Restore SAP HANA Databases

SnapCenter Software 4.5

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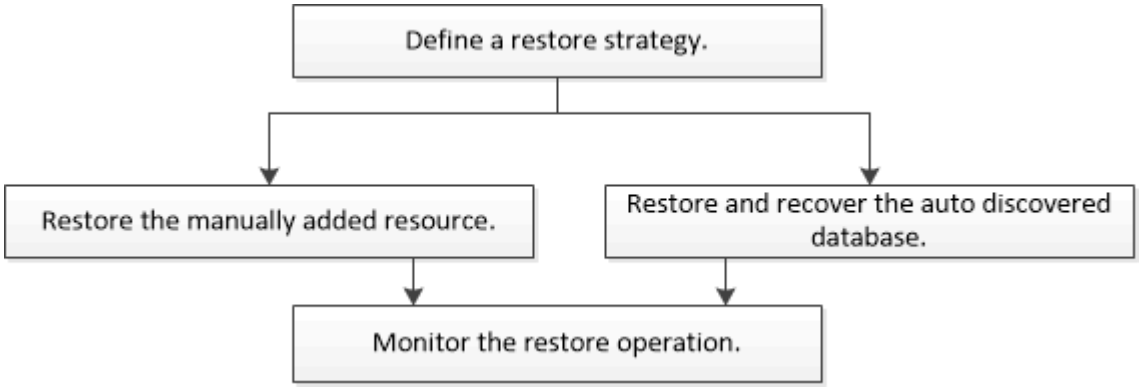
Restore SAP HANA Databases

Restore workflow

The restore and recovery workflow includes planning, performing the restore operations, and monitoring the operations.

The following workflow shows the sequence in which you must perform the restore operation:



You can also use PowerShell cmdlets manually or in scripts to perform backup, restore, and clone operations. The SnapCenter cmdlet help and the cmdlet reference information contain detailed information about PowerShell cmdlets.

SnapCenter Software Cmdlet Reference Guide.

Restore and recover a manually added resource backup

You can use SnapCenter to restore and recover data from one or more backups.

What you will need

- You must have backed up the resource or resource groups.
- You must have canceled any backup operation that is currently in progress for the resource or resource group that you want to restore.

About this task

- File-based backup copies cannot be restored from SnapCenter.
- After upgrading to SnapCenter 4.3, the backups taken in SnapCenter 4.2 can be restored but cannot be recovered. You must use HANA studio or HANA recovery scripts external to SnapCenter to recover the backups taken in SnapCenter 4.2.

Steps

1. In the left navigation pane, click **Resources**, and then select the appropriate plug-in from the list.
2. On the **Resources** page, filter resources from the **View** drop-down list based on resource type.

   The resources are displayed along with type, host, associated resource groups and policies, and status.

Although a backup might be for a resource group, when you restore, you must select the individual resources you want to restore.

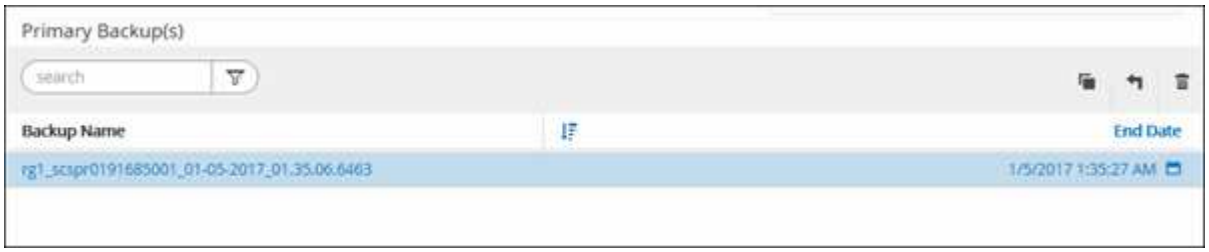
If the resource is not protected, “Not protected” is displayed in the Overall Status column. This can mean either that the resource is not protected, or that the resource was backed up by a different user.

3. Select the resource, or select a resource group and then select a resource in that group.

   The resource topology page is displayed.

4. From the Manage Copies view, select **Backups** either from the primary or secondary (mirrored or vaulted) storage systems.

5. In the Primary backup(s) table, select the backup that you want to restore from, and then click .



6. In the **Restore Scope** page, select either **Complete Resource** or **File Level**.

   a. If you select **Complete Resource**, all of the configured data volumes of the SAP HANA database are restored.

      If the resource contains volumes or qtrees, the Snapshot copies taken after the Snapshot copy selected for restore on such volumes or qtrees are deleted and cannot be recovered. Also, if any other resource is hosted on same volumes or qtrees, then that resource is also deleted.

   b. If you select **File Level**, then you can either select **All** or select the specific volumes or qtrees, and then enter the path related to those volumes or qtrees, separated by commas

      - You can select multiple volumes and qtrees.
      - If the resource type is LUN, the entire LUN is restored.

        You can select multiple LUNs.

If you select **All**, all the files on the volumes, qtrees, or LUNs are restored.

7. On the **Pre ops** page, enter pre restore and unmount commands to run before performing a restore job.

   Unmount commands are not available for auto discovered resources.

8. On the **Post ops** page, enter mount and post restore commands to run after performing a restore job.

   Mount commands are not available for auto discovered resources.

9. 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. SMTP must

also be configured on the **Settings** > **Global Settings** page.

10. Review the summary, and then click **Finish**.
11. Monitor the operation progress by clicking **Monitor** > **Jobs**.

Restore and recover an auto discovered database backup

You can use SnapCenter to restore and recover data from one or more backups.

What you will need

- You must have backed up the resource or resource groups.
- You must have canceled any backup operation that is currently in progress for the resource or resource group that you want to restore.

About this task

- File-based backup copies cannot be restored from SnapCenter.
- After upgrading to SnapCenter 4.3, the backups taken in SnapCenter 4.2 can be restored but cannot be recovered. You must use HANA studio or HANA recovery scripts external to SnapCenter to recover the backups taken in SnapCenter 4.2.

Steps

1. In the left navigation pane, click **Resources**, and then select the appropriate plug-in from the list.
2. On the **Resources** page, filter resources from the **View** drop-down list based on resource type.

   The resources are displayed along with type, host, associated resource groups and policies, and status.

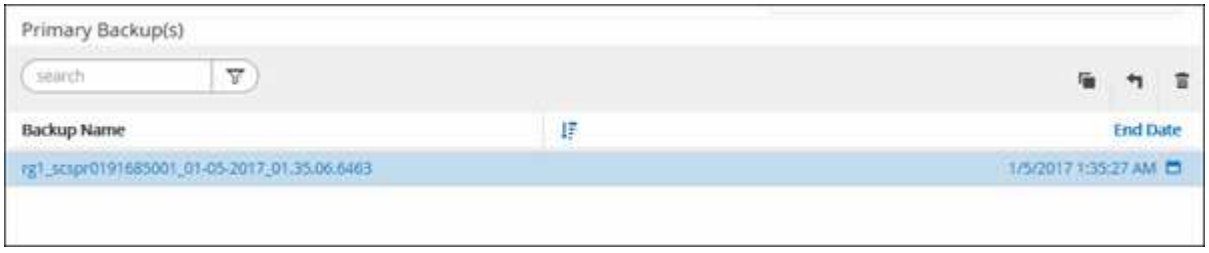
   Although a backup might be for a resource group, when you restore, you must select the individual resources you want to restore.

   If the resource is not protected, “Not protected” is displayed in the Overall Status column. This can mean either that the resource is not protected, or that the resource was backed up by a different user.

3. Select the resource, or select a resource group and then select a resource in that group.

   The resource topology page is displayed.

4. From the Manage Copies view, select **Backups** either from the primary or secondary (mirrored or vaulted) storage systems.
5. In the Primary backup(s) table, select the backup that you want to restore from, and then click .



6. In the **Restore Scope** page, select **Complete Resource** to restore the configured data volumes of the SAP HANA database.

   You can select either **Complete Resource** (with or without **Volume Revert**), or **Tenant Database**.

   Recovery operation is not supported by SnapCenter Server for multiple tenants when user selects either the **Tenant Database** or **Complete Restore** option. You must use HANA studio or HANA python script to perform the recovery operation.

   a. Select **Volume Revert** if you want to restore the entire volume.

      This option is available for backups taken in SnapCenter 4.3 in NFS environments.

      If the resource contains volumes or qtrees, the Snapshot copies taken after the Snapshot copy selected for restore on such volumes or qtrees are deleted and cannot be recovered. Also, if any other resource is hosted on the same volumes or qtrees, then that resource is also deleted. This is applicable when **Complete Resource** with **Volume Revert** option is selected for restore.

   b. Select **Tenant Database**.

      This option is available only for MDC resources.

      Ensure to stop the tenant database before performing the restore operation.

      If you select **Tenant Database** option, you must use HANA studio or use HANA recovery scripts external to SnapCenter to perform recovery operation.

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

If you…	Do this…
Want to recover as close as possible to the current time	Select **Recover to most recent state**. For single container resources specify one or more log and catalog backup locations. For multitenant database container (MDC) resources specify one or more log backup locations and the backup catalog location. For MDC resources, the path should contain both system database and tenant database logs.

If you…	Do this…
Want to recover to the specified point in time	Select **Recover to point in time**. a. Select the time zone. Browser timezone is populated by default. The selected time zone along with the input time is converted to absolute GMT. b. Enter date and time. For example, the HANA Linux host is located in Sunnyvale, CA and the user in Raleigh, NC is recovering the logs in to SnapCenter. The time difference between both these locations is 3 hours, and since the user has logged in from Raleigh, NC, the default browser time zone that will be selected in the GUI is GMT-04:00. If the user wants to perform a recovery to 5 a.m .Sunnyvale, CA, then the user has to set the browser time zone to the HANA Linux host time zone, which is GMT-07:00 and specify the date and time as 5:00 a.m. For single container resources specify one or more log and catalog backup locations. For MDC resources, specify one or more log backup locations and the backup catalog location. For MDC resources, the path should contain both system database and tenant database logs.
Want to recover to a specific data backup	Select **Recover to specified data backup**.
Do not want to recover	Choose **No recovery**. You must perform the recovery operation manually from the HANA studio.

You can recover only those backups that are taken after upgrading to SnapCenter 4.3, provided both the host and the plug-in are upgraded to SnapCenter 4.3, and the backups selected for restore are taken after the resource is converted or discovered as auto discovered resource.

8. On the **Pre ops** page, enter pre restore and unmount commands to run before performing a restore job.

   Unmount commands are not available for auto discovered resources.

9. On the **Post ops** page, enter mount and post restore commands to run after performing a restore job.

Mount commands are not available for auto discovered resources.

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. SMTP must also be configured on the **Settings** > **Global Settings** page.

11. Review the summary, and then click **Finish**.
12. Monitor the operation progress by clicking **Monitor** > **Jobs**.

Restore SAP HANA database using PowerShell cmdlets

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

What you will need

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. Identify the backup that you want to restore by using the Get-SmBackup and Get-SmBackupReport cmdlets.

   This example shows that there are two backups available for the restore:

```
 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. Start the recovery process in the HANA studio.

   The database is shut down.

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

> AppObjectId is "Host\Plugin\UID", where UID = SID is for single container type resource and UID = MDC\SID is for multiple containers resource. You can get the ResourceID from the Get-smResources cmdlet.

```
Get-smResources  -HostName cn24.sccore.test.com  -PluginCode HANA
```

This example shows how to restore the database from the primary storage:

```
Restore-SmBackup -PluginCode HANA -AppObjectId
cn24.sccore.test.com\hana\H10 -BackupId 3
```

This example shows how to restore the database from the secondary storage:

```
Restore-SmBackup -PluginCode 'HANA' -AppObjectId
cn24.sccore.test.com\hana\H10 -BackupId 399 -Confirm:$false  -Archive @(
@{"Primary"="<Primary Vserver>:<PrimaryVolume>";"Secondary"="<Secondary
Vserver>:<SecondaryVolume>"})
```

The backups will be available in HANA studio for recovery.

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.

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 SAP HANA databases 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 restore 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.

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