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SAP HANA Remote Data Sync 2.0 SP 03

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SAP HANA Remote Data Sync: Installation and Migration Guide

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1 SAP HANA Remote Data Sync: Installation and Migration Guide

This guide describes how to install and configure SAP HANA remote data sync. It also describes how to migrate SAP HANA remote data sync to SAP SQL Anywhere MobiLink.

i Note

Starting with SAP HANA 2.0 SPS 03, the recommended product for synchronizing remote databases with SAP HANA is SAP SQL Anywhere MobiLink (MobiLink). If you are upgrading a previous SAP HANA installation to SAP HANA 2.0 SPS 04 and had SAP HANA remote data sync installed, then you must uninstall SAP HANA remote data sync before you upgrade to SAP HANA 2.0 SPS 04.

If you require synchronization, then you must migrate your remote data sync deployment to MobiLink before support ends for SAP HANA 2.0 SPS 02. For more information, see [2641466](#).

You can use remote data sync 2.0 SPS 02 with both SAP HANA 2.0 SPS 02 and SAP HANA 2.0 SPS 03 as long as remote data sync 2.0 SPS 02 remains in support. Because remote data sync 2.0 SPS 02 is a component of SAP HANA 2.0 SPS 02, it is supported as long as SAP HANA 2.0 SPS 02 is supported.

i Note

SAP SQL Anywhere remote databases (synchronization clients) and MobiLink are licensed separately. For more information, see <https://www.sap.com/product/data-mgmt/sql-anywhere.html>.

2 When to Use This Guide

You can install SAP HANA remote data sync 2.0 during the installation of a new SAP HANA 2.0 SPS 02 or S_S 03 system or you can add it to an existing SAP HANA 2.0 SPS 03 system.

i Note

Starting with SAP HANA 2.0 SPS 03, the recommended product for synchronizing remote databases with SAP HANA is SAP SQL Anywhere MobiLink (MobiLink). If you are upgrading a previous SAP HANA installation to SAP HANA 2.0 SPS 04 and had SAP HANA remote data sync installed, then you must uninstall SAP HANA remote data sync before you upgrade to SAP HANA 2.0 SPS 04.

If you require synchronization, then you must migrate your remote data sync deployment to MobiLink before support ends for SAP HANA 2.0 SPS 02. For more information, see [2641466](#).

You can use remote data sync 2.0 SPS 02 with both SAP HANA 2.0 SPS 02 and SAP HANA 2.0 SPS 03 as long as remote data sync 2.0 SPS 02 remains in support. Because remote data sync 2.0 SPS 02 is a component of SAP HANA 2.0 SPS 02, it is supported as long as SAP HANA 2.0 SPS 02 is supported.

The concepts and tasks in this guide focus on the installation of SAP HANA remote data sync. Since this installation may include installing a new SAP HANA system, some related information is included, but is limited in scope to a basic configuration consisting of one SAP HANA host and one remote data sync host.

For complex SAP HANA installations involving multiple SAP HANA hosts with SAP HANA remote data sync, use the *SAP HANA Server Installation and Update Guide* to install and configure the SAP HANA system, and then use the *SAP HANA Remote Data Sync: Installation Guide* to add SAP HANA remote data sync to the existing system.

Installing SAP HANA remote data sync requires an SAP HANA 2.0 SPS 02 or SPS 03 system. For SAP HANA systems earlier than SP 10, use the *SAP HANA Server Installation and Update Guide* to upgrade your system to SAP HANA 2.0, and then use the *SAP HANA Remote Data Sync: Installation Guide* to add SAP HANA remote data sync.

You can install multiple SAP HANA options during a single installation. Installation requirements and steps may vary by SAP HANA option. Refer to the option specific installation guide for details before installing multiple options at once.

Before attempting a new installation of SAP HANA with SAP HANA remote data sync, review the *SAP HANA Master Guide* and SAP HANA installation guides to ensure a complete understanding of the installation requirements of an SAP HANA system, and the design of a core HANA system. Once installation is complete, refer to the SAP HANA core documentation to configure the new SAP HANA core system.

3 Migrating Remote Data Sync

Starting with SAP HANA 2.0 SPS 03, the recommended product for synchronizing remote databases with SAP HANA is SAP SQL Anywhere MobiLink (MobiLink). You must migrate your remote data sync deployment to MobiLink before SAP HANA 2.0 SPS 02 stops being supported.

You can use remote data sync 2.0 SPS 02 with both SAP HANA 2.0 SPS 02 and SAP HANA 2.0 SPS 03 as long as remote data sync 2.0 SPS 02 remains in support. Because remote data sync 2.0 SPS 02 is a component of SAP HANA 2.0 SPS 02, it is supported as long as SAP HANA 2.0 SPS 02 is supported.

Migration Overview

Review all the migration instructions before attempting them. If you have any questions, then contact SAP support about the component HAN-SYN.

The following steps summarize the recommended approach for migrating from remote data sync to MobiLink:

1. Use the same host(s) for MobiLink servers as for your remote data sync servers.
2. Use a different (non-SAP HANA) TCP/IP port for synchronizations to MobiLink.
3. Use a different file hierarchy for MobiLink binaries and log files. These files must be outside the SAP HANA file hierarchy. Keeping a similar structure is recommended.
4. Install and run MobiLink as a different Linux user than the user for SAP HANA.

Your SAP HANA installation may be single database or multidatabase with tenants. The migration instructions assume that remote data sync is running in a multidatabase tenant.

Migration Settings

Setting	Remote Data Sync Value	MobiLink Value	Notes
SAP HANA host	myhanahost	myhanahost	
remote data sync host	myhost	myhost	
SID	AB1	AB1	Although the MobiLink server is not part of the AB1 HANA system, the MobiLink server connects to the tenant AB1/00/tenant1 as the consolidated database.

Setting	Remote Data Sync Value	MobiLink Value	Notes
Instance number	00	00	Although the MobiLink server is not part of the AB1 HANA system, the MobiLink server connects to the tenant AB1/00/tenant1 as the consolidated database.
Tenant name	tenant1	tenant1	Although the MobiLink server is not part of the AB1 HANA system, the MobiLink server connects to the tenant AB1/00/tenant1 as the consolidated database.
Linux user	ab1adm	mlsync	
SAP HANA database user in tenant1 that is used by the synchronization server	SYS_SYNC	ML_SYNC	
Schema that contains system objects for managing synchronization	SAP_HANA_SYNC	ML_SYNC	The ML_SYNC schema, which is owned by the ML_SYNC HANA database user, is used below. You can use any schema that does not have an SAP prefix.
Location of synchronization server executable	/hana/shared/AB1/ rdsync/bin64/ hdbrdsyncserver	/ml/AB1/HDB00/ DB_tenant1/ SQLAnywhere17/ bin64/mlsrv17	<p>If multiple MobiLink servers are being used for the same tenant, then the /ml directory must be a network share that is accessible from all hosts running the MobiLink server.</p> <p>If a single set of MobiLink binaries is to be used by all of the tenants, then consider installing to /ml/AB1/HDB00/SQLAnywhere17 instead.</p>

Setting	Remote Data Sync Value	MobiLink Value	Notes
Synchronization port	30028	2439	<p>The "00" portion of "30028" is the HANA instance number. If your system uses a different instance number, then the synchronization port is 3<xx>28, where <xx> is your instance number.</p> <p>Port 2439 is the default MobiLink synchronization port for TCP/IP. You can use any available port. When the remote data server is shut down or uninstalled, port 30028 will be available for MobiLink to use. However, it is recommended that you use a different port for synchronization requests than the remote data sync port. Using a different port reduces the potential for synchronizations going to the old remote data sync system instead of the new MobiLink system. To deal with the port change, network routing must be changed so that synchronizations are routed to port 2439 instead of 30028.</p>
File download directory	/hana/shared/AB1/ filedownload_rdsync/ DB_tenant1	/ml/AB1/HDB00/ DB_tenant1/ file_download	
File upload directory	/hana/shared/AB1/ fileupload_rdsync/ DB_tenant1	/ml/AB1/HDB00/ DB_tenant1/ file_upload	

Setting	Remote Data Sync Value	MobiLink Value	Notes
Trace file	/hana/shared/AB1/ HDB00/myhost/trace/ DB_tenant1/ rdsyncserver_myhost *.trc	'/ml/AB1/HDB00/ DB_tenant1/ myhost_mobilink.trc	For remote data sync, the path to the trace file contains a myhost directory, and the trace filename also contains myhost. For MobiLink, only the trace filename contains a myhost prefix, which puts all MobiLink trace files from different hosts in the same directory.

3.1 Install the SAP SQL Anywhere MobiLink Server

The SQL Anywhere MobiLink server receives and applies data synchronization requests from clients. It replaces remote data sync in that role.

Context

This step installs the SQL Anywhere MobiLink server. Run the MobiLink server on the hosts that are running remote data sync. Replace the values in the steps with the correct names from your remote data sync deployment.

You need a SQL Anywhere registration key. Anyone with an SAP HANA Real Time Replication Option license also has the right to obtain a SQL Anywhere license and registration key.

Procedure

1. Create a Linux user (mlsync, for example) to run the MobiLink servers. At a Linux command prompt, execute the following commands as root:

```
useradd mlsync
mkdir /home/mlsync
```

2. Create a network share called /ml and make it read and write accessible by the mlsync Linux user from all remote hosts.
3. Create the MobiLink directory hierarchy as follows. At a Linux command prompt, execute the following commands as the mlsync user:

```
mkdir -p /ml/AB1/HDB00/DB_tenant1/file_download
mkdir -p /ml/AB1/HDB00/DB_tenant1/file_upload
```

4. As the mlsync user, install the latest version of SAP SQL Anywhere including MobiLink into the /ml/AB1/HDB00/DB_tenant1/SQLAnywhere17 directory. You can find instructions for installing SQL Anywhere on Linux at <https://wiki.scn.sap.com/wiki/display/SQLANY/Installing+SQL+Anywhere+17+on+Ubuntu+14.04> .

1. Run the installer from a Linux command prompt as the mlsync user:

```
./setup -sqlany-dir /ml/AB1/HDB00/DB_tenant1/SQLAnywhere17 -type CREATE -nogui
```

2. When you are prompted to select an installation type, create a new installation.
3. Enter your SQL Anywhere registration key.
If you have more than one registration key to enter (for example, you have purchased add-ons), enter multiple keys by separating them with a comma.
If you don't have a registration key, then press Enter to install the Developer Edition, which does not require a registration key. The developer edition is available for development and testing, but not for production use or deployment.
4. When you are prompted to select the components to install, choose **Databases**.
5. At the next prompt, choose SQL Anywhere (64-bit).
6. When you are prompted to select the components to install, choose **Synchronization**.
7. At the next prompt, choose **MobiLink (64-bit)**.
8. When you are prompted to add menu items, enter N for no.
9. Check for updates when you are prompted.
5. Perform a simple test of the SQL Anywhere installation by running the sa_config.sh script, as described by the install. This script sets up the SQL Anywhere environment in the current command shell. At a Linux command prompt, execute the following command as the mlsync user:

```
source "/ml/AB1/HDB00/DB_tenant1/SQLAnywhere17/bin64/sa_config.sh"
```

Related Information

<https://www.sap.com/products/sql-anywhere.html> 

3.2 Install the SAP HANA Client

Prerequisites

The SAP HANA client must be installed. If it is not installed, then follow these instructions: <https://help.sap.com/viewer/e7e79e15f5284474b965872bf0fa3d63/2.0.00/en-US/c5c9c3d3bb571014bf0de628d2a47535.html>

Context

The MobiLink server connects to the SAP HANA database with a user name and password (called the MobiLink technical user).

Procedure

1. In the SAP HANA database tenant, create/designate a database user called ML_SYNC (and implied schema) to hold MobiLink system objects.
2. Grant the `sap.hana.sync.monitor.roles::server` role to the ML_SYNC technical user to allow the ML_SYNC user to read the remote data sync system objects during migration. As the SYSTEM user in the tenant database, execute the following statement:

```
CALL
SYS_REPO.GRANT_ACTIVATED_ROLE('sap.hana.sync.monitor.roles::server',
'ML_SYNC');
```

3. For every role granted to the SYS_SYNC database user in the tenant, grant the same role to the ML_SYNC database user in the tenant so it can synchronize to your application tables. To determine the roles granted to the SYS_SYNC database user, execute the following statement as the SYSTEM user in the tenant database:

```
SELECT *
FROM SYS.GRANTED_ROLES
WHERE GRANTEE = 'SYS_SYNC' AND GRANTEE_TYPE = 'USER';
```

Evaluate whether the ML_SYNC database user requires any of these roles. For example, if SYS_SYNC has the WIDGET_USER role, then execute the following statement (as the owner or admin of the role) to grant the same role to the ML_SYNC database user:

```
GRANT WIDGET_USER TO ML_SYNC;
```

4. For every privilege granted to the SYS_SYNC database user in the tenant, grant the same privilege to the ML_SYNC database user in the tenant. To determine the privileges granted to the SYS_SYNC database user, execute the following statement as the SYSTEM user in the tenant database:

```
SELECT * FROM SYS.GRANTED_PRIVILEGES
WHERE GRANTEE = 'SYS_SYNC'
AND GRANTEE_TYPE = 'USER'
AND ( OBJECT_NAME IS NULL;
OR OBJECT_NAME NOT IN ( 'INSTALL_RDSYNC_FIRST_TEMPORARY_LICENSE_DEV',
'STORE_RDSYNC_LICENSE_MEASUREMENT_DEV' )
);
```

Evaluate whether the ML_SYNC database user requires any of these privileges. For example, if SYS_SYNC has SELECT, INSERT, UPDATE, DELETE, and EXECUTE permissions on the WIDGET schema, then execute the following statement (as the owner or delegate grantor of the WIDGET schema) to grant the same permissions to the ML_SYNC database user:

```
GRANT SELECT, INSERT, UPDATE, DELETE, EXECUTE ON SCHEMA WIDGET TO ML_SYNC;
```

Note

- There is different syntax for the GRANT statement depending on whether the privilege is a system privilege, a source privilege, a schema privilege, or an object privilege.

3.3 Satisfy the MobiLink Server Requirements

Prepare an SAP HANA user account for the SQL Anywhere MobiLink server to use.

Context

To operate, a MobiLink server requires connectivity information, a suitable command line, and MobiLink system objects.

Procedure

1. Create the MobiLink system objects in the tenant database by executing the SQL statements from the `/ml/AB1/HDB00/SQLAnywhere17/mobilink/setup/synchana.sql` SQL script as the `ML_SYNC` database user. Do NOT use HANA Studio. Use HANA Cockpit or `hdbsql` instead. Here is the command line for `hdbsql`:

```
/usr/sap/hdbclient/hdbsql -separatornewline -n myhanahost:30013 -i 00 -d MLS -u ML_SYNC -p ML_SYNC_PASSWORD -I /ml/AB1/HDB00/DB_tenant1/SQLAnywhere17/mobilink/setup/synchana.sql
```

2. Create a 64-bit ODBC DSN, called `ml_AB1_00_tenant1`, by creating a file called `~/odbc.ini` as the `mluser` Linux user. The file contents should be as follows:

```
[ml_AB1_00_tenant1]
DRIVER=/usr/sap/hdbclient/libodbcHDB.so
SERVERNODE=myhanahost:30013
DATABASENAME=tenant1
DESCRIPTION=ml_AB1_00_tenant1
USERID=ML_SYNC
PASSWORD=Wsql1234
```

For more information about connecting to HANA via ODBC, see: <https://help.sap.com/viewer/Oeec0d68141541d1b07893a39944924e/2.0.02/en-US/66a4169b84b2466892e1af9781049836.html>.

3. Re-create the MobiLink command line based on the command-line options passed to the remote data sync server. The beginning of the remote data sync server trace file, which is the part written out immediately upon starting the remote data sync server, contains the command-line options. Here is an example showing a typical set of command-line options:

```
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 1: -o
```

```

[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 2: /usr/sap/AB1/HDB00/myhost/trace/
DB_tenant1/rdsyncserver_myhost.30027.trc
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 3: -zw 0
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 4: -v
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 5: -om
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 6: 10
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 7: -os
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 8: 10000000
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 9: -c
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 10:
UID=SYS_SYNC;SID=AB1;ServerNode=myhanahost:30015
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 11: -zs
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 12: AB1_00_tenant1
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 13: -x
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 14: tcpip(port=30028;)
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 15: -sl
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 16: java(
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 17: -DHANA
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 18: -DHANA_PORT=30027
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 19: -cp
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 20: ./my/java/path/myjar.jar
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 21: )
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 22: -w
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 23: 25
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 24: -wm
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 25: 100
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 26: -wn
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 27: 1
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 28: -sn
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 29: SAP_HANA_SYNC
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 30: -zu+
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 31: -ftr
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 32: /big/hanarjc/
download_rdsync/AB1/DB_tenant1
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 33: -ftru

```

```

[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 34: /big/hanarjc/upload_rdsync/AB1/
DB_tenant1
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 35: -zf
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 36: -s1
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 37: -ct1
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 38: -bn110
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 39: -zus
[140125573916448] {main} [-1/-1] 2017-09-08 15:12:02.350484 i
rdsyncserver syncopts.cpp(00435) : Option 40: -vcmnps

```

4. To recreate this command line for MobiLink server:

1. Take all the values of Option 1 through the last option, and combine them, in the same order, into a single line with a single space between each option. For example, based on the options from the trace file above:

```

-o /ml/AM1/DB_tenant1/myhost_mobilink.trc -zw 0 -v -om 10 -os 10000000 -c
UID=SYS_SYNC;SID=AB1;ServerNode=myhanahost:30015 -zs AB1_00_tenant1 -x
tcpip(port=30028;) -sl java( -DHANA -DHANA_PORT=30027 -cp ./my/java/path/
myjar.jar ) -w 25 -wm 100 -wn 1 -sn SAP_HANA_SYNC -zu+ -ftr /ml/AB1/HDB00/
DB_tenant1/file_download -ftru /ml/AB1/HDB00/DB_tenant1/file_upload -zf -
sl -ct1 -bn110 -zus -vcmnps

```

2. Change the -c option as follows:
 - o Change the SYS_SYNC user to the MobiLink technical user from above. In the example command line, the portion with "UID=SYS_SYNC" should change to "UID=ML_SYNC"
 - o Remove the SID=AB1;ServerNode=myhanahost:30015 portion.
 - o Add in the PWD (password) entry, using the password for the ML_SYNC database user, and the DSN (Data Source Name) entry, using the ODBC data source name created in an earlier step: ml_AB1_00_tenant1.
 - o Surround the connection information with double quotes.

The -c option now looks as follows:

```

-c "UID=ML_SYNC;PWD=myspwd;DSN=ml_AB1_00_tenant1"

```

3. Change the -x option by surrounding the network information in double quotes. The resulting -x option looks as follows:

```

-x "tcpip(port=2439;)"

```

4. Remove the options that are applicable only to RDSync. These are the -DHANA and -DHANA_PORT=30027 options, as well as the -sn SAP_HANA_SYNC option.
5. Change the port= entry to use the MobiLink port (2439) instead of the RDSync port (30028).
6. Add the -v option, if not already there, to ensure that synchronization attempts are logged.
7. Finally, add mlsrv17 at the beginning of the command line.

The resulting MobiLink command line based on the example above is (split across multiple lines for clarity):

```

mlsrv17
-o /ml/AB1/HDB00/DB_tenant1/mobilink.trc
-zw 0
-v
-om 10
-os 10000000

```

```

-c "UID=ML_SYNC;PWD=mypwd;DSN=ml_AB1_00_tenant1"
-zs AB1_00_tenant1
-x "tcpip(port=2439;)"
-sl java( -cp ./my/java/path/myjar.jar)
-w 25
-wm 100
-wn 1
-zu+
-fttr /ml/AB1/HDB00/DB_tenant1/file_download
-fttru /ml/AB1/HDB00/DB_tenant1/file_upload
-zf
-sl
-ctl
-bn110
-zus
-vcnps

```

3.4 Confirm the MobiLink Server Configuration

Ensure that the MobiLink server is configured correctly so that it can take over from remote data sync.

Procedure

1. Logged in as the mlsync Linux user, start the MobiLink server with the re-created command line to confirm that the MobiLink server command is correct. You should see something similar to the following:

```

I. 2018-02-07 11:55:21. SQL Anywhere MobiLink Synchronization Server Version
17.0.8.4046
I. 2018-02-07 11:55:21.
I. 2018-02-07 11:55:21. Copyright (c) 2018 SAP SE or an SAP affiliate company.
I. 2018-02-07 11:55:21. All rights reserved.
I. 2018-02-07 11:55:21. Use of this software is governed by the SAP Software
Use Rights Agreement.
I. 2018-02-07 11:55:21. Refer to http://global.sap.com/corporate-en/our-
company/agreements/index.epx.
I. 2018-02-07 11:55:21.
I. 2018-02-07 11:55:21. This server is licensed to:
I. 2018-02-07 11:55:21.      MyName
I. 2018-02-07 11:55:21.      MyCompany
I. 2018-02-07 11:55:21. Running Linux 4.4.103-92.56-default #1 SMP Wed Jan 27
16:24:31 UTC 2018 (2fd2155) on X86_64
I. 2018-02-07 11:55:21. Server built for X86_64 processor architecture
I. 2018-02-07 11:55:22. <Main> Synchronization server started
Press 'q' to quit synchronization server

```

2. Stop the MobiLink server by pressing Q in the SQL Anywhere command shell where you started the MobiLink server.
3. Verify that the end of each MobiLink server trace file indicates that the MobiLink server has started successfully, making sure that the timestamps at the end of the file are current timestamps, not old ones from previous attempts.

```
tail /ml/AB1/HDB00/DB_tenant1/mobilink.trc
```

You should see something similar to the following:

```
I. 2018-02-09 11:26:41. <Main> ODBC DBMS Name: HDB
I. 2018-02-09 11:26:41. <Main> ODBC DBMS Version: 02.00.0023 00-1513691289
I. 2018-02-09 11:26:41. <Main> ODBC DBMS Driver Version: 02.02.0036
(2017-12-01)
I. 2018-02-09 11:26:41. <Main> ODBC Version supported by the driver: 3.51
I. 2018-02-09 11:26:41. <Main> ODBC DBMS Type: SAP HANA
I. 2018-02-09 11:26:41. <Main> Shared administrative connection with
connection ID 'CONNECTION ID 359661' has been established
I. 2018-02-09 11:26:41. <Main> ODBC isolation set to: Read Committed
W. 2018-02-09 11:26:41. <Main> [10093] The synchronization server is
currently running with -zf that will reduce its performance
I. 2018-02-09 11:26:42. <Main> Locking/blocking detector connection with
connection ID 'CONNECTION ID 359662' has been established
I. 2018-02-09 11:26:42. <Main> Synchronization server started
```

Results

Your MobiLink servers can take over from remote data sync once the state information has been copied into the MobiLink system tables.

Related Information

<http://dcx.sap.com/index.html#sqla170/en/html/813df9e16ce21014bf5cdf75390e9c94.html>

3.5 Set up a MobiLink Server Daemon

Configure a daemon to run the MobiLink server.

Procedure

1. Create and configure a MobiLink server daemon called `ml_svc_AB1_00_tenant1` on each MobiLink host. As root, execute the following commands in the same Linux shell on each host:

```
source /ml/AB1/HDB00/DB_tenant1/SQLAnywhere17/bin64/sa_config.sh
dbsvc -t MobiLink -a mlsync -s automatic -w ml_svc_AB1_00_tenant1 -o /ml/AB1/
HDB00/DB_tenant1/mobilink.trc -zw 0 -v -om 10 -os 10000000 -c
"UID=ML_SYNC;PWD=mypwd;DSN=ml_AB1_00_tenant1" -zs AB1_00_tenant1 -x
"tcpip(port=2439;)" -w 25 -wm 100 -wn 1 -zu+ -ftr /ml/AB1/HDB00/DB_tenant1/
file_download -ftru /ml/AB1/HDB00/DB_tenant1/file_upload
```

You should see output similar to the following:

```
SQL Anywhere Service Utility 17.0.9.4046
```

```
Creating SQL Anywhere service: ml_svc_AB1_00_tenant1 File: /usr/lib/systemd/system/SA_ml_svc_AB1_00_tenant1.service
Created symlink from /etc/systemd/system/multi-user.target.wants/SA_ml_svc_AB1_00_tenant1.service to /usr/lib/systemd/system/SA_ml_svc_AB1_00_tenant1.service.
```

2. On each MobiLink server host, make sure you can start the MobiLink daemon. In the SQL Anywhere command shell, start the service manually:

```
dbsvc -u ml_svc_AB1_00_tenant1
```

3. On each MobiLink server host, make sure you can stop the MobiLink daemon.

Run the following command in the SQL Anywhere command shell:

```
dbsvc -x ml_svc_AB1_00_tenant1
```

Verify that the end of each MobiLink server trace file indicates that the MobiLink server has started successfully, making sure that the timestamps at the end of the file are current timestamps, not old ones from previous attempts.

```
tail /ml/AB1/HDB00/DB_tenant1/mobilink.trc
```

You should see something similar to the following:

```
I. 2018-02-09 11:36:14. <Main> Shutdown request through user intervention
I. 2018-02-09 11:36:14. <Main> Synchronization server shutting down
I. 2018-02-09 11:36:14. <Main> Synchronization server undergoing hard shutdown
I. 2018-02-09 11:36:14. <Main> All connections and synchronizations being
terminated
I. 2018-02-09 11:36:15. <Main> Locking/blocking detector connection with
connection ID 'CONNECTION ID 359662' has been disconnected
I. 2018-02-09 11:36:16. <Main> Shared administrative connection with
connection ID 'CONNECTION ID 359661' has been disconnected
I. 2018-02-09 11:36:16. <Main> Shutdown completed
```

3.6 Change the Synchronization System to MobiLink

Move the synchronization system from remote data sync to MobiLink.

Context

Changing the synchronization system to MobiLink requires production downtime, which has been designed to be minimal.

Review these steps carefully before attempting them.

Procedure

1. Disable network routing to the remote data sync servers, which prevents production synchronizations.
2. Stop all remote data sync servers by executing the following SQL statements as the SYSTEM user in the tenant database. In these statements, myhost is the host in the remote data sync role that was added to the tenant and 00 is the instance number for the SAP HANA system.

```
CALL _SYS_REPO.REVOKE_ACTIVATED_ROLE (
  'sap.hana.sync.monitor.roles::server', 'SYS_SYNC');
ALTER SYSTEM STOP SERVICE 'myhost:30027';
```

The first SQL statement removes the remote data sync server's ability to make any changes to the remote data sync system objects.

The ALTER SYSTEM STOP SERVICE statement stops the remote data sync service and it must be executed for each remote data sync host that was added to the specified tenant.

3. Copy the remote data sync state from SAP_HANA_SYNC to the database user by using the provided script and executing it as the ML_SYNC database user in the tenant database:

```
insert into ml_ldap_server ( ldsrv_id, ldsrv_name, search_url, access_dn,
access_dn_pwd, auth_url, num_retries, timeout, start_tls )
select ldsrv_id, ldsrv_name, search_url, access_dn,
      access_dn_pwd, auth_url, num_retries, timeout, start_tls
from SAP_HANA_SYNC.ml_ldap_server;

insert into ml_trusted_certificates_file ( file_name )
select file_name
from SAP_HANA_SYNC.ml_trusted_certificates_file;

insert into ml_user_auth_policy ( policy_id, policy_name, primary_ldsrv_id,
secondary_ldsrv_id, ldap_auto_failback_period, ldap_failover_to_std )
select policy_id, policy_name, primary_ldsrv_id, secondary_ldsrv_id,
ldap_auto_failback_period, ldap_failover_to_std
from SAP_HANA_SYNC.ml_user_auth_policy;

insert into ml_user ( user_id, name, hashed_password, policy_id, user_dn )
select user_id, name, hashed_password, policy_id, user_dn
from SAP_HANA_SYNC.ml_user;

insert into ml_database ( rid, remote_id, script_ldt, seq_id, seq_uploaded,
sync_key, description )
select rid, remote_id, script_ldt, seq_id, seq_uploaded, sync_key,
description
from SAP_HANA_SYNC.ml_database;

insert into ml_subscription ( rid, subscription_id, user_id, progress,
publication_name, last_upload_time, last_download_time )
select rid, subscription_id, user_id, progress, publication_name,
last_upload_time, last_download_time
from SAP_HANA_SYNC.ml_subscription;

insert into ml_table ( table_id, name )
select table_id, name
from SAP_HANA_SYNC.ml_table;

insert into ml_script ( script_id, script, script_language, checksum )
select script_id, script, script_language, checksum
from SAP_HANA_SYNC.ml_script;

insert into ml_script_version ( version_id, name, description )
select version_id, name, description
from SAP_HANA_SYNC.ml_script_version;
```

```

insert into ml_connection_script ( version_id, event, script_id )
    select version_id, event, script_id
        from SAP_HANA_SYNC.ml_connection_script;

insert into ml_table_script ( version_id, table_id, event, script_id )
    select version_id, table_id, event, script_id
        from SAP_HANA_SYNC.ml_table_script;

insert into ml_property ( component_name, property_set_name, property_name,
property_value )
    select component_name, property_set_name, property_name, property_value
        from SAP_HANA_SYNC.ml_property;

insert into ml_scripts_modified ( last_modified )
    select last_modified
        from SAP_HANA_SYNC.ml_scripts_modified;

insert into ml_column ( version_id, table_id, idx, name, type )
    select version_id, table_id, idx, name, type
        from SAP_HANA_SYNC.ml_column;

insert into ml_primary_server ( server_id, name, connection_info,
instance_key, start_time )
    select server_id, name, connection_info, instance_key, start_time
        from SAP_HANA_SYNC.ml_primary_server;

insert into ml_passthrough_script ( script_id, script_name, flags,
affected_pubs, script, description )
    select script_id, script_name, flags, affected_pubs, script, description
        from SAP_HANA_SYNC.ml_passthrough_script;

insert into ml_passthrough ( remote_id, run_order, script_id, last_modified )
    select remote_id, run_order, script_id, last_modified
        from SAP_HANA_SYNC.ml_passthrough;

insert into ml_passthrough_status ( status_id, remote_id, run_order,
script_id, script_status, error_code, error_text, remote_run_time )
    select status_id, remote_id, run_order, script_id, script_status,
error_code, error_text, remote_run_time
        from SAP_HANA_SYNC.ml_passthrough_status;

insert into ml_passthrough_repair ( failed_script_id, error_code,
new_script_id, action )
    select failed_script_id, error_code, new_script_id, action
        from SAP_HANA_SYNC.ml_passthrough_repair;

insert into ml_device ( device_name, listener_version, listener_protocol,
info, ignore_tracking, source )
    select device_name, listener_version, listener_protocol, info,
ignore_tracking, source
        from SAP_HANA_SYNC.ml_device;

insert into ml_device_address ( device_name, medium, address, active,
last_modified, ignore_tracking, source )
    select device_name, medium, address, active, last_modified,
ignore_tracking, source
        from SAP_HANA_SYNC.ml_device_address;

insert into ml_listening ( name, device_name, listening, ignore_tracking,
source )
    select name, device_name, listening, ignore_tracking, source
        from SAP_HANA_SYNC.ml_listening;

insert into ml_sis_sync_state ( remote_id, subscription_id, publication_name,
user_name, last_upload, last_download )
    select remote_id, subscription_id, publication_name, user_name,
last_upload, last_download

```

```
from SAP_HANA_SYNC.ml_sis_sync_state;  
commit;
```

4. Copy all files and directories under `/hana/shared/AB1/filedownload_rdsync/DB_tenant1` into `/ml/AB1/HDB00/DB_tenant1/file_download`.
5. Copy all files and directories under `/hana/shared/AB1/fileupload_rdsync/DB_tenant1` into `/ml/AB1/HDB00/DB_tenant1/file_upload`.
6. If you have processes that reference the `/hana/shared/AB1/filedownload_rdsync/DB_tenant1` or `/hana/shared/AB1/fileupload_rdsync/DB_tenant1` directories, then update them to reference the `/ml/AB1/HDB00/DB_tenant1/file_download` or `/ml/AB1/HDB00/DB_tenant1/file_upload` directories, respectively.
7. Start all MobiLink server daemons.
8. Switch the network routing targeting the synchronization servers to use port 2439 instead of port 30028.
9. Perform a test synchronization directly to each MobiLink server.
10. Verify that the synchronization attempt was handled by each server by inspecting the end of the `/ml/AB1/HDB00/DB_tenant1/myhost_mobilink.trc` file on each host.
11. Enable network routing to the MobiLink servers to enable production synchronizations.
12. Make sure that normal production synchronizations are taking place as expected.
13. Back up your SAP HANA system.

3.7 Remove Remote Data Sync From the SAP HANA System

Remove remote data sync so that it can be replaced by MobiLink.

Context

Only carry out these steps when you are confident that the MobiLink migration is completely successful.

Procedure

1. For each host in the `rdsync` role that was added to and initialized in the tenant, execute the following SQL statement as the `SYSTEM` user in the tenant database:

```
ALTER SYSTEM UNINITIALIZE SERVICE 'rdsyncserver'  
AT LOCATION 'myhost:30027'
```

2. Uninstall remote data sync.

Results

The migration from remote data sync to MobiLink is complete.

Related Information

[Uninstalling SAP HANA Remote Data Sync \[page 78\]](#)

4 Remote Data Sync Installation Overview

SAP HANA remote data sync is installed as an option within an SAP HANA installation.

SAP HANA and SAP HANA remote data sync are delivered on separate installation media. SAP HANA remote data sync is supported on Intel-based hardware platforms only.

SAP HANA remote data sync has two installation packages:

- The remote data sync package (`RDSYNC200* .SAR`), which contains the remote data sync server and all of the tools to administer the server.
- The remote data sync monitor package, which contains HANA content for the monitoring feature (`RDSYNCMON200* .SAR`), and other required database objects for SAP HANA remote data sync .
To monitor SAP HANA remote data sync in the SAP HANA cockpit, you need an SAP HANA user with the `sap.hana.sync.monitor.roles::monitor` role.
To enable configuration for SAP HANA remote data sync using the SAP HANA Cockpit, you need an SAP HANA user with the `sap.hana.sync.monitor.roles::administrator` role.

Follow this guide to install SAP HANA remote data sync. After installing the synchronization server package, add one remote data sync host per sync node.

4.1 Remote Data Sync Software Download

The remote data sync installation package is available as SAP HANA remote data sync version 2.0 on the SAP Software Download Center.

i Note

Installation of SAP HANA remote data sync requires the correct version of SAP HANA. At minimum, you require SAP HANA 2.0. Subsequent support packages or revisions of SAP HANA require an equivalent update to SAP HANA remote data sync. To perform an update, run the SAP HANA database lifecycle manager from the SAP HANA local host. The lifecycle manager (`hdblcm` or `hdblcmgui`) performs a check to ensure you have the correct version of SAP HANA for your current version of SAP HANA remote data sync.

- Installation Media for SAP HANA:
▶ [SAP Software Download Center](#) ▶ [Installations and Upgrades](#) ▶ [A-Z Index](#) ▶ [Installations and Upgrades - H](#) ▶ [SAP In-Memory \(SAP HANA\)](#) ▶ [HANA Platform Edition](#) ▶ [SAP HANA PLATFORM EDITION](#) ▶ [SAP HANA PLATFORM EDIT. 2.0](#) ▶ [Installation](#) ▶
- Support Packages and Patches for SAP HANA:
▶ [SAP Software Download Center](#) ▶ [Support Packages and Patches](#) ▶ [A-Z Index](#) ▶ [Support Packages and Patches - H](#) ▶ [SAP HANA PLATFORM EDITION](#) ▶ [SAP HANA PLATFORM EDIT. 2.0](#) ▶

- Installation Media for SAP HANA Remote Data Sync:
 - ▶ [SAP Software Download Center](#) ▶ [Installations and Upgrades](#) ▶ [A-Z Index](#) ▶ [Installations and Upgrades - H](#) ▶ [SAP In-Memory \(SAP HANA\)](#) ▶ [SAP HANA Add-ons](#) ▶ [SAP HANA REMOTE DATA SYNC](#) ▶ [SAP HANA REMOTE DATA SYNC 2.0](#) ▶ [Comprised Software Component Versions](#) ▶
- Support Packages and Patches for SAP HANA Remote Data Sync:
 - ▶ [SAP Software Download Center](#) ▶ [Support Packages and Patches](#) ▶ [A-Z Index](#) ▶ [Support Packages and Patches - H](#) ▶ [SAP HANA REMOTE DATA SYNC](#) ▶ [SAP HANA REMOTE DATA SYNC 2.0](#) ▶ [Comprised Software Component Versions](#) ▶

Related Information

[SAP Software Download Center](#) 

4.2 SAP HANA Remote Data Sync Licenses

An SAP HANA remote data sync license, separate from the SAP HANA license, is required for synchronization.

Only one remote data sync license is required per installation of remote data sync licenses, regardless of the number of synchronization hosts within the single SAP HANA system. The total CPU core count of all synchronization hosts must not exceed the number of cores licensed.

Download all licenses from SAP Service Marketplace.

Consistent with SAP HANA, a new remote data sync installation includes a temporary license that allows synchronization to initially run without a permanent license for a period of 90 days, after which time you must install a permanent license. If a permanent license has been installed and then expires, then another temporary license is issued, valid for 28 days. If a temporary license expires without a permanent license being installed, then SAP HANA remote data sync ceases to function until a valid permanent license is installed.

For more information on license types, checking the current license key, and installing or deleting a permanent license, refer to *SAP HANA Administration Guide* > *System Administration* > *Managing SAP HANA Licenses*.

i Note

SAP SQL Anywhere remote databases (synchronization clients) are licensed separately. For more information, see <http://go.sap.com/product/data-mgmt/sql-anywhere.html> .

4.3 SQL Anywhere Client Software

SAP SQL Anywhere version 16 or 17 is required to act as client software.

i Note

SAP SQL Anywhere remote databases (synchronization clients) are licensed separately. For more information, see <http://go.sap.com/product/data-mgmt/sql-anywhere.html>.

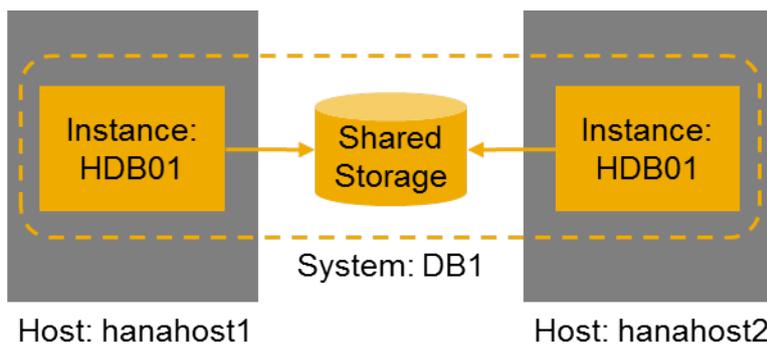
5 SAP HANA System Overview

An SAP HANA system is required to install SAP HANA remote data sync.

The concepts and tasks presented in this guide focus on installing SAP HANA remote data sync. If you are installing SAP HANA with SAP HANA remote data sync as a new system, then there are key SAP HANA system concepts you should be familiar with before proceeding.

5.1 SAP HANA System Concepts

An SAP HANA system is composed of three main components: the host, the system, and the instance.



Host

A host is the operating environment in which the SAP HANA database runs. The host provides all the resources and services (CPU, memory, network, and operating system) that the SAP HANA database requires. The host provides links to the installation directory, data directory, and log directory, or the storage itself. The storage for an installation does not have to be on the host. For multiple-host systems, a shared storage or a storage that is accessible on-demand from all hosts is required.

Instance (HDB)

An SAP HANA instance (HDB) is the smallest operational unit on a host. It is the set of SAP HANA system components that are installed on one host. A single-host system contains one instance on the one host. A multiple-host system either contains several instances distributed across the multiple hosts (one per host) or one HANA instance installed across multiple hosts. Every system has an instance number, which is a two-digit identifier. Each instance in a multiple-host system must have the same instance number.

System

A system is one or more instances with the same number. The term "system" is interchangeable with the term "SAP HANA database". If a system has more than one instance, the instances must be dispersed over several hosts as a multiple-host system. Every system has a unique SAP system ID (SID).

Related Information

[SAP Note 611361](#)

5.2 SAP HANA System Types

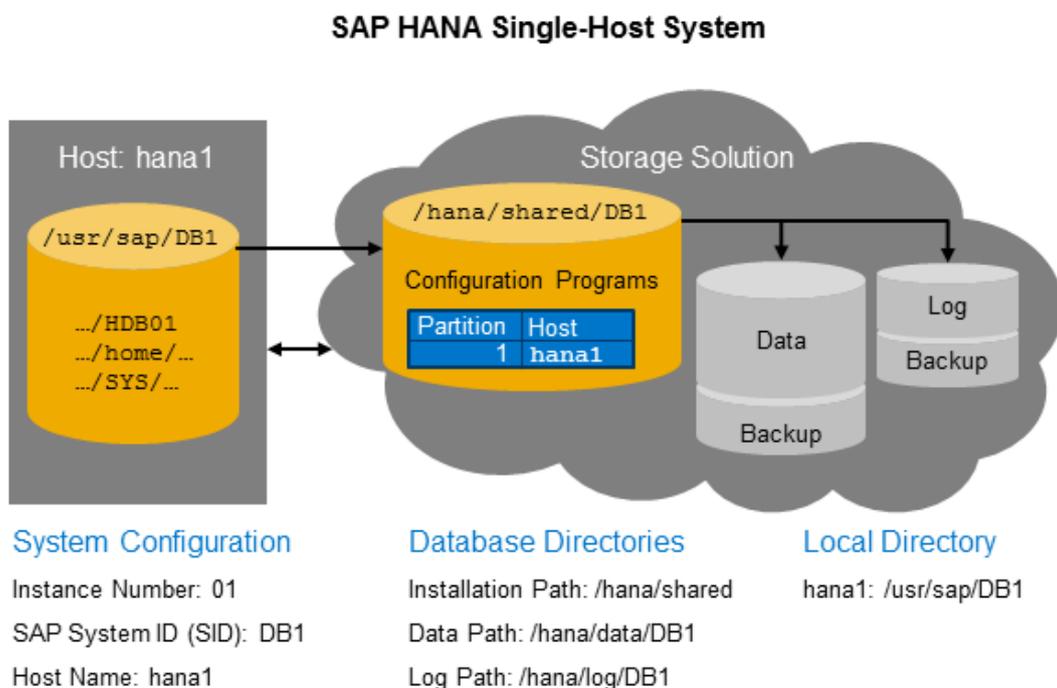
An SAP HANA system can be configured as a single-host or multiple-host system using the SAP HANA database lifecycle manager.

The SAP HANA system type definitions are as follows:

- Single-host system - One SAP HANA instance on one host.
- Multiple-host (distributed) system - Multiple SAP HANA instances distributed over multiple hosts, with one instance per host or one HANA instance installed across multiple hosts.

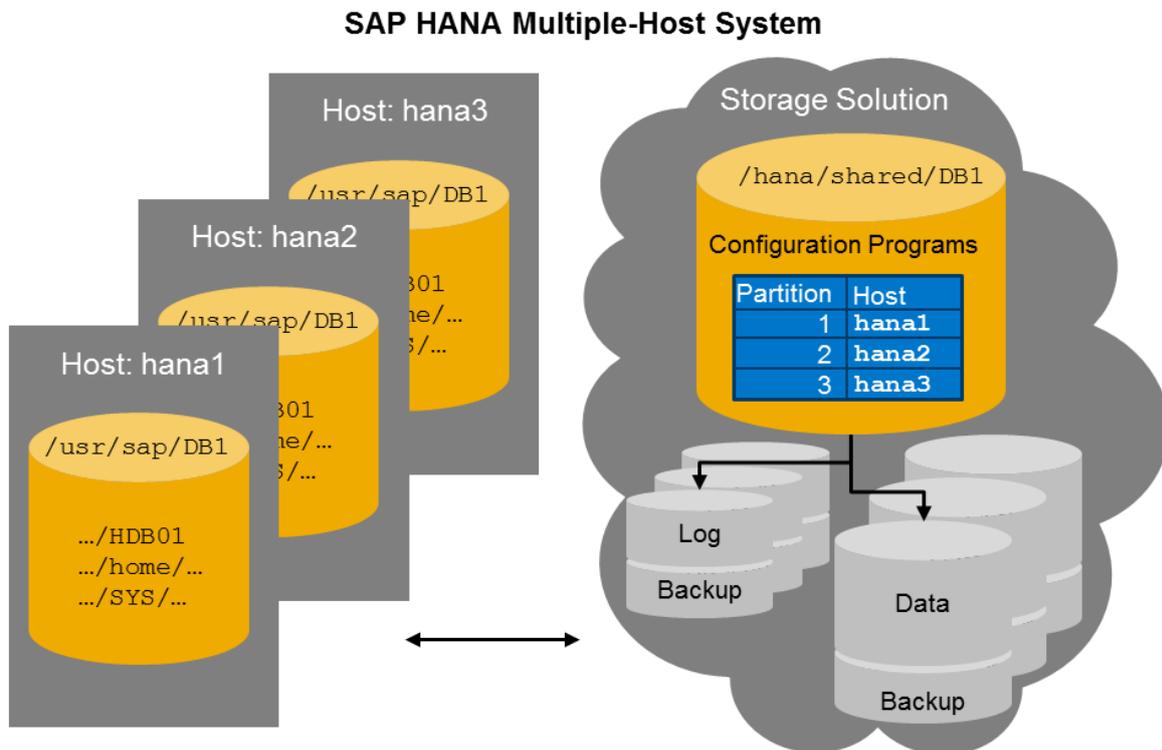
A single-host system is the simplest system installation type. It is possible to run an SAP HANA system entirely on one host and then scale the system up as needed. The SAP HANA database lifecycle manager can be used to install an SAP HANA single-host system in one of the program interfaces, and with a combination of parameter specification methods.

The following graphic shows the file system for a single-host installation:



A multiple-host system is a system with more than one host, which can be configured as active worker hosts or idle standby hosts. The SAP HANA database lifecycle manager can be used to install an SAP HANA multiple-host system in one of the program interfaces, and with a combination of parameter specification methods. To add hosts to an existing system, use the SAP HANA resident hdblcm.

The following graphic shows the file system for a multiple-host system with three hosts:



System Configuration

Instance Number: 01
 SAP System ID (SID): DB1
 Host Names: hana1, hana2, hana3

Database Directories

Installation Path: /hana/shared
 Data Path: /hana/data/DB1
 Log Path: /hana/log/DB1

Local Directories

hana1: /usr/sap/DB1
 hana2: /usr/sap/DB1
 hana3: /usr/sap/DB1

The server software is based on a flexible architecture that enables a distributed installation. This means that load can be balanced between different hosts. The server software has to be installed in a shared file system. This file system has to be mounted by all hosts that are part of the system.

5.3 Recommended File System Layout

The SAP HANA database lifecycle manager (HDBLCM) requires certain file systems in order to successfully install an SAP HANA system.

The file systems can be defined manually before installation and then specified during installation, or the default file systems can be used. It is important that the file systems where you plan to continue the installation are available and have the recommended disk space of 500 MB before starting the SAP HANA database lifecycle manager.

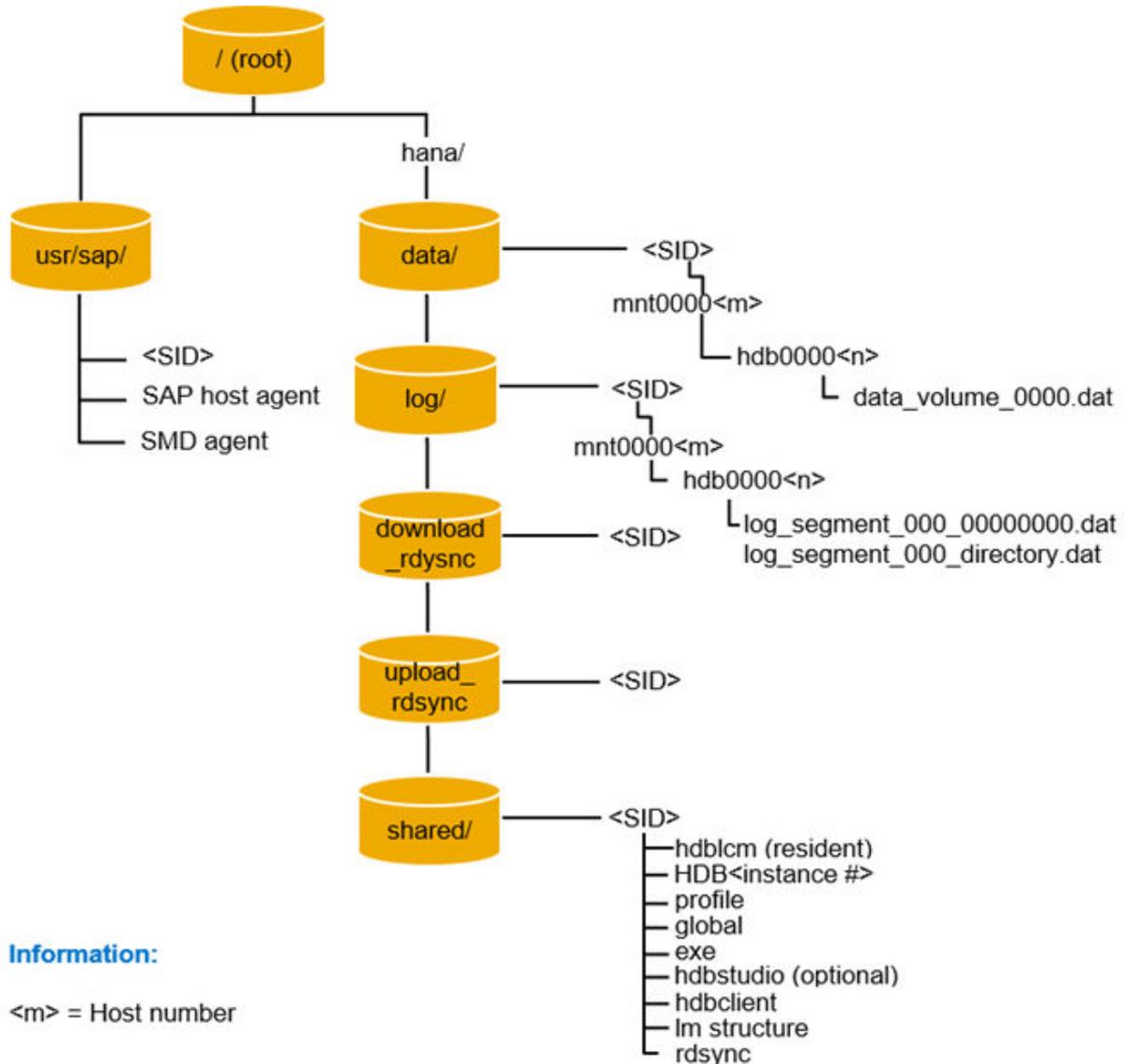
For an SAP HANA system with SAP HANA remote data sync, root level read, write, execute (rwx) shared access to the installation directory (/hana by default) and all subdirectories is required.

Default File Systems

File System	Default Path	Recommendations
Root	/	
Installation path (sapmnt)	/hana/shared/	<p>The mount directory is used for shared files between all hosts in an SAP HANA system. This directory needs to be accessible to each of the servers in the SAP HANA cluster.</p> <p>Sub-directories:</p> <ul style="list-style-type: none"> • /hana/shared/<SID> - Contains executable kernel programs (exe), globally shared data (global), instance profiles (profile), HDB executables (HDB<number>), and uninstallation script and instruntime (hdblcsm) • /hana/shared/<SID>/hdbclient - The SAP HANA client installation path. • /hana/shared/<SID>/hdbstudio - The SAP HANA studio installation path. <p>The following paths apply, when the SAP HANA studio is installed:</p> <ul style="list-style-type: none"> • /hana/shared/<SID>/hdbstudio_update - The studio repository installation path. The studio repository is used to update the local SAP HANA studio installation.
System instance	/usr/sap	<p>This is the path to the local SAP system instance directories.</p> <p>Sub-directories:</p> <ul style="list-style-type: none"> • /usr/sap/hostctrl - The SAP host agent directory. • /usr/sap/<SID> - Contains system executables (SYS) and the home directory (home) of the <SID>adm user.
Remote data sync file download directory	/hana/download_rdsync/<SID>	The default path to the download and upload directory depends on the system ID of the SAP HANA host. Must be shared across hosts.
Remote data sync file upload directory	/hana/upload_rdsync/<SID>	The default path to the download and upload log directory depends on the system ID of the SAP HANA host. Must be shared across hosts

*These files may use a shared file system like Network File System (NFS).

Use the SAP HANA file system layout shown in the figure below:



Information:

`<m>` = Host number

⚠ Caution

An SAP HANA system in a production environment must not share any infrastructure with another SAP HANA system.

Hosts running more than one SAP HANA system (sometimes referred to as multiple-SID installations) can only be used for non-production purposes such as development, quality assurance, or testing.

For production systems with high availability, it is possible to share some temporarily unused resources from the standby hosts. As soon as the standby resources are needed, they must become exclusively available for the production system and no longer shared. For more details, refer to the high availability information in the *SAP HANA Administration Guide*.

The file systems `/hana/data/<SID>` and `/hana/log/<SID>` may use shared file systems like NFS, or block storage using the SAP HANA storage connector API with non-shared file systems. For more details, see Related Information.

The file systems `/hana/download_rdsync/SID` and `/hana/upload_rdsync/SID` may use shared file systems like NFS.

The installation path (`/hana/shared`) is visible on all hosts. By default, the installation path is also used for backup. However, backup directories should be manually configured, and must belong to a shared file system. For more details, refer to the backup information in the *SAP HANA Administration Guide*.

i Note

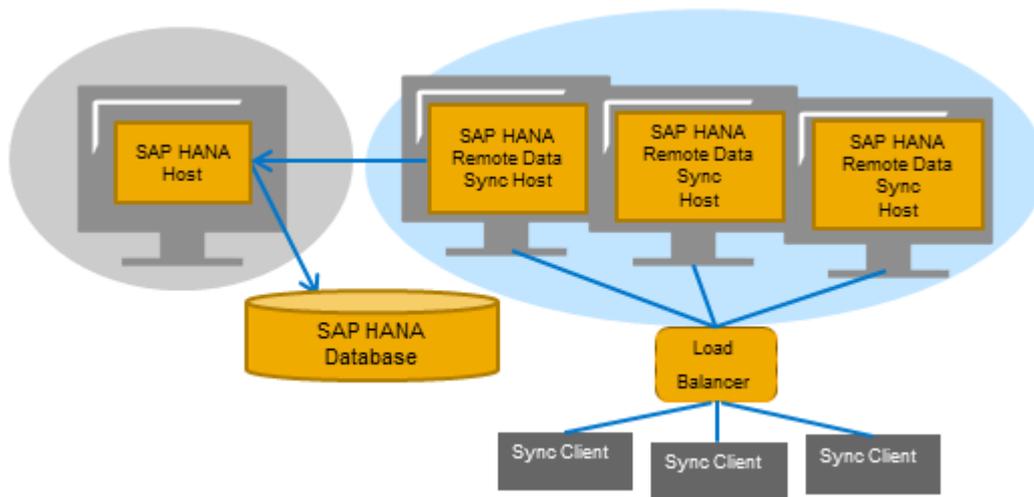
The directories listed are the defaults. Your install location may be different.

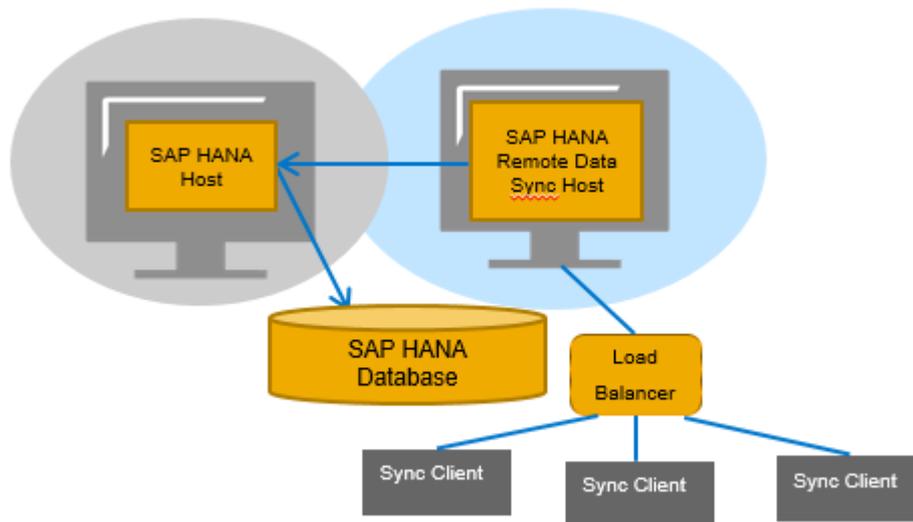
6 Remote Data Sync Installation Planning

Before installing SAP HANA remote data sync, it is important to understand the basic system configuration in order to optimize the installation and avoid unnecessary reconfiguration.

The SAP HANA server is required in order to use SAP HANA remote data sync. An SAP HANA system with SAP HANA remote data sync consists of at least one SAP HANA host and one remote data sync host. Optionally, SAP HANA remote data sync may run on the same host as SAP HANA.

SAP HANA remote data sync can be installed on more than one host, with each host running a single remote data sync server. All hosts in the SAP HANA system, including the remote data sync hosts, must have read and write access to the SAP HANA shared directory before installation begins.





Only one remote data sync license is required per installation of SAP HANA remote data sync, regardless of the number of synchronization hosts within the single SAP HANA system. However, the total CPU core count of all synchronization hosts must not exceed the number of cores licensed.

6.1 Remote Data Sync Hardware Requirements

The SAP HANA host and the host on which you install the remote data sync server package must run the same operating system.

SAP HANA remote data sync must run on one of these operating systems:

- SUSE Linux Enterprise Server (SLES) 12.1 or higher
- Red Hat Enterprise Linux (RHEL) 7.2 or higher

For a list of supported operating systems, see SAP Note [2305868](#).

Setting up a Network Time Protocol (NTP) server for the SAP HANA system landscape is recommended.

i Note

Not having an NTP server has system implications. For example, trace files from distributed hosts cannot be displayed in the correct chronological order.

There are no specific hardware requirements for remote data sync. The specifications of remote data sync hosts do not need to match those of the SAP HANA host.

Hardware Considerations

The remote data sync server can be installed and operate in 100MB RAM and less than 300MB disk space, although more may be needed for significant active use. The remainder of this section describes considerations for active use.

Much of the work done by the synchronization server is executing SQL statements. The synchronization server may execute hundreds of SQL statements against SAP HANA for a single synchronization request. The SAP HANA database is more likely to be the bottleneck than the synchronization server process.

Replacing one host with another is relatively simple. For many users, the best way forward is to choose modest hardware to start with, and move to a larger machine or add additional machines if required because no state information is held on the remote data sync server machine.

Recommendations for hardware requirements are subject to many caveats about application variability.

6.1.1 Memory Use in Remote Data Sync

Outside of external factors such as database capacity and network speed, memory requirements are typically the limiting factor in remote data sync synchronization server throughput.

This section gives formulas for estimating memory requirements under common working conditions. The formulas are simplified, and are approximate only. They are provided for guidance only, and with no guarantee of their accuracy or applicability to a particular case.

Consider three types of memory use:

1. When the remote data sync server starts, it allocates memory it needs independent of synchronization requests.
2. For each synchronization request in the server, the synchronization server has to allocate memory to hold the data being uploaded and/or downloaded.
3. There is a fixed overhead per synchronization request, as well as additional overhead based on the volume of data going through the system.

The following variables are used to calculate memory use:

P

The fixed memory used by the remote data sync server (in MB).

q

The memory requirements per synchronization request (in MB).

r

The memory requirements per MB of uploaded data (a multiplicative factor).

M

The RAM used by the remote data sync server (in MB).

C

The number of concurrent client synchronization requests in the remote data sync server.

V

The volume of data in the average synchronization request (in MB).

$$M = p + (q + rV)C$$

The actual memory use is more complex than this, but it is a guide.

A rough formula for simple cases is:

$$M = 150 + (0.2 + V)C$$

When estimating hardware requirements, 150 MB is insignificant and so we can treat this instead as:

$$M = (V + 0.2)C$$

6.1.2 Concurrent Synchronizations in the Remote Data Sync Server

You need to estimate the RAM/throughput capacity relationship as part of your hardware requirements.

To estimate this relationship, you need the typical synchronization data volume V MB. Estimate this value by multiplying the number of rows uploaded or downloaded in a synchronization by the average row size. Remote data sync stores character data as Unicode, so calculate all text data as 2 bytes per character.

This is a simplification. Downloading deletes may only download primary key values. Uploading updates uploads both before and after images of the row for conflict resolution purposes. Additional data is uploaded, such as database schema information.

A machine with M MB of RAM can have C concurrent synchronizations, each with about V MB of upload or download data volume, where:

$$C = M / (V + 0.2)$$

For large (20 MB) synchronizations, the approximate number of concurrent synchronizations that can be supported depends on the RAM of the machine. Some illustrative values follow:

4 GB RAM

$$C = 4096 \text{ MB} / V \Rightarrow C = 200 \text{ concurrent synchronizations}$$

8 GB RAM

$$C = 8192 \text{ MB} / V \Rightarrow C = 400 \text{ concurrent synchronizations}$$

16 GB RAM

$$C = 16384 \text{ MB} / V \Rightarrow C = 800 \text{ concurrent synchronizations}$$

For smaller synchronizations, the number of concurrent synchronizations that the server can hold goes towards 5M, a very large number. The upper limit will be reached before that, as the number of sockets on the machine is generally smaller, and consolidated database performance generally limits the number even before the number of sockets.

6.1.3 Maximum Throughput

To estimate the throughput, you need to know the average duration of a synchronization request in the remote data sync server.

One way to measure the duration of a synchronization request is to use the SAP SQL Anywhere MobiLink Profiler, which records the time for each phase of synchronizations going through a remote data sync server. One phase that the MobiLink Profiler records is “waiting for database connection”. If this phase is a significant portion of the time for synchronization requests, then the consolidated database is the bottleneck to synchronization throughput. The remainder of this section assumes that the database is not the bottleneck.

If the target throughput is L synchronizations per second, and the average duration of a synchronization request is t , then the number of concurrent requests in the remote data sync server at target throughput is:

$$C = Lt$$

Therefore, the RAM requirements for a throughput of L are:

$$M = (V + 0.2) Lt$$

Here are a few sample data points to illustrate the kinds of values involved.

Target throughput (L , synchronizations/sec)	Average sync volume V (MB)	Elapsed sync request time (t)	RAM (M)
100	0.5	3	210 MB
1000	2	8	18 GB

6.1.4 Tools for Measuring Performance

Measure performance of your SAP HANA remote data sync system by using the SAP HANA cockpit and by using the tools that are included with SAP SQL Anywhere.

SAP SQL Anywhere includes tools to help you measure the input factors for your synchronization model for your SAP HANA remote data sync system.

These tools are run on a machine with SAP SQL Anywhere installed on it, and run against SAP HANA remote data sync; they are not included with the SAP HANA remote data sync software.

SAP SQL Anywhere MLReplay

It is expensive and difficult to use multiple machines to send synchronization requests, especially if you are building an application for mobile devices. SAP SQL Anywhere includes the MLReplay utility, which you can use to play back a recorded synchronization request as executed by many clients, from a single computer.

SAP SQL Anywhere MobiLink Profiler

The profiler records the details of individual synchronization requests, and can capture large numbers of synchronizations at a time. In addition to the data it displays in the user interface, the timing data is stored in a database for custom analysis.

6.1.4.1 Example: Performance Measurement with MLBench

MLBench is a custom benchmark schema used in the SQL Anywhere MobiLink Performance White paper, which gives a far more detailed account of scalability considerations than this document.

As the focus is on load-testing the remote data sync server, the sample uses a simple, single-table synchronization so that the database does not need tuning for fast operation.

The following table shows the maximum throughput observed at different synchronization sizes, which is the closest to reaching the throughput capacity of the remote data sync server. These data were recorded using 50 clients.

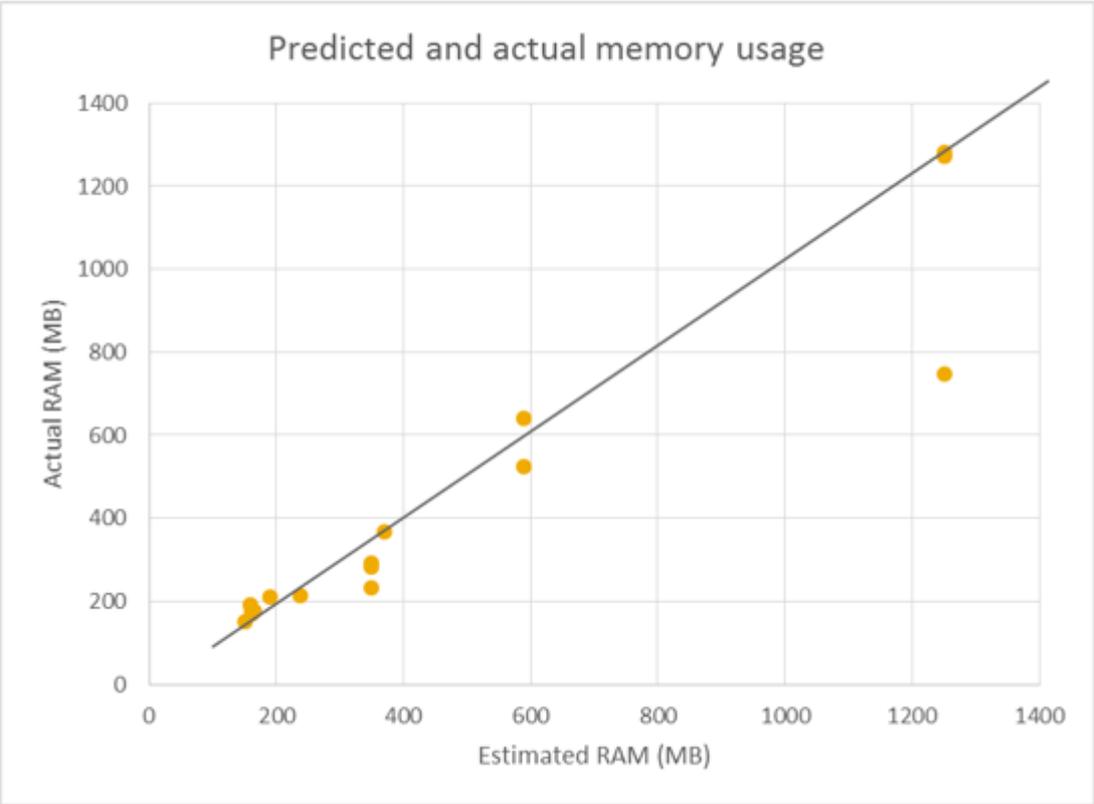
Table 1. Synchronization Throughput For a Simple Synchronization Schema

Operation	Clients C	Synchroniza- tion size (rows/client)	Elapsed Time T (s)	Throughput L (synchroniza- tions/sec)	Avg req time t (s)	RAM M (MB)
None	0	0	0.00	N/A	0.0	150
None	1000	0	5.00	200	0.4	284
Insert	100	1000	0.95	105	0.7	209
Insert	400	100	0.98	409	0.3	214
Insert	100	10000	10.70	9	8.7	368
Insert	500	10000	50.00	10	47.0	1271
Download	50	1	0.12	417	0.1	191
Download	50	10	0.15	333	0.1	171
Download	50	100	0.11	442	0.1	179
Download	50	500	0.14	357	0.1	175
Download	500	1000	4.90	102	1.7	234
Insert	500	1000	5.10	98	2.9	291
Download	500	10000	40.50	12	29.7	747
Insert	500	10000	49.50	10	41.5	1280
Insert	200	10000	17.00	12	16.8	640
Download	200	10000	16.00	13	14.0	523

A rough fit of these values gives the equation above:

$$M = 150 + (0.2 + V) C$$

The following graph plots the actual and predicted usage. Download rows generally take less server memory than rows being uploaded, and the equation is chosen to provide a generally high value.



6.1.4.2 Example: MobiLink Performance

In this example, the MobiLink server and consolidated database are each running on a dedicated Dell PowerEdge R510 server with two six-core Intel Xeon X5650 2.6 GHz processors and 48 GB of RAM. As MobiLink and remote data sync share the same code, the results of the example are relevant to both.

Sample throughput numbers are:

- Download from consolidated: 469 synchronizations/s (41 MB/s)
- Upload of inserts to consolidated: 301 synchronizations/s (26 MB/s)
- Upload of deletes to consolidated: 173 synchronizations/s (15 MB/s)
- Upload of updates (with conflict detection): 114 synchronizations/s (10 MB/s)

Max throughput with 48 GB RAM for 10,000 clients each synchronizing 1000 rows is ~ 41 MB/S, or 470 synchronizations/s, which is similar to the throughput numbers shown above. MobiLink is almost certainly not the bottleneck.

$$M = 150 + (0.2 + V)C$$

$$1000 \text{ rows} = 1000 * 0.1\text{KB} = 0.1\text{MB} = V$$

$$C = 10,000$$

$$\text{Mest} = 150 + 10,000 * 0.3 = 3000 \text{ MB} = 3 \text{ GB}$$

The memory is not limiting performance. The consolidated database is almost certainly limiting. This is a measure of what you can do when memory is not a problem.

6.1.4.3 Example: Extrapolation

This example uses a segment of a log file recording two synchronization requests for a 50 table database, with an average synchronization size of 2 MB.

Synchronization phases, and their times in milliseconds, are shown in the log file listing below.

The database does not have synchronization script for each of inserts, updates, deletes, downloads, and download_deletes for each table, but could easily be executing 100 database requests per synchronization. A throughput of 100 synchronizations per second would require the database to support 10,000 queries per second.

```
I. 2015-04-09 14:53:48. <128> (,u1) PHASE: sync_request: 106
I. 2015-04-09 14:53:48. <128> (,u1) PHASE: receive_upload: 2
I. 2015-04-09 14:53:48. <128> (,u1) PHASE: get_db_worker: 8
I. 2015-04-09 14:53:48. <128> (,u1) PHASE: connect: 47
I. 2015-04-09 14:53:48. <128> (,u1) PHASE: authenticate_user: 52
I. 2015-04-09 14:53:48. <128> (,u1) PHASE: begin_sync: 899
I. 2015-04-09 14:53:48. <128> (,u1) PHASE: apply_upload: 628
I. 2015-04-09 14:53:48. <128> (,u1) PHASE: prepare_for_download: 173
I. 2015-04-09 14:53:48. <128> (,u1) PHASE: fetch_download: 1596
I. 2015-04-09 14:53:48. <128> (,u1) PHASE: end_sync: 73
I. 2015-04-09 14:53:48. <128> (,u1) PHASE: send_download: 2397
I. 2015-04-09 14:53:48. <128> (,u1) PHASE: wait_for_download_ack: 0
I. 2015-04-09 14:53:48. <128> (,u1) PHASE: get_db_worker_for_download_ack: 0
I. 2015-04-09 14:53:48. <128> (,u1) PHASE: connect_for_download_ack: 0
I. 2015-04-09 14:53:48. <128> (,u1) PHASE: nonblocking_download_ack: 0
I. 2015-04-09 14:57:24. <131> (,u1) PHASE: sync_request: 104
I. 2015-04-09 14:57:24. <131> (,u1) PHASE: receive_upload: 2
I. 2015-04-09 14:57:24. <131> (,u1) PHASE: get_db_worker: 9
I. 2015-04-09 14:57:24. <131> (,u1) PHASE: connect: 35
I. 2015-04-09 14:57:24. <131> (,u1) PHASE: authenticate_user: 57
I. 2015-04-09 14:57:24. <131> (,u1) PHASE: begin_sync: 555
I. 2015-04-09 14:57:24. <131> (,u1) PHASE: apply_upload: 142
I. 2015-04-09 14:57:24. <131> (,u1) PHASE: prepare_for_download: 64
I. 2015-04-09 14:57:24. <131> (,u1) PHASE: fetch_download: 1370
I. 2015-04-09 14:57:24. <131> (,u1) PHASE: end_sync: 29
I. 2015-04-09 14:57:24. <131> (,u1) PHASE: send_download: 969
I. 2015-04-09 14:57:24. <131> (,u1) PHASE: wait_for_download_ack: 0
I. 2015-04-09 14:57:24. <131> (,u1) PHASE: get_db_worker_for_download_ack: 0
I. 2015-04-09 14:57:24. <131> (,u1) PHASE: connect_for_download_ack: 0
I. 2015-04-09 14:57:24. <131> (,u1) PHASE: nonblocking_download_ack: 0
```

The total synchronization time averages to:

$$t = 4.5s$$

In principle, the maximum number of concurrent synchronizations at the remote data sync server on a machine with 4 GB of memory is:

$$\begin{aligned} C &= (M-150) / (0.2+V) \\ &= 3850 / 2.2 \\ &= 1750 \end{aligned}$$

Taking the duration of individual synchronizations into account, the maximum potential throughput becomes:

$$\begin{aligned} L &= C/t \\ &= 1750/4.5 \\ &= 389 \text{ syncs } s^{-1} \end{aligned}$$

In practice, the consolidated database is unable to sustain such a load, so the actual throughput is expected to be less than 389 synchronizations/s.

6.2 Preparing to Install SAP HANA Remote Data Sync

Ensure that you meet all SAP HANA distributed system requirements.

See *SAP HANA System Concepts* in the *SAP HANA Server Installation and Update Guide*.

The directory structure that you use determines the command required to start the SAP HANA installer. Regardless of the directory structure used, the location of each extracted package must be accessible to both the SAP HANA and remote data sync hosts.

6.2.1 Shared File System Requirements

A shared file system is required to install SAP HANA.

Designate one host as the file server. The file server hosts the shared file system.

Designate all other hosts that need to access the file system as file server clients. The clients access the shared file system on the file server.

If you are adding SAP HANA remote data sync to an existing SAP HANA system, and you intend to run SAP HANA remote data sync on a separate host, then add the remote data sync host to the shared file system as a file server client.

Ensure that the remote data sync file upload and download directories have been created and are shared between hosts: `/hana/download_rdsync/<SID>` and `/hana/upload_rdsync/<SID>`. The default path to the upload and download directory depends on the `<SID>` of the SAP HANA host.

For an SAP HANA system with SAP HANA remote data sync, root level read, write, execute (rwx) shared access to /hana and all subdirectories or shared directories is required.

There are many ways to set up a shared network file system (NFS). Consult your operating system manual or a system administrator for assistance.

Related Information

[SAP Note 2099253](#) 

6.2.2 Extract Packages to the Default Structure

Download the RDSYNC200* .SAR and RDSYNCMON200* .SAR packages to the same folder and use the default directory structure during extraction.

Context

When you use the default structure, the SAP HANA installer automatically detects the downloaded packages, and makes them available for installation. This eliminates the need to specify individual package locations when you start the SAP HANA installer.

On the SAP Software Downloads Center, installation packages are available for download from **Support Packages and Patches** in a .SAR format.

Procedure

1. In a shared location, create an initial folder; for example, /SAP_downloads/.
2. Download each installation package to this folder. Do not create a subfolder for each package.
3. Change to the download folder created in step 1, and extract the files to the current location. Use the SAP SAPCAR utility to extract the .SAR files.

```
SAPCAR -xvf RDSYNC200*.SAR
SAPCAR -xvf RDSYNCMON200*.SAR
```

The extraction process places each package in a predefined subfolder. Do not change the name of these subfolders, as the installer looks specifically for this structure. Once extracted, the folder structure should look similar to:

```
/SAP_downloads
  /SAP_HANA_DATABASE
  /SAP_HANA_DATABASE_Linux_on_x86_64.SAR
  /SAP_HANA_REMOTE_DATA_SYNC
```

```
/RDSYNC200*.SAR  
/RDSYNCMON200*.SAR
```

6.2.3 Extract Packages to a Custom Directory Structure

Each download package need not reside on the same host. You can override the default package folder name during extraction.

Context

When you use a custom directory structure, you must specify the location of each package when you start the installer, for it to detect the package.

On the SAP Software Downloads Center, installation packages are available for download from **Support Packages and Patches** in a `.SAR` format.

Procedure

1. On a share location, create a folder, and download an installation package to it.
2. Change to the download folder, and extract the files. Use the SAP SAPCAR utility to extract the `.SAR` files.

```
RDSYNC200*.SAR  
RDSYNCMON200*.SAR
```

3. Repeat these steps to extract each downloaded package.

Related Information

[Installer Startup When Using a Custom Directory Structure \[page 41\]](#)

6.2.4 Installer Startup When Using a Custom Directory Structure

When you start the SAP HANA installer, specify the location of the extracted download packages (SAR files).

When you use a custom directory structure, you can extract each installation package to a common or a separate structure. If the package is extracted to a separate structure, then use the `component_dirs` parameter to specify the location of each package. If the package is extracted to a common structure, then use the `component_root` parameter to specify the common path.

For example, to extract the SAP HANA server package to `/downloads/HANA/SAP_HANA_DATABASE` and the remote data sync server package to `/downloads/SAP_HANA_RDSYNC`, use the `component_root` parameter:

```
--component_root=/downloads
```

To extract the SAP HANA database package to `/SAP_HANA/server` and the remote data sync server package to `/SAP_HANA_REMOTE_DATA_SYNC`, use the `component_dirs` parameters:

```
--component_dirs=/SAP_HANA/server,/SAP_HANA_REMOTE_DATA_SYNC
```

If you specify neither the `component_dirs` nor `component_root` parameters, then the installer looks only in the installer directory for the available components for installation.

7 Remote Data Sync Installation

To install SAP HANA remote data sync, install the synchronization server package (at which time it is recommended that you also add the synchronization host).

Using the lifecycle management tools, you can install, update, or uninstall SAP HANA components and plugins independently of each other. Perform installation and update tasks in interactive mode or batch mode.

Either install the SAP HANA server package first, or at the same time as the remote data sync server package. You cannot install SAP HANA remote data sync without the SAP HANA server. From SAP Software Download Center, download the remote data sync installer packages and extract them to the same directory as the SAP HANA installer. This way, the SAP HANA installer can detect SAP HANA remote data sync.

Note

The installer folder must be accessible for all users.

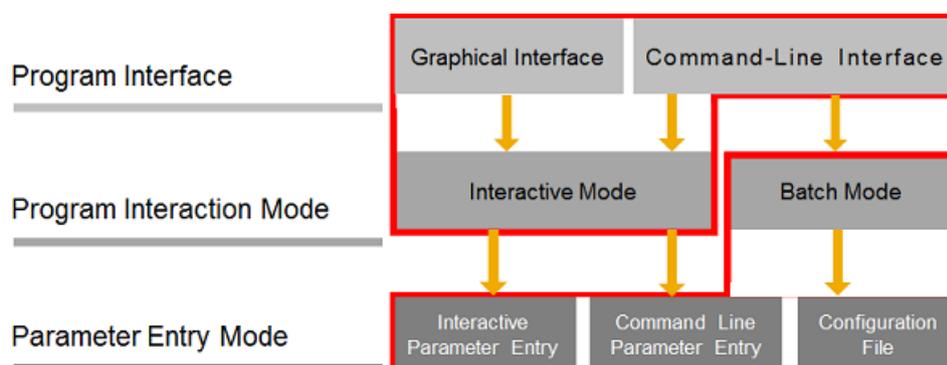
Single- and multi-host deployments of remote data sync

Both single-host and multi-host deployments of SAP HANA remote data sync are supported in a production environment.

7.1 Installing the Remote Data Sync Server Package by Using LCM Tools

The SAP HANA platform lifecycle management tool set includes command-line and graphical interface tools, which you can use to install, update, or configure your SAP HANA system.

The SAP HANA platform lifecycle management tools are used by means of program interface type, program interaction mode, and parameter entry mode. This guide only discusses graphical and command-line interfaces that use interactive mode. See *Using the LCM Tools* in the *SAP HANA Installation and Update Guide* for details on using batch mode or parameter entry mode for installation.



i Note

Use `hdb1cmgui` or `hdb1cm` to install the remote data sync package.

Depending on your installation scenario, use one of the following installation procedures:

- SAP HANA and SAP HANA remote data sync
- SAP HANA remote data sync on an existing system

After installing the synchronization server package, use either the `hdb1cm` or the `hdb1cmgui` tool to add a remote data sync host.

7.1.1 Installing with the Graphical Interface

If you use the `hdb1cmgui` graphical interface to install the synchronization server package, then there is no need to also use the `hdb1cm` command-line interface.

Depending on your installation scenario, use one of the following installation procedures:

- SAP HANA and SAP HANA remote data sync
- SAP HANA remote data sync on an existing system

After installing the synchronization server package, use either the `hdb1cm` or the `hdb1cmgui` tool to add a remote data sync host (one for each sync node).

7.1.1.1 Install SAP HANA and SAP HANA Remote Data Sync by Using `hdb1cmgui`

Install SAP HANA and SAP HANA remote data sync as a new system by using `hdb1cmgui`.

Prerequisites

- You are logged in as the root user on the master SAP HANA host. Both the SAP HANA and remote data sync hosts have the same root user name and password.
- The SAP HANA 2.0 server and remote data sync installation packages are downloaded. All packages are of an equivalent support or revision level.
- The SAP HANA server hosts and remote data sync hosts have access to the SAP HANA shared resources.
- The `/hana/shared/<SID>/rdsync` directory does not already exist, unless you are updating remote data sync, in which case `rdsync` directory may already be present.
- An X Window System is running.

Context

i Note

- These steps pertain only to the remote data sync option. Refer to the option-specific installation guide if you are including other SAP HANA options in the installation.
- Avoid specifying an installation path that contains symbolic links since it may prevent you from renaming the SID at a later point.

The `<SID>adm` user is created on each host of the SAP HANA landscape as part of the SAP HANA core installation. The `sapadm` user is automatically created by the SAP Host Agent installer, which is called by the SAP HANA installer. When you add a host to the system, both users are automatically created on the added host. The `<SID>adm` user must be the same on all hosts. Similarly, the password for the `sapadm` user must be the same on all hosts.

The `SAP_HANA_REMOTE_DATA_SYNC` directory appears after you decompress both the `RDSYNC2XXX.SAR` and `RDSYNCMON2XXX.SAR` packages that you download from the SAP Software Download Center.

Procedure

1. Change to the directory that contains the SAP HANA installer. The suggested layout for the installer path is:

```
/downloads/  
  SAP_HANA_DATABASE/  
    server/  
      SAP_HANA_REMOTE_DATA_SYNC/
```

2. Start the SAP HANA platform lifecycle management tool:

Package

Extraction Method	Syntax
Default Directory Structure	<pre>./hdblcgui</pre>
Custom Directory Structure	<p>Common path, where <code><full_path></code> is the common path to both installation packages:</p> <pre>./hdblcgui --component_root=<full_path></pre> <p>Separate paths, where:</p> <ul style="list-style-type: none">◦ <code><full_path_HANA></code> refers to the path to the SAP HANA installation package, and;◦ <code><full_path_option></code> refers to the remote data sync installation package <pre>./hdblcgui -- component_dirs=<full_path_HANA>,<full_path_option></pre>

3. On the Select Software Locations page, verify that the SAP HANA database and remote data sync components appear on the list. If any are missing:

- a. Click **Add Component Location**.
- b. Type the path to the missing installation package and click **OK**. Repeat this step to add any additional missing packages.
4. On the Select Activity page, select **Install new system**.
5. On the Select Components page, select *remote data sync*.
6. On the Choose System Type page, do one of:

Option	Action
Install the SAP HANA system with SAP HANA remote data sync.	Select Single-Host System . Skip to entering an SAP HANA system ID.
Install the SAP HANA system with SAP HANA remote data sync, and add the remote data sync host.	Select Multiple-Host System .

7. If you selected Multi-Host System:
 - a. Enter the root user password.
 - b. If prompted, enter the SAP host agent password.
 - c. Click the **Add Host** button and specify:

Property	Description
Hostname	Fully qualified domain name for the sync host, not for the SAP HANA host.
Role	Select rdsync.

- d. Leave all other defaults as displayed and click **OK**.
8. On the Define System Properties page, enter an SAP HANA system ID. Accept all other defaults.

i Note

If you override the default values:

- Do not specify `/usr/sap` for the installation path.
- A valid instance number between 00 and 98. 99 is reserved.

9. On the Define Storage Properties and Define Certificate Properties pages, accept all defaults.
10. On the Define System Administrator page, enter a system administrator password; accept all other defaults.
11. On the Define Database User page, enter a database user password.
12. If prompted, on the Define SAP Host Agent user, enter a host agent password.
13. On the Review and Confirm page, review the installation parameters. Modify any properties, as needed. Click **Install** to begin.

Next Steps

If you selected the Single-Host System option, then the next step is to add the remote data sync host to the SAP HANA system.

7.1.1.2 Install SAP HANA Remote Data Sync on an Existing SAP HANA System by Using hdb1cmgui

Install SAP HANA remote data sync on an existing SAP HANA system by using `hdb1cmgui`.

Prerequisites

- You are logged in as the root user on the master SAP HANA host. Both the SAP HANA and remote data sync hosts have the same root user name and password.
- The existing SAP HANA system is version 2.0.
- The remote data sync installation package is downloaded, and is of an equivalent support or revision level as the SAP HANA core system.
- The SAP HANA server hosts and remote data sync hosts have access to the SAP HANA shared resources.
- X Window System is running.

Context

i Note

These steps pertain only to the remote data sync option. Refer to the option-specific installation guide if you are including other SAP HANA options in the installation.

The `<SID>adm` user is created on each host of the SAP HANA landscape as part of the SAP HANA core installation. The `sapadm` user is automatically created by the SAP Host Agent installer, which is called by the SAP HANA installer. When you add a host to the system, both users are automatically created on the added host. The `<SID>adm` user must be the same on all hosts. Similarly, the password for the `sapadm` user must be the same on all hosts.

An alternative way to install the remote data sync option is from within SAP HANA Studio by choosing

► **Lifecycle Management** ► **Platform Lifecycle Management** ► **SAP HANA Platform Lifecycle Management** ►.

Procedure

1. On the SAP HANA host, change to the resident `hdb1cm` directory within the system ID folder. For example, `/hana/shared/AB1/hdb1cm`, where `/hana/shared/` is the shared directory for the system and `AB1` is the system ID.
2. Start the SAP HANA platform lifecycle management tool:

```
./hdb1cmgui --component_dirs=<full_path_option>
```

where `<full_path_option>` refers to the location of the remote data sync installation package.

3. On the **Select Activity** page, select **Install or update additional components**.
4. On the **Select Software Locations** page, if *remote data sync* appears on the list, click **Next**; otherwise:
 - a. Click **Add Component Location**.
 - b. Type the path to the remote data sync installation package and click **OK**.
5. On the **Select Components** page, select **Install remote data sync**.
6. On the **Enter Additional Hosts Properties** page, choose one of the following options:

Option	Action
Install SAP HANA remote data sync software only.	Click Next . Skip to step 8.
Install SAP HANA remote data sync software and add remote data sync hosts.	<ol style="list-style-type: none">1. Specify the root user password, and if prompted, the SAP host agent password.2. Select Add Host.

7. When adding a host, specify one of the following options:

Property	Description
Hostname	The fully qualified domain name of the sync host.
Role	rdsync

8. On the **Define Upgrade Properties** page, enter the system administrator and database user passwords.
9. On the **Review & Confirm** page, review the installation parameters. Modify as needed. Click **Update** to begin.

Next Steps

Add the remote data sync host to the SAP HANA system.

If you are upgrading to SAP HANA remote data sync 2.0, then the SYS_SYNC user must be granted the appropriate privileges on all tables referenced in the remote data sync scripts, and EXECUTE privileges on any procedures referenced in the remote data sync scripts.

7.1.2 Installing SAP HANA Remote Data Sync with the Command-Line Interface

If you use the `hdblcm` command-line interface to install the synchronization server package, then there is no need to also use the `hdblcmgui` graphical interface.

Depending on your installation scenario, follow the installation procedure for either:

- SAP HANA and SAP HANA remote data sync
- SAP HANA remote data sync on an existing system

After installing the synchronization server package, use `hdblcm` to add a remote data sync host (one for each sync node).

7.1.2.1 Install SAP HANA and SAP HANA Remote Data Sync by Using `hdblcm`

Install SAP HANA and SAP HANA remote data sync as a new system by using `hdblcm`.

Prerequisites

- You are logged in as the root user on the master SAP HANA host. Both the SAP HANA and remote data sync hosts have the same root user name and password.
- The SAP HANA 2.0 server and remote data sync installation packages are downloaded. All packages are of an equivalent support or revision level.
- The SAP HANA server hosts and remote data sync hosts have access to the SAP HANA shared resources.
- The `/hana/shared/<SID>/rdsync` directory does not already exist.

Context

i Note

- These steps pertain only to the remote data sync option. Refer to the option-specific installation guide if including other SAP HANA options in the installation.
- Avoid specifying an installation path that contains symbolic links since it may prevent you from renaming the SID at a later point.

The `<SID>adm` user is created on each host of the SAP HANA landscape as part of the SAP HANA core installation. The `sapadm` user is automatically created by the SAP Host Agent installer, which is called by the SAP HANA installer. When you add a host to the system, both users are automatically created on the added host. The `<SID>adm` user must be the same on all hosts. Similarly, the password for the `sapadm` user must be the same on all hosts.

Procedure

1. Change to the directory containing the SAP HANA installer. The suggested layout for the installer path is:

```
/downloads/  
  SAP_HANA_DATABASE/  
    server/  
      rdsync/
```

```
sync/
```

2. Start the SAP HANA platform lifecycle management tool:

Package Extraction Method	Syntax
Default Directory Structure	<pre>./hdblcm</pre>
Custom Directory Structure	<p>Common path, where <code><full_path></code> is the common path to both installation packages:</p> <pre>./hdblcm --component_root=<full_path></pre> <p>Separate paths, where:</p> <ul style="list-style-type: none">◦ <code><full_path_HANA></code> refers to the path to the SAP HANA installation package, and;◦ <code><full_path_option></code> refers to the directory containing the remote data sync installation package <pre>./hdblcm --component_dirs=<full_path_HANA>,<full_path_option></pre>

3. At the Choose system prompt, select **Install new system**.
4. At the Select additional components for installation prompt, select **All**. This installs both SAP HANA and SAP HANA remote data sync.

Note

If SAP HANA and SAP HANA remote data sync do not appear on the list, and you are using the default directory structure, then review the directory structure. If using a custom directory structure, then review the `component_dirs` or `component_root` parameters. Press Ctrl+C to cancel the installation, then restart the installer using the corrected parameters.

5. Specify the SAP HANA system properties:

SAP HANA System Properties

Field Name	Description
Installation Path	Specifies the path to the SAP mount directory, which can be used as a shared directory between multiple hosts. Do not install to <code>/usr/sap</code> .
Local Host Name	Specifies the host name of the machine.
Add additional hosts to the system?	Allows the addition of worker and standby hosts to the SAP HANA installation.
◦ Host names to add	Specifies the fully qualified machine names of the remote data sync host.
◦ Root User Name	Specifies the root user for the SAP HANA system.
◦ Root User Password	If prompted, specifies the password of the root user.

Field Name	Description
○ Select roles for host	Select rdsync.
SAP HANA System ID	Specifies a system ID. The SAP system ID (SID) is the identifier for the SAP HANA system.
Instance Number	Specifies the instance number of the SAP HANA system. A valid instance number is between 00 - 98. 99 is reserved.
System Usage	Specifies the usage type of the system to be installed. This setting is stored in the <code>global.ini</code> file, and can be used to identify the intended usage of the system.
Location of Data Volumes	Specifies the path to the data directory of the SAP HANA system.
Location of Log Volumes	Specifies the path to the log directory of the SAP HANA system.
Restrict maximum memory allocation?	Specifies whether maximum memory allocation is restricted for a new system. Specifies the maximum memory allocation for a new system in MB.
Certificate Host Name	Specifies the hostname used for generation of self-signed SSL certificates for the SAP host agent.
System Administrator Home Directory	Specifies the home directory of the system administrator. This parameter is relevant only if the operating system administrator (<code><SID>adm</code>) does not exist prior to installation.
System Administrator Login Shell	Specifies a system administrator login shell. This parameter is relevant only if the operating system administrator (<code><SID>adm</code>) does not exist prior to installation.
System Administrator User ID	Specifies the user ID of the system administrator. This parameter is relevant only if the operating system administrator (<code><SID>adm</code>) does not exist prior to installation.
System Administrator Timezone	Specifies the timezone of the system administrator.
Database User (SYSTEM) Password	Specifies the password of the database.
ID of User Group (sapsys)	Specifies the SAP system (sapsys) group ID. This parameter is relevant only if a sapsys group does not already exist on the host. If a sapsys group already exists, passing the groupid parameter does not alter the existing group.
Restart instance after machine reboot?	Restarts instance after machine reboot.

SAP HANA Remote Data Sync Properties

Field Name	Description
Location of SAP HANA Remote Data Sync file download directory	Specifies the location of the remote data sync file-transfer download directory
Location of SAP HANA Remote Data Sync file upload directory	Specifies the location of the remote data sync file-transfer upload directory.

6. At the confirmation prompt, type **y** to begin.

Next Steps

If you did not add additional hosts during installation, the next step is to add the remote data sync host to the SAP HANA system.

There are two types of database configurations: single tenant and multitenant. In single-tenant mode, the install copies in the remote data sync binaries. Also in single-tenant mode, if the installer is also adding a host in the 'rdsync' role and the `-auto_initialize_services` option is specified, then the installer initializes remote data sync in the tenant. In a multitenant system, the install only copies in the remote data sync binaries.

7.1.2.2 Install SAP HANA Remote Data Sync on an Existing SAP HANA System by Using `hdb1cm`

Install SAP HANA remote data sync on an existing SAP HANA system by using `hdb1cm`.

Prerequisites

- You are logged in as the root user on the master SAP HANA host. Both the SAP HANA and remote data sync hosts have the same root user name and password.
- The existing SAP HANA system is version 2.0 or later.
- The remote data sync installation package is downloaded, and is of an equivalent support or revision level as the SAP HANA core system.
- The SAP HANA server hosts and remote data sync hosts have access to the SAP HANA shared resources.

Context

Note

- These steps pertain only to the remote data sync option. Refer to the option-specific installation guide if you are including other SAP HANA options in the installation.
- For the initial install of SAP HANA remote data sync, SAP recommends that the `data_sync` folder not already exist.

The `<SID>adm` user is created on each host of the SAP HANA landscape as part of the SAP HANA core installation. The `sapadm` user is automatically created by the SAP Host Agent installer, which is called by the SAP HANA installer. When you add a host to the system, both users are automatically created on the added host. The `<SID>adm` user must be the same on all hosts. Similarly, the password for the `sapadm` user must be the same on all hosts.

Procedure

1. On the SAP HANA host, change to the resident `hdblcm` directory within the system ID folder. For example, `/hana/shared/AB1/hdblcm`, where `/hana/shared/` is the shared directory for the system and `AB1` is the system ID.
2. Start the SAP HANA platform lifecycle management tool:

```
./hdblcm --component_dirs=<full_path_option>
```

where `<full_path_option>` refers to the remote data sync installation package.

3. At the **Enter selected action index** prompt, enter the index number of the system into which you want to install SAP HANA remote data sync.
4. At the **Choose components to be installed or updated** prompt, enter the index for SAP HANA remote data sync.
5. Press **Enter** to accept the parameter default values suggested in brackets (recommended), or enter new values as prompted. Accept the defaults for the file download directory and the file upload directory.
6. At the confirmation prompt, type **y** to begin.

Next Steps

Add the remote data sync host to the SAP HANA system.

If you are upgrading to SAP HANA remote data sync 2.0, then the `SYS_SYNC` user must be granted the appropriate privileges on all tables referenced in the remote data sync scripts, and `EXECUTE` privileges on any procedures referenced in the remote data sync scripts.

Related Information

[SAP Note 2096836](#) 

7.2 Create a Single-Host System

You can create a single-host system.

Procedure

1. Install SAP HANA and SAP HANA remote data sync.

2. Add the rdsync role to the SAP HANA landscape with the following command:

```
sudo /hana/shared/<SID>/hdblcm/hdblcm --action=add_host_roles --  
add_roles=<hostname>=rdsync
```

i Note

If you are logged in as root, then sudo is not required.

7.3 Adding a Remote Data Sync Host by Using LCM Tools

After installing SAP HANA remote data sync with SAP HANA, or on an existing SAP HANA system, add a remote data sync host.

Use either `hdblcmgui` or `hdblcm` to add the remote data sync host. These procedures pertain only to SAP HANA remote data sync. Refer to the option-specific installation guide if including other SAP HANA options in the installation.

7.3.1 Add a Remote Data Sync Host by Using `hdblcmgui`

Add a remote data sync host to the SAP HANA system by using `hdblcmgui`.

Prerequisites

- You are logged in as the root user on the master SAP HANA host. Both the SAP HANA and remote data sync hosts have the same root user name and password.
- The SAP HANA and remote data sync hosts have access to the SAP HANA shared resources.
- X Window System is running.

Context

- These steps pertain only to the remote data sync option. Refer to the option-specific installation guide if including other SAP HANA options in the installation.

The `<SID>adm` user is created on each host of the SAP HANA landscape as part of the SAP HANA core installation. The `sapadm` user is automatically created by the SAP Host Agent installer, which is called by the SAP HANA installer. When you add a host to the system, both users are automatically created on the added host. The `<SID>adm` user must be the same on all hosts. Similarly, the password for the `sapadm` user must be the same on all hosts.

Procedure

1. On the SAP HANA host, change to the resident `hdblcm` directory within the system ID folder. For example, `/hana/shared/AB1/hdblcm`, where `/hana/shared/` is the shared directory for the system and `AB1` is the system ID.
2. Start the SAP HANA platform lifecycle management tool:

```
./hdblcmgui
```

3. On the Select Activity page, verify that the correct system ID to receive the host is displayed and then select **Add Additional Hosts to the SAP HANA System**.
4. Click the **Add Host** button and specify:

Property	Description
Hostname	The fully qualified domain name for the sync host, not for the SAP HANA host.
Role	Select <code>rdsync</code> .

5. Leave all other defaults as displayed and click **OK**.
6. On the Define Certificate Properties pages, accept all defaults.
7. On the Enter Inter-Service Communication Properties page, accept all defaults.
8. On the Review & Confirm page, review the installation parameters. Modify any properties, as needed. Click **Add Hosts** to begin.

7.3.2 Add a Remote Data Sync Host by Using hdblcm

Add a remote data sync host to the SAP HANA system by using `hdblcm`.

Prerequisites

- You are logged in as the root user on the master SAP HANA host. Both the SAP HANA and SAP HANA option hosts have the same root user name and password.

Context

- These steps pertain only to the remote data sync option. Refer to the option-specific installation guide if including other SAP HANA options in the installation.
- To modify an existing host to use this configuration, run the following commands as root user:

```
cd /hana/shared/<SID>/hdblcm
: ./hdblcm --action=add_host_roles --add_roles=<hostname>=rdsync
```

Follow this procedure to add a remote data sync host.

The `<SID>adm` user is created on each host of the SAP HANA landscape as part of the SAP HANA core installation. The `sapadm` user is automatically created by the SAP Host Agent installer, which is called by the SAP HANA installer. When you add a host to the system, both users are automatically created on the added host. The `<SID>adm` user must be the same on all hosts. Similarly, the password for the `sapadm` user must be the same on all hosts.

Procedure

1. On the SAP HANA host, change to the resident `hdb1cm` directory within the system ID folder. For example, `/hana/shared/AB1/hdb1cm`, where `/hana/shared/` is the shared directory for the system and `AB1` is the system ID.
2. Start the SAP HANA platform management tool.

```
./hdb1cm --action=add_host_roles --add_roles=<hostname>=rdsync
```

i Note

The host name must be a fully qualified domain name for the remote data sync host.

3. At the prompt to choose an action, select **Add Additional Hosts to the SAP HANA System**.
4. Enter the root user name, or accept the default value.
5. If you are prompted for the Listener Interface, select **global**.
6. Enter the system administrator password, then accept the Certificate Host name.
7. At the confirmation prompt, type **y** to begin.

8 Verify the Version of SAP HANA Remote Data Sync

Verify the version of your installation of SAP HANA remote data sync.

Procedure

1. Log on to the SAP HANA master host as the <SID>adm user.
2. Display the contents of the file `/usr/sap/SID/HDBXX/rdsync/manifest`, where XX is the instance number.
3. Look for the `<fullversion:>` value.

9 Verify That There are Hosts in the Rdsync Role

View all hosts in the rdsync role.

Procedure

To see all hosts in the rdsync role, connect to the SYSTEMDB as the SYSTEM user and executing the following statement:

```
SELECT HOST FROM SYS.M_LANDSCAPE_HOST_CONFIGURATION WHERE HOST_CONFIG_ROLES LIKE '%RDSYNC%';
```

Results

The above query returns one row for each host in the rdsync role.

10 Verify That the Rdsync Role has Been Initialized in a Tenant

If a host has been added in the rdsync role when the HANA system is running in single-tenant mode, then the host is automatically added to the default tenant and initialized in the tenant.

Procedure

To see all hosts in the rdsync role that have been added to and initialized in a tenant, connect to the tenant as the SYSTEM user and execute the following statement:

```
SELECT HOST FROM SYS.M_SERVICES WHERE SERVICE_NAME = 'rdsyncserver' AND DETAIL=''
```

Results

The above query returns one row for each host in the rdsync role that has been added to the tenant and initialized in the tenant.

11 Verify That the Rdsync Role has Been Added to a Tenant

If a host has been added in the rdsync role when the HANA system is running in single-tenant mode, then the host is automatically added to the default tenant and initialized in the tenant.

Procedure

To see all hosts in the rdsync role that have been added to a tenant, connect to the tenant as the SYSTEM user and execute the following statement:

```
SELECT HOST FROM SYS.M_SERVICES WHERE SERVICE_NAME = 'rdsyncserver' AND  
ACTIVE_STATUS = 'YES';
```

Results

The above query returns one row for each host in the rdsync role that has been added to the tenant.

12 Updating SAP HANA Remote Data Sync

Use the SAP HANA platform lifecycle manager to update SAP HANA remote data sync.

Always update to the most recent patch level. However, if the most recent patch level for SAP HANA remote data sync differs from the SAP HANA patch level, use the most recent SAP HANA remote data sync patch that is lower than your SAP HANA patch.

i Note

As of SAP HANA Support Package Stack (SPS) 09, updating the SAP HANA system can be performed as the system administrator user <SID>adm, where <SID> is the SAP HANA SID in lowercase letters. For example, if the <SID> is "XY1", log in as "xy1adm".

You can update SAP HANA and SAP HANA remote data sync at the same time.

Before updating an SAP HANA system, review the *SAP HANA Server Installation and Upgrade Guide* to ensure a complete understanding of the SAP HANA core system update requirements.

On the SAP Software Download Center (<https://support.sap.com/software.html>), you can find the installation packages in the following locations:

- Support Packages and Patches for SAP HANA:
▶ **SAP Software Download Center** ▶ **Support Packages and Patches** ▶ **A-Z Index** ▶ **Support Packages and Patches - H** ▶ **SAP HANA PLATFORM EDITION** ▶ **SAP HANA PLATFORM EDIT. 2.0** ▶
- Support Packages and Patches for SAP HANA Remote Data Sync:
▶ **SAP Software Download Center** ▶ **Support Packages and Patches** ▶ **A-Z Index** ▶ **Support Packages and Patches - H** ▶ **SAP HANA REMOTE DATA SYNC** ▶ **SAP HANA REMOTE DATA SYNC 2.0** ▶ **Comprised Software Component Versions** ▶

12.1 SAP HANA Remote Data Sync Regular Update

A regular update updates the SAP HANA and SAP HANA remote data sync software in one step and requires system downtime for the entire process.

12.1.1 Update SAP HANA and SAP HANA Remote Data Sync by Using hdblcmgui

Update both SAP HANA and SAP HANA remote data sync by using `hdblcmgui`.

Prerequisites

- You are logged on to the master SAP HANA host as either root user or `<SID>adm` and have the database administrator passwords.
- The required support packages and revisions, of an equivalent support or revision level, are downloaded.
- You have performed a system backup.
- You have met all applicable update requirements for updating an SAP HANA database, per the *SAP HANA Server Installation and Update Guide*.
- An X window system is running.

Context

i Note

There is business downtime for your SAP HANA system during the update.

These steps pertain only to the remote data sync option. Refer to the option-specific installation guide if you are including other SAP HANA options in the update.

Procedure

1. Change to the directory containing the extracted SAP HANA installer support package or revision. For example, `/SAP_downloads/SAP_HANA_DATABASE` if you are using the default directory structure.
2. Start the SAP HANA platform lifecycle management tool:

Package Extraction Method	Start Syntax
Default Directory Structure	<code>./hdblcmgui</code>

Package Extraction

Method

Start Syntax

Custom Directory Structure

Common path:

```
./hdblcmgui --component_root=<full_path>
```

where <full_path> refers to the common path to both support packages.

Separate paths:

```
./hdblcmgui --  
component_dirs=<full_path_HANA>,<full_path_option>
```

where <full_path_HANA> refers to the path to the SAP HANA support package and <full_path_option> refers to the path to the remote data sync support package.

3. On the Select Software Locations page, if the SAP HANA database and remote data sync components being updated appear on the list, click **Next**; otherwise:
 - a. Click **Add Component Location**.
 - b. Type the path to the missing update package and click **OK**. Repeat this step to add additional missing packages.
4. On the Select Activity page, select **Update existing system**. Verify that the correct <SID> is specified. Change if necessary.
5. On the Select Components page, select the components to update.
6. On the Define Upgrade Properties page, accept the database user name and enter the corresponding password.
7. On the Define Certificate Properties pages, accept all defaults.
8. On the Review & Confirm page, review the installation parameters. Modify as needed. Click **Update** to begin.

12.1.2 Update SAP HANA Remote Data Sync by Using hdblcmgui

Update both SAP HANA and SAP HANA remote data sync by using hdblcmgui.

Prerequisites

- Your SAP HANA system is already upgraded.
- The SAP HANA indexserver is running.
- You are logged on to the master SAP HANA host as either root user or <SID>adm and have the database administrator passwords.
- The required support packages and revisions, of an equivalent support or revision level, are downloaded.
- You have performed a system backup.

- An X window system is running.

Context

i Note

There is business downtime for your SAP HANA system during the update.

These steps pertain only to the remote data sync option. Refer to the option-specific installation guide if you are including other SAP HANA options in the update.

Procedure

1. On the SAP HANA host, change to the reSIDent directory containing the resident `hdblcm` directory within the system ID folder. For example, `/hana/shared/AB1/hdblcm`, where `/hana/shared/` is the shared directory for the system and `AB1` is the system ID.
2. Start the SAP HANA platform lifecycle management tool:

```
./hdblcmgui --component_dirs=<full_path_option>
```

where `<full_path_option>` refers to the path to the remote data sync support package.

3. On the Select Activity page, select **Install or Update Additional Components**.
4. On the Select Software locations page, if the SAP HANA remote data sync components benign updated appear on the list, click **Next**; otherwise:
 - a. Click **Add Component Location**.
 - b. Type the path to the missing update package and click **OK**. Repeat this step to add additional missing packages.
5. On the Select Components page, select **Update SAP HANA** remote data sync.
6. On the Define Upgrade Properties page, accept the database user name and enter the corresponding password.
7. On the Review & Confirm page, review the installation parameters. Modify as needed. Click **Update** to begin.

12.1.3 Update SAP HANA and SAP HANA Remote Data Sync by Using hdblcm

Update both SAP HANA and SAP HANA remote data sync by using `hdblcm`.

Prerequisites

- You are logged on to the master SAP HANA host as either root user or `<SID>adm` and have the database administrator passwords.
- The required support packages and revisions, of an equivalent support or revision level, are downloaded.
- You have performed a system backup.
- You have met all applicable update requirements for updating an SAP HANA database, per the *SAP HANA Server Installation and Update Guide*.

Context

i Note

There is business downtime for your SAP HANA system during the update.

These steps pertain only to the remote data sync option. Refer to the option-specific installation guide if you are including other SAP HANA options in the update.

Procedure

1. Change to the directory containing the extracted SAP HANA installer support package or revision. For example, `/SAP_downloads/SAP_HANA_DATABASE` if you are using the default directory structure.
2. Start the SAP HANA platform lifecycle management tool:

Package Extraction Method	Start Syntax
Default Directory Structure	<code>./hdblcm</code>

Package Extraction

Method

Start Syntax

Custom Directory Structure

Common path:

```
./hdblcm --component_root=<full_path>
```

where <full_path> refers to the common path to both support packages.

Separate paths:

```
./hdblcm --  
component_dirs=<full_path_HANA>,<full_path_option>
```

where <full_path_HANA> refers to the path to the SAP HANA support package and <full_path_option> refers to the remote data sync component location.

3. At the Choose system to update prompt, select the system being updated (<SID> **(update)**).
4. At the Choose components to be installed or updated prompt, press **Enter** to accept the default to updated all detected, updatable components, or select the components to update. The SAP HANA database and client components are not listed. They are included automatically as part of the update process.

i Note

If a component being updated does not appear on the list, and you are using the default directory structure, review the location of the support package in the default directory structure. If you are using a custom directory structure, then review the path to the support package defined in the component_dirs or component_root parameters. Press Ctrl+C to cancel the update, and then restart the installer using the corrected parameter.

5. Press **Enter** to accept the database user name, and then enter the corresponding password.
6. At the confirmation prompt, type **Y** to begin.

12.1.4 Update SAP HANA Remote Data Sync by Using hdblcm

Update SAP HANA remote data sync by using hdblcm.

Prerequisites

- Your SAP HANA system is already upgraded.
- The SAP HANA indexserver is running.
- You are logged on to the master SAP HANA host as either root user or <SID>adm and have the database administrator passwords.
- The required support packages and revisions, of an equivalent support or revision level, are downloaded.
- You have performed a system backup.

Context

i Note

There is business downtime for your SAP HANA system during the update.

These steps pertain only to the remote data sync option. Refer to the option-specific installation guide if you are including other SAP HANA options in the update.

Procedure

1. On the SAP HANA host, change to the resident directory containing the resident `hdblcm` directory within the system ID folder. For example, `/hana/shared/AB1/hdblcm`, where `/hana/shared/` is the shared directory for the system and `AB1` is the system ID.
2. Start the SAP HANA platform lifecycle management tool:

```
./hdblcmgui --component_dirs=<full_path_option>
```

where `<full_path_option>` refers to the path to the remote data sync support package.

3. At the Choose an action to perform prompt, select **Install or Update Additional Components**.
4. At the Choose components to be installed or updated prompt, select **Update SAP HANA** remote data sync.

i Note

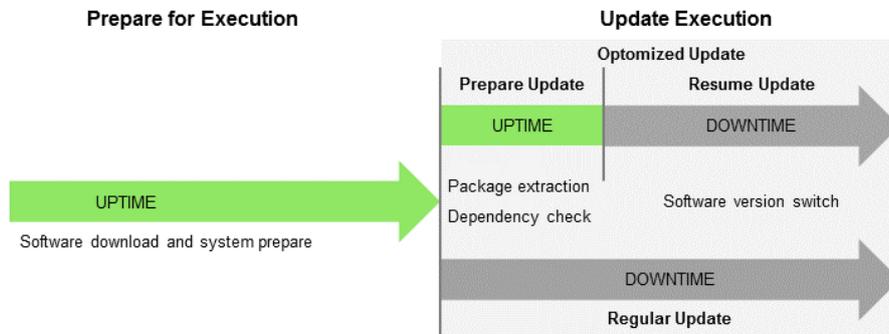
If SAP HANA remote data sync does not appear on the list, then review the `component_dirs` parameter. Press `Ctrl+C` to cancel the installation, and then restart the installer with the corrected `component_dirs` parameter.

5. Press **Enter** to accept the database user name, and then enter the corresponding password.
6. At the confirmation prompt, type **Y** to begin.

12.2 SAP HANA Remote Data Sync Optimized Update

An optimized update is comprised of two phases: an update preparation phase and a resume update phase. This two-phased approach minimizes system downtime and reduces the chances of a failed system update because of preliminary steps like archive preparation or dependency conflicts.

When you start the SAP HANA database lifecycle manager (HDBLCM) with the `prepare_update` flag, it extracts the packages from the new source, but does not actually perform the update and requires no system downtime. The software update does not occur until you run HDBLCM a second time, resuming the system update. Only the second phase requires system downtime.



The two phases can be performed at different times. Once the prepare is complete, schedule a convenient time to perform the update phase.

12.2.1 Phase 1 - Prepare an SAP HANA Remote Data Sync Update by Using hdblcmgui

The prepare phase extracts the downloaded update software package and performs dependency checks reducing the chances of a failed system update due to missed preliminary steps or dependency conflicts. This phase requires no system downtime.

Prerequisites

- You are logged on to the master SAP HANA host as either root user or <SID>adm and have the database administrator passwords.
- The required support packages and revisions, of an equivalent support or revision level, are downloaded.
- You have performed a system backup.
- You have met all applicable update requirements for updating an SAP HANA database, per the *SAP HANA Server Installation and Update Guide*.
- You have stopped the data replication if installed.
- The SAP HANA system is currently running Support Package Stack (SPS) 10 or later.
- The SAP HANA database server is up and running. Otherwise, inconsistencies in the configuration occur.
- An X window system is running.

Procedure

1. (For SUSE Linux Enterprise (SLES) 11 operating system only) As of SAP HANA 2.0 SPS 00, SUSE SLES 11 is no longer supported for SAP HANA core and remote data sync. Use `/etc/<SuSE-release>` to verify your current operating system level, and upgrade your operating system to a supported version before upgrading SAP HANA, if necessary.
2. Change to the directory containing the extracted SAP HANA installer support package or revision. For example, `/SAP_downloads/SAP_HANA_DATABASE` if you are using the default directory structure.
3. Start the SAP HANA platform lifecycle management tool:

Package Extraction Method	Start Syntax
Default Directory Structure	<pre>./hdblcmgui --prepare_update</pre>
Custom Directory Structure	<p>Common path:</p> <pre>./hdblcmgui --prepare update --component_root=<full_path></pre> <p>where <code><full_path></code> refers to the common path to both support packages.</p> <p>Separate paths:</p> <pre>./hdblcmgui --prepare update --component_dirs=<full_path_HANA>,<full_path_option></pre> <p>where <code><full_path_HANA></code> refers to the path to the SAP HANA support package and <code><full_path_option></code> refers to the path to the remote data sync support package.</p>

4. On the Select Software Locations page, if the components being updated appear on the list, click **Next**; otherwise:
 - a. Click **Add Component Location**.
 - b. Type the path to the missing update package and click **OK**. Repeat this step to add additional missing packages.
5. On the Select Activity page, select **Update existing system** and then select the system `<SID>` that is being updated.
6. On the Select Components page, select the components to update.
7. On the Define Upgrade Properties page, enter the names and passwords for the root user, system administrator, and database user.
8. On the Review & Confirm page, confirm that the following line appears in the action summary at the end of the Update Parameters section:

```
Stop update before software version switch, resumable: Yes
```

If the line appears, then click **Update** to begin. If the line is missing, then you are about to perform a regular update, which requires system downtime, not a prepare update. Click **Cancel**. Review and correct the syntax and restart the prepare phase.

12.2.2 Phase 2 - Resume an SAP HANA Remote Data Sync Update by Using hdblcmgui

The resume phase updates the version of the software. This phase requires system downtime.

Prerequisites

- You are logged on to the master SAP HANA host as either root user or <SID>adm and have the database administrator passwords.
- You have stopped the data replication if installed.
- You have performed a system backup.
- The SAP HANA database server is up and running. Otherwise, inconsistencies in the configuration occur.
- You have completed the prepare updated phase.
- An X window system is running.

Context

These steps are for SAP HANA Remote Data Sync only. Refer to the option-specific installation guide if you are including other SAP HANA options in the update process.

Procedure

1. Change to the directory containing the extracted SAP HANA installer support package or revision. For example, /SAP_downloads/SAP_HANA_DATABASE if you are using the default directory structure.
2. Start the SAP HANA platform lifecycle management tool:

```
./hdblcmgui
```

3. On the Select Software Locations page, click **Next**. The list will not contain SAP HANA Remote Data Sync.
4. On the Select Activity page, select **Update existing system** and then select the system that is being updated. Under System Description, ensure that Pending action indicates an update is pending (date) at step 'Prepare update ...'. Click **Next**.
5. On the Pending Update Information page, select **Continue using these parameters**.
6. On the Define Upgrade Properties page, enter the passwords for the system administrator and database user.
7. On the Review & Confirm page, click **Update** to begin.

12.2.3 Phase 1 - Prepare an SAP HANA Remote Data Sync Update by Using hdblcm

The prepare phase extracts the downloaded update software package and performs dependency checks reducing the chances of a failed system update due to missed preliminary steps or dependency conflicts. This phase requires no system downtime.

Prerequisites

- You are logged on to the master SAP HANA host as either root user or <SID>adm and have the database administrator passwords.
- The required support packages and revisions, of an equivalent support or revision level, are downloaded.
- You have performed a system backup.
- You have met all applicable update requirements for updating an SAP HANA database, per the *SAP HANA Server Installation and Update Guide*.
- You have stopped the data replication if installed.
- The SAP HANA system is currently running Support Package Stack (SPS) 10 or later.
- The SAP HANA database server is up and running. Otherwise, inconsistencies in the configuration occur.

Procedure

1. (For SUSE Linux Enterprise (SLES) 11 operating system only) As of SAP HANA 2.0 SPS 00, SUSE SLES 11 is no longer supported for SAP HANA core and remote data sync. Use `/etc/<SUSE-release>` to verify your current operating system level, and upgrade your operating system to a supported version before upgrading SAP HANA, if necessary.
2. Change to the directory containing the extracted SAP HANA installer support package or revision. For example, `/SAP_downloads/SAP_HANA_DATABASE` if you are using the default directory structure.
3. Start the SAP HANA platform lifecycle management tool:

Package Extraction Method	Start Syntax
Default Directory Structure	<pre>./hdblcm --prepare_update</pre>

Package Extraction

Method

Start Syntax

Custom Directory Structure

Common path:

```
./hdblcm --prepare update  
--component_root=<full_path>
```

where <full_path> refers to the common path to both support packages.

Separate paths:

```
./hdblcm --prepare update  
--component_dirs=<full_path_HANA>,<full_path_option>
```

where <full_path_HANA> refers to the path to the SAP HANA support package and <full_path_option> refers to the path to the remote data sync support package.

4. At the Choose system to update prompt, select the system being updated (<SID>(update)).
5. At the Choose components to be installed or updated prompt, select the components to update. Ensure that both the SAP HANA database, client, and SAP HANA remote data sync components are selected.
6. Enter the root user, system administrator, and database user names and passwords when prompted.
7. At the prompt to continue, confirm that the following line appears in the Update Parameters section:

```
Stop update before software version switch, resumable: Yes
```

If the line appears, type **Y** to begin. If the line is missing, then you are about to perform a regular update, which requires system downtime, not a prepare update. Click **Cancel**. Review and correct the syntax and restart the prepare phase.

12.2.4 Phase 2 - Resume an SAP HANA Remote Data Sync Update by Using hdblcm

The resume phase updates the version of the software. This phase requires system downtime.

Prerequisites

- You are logged on to the master SAP HANA host as either root user or <SID>adm and have the database administrator passwords.
- You have stopped the data replication if installed.
- The SAP HANA database server is up and running. Otherwise, inconsistencies in the configuration occur.
- You have performed a system backup.
- You have completed the prepare updated phase.

Context

i Note

There is business downtime for your SAP HANA system during the update.

These steps are for SAP HANA remote data sync only. Refer to the option-specific installation guide if you are including other SAP HANA options in the update process.

Procedure

1. Change to the directory containing the extracted SAP HANA installer support package or revision. For example, `/SAP_downloads/SAP_HANA_DATABASE` if you are using the default directory structure.
2. Start the SAP HANA platform lifecycle management tool:

```
./hdblcm
```

3. At the Choose system to update prompt, select the system being updated (`<SID>(update)`). Ensure that the following message appears for the `<SID>`:

```
Update to version xxx is pending (since (date) at step 'Prepare update for  
SAP HANA remote data sync')
```

4. At the prompt to continue using these parameters, type **Y**.
5. Enter the system administrator and database user passwords when prompted.
6. At the confirmation prompt, type **Y**.

12.3 SAP HANA Remote Data Sync Backup and Restore Update

A backup and restore update backs up your current SAP HANA system including remote data sync, updates it and restores it.

Prerequisites

- You are logged on to the master SAP HANA host as either root user or `<SID>adm` and have the database administrator passwords.
- You have downloaded the required support packages and revisions of an equivalent support or revision level.
- You have met all applicable update requirements for updating an SAP HANA database described in the *SAP HANA Server Installation and Update Guide*.

Context

i Note

There is business downtime for your SAP HANA system during the update.

The restore can be done onto a different set of host machines. This is useful when you cannot perform an in-place update because the operating system version that your existing SAP HANA system is running on is no longer supported by the more recent version of SAP HANA that you are updating to.

These steps apply only to remote data sync.

For SUSE Linux Enterprise (SLES) 11 operating system only) As of SAP HANA 2.0 SPS 00, SUSE SLES 11 is no longer supported for SAP HANA core and remote data sync. Use `/etc/<SuSE-release>` to verify your current operating system level.

Procedure

1. Perform the following steps on your current operating system.

Backup your SAP HANA system, including tenants, to `<Backup1>`.

2. Perform the following actions for each tenant that is using remote data sync before proceeding to the next step.

- a. Stop clients from attempting synchronizations. For example, disable access to external port 3XX28 (where XX is the HANA instance number) by disabling a load-balancer rule.
- b. Export the SAP_HANA_SYNC schema by performing the following actions.
 1. Create or modify a user to perform the export and grant the user (`<user1>` in the tenant) the necessary roles by executing the following statements as the SYSTEM user in the tenant database::

```
CALL SYS_REPO.GRANT_ACTIVATED_ROLE('sap.hana.sync.monitor.roles::administrator', '<user1>');
```

```
GRANT EXPORT TO <user1>;
```

- c. As `<user1>` in the tenant, perform the export by executing the following statement:

```
EXPORT SAP_HANA_SYNC.* AS CSV INTO '<export_directory>' WITH REPLACE;
```

- d. Back up the files in the upload and download directories by copying them to a safe location. Skip this step if your synchronization application does not use file transfer.

The default file upload location is `<HANA-installation-path>/download_rdsync/<SID>/DB_<tenant>`, where `<SID>` is the HANA system ID, and `<tenant>` is the tenant database name.

The default file download location is `<HANA-installation-path>/upload_rdsync/<SID>/DB_<tenant>`, where `<SID>` is the HANA system ID, and `<tenant>` is the tenant database name.

- e. As the SYSTEM user in the tenant database, find the list of remote data sync hosts by executing the following statement:

```
SELECT HOST FROM SYS.M_SERVICES WHERE SERVICE_NAME = 'rdsyncserver';
```

- f. As the SYSTEM user in the tenant database, remove remote data sync from the tenant by executing the following statement, where XX is the SAP HANA system instance number:

```
ALTER SYSTEM UNINITIALIZE SERVICE 'rdsyncserver' AT LOCATION '<host:3XX27>';
```

3. As the SYSTEM user in the SYSTEMDB database, find the remote data sync tenant, hosts, and ports by executing the following statement:

```
SELECT DATABASE_NAME, HOST, PORT FROM SYS_DATABASES.M_SERVICES WHERE SERVICE_NAME = 'rdsyncserver';
```

4. For each host/port pair found, perform the following actions:
 - a. As the SYSTEM user in the SYSTEMDB database, remove the host's rdsync server from the tenant by executing the following statement:

```
ALTER DATABASE <tenant> REMOVE 'rdsyncserver' AT LOCATION '<host>:<port>';
```

- b. Using `hdb1cm` or `hdb1cmgui`, remove the host in the 'rdsync' role that was previously associated with the tenant.
5. Uninstall remote data sync by using `hdb1cm` or `hdb1cmgui`.
6. Back up the SAP HANA system, including tenant database, to `<Backup2>`.

For more information on backing up SAP HANA systems, see the *SAP HANA Administration Guide*.

7. Perform the following steps on your new system.

Install SAP HANA 2.0 by using `hdb1cm` or `hdb1cmgui`.

8. Restore the SAP HANA system and tenants from `<Backup2>`.

For more information on restoring SAP HANA systems, see the *SAP HANA Administration Guide*.

9. Install SAP HANA Remote Data Sync 2.0 by using `hdb1cm` or `hdb1cmgui`.

For more information on installing SAP HANA Remote Data Sync, see the *SAP HANA Remote Data Sync Installation Guide*.

10. Add the remote data sync host by using `hdb1cm` or `hdb1cmgui`.

11. As the SYSTEM user in the SYSTEMDB database, add the remote data sync servers to the tenants by executing the following statement:

```
ALTER DATABASE <tenant> ADD 'rdsyncserver' AT LOCATION '<host>:<port>';
```

12. For each tenant perform the following actions:
 - a. As the tenant's SYSTEM user, initialize remote data sync in the tenant by executing the following statement:

```
ALTER SYSTEM INITIALIZE SERVER 'rdsyncserver';
```

- b. Restore the files to the upload and download directories. Skip this step if your synchronization application does not use file transfer.

The default file upload location is `<HANA-installation-path>/download_rdsync/<SID>/DB_<tenant>`, where `<SID>` is the HANA system ID, and `<tenant>` is the tenant database name.

The default file download location is `<HANA-installation-path>/upload_rdsync/<SID>/DB_<tenant>`, where `<SID>` is the HANA system ID, and `<tenant>` is the tenant database name.

c. Import the SAP_HANA_SYNC schema into the tenant by performing the following actions:

1. Create or modify a tenant user to perform the import and grant the user (<user2>) the necessary roles by executing the following statements:

```
CALL SYS_REPO>GRANT_ACTIVATED_ROLE('sap.hana.sync.monitor.roles::administrator', '<user2>');
```

```
GRANT IMPORT TO <user2>;
```

2. Ensure that enable_csv_import_path_filter is set to FALSE. Note the prior value so that you can restore it later. For more information on the enable_csv_import_path_filter, see the IMPORT FROM Statement in the *SAP HANA SQL and System Views Reference*.
3. As <user2> in the tenant database, import each table.

```
IMPORT FROM CSV FILE '<export_directory>/index/SAP_HANA_SYNC/ML/ML_LDAP_SERVER/data.csv' INTO SAP_HANA_SYNC.ML_LDAP_SERVER;
IMPORT FROM CSV FILE '<export_directory>/index/SAP_HANA_SYNC/ML/ML_TRUSTED_CERTIFICATES_FILE/data.csv' INTO
SAP_HANA_SYNC.ML_TRUSTED_CERTIFICATES_FILE;
IMPORT FROM CSV FILE '<export_directory>/index/SAP_HANA_SYNC/ML/ML_USER_AUTH_POLICY/data.csv' INTO SAP_HANA_SYNC.ML_USER_AUTH_POLICY;
IMPORT FROM CSV FILE '<export_directory>/index/SAP_HANA_SYNC/ML/ML_USER/
data.csv' INTO SAP_HANA_SYNC.ML_USER;
IMPORT FROM CSV FILE '<export_directory>/index/SAP_HANA_SYNC/ML/
ML_DATABASE/data.csv' INTO SAP_HANA_SYNC.ML_DATABASE;
IMPORT FROM CSV FILE '<export_directory>/index/SAP_HANA_SYNC/ML/
ML_SUBSCRIPTION/data.csv' INTO SAP_HANA_SYNC.ML_SUBSCRIPTION;
IMPORT FROM CSV FILE '<export_directory>/index/SAP_HANA_SYNC/ML/
ML_TABLE/data.csv' INTO SAP_HANA_SYNC.ML_TABLE;
IMPORT FROM CSV FILE '<export_directory>/index/SAP_HANA_SYNC/ML/
ML_SCRIPT/data.csv' INTO SAP_HANA_SYNC.ML_SCRIPT;
IMPORT FROM CSV FILE '<export_directory>/index/SAP_HANA_SYNC/ML/
ML_SCRIPT_VERSION/data.csv' INTO SAP_HANA_SYNC.ML_SCRIPT_VERSION;
IMPORT FROM CSV FILE '<export_directory>/index/SAP_HANA_SYNC/ML/
ML_CONNECTION_SCRIPT/data.csv' INTO SAP_HANA_SYNC.ML_CONNECTION_SCRIPT;
IMPORT FROM CSV FILE '<export_directory>/index/SAP_HANA_SYNC/ML/
ML_TABLE_SCRIPT/data.csv' INTO SAP_HANA_SYNC.ML_TABLE_SCRIPT;
IMPORT FROM CSV FILE '<export_directory>/index/SAP_HANA_SYNC/ML/
ML_COLUMN/data.csv' INTO SAP_HANA_SYNC.ML_COLUMN;
IMPORT FROM CSV FILE '<export_directory>/index/SAP_HANA_SYNC/ML/
ML_PRIMARY_SERVER/data.csv' INTO SAP_HANA_SYNC.ML_PRIMARY_SERVER;
IMPORT FROM CSV FILE '<export_directory>/index/SAP_HANA_SYNC/ML/
ML_PASSTHROUGH_SCRIPT/data.csv' INTO
SAP_HANA_SYNC.ML_PASSTHROUGH_SCRIPT;
IMPORT FROM CSV FILE '<export_directory>/index/SAP_HANA_SYNC/ML/
ML_PASSTHROUGH/data.csv' INTO SAP_HANA_SYNC.ML_PASSTHROUGH;
IMPORT FROM CSV FILE '<export_directory>/index/SAP_HANA_SYNC/ML/
ML_PASSTHROUGH_STATUS/data.csv' INTO
SAP_HANA_SYNC.ML_PASSTHROUGH_STATUS;
IMPORT FROM CSV FILE '<export_directory>/index/SAP_HANA_SYNC/ML/
ML_PASSTHROUGH_REPAIR/data.csv' INTO
SAP_HANA_SYNC.ML_PASSTHROUGH_REPAIR;
IMPORT FROM CSV FILE '<export_directory>/index/SAP_HANA_SYNC/ML/
ML_DEVICE/data.csv' INTO SAP_HANA_SYNC.ML_DEVICE;
IMPORT FROM CSV FILE '<export_directory>/index/SAP_HANA_SYNC/ML/
ML_DEVICE_ADDRESS/data.csv' INTO SAP_HANA_SYNC.ML_DEVICE_ADDRESS;
IMPORT FROM CSV FILE '<export_directory>/index/SAP_HANA_SYNC/ML/
ML_LISTENING/data.csv' INTO SAP_HANA_SYNC.ML_LISTENING;
IMPORT FROM CSV FILE '<export_directory>/index/SAP_HANA_SYNC/ML/
ML_SIS_SYNC_STATE/data.csv' INTO SAP_HANA_SYNC.ML_SIS_SYNC_STATE; IMPORT
FROM CSV FILE IMPORT FROM CSV FILE 'export_directory/index/
SAP_HANA_SYNC/ML/ML_PROPERTY/data.csv' INTO SAP_HANA_SYNC.ML_PROPERTY;
```

Importing into the ML_PROPERTY table always gives an error. This error is expected because the ML_PROPERTY table has rows in it after the install.

- d. Restore the enable_csv_import_path_filter setting to its prior value.
- e. Allow clients to attempt synchronizations. For example, re-enable access to external port 3xx28 by re-enabling a load-balancer rule.

Results

You have successfully updated your SAP HANA system, including remote data sync.

13 Uninstalling SAP HANA Remote Data Sync

To uninstall SAP HANA remote data sync from your SAP HANA system, use either the graphical interface or the command-line interface.

For information about uninstalling the SAP HANA system, refer to the SAP HANA core documentation.

13.1 Removing a Remote Data Sync Host

If you need to remove a remote data sync host, then use either `hdblcm` or `hdblcmgui`.

These procedures pertain only to SAP HANA remote data sync. To remove an SAP HANA host, refer to the *SAP HANA Installation Guide* for prerequisite tasks before continuing.

13.1.1 Remove a Remote Data Sync Host by Using `hdblcmgui`

Remove a remote data sync host from the SAP HANA system by using `hdblcmgui`.

Prerequisites

- You are logged in as the root user or `<SID>adm` on the master SAP HANA host. Both the SAP HANA and SAP HANA option hosts have the same root user name and password.
- The remote data sync host is not initialized in any tenant. To uninitialized a remote data sync host, execute the following statement as the tenant SYSTEM user: `ALTER SYSTEM UNINITIALIZE SERVICE 'rdsyncserver';`
- The remote data sync host is not added to a tenant. To remove a host from a tenant, execute the following statement as the SYSTEMDB SYSTEM user: `ALTER DATABASE <tenant> REMOVE 'rdsyncserver';`
- An X window system is running.

Context

These steps pertain only to the remote data sync option. Refer to the option-specific installation guide if including other SAP HANA options in the installation.

Procedure

1. On the SAP HANA host, change to the resident `hdblcm` directory within the system ID folder. For example, `/hana/shared/AB1/hdblcm`, where `/hana/shared/` is the shared directory for the system and `AB1` is the system ID.

2. Start the SAP HANA platform lifecycle management tool:

```
./hdblcmgui
```

3. On the Select Activity page, verify that the correct system ID to remove the host from is displayed and select **Remove Hosts from the SAP HANA System**.
4. On the Select Hosts page, select the host to remove. Accept the defaults to remove the user and home directory of the system administrator from the host.
5. On the Enter Hosts Password page, type the root user password.
6. On the Review & Confirm page, review the installation parameters. Modify any properties, as needed. Click **Remove Hosts** to begin.

13.1.2 Remove a Remote Data Sync Host by Using hdblcm

Remove a remote data sync host from the SAP HANA system by using `hdblcm`.

Prerequisites

- You are logged in as the root user or `<SID>adm` on the master SAP HANA host. Both the SAP HANA and SAP HANA option hosts have the same root user name and password.
- The remote data sync host is not initialized in any tenant. To uninitialize a remote data sync host, execute the following statement as the tenant SYSTEM user: `ALTER SYSTEM UNINITIALIZE SERVICE 'rdsyncserver';`
- The remote data sync host is not added to a tenant. To remove a host from a tenant, execute the following statement as the SYSTEMDB SYSTEM user: `ALTER DATABASE <tenant> REMOVE 'rdsyncserver';`

Context

These steps pertain only to the remote data sync option. Refer to the option-specific installation guide if including other SAP HANA options in the installation.

Procedure

1. On the SAP HANA host, change to the resident `hdb1cm` directory within the system ID folder. For example, `/hana/shared/AB1/hdb1cm`, where `/hana/shared/` is the shared directory for the system and `AB1` is the system ID.
2. Start the SAP HANA platform lifecycle management tool:

```
./hdb1cm
```

3. At the prompt to select an action, select **Remove Hosts from the SAP HANA System**.
4. At the prompt **Specify hosts to remove from SAP HANA System**, enter the comma-separated list of selected indexes for any host names that are being removed.
5. Enter the root user name, or accept the default value.
6. Accept the defaults on all other prompts.
7. At the confirmation prompt to remove the specified host, type **y**.

13.2 Uninstall SAP HANA Remote Data Sync by Using `hdb1cmgui`

Uninstall SAP HANA remote data sync by using `hdb1cmgui`.

Prerequisites

- You are logged in as the root user on the master SAP HANA host. Both the SAP HANA and remote data sync hosts have the same root user name and password.
- An X window system is running.
- All remote data sync hosts have been removed, or the `rdsync` role has been removed from all hosts..

i Note

To remove the `rdsync` host role, use the `remove_host_roles` action of `hdb1cm`.

Context

These steps pertain only to the remote data sync option. Refer to the option-specific installation guide if including other SAP HANA options in the installation.

Procedure

1. On the SAP HANA host, change to the resident `hdblcm` directory within the system ID folder. For example, `/hana/shared/AB1/hdblcm`, where `/hana/shared/` is the shared directory for the system and `AB1` is the system ID.
2. Start the SAP HANA platform lifecycle management tool:

```
./hdblcmgui
```

3. On the Select Activity page, select **Uninstall SAP HANA components**.

→ Tip

Use the System Description information to verify that you are uninstalling SAP HANA components from the expected system ID.

4. On the Select Components page, select **Uninstall separate components**, then select **Uninstall SAP HANA Remote Data Sync**.
5. On the Enter Uninstallation Credentials page, enter the database user password.
6. On the Review & Confirm page, review the uninstallation parameters. Modify as needed. Click **Uninstall** to begin.

Next Steps

For information on removing a host, see [Removing a Remote Data Sync Host \[page 78\]](#).

13.3 Uninstall SAP HANA Remote Data Sync by Using hdblcm

Uninstall SAP HANA remote data sync from the SAP HANA system by using `hdblcm`.

Prerequisites

- You are logged in as the root user on the master SAP HANA host. Both the SAP HANA and remote data sync hosts have the same root user name and password.
- All remote data sync hosts have been removed, or the `rdsync` role has been removed from all hosts..

i Note

To remove the `rdsync` host role, use the `remove_host_roles` action of `hdblcm`..

Context

These steps pertain only to the remote data sync option. Refer to the option-specific installation guide if including other SAP HANA options in the installation.

Procedure

1. On the SAP HANA host, change to the resident `hdblcm` directory within the system ID folder. For example, `/hana/shared/AB1/hdblcm`, where `/hana/shared/` is the shared directory for the system and `AB1` is the system ID.
2. Start the SAP HANA platform lifecycle management tool:

```
./hdblcm
```

3. Select **Uninstall SAP HANA Components**.
4. At the Choose components prompt, select **Uninstall *SAP HANA REMOTE DATA SYNC***.
5. Enter the root user name, or accept the default value.
6. At the confirmation prompt, type **y** to begin uninstalling the software.

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