create -vserver svm_backup -subtype dp-destination
   ```

2. From the destination cluster, create an SVM peer relationship using the `vserver peer create` command.

   For more information, see Create an SVM intercluster peer relationship (ONTAP 9.3 and later).

3. Create a job schedule:

   `job schedule cron create -name job_name -month month -dayofweek day_of_week -day day_of_month -hour hour -minute minute`

   For `-month`, `-dayofweek`, and `-hour`, you can specify `all` to run the job every month, day of the week, and hour, respectively.

   The following example creates a job schedule named `my_weekly` that runs on Saturdays at 3:00 a.m.:

   ```
   cluster_dst::> job schedule cron create -name my_weekly -dayofweek
   "Saturday" -hour 3 -minute 0
   ```

4. Create a custom replication policy:

   `snapmirror policy create -vserver SVM -policy policy -type async-mirror|vault|mirror-vault -comment comment -tries transfer_tries -transfer -priority low|normal -is-network-compression-enabled true|false -discard -configs network`

   For complete command syntax, see the man page.

   The following example creates a custom replication policy for SnapMirror DR that excludes LIFs:

   ```
   cluster_dst::> snapmirror policy create -vserver svm1 -policy
   DR_exclude_LIFs -type async-mirror -discard-configs network
   ```

   The following example creates a custom replication policy for unified replication that excludes LIFs:

```
cluster_dst::> snapmirror policy create -vserver svm1 -policy
unified_exclude_LIFs -type mirror-vault -discard-configs network
```

5. From the destination SVM or the destination cluster, run the following command to create a replication relationship:

   `snapmirror create -source-path SVM: -destination-path SVM: -type DP|XDP -schedule schedule -policy policy -identity-preserve true|false`

   > You must enter a colon (:) after the SVM name in the `-source-path` and `-destination-path` options. See the examples below.

   The following example creates a SnapMirror DR relationship that excludes LIFs:

   ```
   cluster_dst::> snapmirror create -source-path svm1: -destination-path
   svm_backup: -type XDP -schedule my_daily -policy DR_exclude_LIFs
   -identity-preserve true
   ```

   The following example creates a SnapMirror unified replication relationship that excludes LIFs:

   ```
   cluster_dst::> snapmirror create -source-path svm1: -destination-path
   svm_backup: -type XDP -schedule my_daily -policy unified_exclude_LIFs
   -identity-preserve true
   ```

6. Stop the destination SVM:

   `vserver stop`

   SVM name

   The following example stops a destination SVM named dvs1:

   ```
   cluster_dst::> vserver stop -vserver dvs1
   ```

7. From the destination SVM or the destination cluster, initialize a replication relationship:

   `snapmirror initialize -source-path SVM: -destination-path SVM:`

   For complete command syntax, see the man page.

   The following example initializes the relationship between the source, `svm1` and the destination, `svm_backup`:

```
cluster_dst::> snapmirror initialize -source-path svm1: -destination
-path svm_backup:
```

After you finish

You must configure the network and protocols on the destination SVM for data access in the event a disaster occurs.

Exclude network, name service, and other settings from SVM replication

You can use the `-identity-preserve false` option of the `snapmirror create` command to replicate only the volumes and security configurations of an SVM. Some protocol and name service settings are also preserved.

What you'll need

The source and destination clusters and SVMs must be peered.

For more information, see Create a cluster peer relationship (ONTAP 9.3 and later) and Create an SVM intercluster peer relationship (ONTAP 9.3 and later).

About this task

For a list of preserved protocol and name service settings, see Configurations replicated in SVM DR relationships.

For complete command syntax, see the man page.

Steps

1. Create a destination SVM:

   `vserver create -vserver` *`SVM`* `-subtype dp-destination`

   The SVM name must be unique across the source and destination clusters.

   The following example creates a destination SVM named `svm_backup`:

   ```
   cluster_dst:> vserver create -vserver svm_backup -subtype dp-destination
   ```

2. From the destination cluster, create an SVM peer relationship using the `vserver peer create` command.

   For more information, see Create an SVM intercluster peer relationship (ONTAP 9.3 and later).

3. Create a replication job schedule:

   `job schedule cron create -name` *`job_name`* `-month` *`month`* `-dayofweek` *`day_of_week`* `-day` *`day_of_month`* `-hour` *`hour`* `-minute` *`minute`*

For `-month`, `-dayofweek`, and `-hour`, you can specify `all` to run the job every month, day of the week, and hour, respectively.

The following example creates a job schedule named `my_weekly` that runs on Saturdays at 3:00 a.m.:

```
cluster_dst::> job schedule cron create -name my_weekly -dayofweek
"Saturday" -hour 3 -minute 0
```

4. Create a replication relationship that excludes network, name service, and other configuration settings:

   `snapmirror create -source-path` *`SVM`*`: -destination-path` *`SVM`*`: -type DP|XDP -schedule schedule -policy policy -identity-preserve false`

   > You must enter a colon (:) after the SVM name in the `-source-path` and `-destination-path` options. See the examples below. You must run this command from the destination SVM or the destination cluster.

   The following example creates a SnapMirror DR relationship using the default `MirrorAllSnapshots` policy. The relationship excludes network, name service, and other configuration settings from SVM replication:

   ```
   cluster_dst::> snapmirror create -source-path svm1: -destination-path
   svm_backup: -type XDP -schedule my_daily -policy MirrorAllSnapshots
   -identity-preserve false
   ```

   The following example creates a unified replication relationship using the default `MirrorAndVault` policy. The relationship excludes network, name service, and other configuration settings:

   ```
   cluster_dst:> snapmirror create svm1: -destination-path svm_backup:
   -type XDP -schedule my_daily -policy MirrorAndVault -identity-preserve
   false
   ```

   Assuming you have created a custom policy with the policy type `async-mirror`, the following example creates a SnapMirror DR relationship. The relationship excludes network, name service, and other configuration settings from SVM replication:

   ```
   cluster_dst::> snapmirror create -source-path svm1: -destination-path
   svm_backup: -type XDP -schedule my_daily -policy my_mirrored -identity
   -preserve false
   ```

   Assuming you have created a custom policy with the policy type `mirror-vault`, the following example creates a unified replication relationship. The relationship excludes network, name service, and other configuration settings from SVM replication:

```
cluster_dst::> snapmirror create -source-path svm1: -destination-path
svm_backup: -type XDP -schedule my_daily -policy my_unified -identity
-preserve false
```

5. Stop the destination SVM:

   `vserver stop`

   SVM name

   The following example stops a destination SVM named dvs1:

```
destination_cluster::> vserver stop -vserver dvs1
```

6. If you are using SMB, you must also configure an SMB server.

   See SMB only: Creating an SMB server.

7. From the destination SVM or the destination cluster, initialize the SVM replication relationship:

   `snapmirror initialize -source-path` *SVM_name*`: -destination-path` *SVM_name*`:`

After you finish

You must configure the network and protocols on the destination SVM for data access in the event a disaster occurs.

Specify aggregates to use for SVM DR relationships

After a disaster recovery SVM is created, you can use the `aggr-list` option with `vserver modify` command to limit which aggregates are used to host SVM DR destination volumes.

Step

1. Create a destination SVM:

   `vserver create -vserver` *SVM* `-subtype dp-destination`

2. Modify the disaster recovery SVM's aggr-list to limit the aggregates that are used to host the disaster recovery SVM's volume:

   `cluster_dest::> vserver modify -vserver` *SVM* `-aggr-list <comma-separated-list>`

SMB only: Create a SMB server

If the source SVM has an SMB configuration, and you chose to set `identity-preserve` to `false`, you must create a SMB server for the destination SVM. SMB server

is required for some SMB configurations, such as shares during initialization of the SnapMirror relationship.

Steps

1. Start the destination SVM by using the `vserver start` command.

```
destination_cluster::> vserver start -vserver dvs1
[Job 30] Job succeeded: DONE
```

2. Verify that the destination SVM is in the `running` state and subtype is `dp-destination` by using the `vserver show` command.

```
destination_cluster::> vserver show
                                  Admin      Operational Root
Vserver  Type    Subtype          State      State       Volume
Aggregate
-------- ------- ----------       ---------- ----------- ----------
----------
dvs1     data    dp-destination    running    running       -         -
```

3. Create a LIF by using the `network interface create` command.

```
destination_cluster::>network interface create -vserver dvs1 -lif NAS1
-role data -data-protocol cifs -home-node destination_cluster-01 -home
-port a0a-101  -address 192.0.2.128 -netmask 255.255.255.128
```

4. Create a route by using the `network route create` command.

```
destination_cluster::>network route create -vserver dvs1 -destination
0.0.0.0/0
-gateway 192.0.2.1
```

Network management

5. Configure DNS by using the `vserver services dns create` command.

```
destination_cluster::>vserver services dns create -domains
mydomain.example.com -vserver
dvs1 -name-servers 192.0.2.128 -state enabled
```

6. Add the preferred domain controller by using the `vserver cifs domain preferred-dc add` command.

```
destination_cluster::>vserver cifs domain preferred-dc add -vserver dvs1
-preferred-dc
192.0.2.128 -domain mydomain.example.com
```

7. Create the SMB server by using the `vserver cifs create` command.

```
destination_cluster::>vserver cifs create -vserver dvs1 -domain
mydomain.example.com
-cifs-server CIFS1
```

8. Stop the destination SVM by using the `vserver stop` command.

```
destination_cluster::> vserver stop -vserver dvs1
[Job 46] Job succeeded: DONE
```

Exclude volumes from SVM replication

By default, all RW data volumes of the source SVM are replicated. If you do not want to protect all the volumes on the source SVM, you can use the `-vserver-dr -protection unprotected` option of the `volume modify` command to exclude volumes from SVM replication.

Steps

1. Exclude a volume from SVM replication:

   `volume modify -vserver` *`SVM`* `-volume` *`volume`* `-vserver-dr-protection unprotected`

   For complete command syntax, see the man page.

   The following example excludes the volume `volA_src` from SVM replication:

```
cluster_src::> volume modify -vserver SVM1 -volume volA_src -vserver-dr
-protection unprotected
```

   If you later want to include a volume in the SVM replication that you originally excluded, run the following command:

   `volume modify -vserver` *`SVM`* `-volume` *`volume`* `-vserver-dr-protection protected`

   The following example includes the volume `volA_src` in the SVM replication:

```
cluster_src::> volume modify -vserver SVM1 -volume volA_src -vserver-dr
-protection protected
```

2. Create and initialize the SVM replication relationship as described in Replicating an entire SVM configuration.

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