

Contents

SAP HANA	1
SAP HANA Configuration.....	3
Creating the SAP HANA HDBUSERSTORE KEY.....	3
Creating the SAP HANA Parameter File	5
Enabling SSL Communication with the SAP HANA System	7
SAP HANA Restores	8
Restoring SAP HANA Database to Its Current Location (In Place).....	8
Restoring a SAP HANA Database to a Different Location (Out of Place).....	9

SAP HANA

You can use the Metallic software to back up and restore SAP HANA. SAP HANA is also supported in a multi-tenant environment.

Backups

Data You Can Back Up

- All of the database files on each of the nodes
- The log files on each of the nodes
- The catalog files

Data That Cannot Be Backed Up

- SAP HANA application profiles and binaries that are associated with the SAP HANA installation.

Backups You Can Perform

- Full backups
- Incremental backups
- Differential backups

When You Can Perform Backups

- On a schedule: The server plan that you assign manages scheduled backups
- On demand: You can perform on-demand backups at any time

Restores

Data You Can Restore

- Full Database: This restore operation includes the database and the log files
- Data Only

Backups You Can Use for Restores

- The most recent backup
- A backup from a specific date (point-in-time)
- A backup identified by a backup prefix or a internal backup job ID

Destinations You Can Restore To

- Destination server is where you performed the backup operation
- Destination server is different from where you performed the backup

SAP HANA Configuration

Configure SAP HANA.

Creating the SAP HANA HDBUSERSTORE KEY

To connect to the SAP HANA database by using the SAP HANA Secure User Store, create a SAP HANA HDBUSERSTORE key. Use a SAP HANA HDBUSERSTORE key instead of a user name and password so that users do not need to enter connection information.

Note: In a HANA replication setup, for example, if you have a replication system of HANA SID where the first two nodes (machine01 and machine 02) are master nodes, and the other two nodes (machine03 and machine04) are standby nodes, create the key on all nodes. When the master nodes are down and the standby nodes become the master nodes, the key will still remain valid and can connect to machine03 and machine04 when machine01 and machine02 are not available.

For information on the SAP Secure User Store, see *hdbuserstore* on the SAP (<https://help.sap.com/viewer/b3ee5778bc2e4a089d3299b82ec762a7/2.0.02/en-US/ddbdd66b632d4fe7b3c2e0e6e341e222.html>) website.

Before You Begin

Verify that the user associated with the HDBUSERSTORE key has the correct permissions:

- Backup operations: The DBA COCKPIT privilege is required. For more information, go to the SAP Documentation (<https://help.sap.com/viewer/6b94445c94ae495c83a19646e7c3fd56/2.0.04/en-US/c4b71703bb571014810ebb38dc59cf51.html>) site, DBA Cockpit for SAP HANA: Authorizations. In the Database Users section, look at the Customer-specific user row.

To create a SAP HANA database user that has the required backup operation privileges, run the following SQL command:

```
CREATE USER MY_BACKUP_USER PASSWORD BackupOnly01 NO
FORCE_FIRST_PASSWORD_CHANGE;
GRANT BACKUP ADMIN, DATABASE BACKUP ADMIN, CATALOG READ, INIFILE ADMIN TO
```

```
MY_BACKUP_USER;
```

where *MY_BACKUP_USER* is the user name and *BackupOnly1* is the password. The user must be created for the SYSTEMDB and all tenant databases, and the user must have the same password for each database.

- Restore operations or clone operations: To run the CREATE or RENAME statements, the DATABASE_ADMIN privilege is required. For more information, see the SAP documentation site, System Privileges
<https://help.sap.com/viewer/b3ee5778bc2e4a089d3299b82ec762a7/2.0.02/en-US/2a942546f16846d597177b3bfb1df04.html>.

To create a SAP HANA database user that has the required restore operation privileges, run the following SQL command:

```
CREATE USER MY_RESTORE_USER PASSWORD RestoreOnly01 NO
FORCE_FIRST_PASSWORD_CHANGE;
GRANT BACKUP ADMIN, DATABASE BACKUP ADMIN, DATABASE RECOVERY OPERATOR,
CATALOG READ, INIFILE ADMIN, DATABASE START, DATABASE STOP, TRACE ADMIN,
SERVICE ADMIN TO MY_RESTORE_USER;
```

Where *MY_RESTORE_USER* is the user name and *RestoreOnly1* is the password. The user must be created for the SYSTEMDB and all tenant databases, and the user must have the same password for each database.

Note: The DATABASE BACKUP ADMIN and DATABASE RECOVERY OPERATOR privileges are supported on SAP HANA 2.0 SPS05 and later versions.

Procedure

1. Log on as the <SID> admin in SAP HANA, on the command line, type the following command:

```
su - <SID>adm
hdbuserstore -i set <key_name>
<client_computer>:3NN13,<client_computer>:3NN15 <user_name> <password>
```

where *NN* is the HANA SID number starting from **00** to **99**.

Example:

- If you have HANA SID with One Node (machine01 only) with the SID name **X01** and instance number **10**, use the following command:

```
su - x01adm
hdbuserstore -i set MYKEY machine01:31013,machine01:31015 SYSTEM
Password@12
```

- If you have HANA SID with four nodes (machine01 to machine04) with SID name **Y01** and instance number **99**, then create the key only on the node that appears first in the SAP

HANA database instance or on the node that the user has manually set to appear as the first node. You do not create the KEY on the other three nodes. To create the key, use the following command:

```
su - y01adm
hdbuserstore -i set MYKEY
machine01:39913,machine01:39915,machine02:39913,machine02:39915,machine03:
39913,machine03:39915,machine04:39913,machine04:39915 SYSTEM Password@12
```

2. On the command line, type the following command to verify the key information.

```
hdbuserstore LIST <KEY>
```

where, *KEY* is the SAP HANA HDBUSERSSTORE key.

Example:

- To verify one node HANA SID machine01:

```
hdbuserstore list MYKEY
KEY MYKEY
  ENV : machine01:31013,machine01:31015
  USER: SYSTEM
```

- To verify four node HANA SID machine01 to machine04:

```
hdbuserstore list MYKEY
KEY MYKEY
  ENV :
machine01:39913,machine01:39915,machine02:39913,machine02:39915,machine03:
39913,machine03:39915,machine04:39913,machine04:39915
  USER: SYSTEM
```

Creating the SAP HANA Parameter File

You must create a parameter file when you perform certain types of backups and restores.

A parameter file is required for the following use cases:

- Perform a cross-machine restore. This includes a restore for disaster recovery.
- Perform a backup or restore for a multi-instance configuration.

Procedure

1. In the **iDataAgent** folder, on the host where you installed the SAP HANA agent, create the SAP HANA BACKINT parameter file.

For information about required and optional parameters, see SAP HANA BACKINT Configuration Parameters (on page 6).

2. Create the `/usr/sap/<SID>/SYS/global/hdb/opt/hdbconfig` directory.
3. To link the file to the specified location, on the command line, type the following command:

```
ln -s /opt/commvault/iDataAgent/param
/usr/sap/<SID>/SYS/global/hdb/opt/hdbconfig/param
```

where *param* is the name of the parameter file.

4. In the SAP HANA Studio, set the Backint data and log parameter files to the new parameter file.

For information about configuring the files, see [Configure a Third-Party Backup Tool](http://help.sap.com/saphelp_hanaplatform/helpdata/en/0c/88b2a28e60471b8dde8829dcf8196f/frameset.htm) (http://help.sap.com/saphelp_hanaplatform/helpdata/en/0c/88b2a28e60471b8dde8829dcf8196f/frameset.htm) on the SAP website.

Note: Enable the third-party log backup option. Set the option to true.

SAP HANA BACKINT Configuration Parameters

The following table defines the SAP HANA BACKINT configuration file parameters.

Parameter	Example	Definition
	CvInstanceName	The name of the configured instance.
	instance_name	This parameter is optional.
CvInstanceName	Example: CvInstanceName Instance001	
CV_restCopyPrec	CV_restCopyPrec	The copy precedence for the restore job.

copy_precedence

You must set this value to 0 if you restore from a selective copy.

Example:

```
CV_restCopyPrec
2
```

Enabling SSL Communication with the SAP HANA System

If the SAP HANA system is configured to use an SSL (Secure Sockets Layer) connection, you must enable the Metallic software to authenticate access to the SAP HANA system.

Before You Begin

If the SAP HANA environment uses a Secure Sockets Layer (SSL) connection, obtain the name of the SSL provider and the SSL trust store file that stores the CA-signed certificates.

Procedure

1. From the navigation pane, go to **Protect > Databases**.
The **Instances** page appears.
2. Click the SAP HANA instance.
The instance page appears.
3. In the **General** section, click **Edit**.
The **Edit SAP HANA instance** dialog box appears.
4. Move the **Enable SSL** toggle key to the right, and then provide the following details:
 - In the **Service Provider** box, type the service provider that is used for the SSL connection. For example, type **commoncrpto**.
 - In the **SSL Trust store** box, type the trust store name for the SSL connection. For example, type **sapcli.pse**.
5. Click **Save**.

SAP HANA Restores

You can restore a SAP HANA database to its current location (in place) or to a different location (out of place).

Restoring SAP HANA Database to Its Current Location (In Place)

You can restore a SAP HANA database to its current location (in place). The SAP HANA software brings the database down before the restore and brings it back up after the restore is complete.

To recover only the data, perform the restore by using a full backup.

Before You Begin

If you want to restore the most recent backup data and log files, stop the SAP HANA replication. If you do not stop the SAP HANA replication, only the latest data is restored and the latest log is not restored.

Procedure

1. From the navigation pane, go to **Protect > Databases > DB Instances > instance**.
The instance properties page appears.
2. In the **Recovery points** section, click **Restore**.
The **Restore Options** page appears.
3. In the **Destination Database**, select the database where you want to restore.
4. Choose the database recovery option:
 - To recover the database to a point-in-time, click **Up to**, and then select the date and time.
 - To restore by specifying the backup prefix, in the **Backup prefix** box, type the backup prefix for the backup.

Note: The Metallic software creates the backup prefix by pre-pending the job ID to the backup prefix. For example, 4815976_COMPLETE_DATA_BACKUP. You do not need the catalog backup available with backint.

- To restore by specifying the internal backup job ID, in the **Internal Backup ID** box, type the internal backup job ID.

Note: If you restore by specifying the internal backup job ID, then you must have the catalog backup available with backint. SAP HANA creates the internal backup ID.

5. To verify that all the backups required for the recovery operation are available, select the **Check Access** check box.
6. To initialize the log area after the restore, select the **Initialize log area** check box.
7. To recover using delta backups, select the **Use delta backups** check box.
If you do not use a delta backup for the recovery option, the software only uses the log backups for recovery.
8. To send a notification email when the restore job completes, select the **When the job completes, notify me via email**.
9. Click **Submit**.

Restoring a SAP HANA Database to a Different Location (Out of Place)

You can restore a SAP HANA database to a different location (out of place). The SAP HANA software brings the database down before the restore and brings it back up after the restore is complete.

To recover only the data, perform the restore by using a full backup.

Before You Begin

- Verify that the restore environment has the same set of nodes and the instance SID name as the backup environment. If you modified the backup environment, then you must make the same modifications on the restore environment.
- Verify that the SAP HANA software version on the destination is the same version or higher than the software version.
- If you want to restore the most recent backup data and log files, stop the SAP HANA replication. If you do not stop the SAP HANA replication, only the latest data is restored and the latest log is not restored.

Procedure

1. From the navigation pane, go to **Protect > Databases > DB Instances > instance**.

The instance properties page appears.

2. In the **Recovery points** section, click **Restore**.

The **Restore Options** page appears.

3. On the **Out of place** tab, in the **Source database**, select the source database from where you to restore.
4. From the **Destination Server** list, select the destination host to use for the restore.
5. From the **Destination instance** list, select the destination instance to use for the restore.
6. To restore from a snapshot backup, in the **HANA data directory** box, click **Browse** and select the HANA directory.

The full path where the destination instance resides. For example, if the SAP HANA SID path is **hana/data/SID**, then set the Destination Instance SAP HANA directory to: **/hana/data**.

Note: This is required for IntelliSnap cross instance and cross machine restores.

7. Choose the database recovery option:
 - To recover the database to a point-in-time, click **Up to**, and then select the date and time.
 - To restore by specifying the backup prefix, in the **Backup prefix** box, type the backup prefix for the backup.

Note: The Metallic software creates the backup prefix by pre-pending the job ID to the backup prefix. For example, 4815976_COMPLETE_DATA_BACKUP. You do not need the catalog backup available with backint.

- To restore by specifying the internal backup job ID, in the **Internal Backup ID** box, type the internal backup job ID.

Note: If you restore by specifying the internal backup job ID, then you must have the catalog backup available with backint. SAP HANA creates the internal backup ID.

8. To verify that all the backups required for the recovery operation are available, select the **Check Access** check box.
9. To initialize the log area after the restore, select the **Initialize log area** check box.
10. To recover using delta backups, select the **Use delta backups** check box.

If you do not use a delta backup for the recovery option, the software only uses the log backups for recovery.
11. To send a notification email when the restore job completes, select the **When the job completes, notify me via email**.

12. Click **Submit**.