Restore SQL Server resources

SnapCenter Software

NetApp
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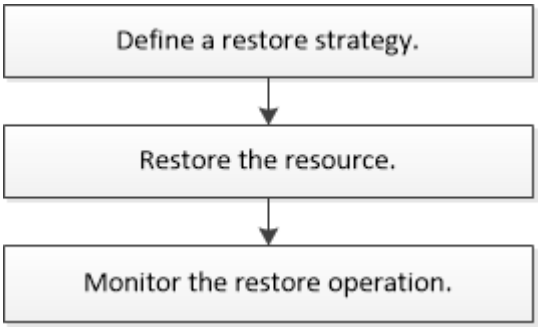
Restore SQL Server resources

You can use SnapCenter to restore SQL Server databases by restoring the data from one or more backups to your active file system and then recovering the database. You can also restore databases that are in Availability Groups and then add the restored databases to the Availability Group. Before restoring an SQL Server database, you must perform several preparatory tasks.

The following workflow shows the sequence in which you must perform the database restoration operations:



You can also use PowerShell cmdlets manually or in scripts to perform backup, restore, recovery, verify, and clone operations. For detailed information about PowerShell cmdlets, use the SnapCenter cmdlet help or see the SnapCenter Software 4.4 Cmdlet Reference Guide

Find more information

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Restore operation might fail on Windows 2008 R2

Requirements for restoring a database

Before you restore a SQL Server database from a SnapCenter Plug-in for Microsoft SQL Server backup, you must ensure that several requirements are met.

- The SQL Server instance must be online and running before you can restore a database.

  This applies to both user database restore operations and system database restore operations.

- SnapCenter operations that are scheduled to run against the SQL Server data you are restoring must be disabled, including any jobs scheduled on remote management or remote verification servers.
- If system databases are not functional, you must first rebuild the system databases using a SQL Server utility.
- If you are installing the plug-in, ensure that you grant permissions for other roles to restore the Availability Group (AG) backups.

  Restoring AG fails when one of the following conditions are met:

  - If the plug-in is installed by RBAC user and an admin tries to restore an AG backup

    - If the plug-in is installed by an admin and a RBAC user tries to restore an AG backup
- If you are restoring custom log directory backups to an alternate host, the SnapCenter Server and the plug-in host must have the same SnapCenter version installed.
- You must have installed Microsoft hotfix, KB2887595. The Microsoft Support Site contains more information about KB2887595.

  Microsoft Support Article 2887595: Windows RT 8.1, Windows 8.1, and Windows Server 2012 R2 update rollup: November 2013

- You must have backed up the resource groups or database.
- If you are replicating Snapshot copies to a mirror or vault, the SnapCenter administrator must have assigned you the storage virtual machines (SVMs) for both the source volumes and destination volumes.

  For information about how administrators assign resources to users, see the SnapCenter installation information.

- All backup and clone jobs must be stopped before restoring the database.
- The restore operation might timeout if the database size is in terabytes (TB).

  You must increase the value of the RESTTimeout parameter of SnapCenter Server to 20000000 ms by running the following command: Set-SmConfigSettings -Agent -configSettings @{"RESTTimeout" = "2000000"}. According to the size of the database, the timeout value can be changed and the maximum value that you can set is 2147483648.

If you want to restore while the databases are online, the online restore option should be enabled in the Restore page.

Restore SQL Server database backups

You can use SnapCenter to restore backed-up SQL Server databases. Database restoration is a multiphase process that copies all of the data and log pages from a specified SQL Server backup to a specified database.

About this task

- You can restore the backed-up SQL Server databases to a different SQL Server instance on the same host where the backup was created.

  You can use SnapCenter to restore the backed-up SQL Server databases to an alternate path so that you do not replace a production version.

- SnapCenter can restore databases in a Windows cluster without taking the SQL Server cluster group offline.
- If a cluster failure (a cluster group move operation) occurs during a restore operation (for example, if the node that owns the resources goes down), you must reconnect to the SQL Server instance, and then restart the restore operation.
- You cannot restore the database when the users or the SQL Server Agent jobs are accessing the database.
- You cannot restore system databases to an alternate path.

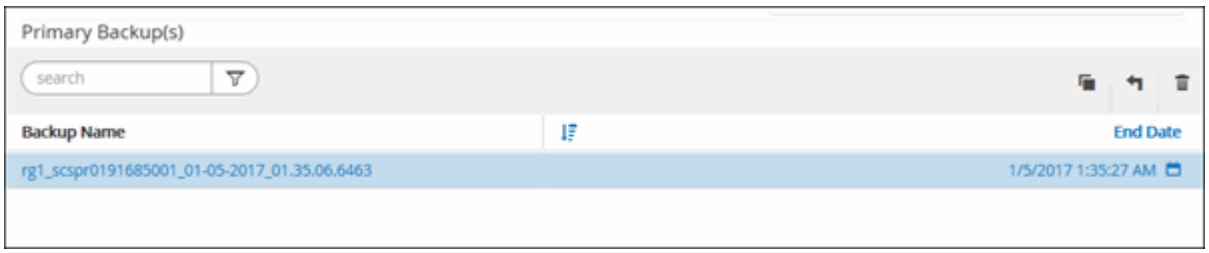
- Most of the fields on the Restore wizard pages are self-explanatory. The following information describes fields for which you might need guidance.

Steps

1. In the left navigation pane, click **Resources**, and then select the appropriate plug-in from the list.
2. In the **Resources** page, select either **Database** or **Resource Group** from the **View** list.
3. Select the database or the resource group from the list.

   The topology page is displayed.

4. From the **Manage Copies** view, select **Backups** from the storage system.
5. Select the backup from the table, and then click the  icon.



6. On the **Restore Scope** page, select one of the following options:

Option	Description
Restore the database to the same host where the backup was created	Select this option if you want to restore the database to the same SQL server where the backups are taken.
Restore the database to an alternate host	Select this option if you want the database to be restored to a different SQL server in the same or different host where backups are taken. Select a host name, provide a database name (optional), select an instance, and specify the restore paths. The file extension provided in the alternate path must be same as the file extension of the original database file. If the **Restore the database to an alternate host** option is not displayed in the Restore Scope page, clear the browser cache.

Option	Description
Restore the database using existing database files	Select this option if you want the database to be restored to an alternate SQL Server in the same or different host where backups are taken. Database files should be already present on the given existing file paths. Select a host name, provide a database name (optional), select an instance, and specify the restore paths.

7. On the **Recovery Scope** page, select one of the following options:

Option	Description
None	Select **None** when you need to restore only the full backup without any logs.
All log backups	Select **All log backups** up-to-the-minute backup restore operation to restore all of the available log backups after the full backup.
By log backups until	Select **By log backups** to perform a point-in-time restore operation, which restores the database based on backup logs until the backup log with the selected date.
By specific date until	Select **By specific date until** to specify the date and time after which transaction logs are not applied to the restored database. This point-in-time restore operation halts the restoration of transaction log entries that were recorded after the specified date and time.
Use custom log directory	If you have selected **All log backups**, **By log backups**, or **By specific date until** and the logs are located at a custom location, select **Use custom log directory**, and then specify the log location. The custom log directory is not supported for availability group database.

8. On the **Pre Ops** page, perform the following steps:
   a. On the **Pre Restore Options** page, select one of the following options:
      - Select **Overwrite the database with same name during restore** to restore the database with the same name.

- Select **Retain SQL database replication settings** to restore the database and retain the existing replication settings.
- Select **Create transaction log backup before restore** to create a transaction log before the restore operation begins.
- Select **Quit restore if transaction log backup before restore fails** to abort the restore operation if the transaction log backup fails.

b. Specify optional scripts to run before performing a restore job.

For example, you can run a script to update SNMP traps, automate alerts, send logs, and so on.

9. On the **Post Ops** page, perform the following steps:
   a. In the Choose database state after restore completes section, select one of the following options:
      - Select **Operational, but unavailable for restoring additional transaction logs** if you are restoring all of the necessary backups now.

        This is the default behavior, which leaves the database ready for use by rolling back the uncommitted transactions. You cannot restore additional transaction logs until you create a backup.

      - Select **Non-operational, but available for restoring additional transactional logs** to leave the database non-operational without rolling back the uncommitted transactions.

        Additional transaction logs can be restored. You cannot use the database until it is recovered.

      - Select **Read-only mode, available for restoring additional transactional logs** to leave the database in read-only mode.

        This option undoes uncommitted transactions, but saves the undone actions in a standby file so that recovery effects can be reverted.

        If the Undo directory option is enabled, more transaction logs are restored. If the restore operation for the transaction log is unsuccessful, the changes can be rolled back. The SQL Server documentation contains more information.

   b. Specify optional scripts to run after performing a restore job.

      For example, you can run a script to update SNMP traps, automate alerts, send logs, and so on.

10. On the **Notification** page, from the **Email preference** drop-down list, select the scenarios in which you want to send the emails.

    You must also specify the sender and receiver email addresses, and the subject of the email.

11. Review the summary, and then click **Finish**.
12. Monitor the restore process by using the **Monitor** > **Jobs** page.

Find more information

Restore and recover resources using PowerShell cmdlets

Restore an SQL Server database from secondary storage

Restore an SQL Server database from secondary storage

You can restore the backed-up SQL Server databases from the physical LUNs (RDM, iSCSI, or FCP) on a secondary storage system. The Restore feature is a multiphase process that copies all of the data and the log pages from a specified SQL Server backup residing on the secondary storage system to a specified database.

What you will need

- You must have replicated the Snapshot copies from primary to secondary storage system.
- You must ensure that the SnapCenter Server and the plug-in host are able to connect to the secondary storage system.
- Most of the fields on the Restore wizard pages are explained in the basic restore process. The following information describes some of the fields for which you might need guidance.

Steps

1. In the left navigation pane, click **Resources**, and then select the appropriate plug-in from the list.
2. On the Resources page, select **Database** or **Resource Group** from the **View** drop-down list.
3. Select the database or resource group.

   The database or resource group topology page is displayed.
4. In the Manage Copies section, select **Backups** from the secondary storage system (mirrored or vault).
5. Select the backup from the list, and then click  .
6. On the **Location** page, choose the destination volume for restoring selected resource.
7. Complete the Restore wizard, review the summary, and then click **Finish**.

If you restored a database to a different path that is shared by other databases, you should perform a full backup and backup verification to confirm that your restored database is free of physical-level corruption.

Reseed Availability Group databases

Reseed is an option to restore Availability Group (AG) databases. If a secondary database gets out of synchronization with the primary database in an AG, you can reseed the secondary database.

What you will need

- You must have created backup of secondary AG database that you want to restore.
- The SnapCenter Server and the plug-in host must have the same SnapCenter version installed.

About this task

- You cannot perform reseed operation on primary databases.
- You cannot perform a reseed operation if the replica database is removed from the availability group. When the replica is removed, the reseed operation fails.

- While running the reseed operation on SQL Availability Group database, you should not trigger log backups on the replica databases of that availability group database. If you trigger log backups during reseed operation, the reseed operation fails with The mirror database, "database_name" has insufficient transaction log data to preserve the log backup chain of the principal database error message.

Steps

1. In the left navigation pane, click **Resources**, and then select the appropriate plug-in from the list.
2. In the **Resources** page, select **Database** from the **View** list.
3. Select secondary AG database from the list.
4. Click **Reseed**.
5. Monitor the operation progress by clicking **Monitor** > **Jobs**.

Restore resources using PowerShell cmdlets

Restoring a resource backup includes initiating a connection session with the SnapCenter Server, listing the backups and retrieving backup information, and restoring a backup.

You must have prepared the PowerShell environment to execute the PowerShell cmdlets.

Steps

1. Initiate a connection session with the SnapCenter Server for a specified user by using the Open-SmConnection cmdlet.

```
Open-smconnection  -SMSbaseurl  https:\\snapctr.demo.netapp.com:8146/
```

2. Retrieve the information about the one or more backups that you want to restore by using the Get-SmBackup and Get-SmBackupReport cmdlets.

   This example displays information about all available backups:

```
 C:\PS>PS C:\> Get-SmBackup

        BackupId                      BackupName
BackupTime                    BackupType
        --------                      ----------
----------                    ----------
         1                     Payroll Dataset_vise-f6_08... 8/4/2015
11:02:32 AM          Full Backup
         2                     Payroll Dataset_vise-f6_08... 8/4/2015
11:23:17 AM
```

   This example displays detailed information about the backup from January 29th 2015 to February 3rd, 2015:

```
PS C:\> Get-SmBackupReport -FromDateTime "1/29/2015" -ToDateTime
"2/3/2015"

SmBackupId           : 113
   SmJobId              : 2032
   StartDateTime        : 2/2/2015 6:57:03 AM
   EndDateTime          : 2/2/2015 6:57:11 AM
   Duration             : 00:00:07.3060000
   CreatedDateTime      : 2/2/2015 6:57:23 AM
   Status               : Completed
   ProtectionGroupName  : Clone
   SmProtectionGroupId  : 34
   PolicyName           : Vault
   SmPolicyId           : 18
   BackupName           : Clone_SCSPR0019366001_02-02-2015_06.57.08
   VerificationStatus   : NotVerified

   SmBackupId           : 114
   SmJobId              : 2183
   StartDateTime        : 2/2/2015 1:02:41 PM
   EndDateTime          : 2/2/2015 1:02:38 PM
   Duration             : -00:00:03.2300000
   CreatedDateTime      : 2/2/2015 1:02:53 PM
   Status               : Completed
   ProtectionGroupName  : Clone
   SmProtectionGroupId  : 34
   PolicyName           : Vault
   SmPolicyId           : 18
   BackupName           : Clone_SCSPR0019366001_02-02-2015_13.02.45
   VerificationStatus   : NotVerified
```

3. Restore data from the backup by using the Restore-SmBackup cmdlet.

```
Restore-SmBackup -PluginCode 'DummyPlugin' -AppObjectId
'scc54.sccore.test.com\DummyPlugin\NTP\DB1' -BackupId 269
-Confirm:$false
output:
Name                 : Restore
'scc54.sccore.test.com\DummyPlugin\NTP\DB1'
Id                   : 2368
StartTime            : 10/4/2016 11:22:02 PM
EndTime              :
IsCancellable        : False
IsRestartable        : False
IsCompleted          : False
IsVisible            : True
IsScheduled          : False
PercentageCompleted : 0
Description          :
Status               : Queued
Owner                :
Error                :
Priority             : None
Tasks                : {}
ParentJobID          : 0
EventId              : 0
JobTypeId            :
ApisJobKey           :
ObjectId             : 0
PluginCode           : NONE
PluginName           :
```

The information regarding the parameters that can be used with the cmdlet and their descriptions can be obtained by running *Get-Help command_name*. Alternatively, you can also refer to the SnapCenter Software Cmdlet Reference Guide.

Monitor SQL resources restore operations

You can monitor the progress of different SnapCenter restore operations by using the Jobs page. You might want to check the progress of an operation to determine when it is complete or if there is an issue.

About this task

Post-restore states describe the conditions of the resource after a restore operation and any further restore actions that you can take.

The following icons appear on the Jobs page, and indicate the state of the operation:

- In progress

- Completed successfully
- Failed
- Completed with warnings or could not start due to warnings
- Queued
- Canceled

Steps

1. In the left navigation pane, click **Monitor**.
2. In the **Monitor** page, click **Jobs**.
3. On the **Jobs** page, perform the following steps:
   a. Click to filter the list so that only restore operations are listed.
   b. Specify the start and end dates.
   c. From the **Type** drop-down list, select **Restore**.
   d. From the **Status** drop-down list, select the restore status.
   e. Click **Apply** to view the operations that have been completed successfully.
4. Select the restore job, and then click **Details** to view the job details.
5. On the **Job Details** page, click **View logs**.

   The **View logs** button displays the detailed logs for the selected operation.

After the volume based restore operation, the backup metadata is deleted from the SnapCenter repository but the backup catalog entries remain in SAP HANA catalog. Though the backup job status displays , you should click on job details to see the warning sign of some of the child tasks. Click on the warning sign and delete the indicated backup catalog entries.

Cancel SQL resources restore operations

You can cancel restore jobs that are queued.

You should be logged in as the SnapCenter Admin or job owner to cancel restore operations.

About this task

- You can cancel a restore operation from either the Monitor page or the Activity pane.
- You cannot cancel a running restore operation.
- You can use the SnapCenter GUI, PowerShell cmdlets, or CLI commands to cancel the restore operations.
- The **Cancel Job** button is disabled for restore operations that cannot be canceled.
- If you selected **All members of this role can see and operate on other members objects** in Users\Groups page while creating a role, you can cancel the queued backup operations of other members while using that role.

Step

Perform one of the following actions:

From the…	Action
Monitor page	a. In the left navigation pane, click **Monitor** > **Jobs**. b. Select the job and click **Cancel Job**.
Activity pane	a. After initiating the restore operation, click  on the Activity pane to view the five most recent operations. b. Select the operation. c. In the Job Details page, click **Cancel Job**.