HANA Update from 1.0 to 2.0

What is the best way of upgrading SAP HANA 1.0 to 2.0 Version. Another 2 ½ weeks months before end-of-maintenance of all (!) SAP HANA 1.0 and 2.0 release, except for SPS 05.👆
✓Refer to the post: https://lnkd.in/e8hRT6k

In the document if covers the 2-type HANA update:

- Normal upgrade-Single Tenant.
- HA Scenario-How to break the replication and perform upgrade in both system.

SAP note: 1948334 SAP HANA Database Update Paths for SAP HANA Maintenance Revisions.
☞**Many of have queries who are running in lower version: ?**
📌Customers on SAP HANA 1.0 with SPS10 can upgrade directly to SAP HANA 2.0
📌Recommendation is first upgrade to SPS12 and continue with SAP HANA 2.0 upgrade
📌If you are using SAP HANA 1.0 with the below SPS version from 10, then an SPS12 upgrade is mandatory before start the SAP HANA 2.0 upgrade

With SAP HANA 2 - major changes: 👆
📌The metadata persistence layout has been changed and
📌An older column store persistence format has been deprecated and is not supported anymore.

☞SAP will provide Maintenance Revisions for SAP HANA 1.0 SPS12 for a period of 5 years after RTC. Maintenance Revisions for SAP HANA SPS12 are not scheduled and delivered on demand.
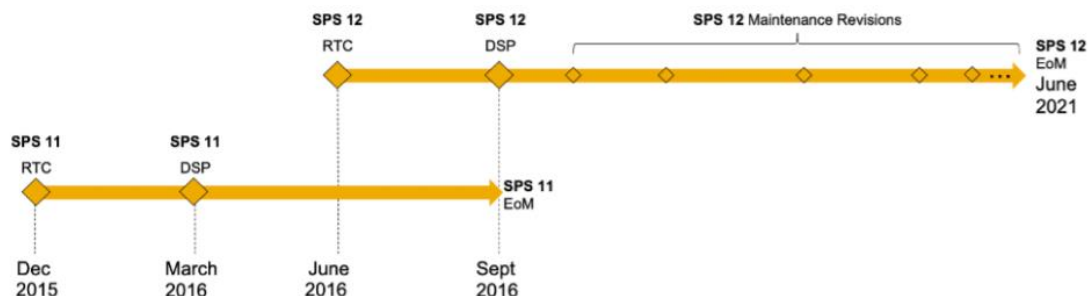
HANA 1.0 : Revision Strategy for the SAP HANA Platform (1.0)

SAP HANA 2.0

• Corrections
 SAP will provide Maintenance Revisions for SAP HANA 2.0 SPS05 for a period of five (5) years after RTC. These Revisions after SPS05 are not scheduled but delivered on demand. Bug fixes and security patches are released for every Support Package Stack (SPS) for two (2) years after RTC.
• New capabilities
SAP will introduce new capabilities once a year, every time a new SAP HANA Support Package Stack (SPS) is released. An overview can be found in SAP HANA 2.0 Revision Strategy
An overview can be found in SAP HANA 2.0 Revision Strategy
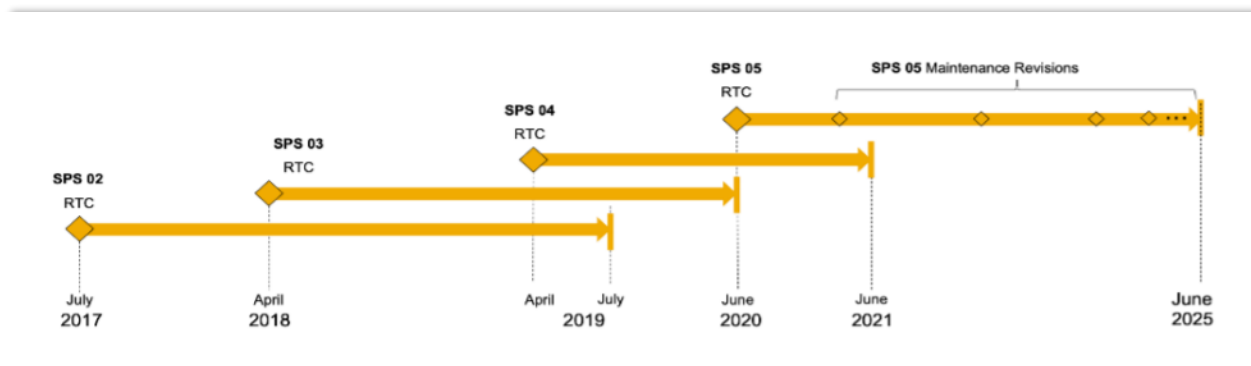
SAP HANA Update Strategy Customers may opt to continue consuming maintenance revisions until end of provisioning or choose to upgrade to a new stack upon release. This decision depends on the individual and unique customer needs for adopting new features and capabilities of SAP HANA®.

Un-Planned Maintenance - Recommended path for production systems- SAP provides SAP HANA standard revisions until RTC of the following SPS. These standard revisions contain only incremental fixes. SAP provides SAP HANA maintenance revisions between RTC of the following SPS and end of maintenance of the current SPS. These maintenance revisions contain only major bug fixes, identified to be relevant in particular for production environments.
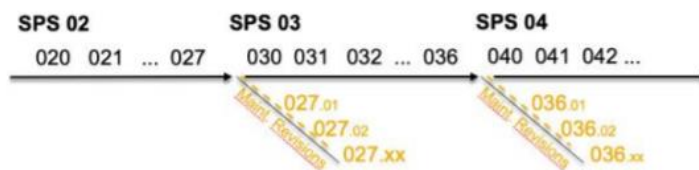
 SAP recommends to always implement the latest SAP HANA revision available on SAP Service Marketplace to benefit from incremental, but non-disruptive improvements.

Planned Maintenance - Recommended path for production systems Customers can upgrade to any available revision of a new SPS at any point in time. Starting with SAP HANA 2.0 SPS00,

SAP will no longer explicitly declare a Datacenter Service Point (DSP) since SAP is running DSP qualification validation before RTC of a new SPS. DSP status is automatically given with RTC of the SPS. More information about DSP can be found in SAP Note 2021789.
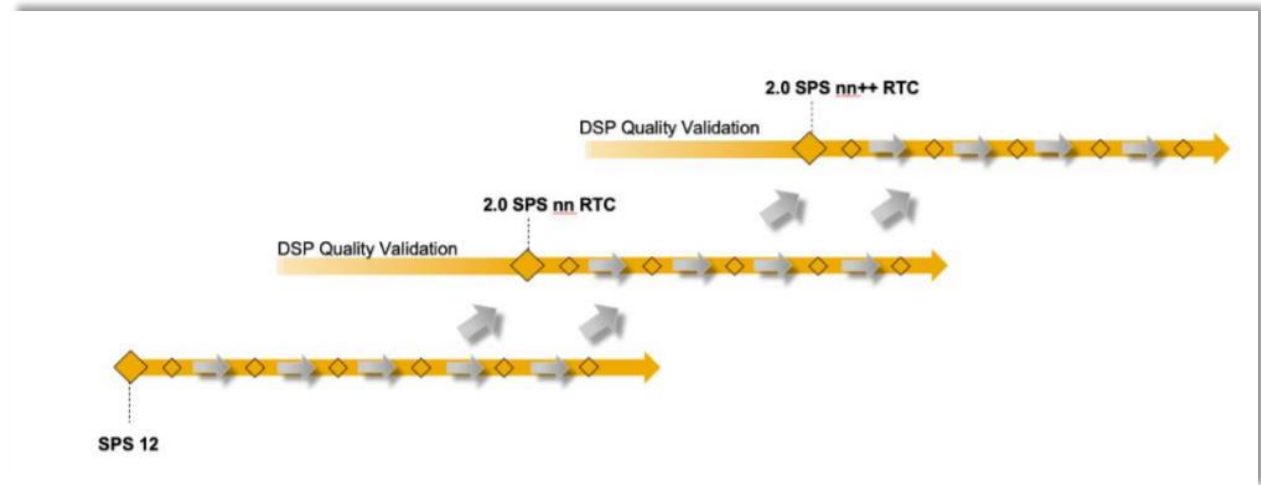
Please see SAP Note 2021789 (HANA 1.0) and SAP Note 2378962(HANA 2.0) for further information.

## Upgrade Strategy for the SAP HANA Platform – HANA 1.0 to 2.0

SAP HANA 2.0 is upward compatible which means customers are able to perform a normal upgrade with no migration required. SAP HANA® systems running on HANA 1.0 SPS10 or newer may be upgraded to HANA 2.0 directly. SAP HANA systems running on HANA 1.0 SPS09 or lower, need to upgrade to a HANA SPS $\geqq$ SPS10 prior to upgrading to HANA 2.0. However, SAP recommends minimum start release HANA 1.0 SPS12 revision before upgrading to SAP HANA 2.0 to be able to use Capture & Replay tool for regression tests. Customers running mission critical systems may opt to stay on HANA 1.0 on SPS12 until June 2021.
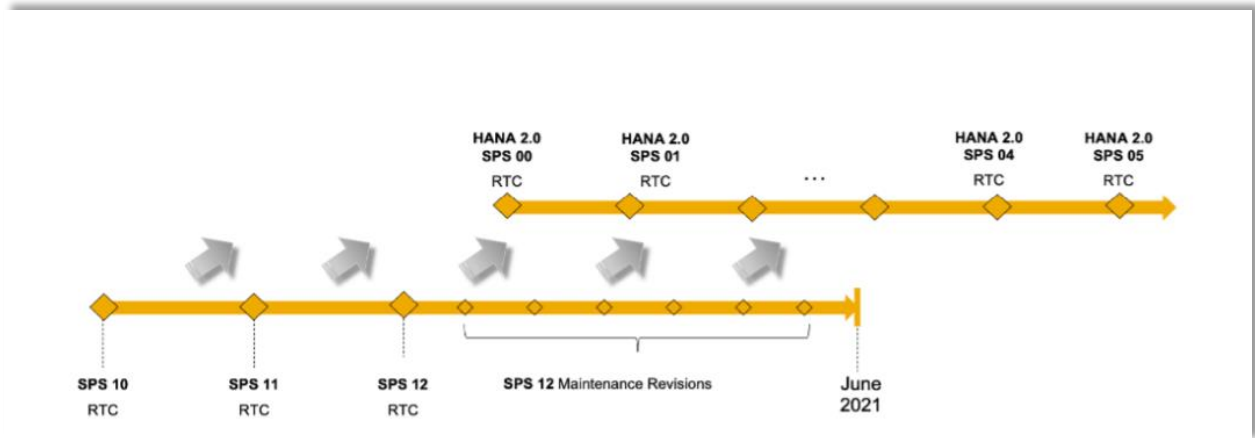
See SAP Note 1948334 for possible update paths from maintenance revisions to support package revisions For more information, see SAP Note 2372809 (Mandatory Preparation Steps for Upgrading an SAP HANA 1 System to SAP HANA 2).

Appendix: High level Steps:

1. Download the required software of HANA 2.0
2. Capturing Current status of HANA database technical details
3. Pre-Upgrade check as guidelines of SAP KBA
4. Perform Hana Upgrade from 1.0 to 2.0
5. Post Hana Upgrade technical Validation.
6. Adjust hdbuserstore setting on the Application server(If required).

Agenda: Update HANA from 1.0 to 2.0 where Application component are unchanged (Please also refer PAM)

Technical details of current Hana server:

   Operating System: SLES 12 SP02
   Database: HANA 1.0 SPS12 Revision 8(1.00.122.08.1490178281)
   Hana environment: Single container
   Application: NW 7.50 with Banking services 9.0 SPS 05

Target Hana Version:

Database: SAP HANA 2.0 SPS 03 Database Maintenance Revision 024.03(2.00.024.03.1527766375)

1. Download the required software of HANA 2.0(**IMDB_SERVER20_024_3-80002031.SAR**)

2. Capturing Current status of HANA database technical details

FDD (SYSTEM) FDD ████ 00   Last Update: ████████ M   Interval: 60 ▾ Se

Overview | Landscape | Alerts | Performance | Volumes | Configuration | System Information | Diagnosis Files | Trace Configuration

General Information
Operational Status:	■ All services started
System Usage:	Development System
Start Time of First Started Service:	Jun 18, 2018 1:22:28 AM
Start Time of Most Recently Started Service:	Jun 18, 2018 1:26:09 AM
Distributed System:	No
Version:	1.00.122.08.1490178281 (fa/hana1sp12)
Build Time:	Mar 22, 2017 11:32:17 AM
Platform:	SUSE Linux Enterprise Server 12.2
Linux Kernel Version:	4.4.121-92.73-default
Hardware Manufacturer:	VMware, Inc.

Current Alerts and Messages
⬆ 2 alerts with HIGH priority
➡ 1 alert with MEDIUM priority
⬇ 7 alerts with LOW priority
Show Alerts

SAP HANA Used Memory
Used Memory/Peak Used Memory/Allocation Limit (GB)
On Host bohfddhdb010: 63.58/63.58 239.63
More Information

Resident Memory
Database Resident/Total Resident/Physical Memory (GB)
On Host ██████: 64.43/65.05 251.72
More Information

CPU Usage
Database CPU Usage/Total CPU Usage/Maximum CPU Usage
On Host ██████: 5/5 100
More Information

Disk Usage
Data Volume Size/Total Disk Usage/Total Disk Size (GB)
On Host ██████: 173.41/279.32
Log Volume Size/Total Disk Usage/Total Disk Size (GB)
On Host ██████: 22.24/22.27
Trace Volume Size/Total Disk Usage/Total Disk Size (GB)
On Host bohfddhdb010: 1.55/43.79
More Information

Activate Windows

FDD (SYSTEM) FDD ████ 00   Last Update: Jun 18, 2018 4:30:32 AM   Interval: 60 ▾

Overview | Landscape | Alerts | Performance | Volumes | Configuration | System Information | Diagnosis Files | Trace Configuration

Services | Hosts | Redistribution | System Replication   Host: <All> ▾   Service: <All> ▾ ✗

Active	Host	Port	Service	Detail	Start Time	Process ID	CPU	Memory	Used Memory (MB)	Peak Used Me
■	████	30010	compileserver		Jun 18, 2018 1:22:36 AM	3108			1,724	
■		30000	daemon		Jun 18, 2018 1:22:28 AM	2923			0	
■		30003	indexserver	master	Jun 18, 2018 1:22:39 AM	3222			64,023	
■		30001	nameserver	master	Jun 18, 2018 1:22:30 AM	2944			2,813	
■		30002	preprocessor		Jun 18, 2018 1:22:37 AM	3110			1,653	
⚠			sapstartsrv							
■		30006	webdispatcher		Jun 18, 2018 1:26:09 AM	4598			1,945	
■	████	30007	xsengine		Jun 18, 2018 1:22:39 AM	3224			3,066	

Overview | Landscape | Alerts | Performance | Volumes | Configuration | System Information | Diagnosis Files | Trace Configuration

Show: Service   Host: <All>

Service/Volume	Service	Total Volume Size (MB)	Data Volume Size (MB)	Log Volume Size (MB)	Path	Storage Device ID	Total Disk Size (MB)	Used Disk Size (MB)	Available Dis...
...010:30001	nameserver	681	488	193					
Data		488	488		/hana/data/FDD/mnt00001/hdb00001	438108	409,400	286,028	30
Log		193		193	/hana/log/FDD/mnt00001/hdb00001	619679	153,525	22,804	85
...010:30003	indexserver	199,297	176,768	22,529					
Data		176,768	176,768		/hana/data/FDD/mnt00001/hdb00003	438108	409,400	286,028	30
Log		22,529		22,529	/hana/log/FDD/mnt00001/hdb00003	619679	153,525	22,804	85
...010:30007	xsengine	370	320	49					
Data		320	320		/hana/data/FDD/mnt00001/hdb00002	438108	409,400	286,028	30
Log		49		49	/hana/log/FDD/mnt00001/hdb00002	619679	153,525	22,804	85

```
...010:/usr/sap/FDD/HDB00> HDB info
USER      PID  PPID %CPU    VSZ    RSS COMMAND
fddadm  12493 12492  0.0  23644   5712 -sh
fddadm   7000 12493 12.5  13376   3396  \_ /bin/sh /usr/sap/FDD/HDB00/HDB info
fddadm   7027  7000  0.0  55388   3968     \_ ps fx -U fddadm -o user,pid,ppid,pcpu,vsz,rss,args
fddadm   2913     1  0.0  22916   3284 sapstart pf=/usr/sap/FDD/SYS/profile/FDD_HDB00_bohfddhdb010
fddadm   2923  2913  0.1 600360 316724  \_ /usr/sap/FDD/HDB00/.........../trace/hdb.sapFDD_HDB00 -d -nw -f /usr/sap/FDD
fddadm   2944  2923  2.4 9441388 1857088      \_ hdbnameserver
fddadm   3108  2923  4.8 3402240 796220       \_ hdbcompileserver
fddadm   3110  2923  0.6 3136656 493720       \_ hdbpreprocessor
fddadm   3222  2923  235 73075592 67141236    \_ hdbindexserver
fddadm   3224  2923  2.2 4921608 1459168      \_ hdbxsengine
fddadm   4598  2923  0.9 3313924 553472       \_ hdbwebdispatcher
fddadm   3944     1  0.0 2217148 32132 /usr/sap/FDD/HDB00/exe/sapstartsrv pf=/usr/sap/FDD/SYS/profile/FDD_HDB00_.......hd
......    010:/usr/sap/FDD/HDB00> sapcontrol -nr 0 -function GetProcessList

18.06.2018 01:36:05
GetProcessList
OK
name, description, dispstatus, textstatus, starttime, elapsedtime, pid
hdbdaemon, HDB Daemon, GREEN, Running, 2018 06 18 01:22:27, 0:13:38, 2923
hdbcompileserver, HDB Compileserver, GREEN, Running, 2018 06 18 01:22:36, 0:13:29, 3108
hdbindexserver, HDB Indexserver, GREEN, Running, 2018 06 18 01:22:38, 0:13:27, 3222
hdbnameserver, HDB Nameserver, GREEN, Running, 2018 06 18 01:22:28, 0:13:37, 2944
hdbpreprocessor, HDB Preprocessor, GREEN, Running, 2018 06 18 01:22:36, 0:13:29, 3110
hdbwebdispatcher, HDB Web Dispatcher, GREEN, Running, 2018 06 18 01:26:09, 0:09:56, 4598
hdbxsengine, HDB XSEngine, GREEN, Running, 2018 06 18 01:22:38, 0:13:27, 3224
```

```
Filesystem                      Size  Used Avail Use% Mounted on
devtmpfs                        126G     0  126G   0% /dev
tmpfs                           213G   84K  213G   1% /dev/shm
tmpfs                           126G   19M  126G   1% /run
tmpfs                           126G     0  126G   0% /sys/fs/cgroup
/dev/mapper/VG--00-rootlv        50G   18G   31G  38% /
/dev/sda1                       2.0G  102M  1.8G   6% /boot
/dev/mapper/VG--Data-usrsaplv    18G  2.6G   15G  15% /usr/sap
/dev/mapper/VG--Data-hanaloglv  150G   23G  128G  15% /hana/log
/dev/mapper/VG--Data-hanadatalv 400G  280G  121G  70% /hana/data
/dev/mapper/VG--Data-hanasharedlv 200G 44G  157G  22% /hana/shared
tmpfs                            26G     0   26G   0% /run/user/478
tmpfs                            26G     0   26G   0% /run/user/0
tmpfs                            26G     0   26G   0% /run/user/479
tmpfs                            26G     0   26G   0% /run/user/1007
tmpfs                            26G     0   26G   0% /run/user/1006
tmpfs                            26G   16K   26G   1% /run/user/485
tmpfs                            26G     0   26G   0% /run/user/351403409
tmpfs                            26G     0   26G   0% /run/user/351403367
```

3. Pre-Upgrade check as guidelines of SAP KBA

SAPNote: 2372809 - Guideline for Upgrading a SAP HANA 1.0 to SAP HANA 2.0 System
SAPNote: 2469025 - How-To: Upgrading to SAP HANA 2.0

SAPNote: 1948334 - SAP HANA Database Update Paths for SAP HANA Maintenance Revisions

4. Perform Hana Upgrade from 1.0 to 2.0

```
[XXXXXXXXX]:/media/hana20/SAP_HANA_DATABASE # ./hdblcm

SAP HANA Lifecycle Management - SAP HANA Database 2.00.024.03.1527766375
************************************************************************

Scanning software locations...
Detected components:
    SAP HANA Database (2.00.024.03.1527766375) in /media/hana20/SAP_HANA_DATABASE/server


Choose an action

  Index | Action           | Description
  ------------------------------------------------------------
  1     | FDD (update)     | 1.00.122.08.1490178281
        |                  | bohfddhdb010 (Database Worker (worker))
        |                  |
  2     | install          | Install new system
  3     | extract_components | Extract components
  4     | Exit (do nothing) |

Enter selected action index [4]: 1
```

```
[XXXXXXXXX]:/media/hana20/SAP_HANA_DATABASE # ./hdblcm

SAP HANA Lifecycle Management - SAP HANA Database 2.00.024.03.1527766375
************************************************************************

Scanning software locations...
Detected components:
    SAP HANA Database (2.00.024.03.1527766375) in /media/hana20/SAP_HANA_DATABASE/server


Choose an action

  Index | Action           | Description
  ------------------------------------------------------------
  1     | FDD (update)     | 1.00.122.08.1490178281
        |                  | bohfddhdb010 (Database Worker (worker))
        |                  |
  2     | install          | Install new system
  3     | extract_components | Extract components
  4     | Exit (do nothing) |

Enter selected action index [4]: 1

Choose components to be installed or updated:

  Index | Components | Description
  -------------------------------------------------------------------------------------------------
  1     | all        | All components
  2     | server     | Update SAP HANA Database from version 1.00.122.08.1490178281 to version 2.00.024.03.1527766375

Enter comma-separated list of the selected indices [1]: 2
```

```
Choose components to be installed or updated:

 Index | Components | Description
 -------------------------------------------------------------------------------------------------------------------
 1     | all        | All components
 2     | server     | Update SAP HANA Database from version 1.00.122.08.1490178281 to version 2.00.024.03.1527766375

Enter comma-separated list of the selected indices [1]: 2
Enter System Administrator (fddadm) Password:
Enter Database User Name [SYSTEM]:
Enter Database User (SYSTEM) Password:
Enter System database user (SYSTEM) password:
Confirm System database user (SYSTEM) password:

Summary before execution:
=========================

SAP HANA Database
   Update Parameters
      SAP HANA System ID: FDD
      Remote Execution: ssh
      Update Execution Mode: optimized
      Database User Name: SYSTEM
   Software Components
      SAP HANA Database
         Update from version 1.00.122.08.1490178281 to 2.00.024.03.1527766375
         Location: /media/hana20/SAP_HANA_DATABASE/server

Note: The upgrade of SAP HANA Database to this version will convert your system to multi-tenant database containers. This is a mandatory step. For more info
 SAP Note 2423367.

Do you want to continue? (y/n): y
```

```
Do you want to continue? (y/n): y

Updating components...
Preparing update of SAP HANA Database...
  Preparing package 'Saphostagent Setup'...
  Preparing package 'Python Support'...
  Preparing package 'Python Runtime'...
  Preparing package 'Product Manifest'...
  Preparing package 'Binaries'...
  Preparing package 'Data Quality'...
  Preparing package 'Krb5 Runtime'...
  Preparing package 'Installer'...
  Preparing package 'Ini Files'...
  Preparing package 'HWCCT'...
  Preparing package 'Documentation'...
  Preparing package 'Delivery Units'...
  Preparing package 'Offline Cockpit'...
  Preparing package 'DAT Languages (EN, DE)'...
  Preparing package 'DAT Languages (other)'...
  Preparing package 'DAT Configfiles (EN, DE)'...
  Preparing package 'DAT Configfiles (other)'...
  Extracting software...
  Extracting package 'Saphostagent Setup'...
  Extracting package 'Python Support'...
```

```
Preparing package 'Saphostagent Setup'...
Preparing package 'Python Support'...
Preparing package 'Python Runtime'...
Preparing package 'Product Manifest'...
Preparing package 'Binaries'...
Preparing package 'Data Quality'...
Preparing package 'Krb5 Runtime'...
Preparing package 'Installer'...
Preparing package 'Ini Files'...
Preparing package 'HWCCT'...
Preparing package 'Documentation'...
Preparing package 'Delivery Units'...
Preparing package 'Offline Cockpit'...
Preparing package 'DAT Languages (EN, DE)'...
Preparing package 'DAT Languages (other)'...
Preparing package 'DAT Configfiles (EN, DE)'...
Preparing package 'DAT Configfiles (other)'...
Extracting software...
Extracting package 'Saphostagent Setup'...
Extracting package 'Python Support'...
Extracting package 'Python Runtime'...
Extracting package 'Product Manifest'...
Extracting package 'Binaries'...
Extracting package 'Data Quality'...
Extracting package 'Krb5 Runtime'...
Extracting package 'Installer'...
Extracting package 'Ini Files'...
Extracting package 'HWCCT'...
Extracting package 'Documentation'...
Extracting package 'Delivery Units'...
Installing package 'Offline Cockpit'...
Extracting package 'DAT Languages (EN, DE)'...
Installing package 'DAT Languages (other)'...
Extracting package 'DAT Configfiles (EN, DE)'...
Installing package 'DAT Configfiles (other)'...
Stopping system...
  Stopping 7 processes on host 'bohfddhdb010' (worker):
    Stopping on        '10': hdbcompileserver, hdbdaemon, hdbindexserver, hdbnameserver, hdbpreprocessor, hdbwebdispatcher, hdbxsengine
```

```
Installing package 'DAT Configfiles (other)'...
Stopping system...
  Stopping 7 processes on host '                ' (worker):
    Stopping on '       ': hdbcompileserver, hdbdaemon, hdbindexserver, hdbnameserver, hdbpreprocessor, hdbwebdispatcher, hdbxsengine
  All server processes stopped on host '          ' (worker).
Updating SAP HANA Database...
  Starting service (sapstartsrv)...
Updating Resident hdblcm...
  Cleaning up old installation of Resident hdblcm...
  Installing Resident hdblcm...
Converting system to multitenant database containers...
Starting instances...
Starting 1 process on host '            ' (worker):
    Starting on '        ': hdbdaemon
Starting 7 processes on host '           0' (worker):
    Starting on '         ': hdbcompileserver, hdbdaemon, hdbindexserver, hdbnameserver, hdbpreprocessor, hdbwebdispatcher, hdbxsengine
    Starting on '         ': hdbcompileserver, hdbdaemon, hdbindexserver, hdbpreprocessor, hdbwebdispatcher, hdbxsengine
    Starting on '         ': hdbdaemon, hdbindexserver, hdbwebdispatcher, hdbxsengine
    Starting on '         ': hdbdaemon, hdbwebdispatcher, hdbxsengine
    Starting on '         ': hdbdaemon, hdbwebdispatcher
  All server processes started on host '           ' (worker).
Finalizing update of SAP HANA Database...
  Importing delivery units...
  Importing delivery unit HCO_INA_SERVICE
  Importing delivery unit HANA_DT_BASE
  Importing delivery unit HANA_IDE_CORE
  Importing delivery unit HANA_TA_CONFIG
  Importing delivery unit HANA_UI_INTEGRATION_SVC
  Importing delivery unit HANA_UI_INTEGRATION_CONTENT
  Importing delivery unit HANA_XS_BASE
  Importing delivery unit HANA_XS_DBUTILS
  Importing delivery unit HANA_XS_EDITOR
  Importing delivery unit HANA_XS_IDE
  Importing delivery unit HANA_XS_LM
```

```
Finalizing update of SAP HANA Database...
  Importing delivery units...
  Importing delivery unit HCO_INA_SERVICE
  Importing delivery unit HANA_DT_BASE
  Importing delivery unit HANA_IDE_CORE
  Importing delivery unit HANA_TA_CONFIG
  Importing delivery unit HANA_UI_INTEGRATION_SVC
  Importing delivery unit HANA_UI_INTEGRATION_CONTENT
  Importing delivery unit HANA_XS_BASE
  Importing delivery unit HANA_XS_DBUTILS
  Importing delivery unit HANA_XS_EDITOR
  Importing delivery unit HANA_XS_IDE
  Importing delivery unit HANA_XS_LM
  Importing delivery unit HDC_ADMIN
  Importing delivery unit HDC_BACKUP
  Importing delivery unit HDC_IDE_CORE
  Importing delivery unit HDC_SEC_CP
  Importing delivery unit HDC_SYS_ADMIN
  Importing delivery unit HDC_XS_BASE
  Importing delivery unit HDC_XS_LM
  Importing delivery unit SAPUI5_1
  Importing delivery unit SAP_WATT
  Importing delivery unit HANA_SEC_CP
  Importing delivery unit HANA_BACKUP
  Importing delivery unit HANA_HDBLCM
  Importing delivery unit HANA_SEC_BASE
  Importing delivery unit HANA_SYS_ADMIN
  Importing delivery unit HANA_ADMIN
  Importing delivery unit HANA_WKLD_ANLZ
Starting tenant database...
Updating SAP HANA Database Instance Integration on Local Host...
  Deploying SAP Host Agent configurations...
Updating Component List...
SAP HANA Database components updated
You can send feedback to SAP with this form: https://Abcd010:1129/lmsl/HDBLCM/FDD/feedback/feedback.html
Log file written to '/var/tmp/hdb_FDD_hdblcm_update_2018-06-18_01.44.02/hdblcm.log' on host 'AbcdB010'.
```

You can send feedback to SAP with this form:
https://Abcd010:1129/lmsl/HDBLCM/FDD/feedback/feedback.html

Log file written to '/var/tmp/hdb_FDD_hdblcm_update_2018-06-18_01.44.02/hdblcm.log' on host 'AbcdB010'
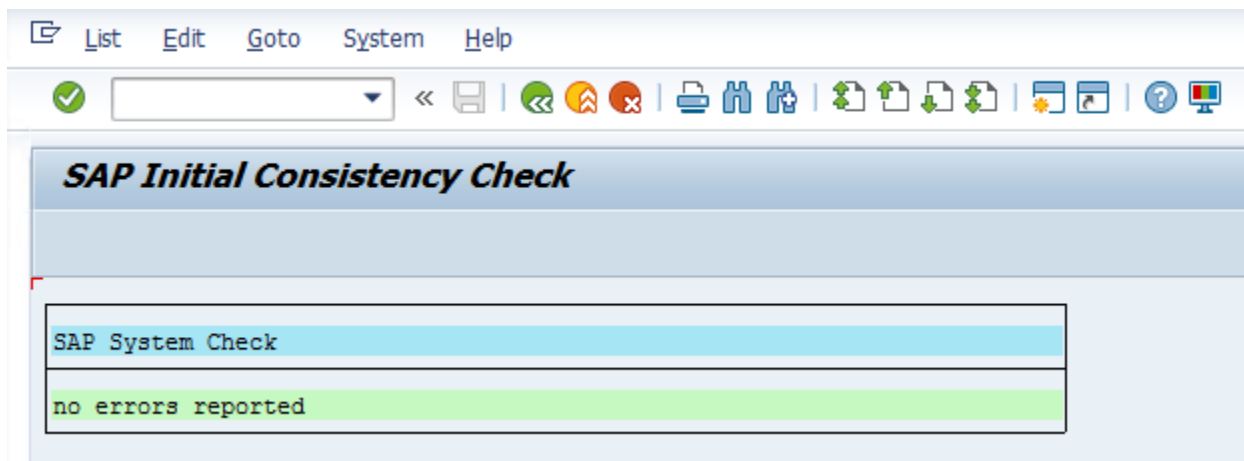
5. Post Hana Upgrade technical Validation.

```
fddadm@Abcd010:/usr/sap/FDD/HDB00> HDB version
HDB version info:
  version:          2.00.024.03.1527766375
  branch:           fa/hana2sp02
  machine config:   linuxx86_64
  git hash:         057ec886b4a1b6fbfec9093b8b4078a24b8df178
  git merge time:   2018-05-31 13:32:55
  weekstone:        0000.00.0
  compile date:     2018-05-31 14:14:55
  compile host:     1d4552
  compile type:     rel


fddadm@Abcd010:/usr/sap/FDD/HDB00> HDB info
USER        PID     PPID   %CPU      VSZ         RSS COMMAND
fddadm      15388   15387   0.5     23644       5724 -sh
fddadm      15671   15388   10.0    13376       3456  \_ /bin/sh /usr/sap/FDD/HDB00/HDB info
fddadm      15702   15671   400     55388       4068      \_ ps fx -U fddadm -o user:8,pid:8,ppid:8,pcpu:5,vsz:10,rss:10,args
fddadm      11897       1   0.0     23728       3004 sapstart pf=/hana/shared/FDD/profile/FDD_HDB00_abcdb010
fddadm      11905   11897   0.1    629168      57976  \_ /usr/sap/FDD/HDB00/abcdfddhdb/trace/hdb.sapFDD_HDB00 -d -nw -f /usr/sap/FDD/HDB00/abcdfddhdb01
fddadm      11922   11905  78.5  15655632   10117784      \_ hdbnameserver
fddadm      12088   11905   3.7   7717636     475976      \_ hdbcompileserver
fddadm      12090   11905   248  15688164   11480924      \_ hdbpreprocessor
fddadm      12130   11905   190  72258540   65040280      \_ hdbindexserver -port 30003
fddadm      12132   11905   4.4   9699704    1424516      \_ hdbxsengine -port 30007
fddadm      13455   11905   3.1   7756932     487156      \_ hdbwebdispatcher
fddadm      10555       1   0.1    435968      28872 /usr/sap/FDD/HDB00/exe/sapstartsrv pf=/hana/shared/FDD/profile/FDD_HDB00_abcdb010
```

SAP Initial Consistency Check

SAP System Check

no errors reported

Host data		Database data	
Operating system	Linux	Database System	HDB
Machine type	x86_64	Release	2.00.024.03.15...
Server name	▓▓▓▓▓_F...	Name	FDD/00
Platform ID	390	Host	▓▓▓▓▓
		Owner	SAPABAP1

6. Adjust hdbuserstore setting on the Application server (If required).


```
▓▓▓▓▓:fddadm 58> hdbuserstore list
DATA FILE      : /home/fddadm/.hdb/▓▓▓▓▓/SSFS_HDB.DAT
KEY FILE       : /home/fddadm/.hdb/▓▓▓▓▓/SSFS_HDB.KEY

KEY DEFAULT
  ENV : ▓▓▓▓▓0:30015
  USER: ▓▓▓▓▓
BOHFDDAPP010:fddadm 59> R3trans -d
This is R3trans version 6.26 (release 749 - 14.02.17 - 20:17:01).
unicode enabled version
R3trans finished (0000).
```

High Availability Scenario:

```
aspadm@S   ASPSTNB:/usr/sap/ASP/HDB00/exe/python_support> python systemReplicationStatus.py
this system is either not running or not primary system replication site

Local System Replication State
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

mode: SYNCMEM
site id: 2
site name: Secondary
active primary site: 1
primary masters: sreaspdb03
```

Check Replication Status

```
aspadm@SREASPSTNB:/usr/sap/ASP/HDB00/exe/python_support> python systemReplicationStatus.py
this system is either not running or not primary system replication site

Local System Replication State
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

mode: SYNCMEM
site id: 2
site name: Secondary
active primary site: 1
primary masters: sreaspdb03
aspadm@SREASPSTNB:/usr/sap/ASP/HDB00/exe/python_support> hdbnsutil -sr_state

System Replication State
~~~~~~~~~~~~~~~~~~~~~~~~~
online: true

mode: syncmem
site id: 2
site name: Secondary
active primary site: 1

Host Mappings:
~~~~~~~~~~~~~~~

sreaspdb -> [Primary] sreaspdb
sreaspstnb -> [Secondary] sreaspstnb

primary masters:sreaspdb03

done.
aspadm@SREASPSTNB:/usr/sap/ASP/HDB00/exe/python_support> ip r ;date
default via 10.10.81.1 dev eth0
10.10.81.0/24 dev eth0 proto kernel scope link src       .81.89
172.31.3.0/24 dev eth1 proto kernel scope link src 172
Fri Jun 11 20:10:30 +03 2021
```

Replciation State

```
aspadm:/usr/sap/ASP/HDB00> HDB version
HDB version info:
  version:         1.00.122.31.1590049925
  branch:          fa/hana1sp12
  machine config:  linuxx86_64
  git hash:        5d15f8541844c7f401b8bbf408fc5a35656e2c29
  git merge time:  2020-05-21 10:32:05
  weekstone:       0000.00.0
  compile date:    2020-05-21 11:23:03
  compile host:    1d4549
  compile type:    rel
```

Current Version

```
aspadm:/usr/sap/ASP/HDB00> cdpy
aspadm:/usr/sap/ASP/HDB00/exe/python_support> python systemReplicationStatus.py
| Host     | Port | Service Name | Volume ID | Site ID | Site Name | Secondary | Secondary | Secondary | Secondary    | Replication | Replication | Rep
lication |
|          |      |              |           |         |           | Host      | Port      | Site ID   | Site Name | Active Status | Mode        | Status      | Sta
tus Details |
| -------- | ---- | ------------ | --------- | ------- | --------- | --------- | --------- | --------- | --------- | --------- | --------- | ----------- | ---
----------- |
| sreaspdb03 | 30007 | xsengine    |        2 |       1 | Primary   | sreaspstnb |     30007 |        2 | Secondary | YES       | SYNCMEM   | ACTIVE      |
| sreaspdb03 | 30001 | nameserver  |        1 |       1 | Primary   | sreaspstnb |     30001 |        2 | Secondary | YES       | SYNCMEM   | ACTIVE      |
| sreaspdb03 | 30003 | indexserver |        3 |       1 | Primary   | sreaspstnb |     30003 |        2 | Secondary | YES       | SYNCMEM   | ACTIVE      |

status system replication site "2": ACTIVE
overall system replication status: ACTIVE

Local System Replication State
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

mode: PRIMARY
site id: 1
site name: Primary
```

Replciation Status

```
Filesystem                              Size  Used Avail Use% Mounted on
devtmpfs                                16G  8.0K   16G   1% /dev
tmpfs                                   71G  4.0K   71G   1% /dev/shm
tmpfs                                   16G  1.6G   14G  11% /run
tmpfs                                   16G     0   16G   0% /sys/fs/cgroup
/dev/mapper/osvg-root                   50G  3.3G   47G   7% /
/dev/mapper/osvg-usr                    30G  5.4G   25G  18% /usr
/dev/sda1                               10G  162M  9.9G   2% /boot
/dev/mapper/osvg-tmp                    10G  2.6G  7.4G  26% /tmp
/dev/mapper/osvg-home                   40G  9.5G   31G  24% /home
/dev/mapper/osvg-var                    30G  2.3G   28G   8% /var
/dev/mapper/VG--DATA-usrsaplv           40G   23G   18G  58% /usr/sap
/dev/mapper/VG--DATA-usrsaptranslv     330G  106G  225G  32% /usr/sap/trans
/dev/mapper/VG--DATA-sapmntASPlv        30G  5.7G   25G  19% /sapmnt/ASP
10.10.81.40:/softdump                  500G  421G   79G  85% /softdump
10.10.81.40:/backup                    1.0T  922G  102G  91% /backup
tmpfs                                  3.1G     0  3.1G   0% /run/user/0
tmpfs                                  3.1G     0  3.1G   0% /run/user/351427144
tmpfs                                  3.1G     0  3.1G   0% /run/user/351409236
tmpfs                                  3.1G     0  3.1G   0% /run/user/351409304
tmpfs                                  3.1G     0  3.1G   0% /run/user/351409482
```

```
CHLE5TH:svaspadm 61> sapcontrol -nr 0 -function GetProcessList

11.06.2021 20:12:47
GetProcessList
OK
name, description, dispstatus, textstatus, starttime, elapsedtime, pid
disp+work, Dispatcher, GREEN, Running, 2021 03 16 22:17:30, 2085:55:17, 18961
igswd_mt, IGS Watchdog, GREEN, Running, 2021 03 16 22:17:30, 2085:55:17, 18962
gwrd, Gateway, GREEN, Running, 2021 03 16 22:17:33, 2085:55:14, 18981
icman, ICM, GREEN, Running, 2021 03 16 22:17:33, 2085:55:14, 18982
CHLE5TH:aspadm 62> sapcontrol -nr 01 -function GetProcessList

11.06.2021 20:12:58
GetProcessList
OK
name, description, dispstatus, textstatus, starttime, elapsedtime, pid
msg_server, MessageServer, GREEN, Running, 2021 03 16 22:17:08, 2085:55:50, 17358
enserver, EnqueueServer, GREEN, Running, 2021 03 16 22:17:08, 2085:55:50, 17359
CHLE5TH3:aspadm 63> ip r ;date
default via 10.10.81.1 dev eth0
10.10.81.0/24 dev eth0 proto kernel scope link src 10.10.81.58
172.31.3.0/24 dev eth1 proto kernel scope link src 172.31.3.58
Fri Jun 11 20:13:03 +03 2021
```

HA Checks: Check Replication State in HA

```
aspadm@CHLEA5TH0:/usr/sap/ASP/HDB00/exe/python_support> python systemReplicationStatus.py
this system is either not running or not primary system replication site

Local System Replication State
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

mode: SYNCMEM
site id: 2
site name: Secondary
active primary site: 1
primary masters: saaspxxx
```

Take over using HANA studio: Login with SIDADM in HANA studio in HA system

Configure System Replication for System ASP

Review configuration summary.

Configuration details for takeover...

Secondary System Information (ASP)

Host:

Instance Number: 00

[< Back] [Next >] [Finish] [Cancel]
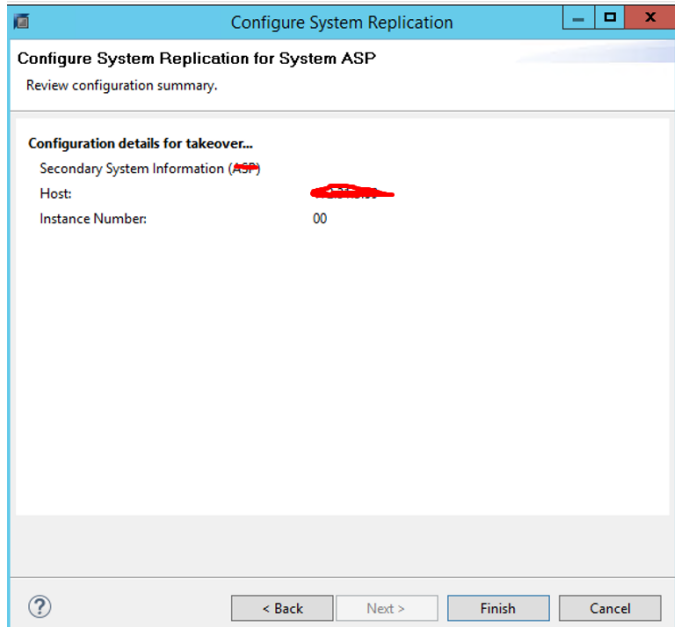

```
1.zip
    XS Messaging Service 1 (1.004.10) in /softdump/HANA_52_54/51054623/DATA_UNITS/XSA_CONTENT_10/XSACMESSSRV04_10.zip
    Develop and run portal services for customer apps on XSA (1.005.1) in /softdump/HANA_52_54/51054623/DATA_UNITS/XSA_CONTENT_10/XSACPORTALSERV05_1.zip
    SAP Web IDE Web Client (4.005.1) in /softdump/HANA_52_54/51054623/DATA_UNITS/XSAC_SAP_WEB_IDE_20/XSACSAPWEBIDE05_1.zip
    XS JOB SCHEDULER 1.0 (1.007.12) in /softdump/HANA_52_54/51054623/DATA_UNITS/XSA_CONTENT_10/XSACSERVICES07_12.zip
    SAPUI5 FESV6 XSA 1 - SAPUI5 1.71 (1.071.25) in /softdump/HANA_52_54/51054623/DATA_UNITS/XSA_CONTENT_10/XSACUI5FESV671_25.zip
    SAPUI5 SERVICE BROKER XSA 1 - SAPUI5 Service Broker 1.0 (1.000.3) in /softdump/HANA_52_54/51054623/DATA_UNITS/XSA_CONTENT_10/XSACUI5SB00_3.zip
    XSA Cockpit 1 (1.001.17) in /softdump/HANA_52_54/51054623/DATA_UNITS/XSA_CONTENT_10/XSACXSACOCKPIT01_17.zip


Choose an action

 Index | Action          | Description
------------------------------------------------------------------------
 1     | ASP (update)    | Update SAP HANA Database version 1.00.122.31.1590049925
       |                 | sreaspstnb (Database Worker (worker))
 2     | install         | Install new system
 3     | extract_components | Extract components
 4     | Exit (do nothing) |

Enter selected action index [4]: 1


Choose components to be installed or updated:

 Index | Components | Description
------------------------------------------------------------------------
 1     | all      | All components
 2     | server   | Update SAP HANA Database from version 1.00.122.31.1590049925 to version 2.00.052.00.1599235305
 3     | client   | Update SAP HANA Database Client from version 1.00.120.050.1484020229 to version 2.5.109.1598303414
 4     | lss      | Install SAP HANA Local Secure Store version 2.4.24.0
 5     | studio   | Install SAP HANA Studio version 2.3.54.000000
 6     | smartda  | Install SAP HANA Smart Data Access version 2.00.5.000.0
 7     | xs       | Install SAP HANA XS Advanced Runtime version 1.0.130.519
 8     | afl      | Install SAP HANA AFL (incl.PAL,BFL,OFL) version 2.00.052.0000.1599259237
 9     | eml      | Install SAP HANA EML AFL version 2.00.052.0000.1599259237
 10    | epmmds   | Install SAP HANA EPM-MDS version 2.00.052.0000.1599259237

Enter comma-separated list of the selected indices [2,3]:
```

```
Summary before execution:
==========================

SAP HANA Database
   Update Parameters
      SAP HANA System ID: ASP
      Remote Execution: ssh
      Update Execution Mode: optimized
      SAP HANA Database secure store: ssfs
      Database User Name: SYSTEM
   Software Components
      SAP HANA Local Secure Store
         Do not install
      SAP HANA AFL (incl.PAL,BFL,OFL)
         Do not install
      SAP HANA EML AFL
         Do not install
      SAP HANA EPM-MDS
         Do not install
      SAP HANA Database
         Update from version 1.00.122.31.1590049925 to 2.00.052.00.1599235305
         Location: /softdump/HANA_52_54/51054623/DATA_UNITS/HDB_SERVER_LINUX_X86_64/server
      SAP HANA Database Client
         Update from version 1.00.120.050.1484020229 to 2.5.109.1598303414
         Location: /softdump/HANA_52_54/51054623/DATA_UNITS/HDB_CLIENT_LINUX_X86_64/client
      SAP HANA Studio
         Do not install
      SAP HANA Smart Data Access
         Do not install
      SAP HANA XS Advanced Runtime
         Do not install
   Log File Locations
      Log directory: /var/tmp/hdb_ASP_hdblcm_update_2021-06-11_21.08.54
      Trace location: /var/tmp/hdblcm_2021-06-11_21.08.54_5271.trc

Note: The upgrade of SAP HANA Database to this version will convert your system to multi-tenant database containers. This is a mandatory step. For more information, see
 SAP Note 2423367.

Do you want to continue? (y/n):
```

```
  Preparing package 'Installer'...
  Preparing package 'Ini Files'...
  Preparing package 'HWCCT'...
  Preparing package 'Documentation'...
  Preparing package 'Delivery Units'...
  Preparing package 'Offline Cockpit'...
  Preparing package 'DAT Languages (EN, DE)'...
  Preparing package 'DAT Languages (other)'...
  Preparing package 'DAT Configfiles (EN, DE)'...
  Preparing package 'DAT Configfiles (other)'...
  Extracting software...
  Extracting package 'Saphostagent Setup'...
  Extracting package 'Python Support'...
  Extracting package 'Python Runtime'...
  Extracting package 'Product Manifest'...
  Extracting package 'Binaries'...
  Extracting package 'Data Quality'...
  Extracting package 'Krb5 Runtime'...
  Extracting package 'Installer'...
  Extracting package 'Ini Files'...
  Extracting package 'HWCCT'...
  Extracting package 'Documentation'...
  Extracting package 'Delivery Units'...
  Installing package 'Offline Cockpit'...
  Extracting package 'DAT Languages (EN, DE)'...
  Installing package 'DAT Languages (other)'...
  Extracting package 'DAT Configfiles (EN, DE)'...
  Installing package 'DAT Configfiles (other)'...
  Migrating table persistencies for HANA2...
Stopping system...
  Stopping 7 processes on host 'sreaspstnb' (worker):
    Stopping on 'sreaspstnb' (worker): hdbdaemon, hdbcompileserver, hdbindexserver, hdbnameserver, hdbpreprocessor, hdbwebdispatcher, hdbxsengine
  All server processes stopped on host 'sreaspstnb' (worker).
Updating SAP HANA Database...
Updating Resident hdblcm...
  Cleaning up old installation of Resident hdblcm...
Configuring SAP HANA Database...
  Starting service (sapstartsrv)...
Converting system to multitenant database containers...
```

```
HDB version info:
  version:             2.00.052.00.1599235305
  branch:              fa/hana2sp05
  machine config:      linuxx86_64
  git hash:            33d9d2f805777f29e5dafe6d33d93026bc39d78c
  git merge time:      2020-09-04 18:01:45
  weekstone:           0000.00.0
  cloud edition:       0000.00.00
  compile date:        2020-09-04 18:22:04
  compile host:        ld4553
  compile type:        rel

aspadm@          :/usr/sap/ASP/HDB00> ip r ;date
default via 10.10.81.1 dev eth0
10.10.81.0/24 dev eth0 proto kernel scope link src 10.10.81.59
172.31.3.0/24 dev eth1 proto kernel scope link src 172.31.3.59
Fri Jun 11 21:31:03 +03 2021
aspadm@          :/usr/sap/ASP/HDB00> sapcontrol -nr 00 -function GetProcessList

11.06.2021 21:31:26
GetProcessList
OK
name, description, dispstatus, textstatus, starttime, elapsedtime, pid
hdbdaemon, HDB Daemon, GREEN, Running, 2021 06 11 21:19:51, 0:11:35, 8808
hdbcompileserver, HDB Compileserver, GREEN, Running, 2021 06 11 21:21:34, 0:09:52, 9834
hdbnameserver, HDB Nameserver, GREEN, Running, 2021 06 11 21:19:51, 0:11:35, 8827
hdbpreprocessor, HDB Preprocessor, GREEN, Running, 2021 06 11 21:21:34, 0:09:52, 9837
hdbwebdispatcher, HDB Web Dispatcher, GREEN, Running, 2021 06 11 21:27:50, 0:03:36, 12542
hdbindexserver, HDB Indexserver-ASP, GREEN, Running, 2021 06 11 21:21:34, 0:09:52, 9891
hdbxsengine, HDB XSEngine-ASP, GREEN, Running, 2021 06 11 21:21:34, 0:09:52, 9894
```

HANA Revision

```
                 :/softdump/HANA_52_54/SAP_HANA_DATABASE # ./hdblcm


SAP HANA Lifecycle Management - SAP HANA Database 2.00.054.00.1611906357
************************************************************************


Scanning software locations...
Detected components:
    SAP HANA Database (2.00.054.00.1611906357) in /softdump/HANA_52_54/SAP_HANA_DATABASE/server
    SAP HANA Database Client (2.8.20.1619811438) in /softdump/HANA_52_54/SAP_HANA_CLIENT/client


Do you want to specify additional components location? (y/n) [n]: n
```

```
Processing software locations from pending update...
Pending update cannot be resumed with the persisted parameters. New update process will be started.
  Pending update started with SAP HANA Lifecycle Management version '2.5.41.0' cannot be resumed with version '2.5.49.0'
  SAP HANA Database installation kit '2.5.41.0' required.

Choose components to be installed or updated:

  Index | Components | Description
  -----------------------------------------------------------------------------------------------------------------------
  1     | all        | All components
  2     | server     | Update SAP HANA Database from version 2.00.052.00.1599235305 to version 2.00.054.00.1611906357
  3     | client     | Update SAP HANA Database Client from version 2.5.109.1598303414 to version 2.8.20.1619811438

Enter comma-separated list of the selected indices [1]: 1
Enter System Database User Name [SYSTEM]:
Enter System Database User (SYSTEM) Password:

Summary before execution:
=========================

SAP HANA Database
  Update Parameters
    SAP HANA System ID: ASP
    Remote Execution: ssh
    Update Execution Mode: standard
    SAP HANA Database secure store: ssfs
    System Database User Name: SYSTEM
  Software Components
    SAP HANA Database
        Update from version 2.00.052.00.1599235305 to 2.00.054.00.1611906357
        Location: /softdump/HANA_52_54/SAP_HANA_DATABASE/server
    SAP HANA Database Client
        Update from version 2.5.109.1598303414 to 2.8.20.1619811438
        Location: /softdump/HANA_52_54/SAP_HANA_CLIENT/client
  Log File Locations
    Log directory: /var/tmp/hdb_ASP_hdblcm_update_2021-06-11_21.33.29
    Trace location: /var/tmp/hdblcm_2021-06-11_21.33.29_15932.trc

Do you want to continue? (y/n):
```

```
HDB version info:
  version:           2.00.054.00.1611906357
  branch:            fa/hana2sp05
  machine config:    linuxx86_64
  git hash:          989e98fd1334a1b6e36785c8bd7e9ab5239960f1
  git merge time:    2021-01-29 08:45:57
  weekstone:         0000.00.0
  cloud edition:     0000.00.00
  compile date:      2021-01-29 08:49:45
  compile host:      ld4554
  compile type:      rel


                        :/usr/sap/ASP/HDB00> sapcontrol -nr 00 -function GetProcessList


11.06.2021 21:46:18
GetProcessList
OK
name, description, dispstatus, textstatus, starttime, elapsedtime, pid
hdbdaemon, HDB Daemon, GREEN, Running, 2021 06 11 21:42:46, 0:03:32, 23798
hdbcompileserver, HDB Compileserver, GREEN, Running, 2021 06 11 21:43:18, 0:03:00, 25379
hdbindexserver, HDB Indexserver-ASP, GREEN, Running, 2021 06 11 21:43:18, 0:03:00, 25431
hdbnameserver, HDB Nameserver, GREEN, Running, 2021 06 11 21:42:47, 0:03:31, 23821
hdbpreprocessor, HDB Preprocessor, GREEN, Running, 2021 06 11 21:43:18, 0:03:00, 25382
hdbwebdispatcher, HDB Web Dispatcher, GREEN, Running, 2021 06 11 21:44:27, 0:01:51, 29047
hdbxsengine, HDB XSEngine-ASP, GREEN, Running, 2021 06 11 21:43:18, 0:03:00, 25434
```

```
Do you want to specify additional components location? (y/n) [n]: n

Choose an action

 Index | Action            | Description
 --------------------------------------------------------------------------------
 1       | ASP (update)      | Update SAP HANA Database version 2.00.052.00.1599235305
         |                   | sreaspstnb (Database Worker (worker))
 2       | install           | Install new system
 3       | extract_components | Extract components
 4       | Exit (do nothing) |

Enter selected action index [4]: 1

Processing software locations from pending update...
Pending update cannot be resumed with the persisted parameters. New update process will be started.
 Pending update started with SAP HANA Lifecycle Management version '2.5.41.0' cannot be resumed with version '2.5.49.0'
 SAP HANA Database installation kit '2.5.41.0' required.

Choose components to be installed or updated:

 Index | Components | Description
 --------------------------------------------------------------------------------
 1       | all        | All components
 2       | server     | Update SAP HANA Database from version 2.00.052.00.1599235305 to version 2.00.054.00.1611906357
 3       | client     | Update SAP HANA Database Client from version 2.5.109.1598303414 to version 2.8.20.1619811438
```

Same Repeat to the Primary Server and update the DB Client as well.

Don't FORGET to check the REPLICATION STATUS.

Reference SAP Note:

⍁SAP Note: 2469025 – How-To: Upgrading to SAP HANA 2.0
⍁SAP Note: 2399995 – Hardware requirement for SAP HANA 2.0
⍁SAP Note: 2380229 – SAP HANA Platform 2.0 – Central Note
⍁SAP Note:1948334 – SAP HANA Database Update Paths for SAP HANA Maintenance Revisions

- Updating an SAP HANA System Landscape, SAP HANA Master Guide
- 2679360 – Central Note for Behavioral Changes in SAP HANA
- 2222219 – SAP HANA Errors and different Results due to Design Changes
- 2372809 – Mandatory Preparation Steps for Upgrading a SAP HANA 1 System to SAP HANA 2
- 2469025 – How-To: Upgrading to SAP HANA 2.0
- 2732756 – SAP HANA Platform Update and Migration from 1.0 to 2.0
-

📌SAP Note: 2378962 - SAP HANA 2.0 Revision and Maintenance Strategy
📌SAP Note: 2235581- SAP HANA: Supported Operating Systems

For the recommended settings and additional information, see

- 2777782 – SAP HANA DB: Recommended OS Settings for RHEL 8
- 2684254 – SAP HANA DB: Recommended OS settings for SLES 15 / SLES for SAP Applications 1
- 2235581 – SAP HANA: Supported Operating Systems
- SAP HANA 2.0 and 1.0 – What's the difference?
- 2101244 – FAQ: SAP HANA Multitenant Database Containers (MDC)

Thank You
Jasbir Khanuja, Never Stop Learning, Never Stop Exploring.