2000003 - FAQ: SAP HANA

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Symptom

You are looking for general advice about SAP HANA.

Environment

SAP HANA

Cause

1. Where do I find central information about SAP HANA?
2. How can I determine SAP HANA topology details?
3. What do SAP HANA error codes mean?
4. What has to be considered for BW on SAP HANA?
5. What has to be considered for Suite on HANA?
6. How can the configuration and performance of the SAP HANA hardware, firmware and operating system be checked?
7. What has to be considered when opening an SAP incident?
8. What are the requirements for SAP support service deliveries in SAP HANA environments?
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10. How can I check the technical consistency of the SAP HANA database?
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37. Does SAP HANA provide a history of DDL operations?
38. What is the difference between the SAP HANA enterprise edition and the SAP HANA platform edition?
39. Are there any special SAP HANA options that can be purchased on top of the standard SAP HANA edition?
40. Where can I find central information about SAP HANA host and service startups and shutdowns?
41. How can a critical SAP HANA session be terminated?
42. Which types of dumps can be created in SAP HANA environments?
43. How can standalone databases or individual tables be migrated to SAP HANA?
44. How can system copies be performed in SAP HANA environments?
45. How are fetch sizes defined in SAP HANA environments?
46. What can be reasons for unexpected or wrong results of SAP HANA database requests?
47. What kind of temporary and non-persisted tables can be created with SAP HANA?
48. How can the content of this and other SAP Notes with broad tables be transformed to PDF and printed without lines being cut?
49. How can a SAP HANA connection for SAP support be established?

Resolution

1. Where do I find central information about SAP HANA?

SAP Notes 1514967 and 1523337 contain central information and important links for SAP HANA.

Documentation for current and previous SAP HANA releases is available at http://service.sap.com/hana and http://help.sap.com/hana. Particularly in

SAP HANA software can be downloaded via the SAP Software Download Center (SWDC).

The SAP Community Network (SCN) covers SAP HANA topics at http://scn.sap.com/community/hana-in-memory.

Useful troubleshooting information can be found in the SAP HANA Troubleshooting and Performance Analysis Guide.

At SAP Press the book SAP HANA Administration is published, that provides a detailed overview about SAP HANA architecture and administration

The following FAQ Notes and SCN references for central SAP HANA topics exist:

SAP Note / SCN Link	Title	SAP Note / SCN Link	
1642148	FAQ: SAP HANA Database Backup and Recovery	2143736	FAQ: SAP HANA Table Distribution fo
1999880	FAQ: SAP HANA System Replication	2147247	FAQ: SAP HANA Statistics Server
1999930	FAQ: SAP HANA I/O Analysis	2159014	FAQ: SAP HANA Security
1999997	FAQ: SAP HANA Memory	2160391	FAQ: SAP HANA Indexes
1999998	FAQ: SAP HANA Lock Analysis	2165547	FAQ: SAP HANA Database Backup &
2000000	FAQ: SAP HANA Performance Optimization	2169283	FAQ: SAP HANA Garbage Collection
2000002	FAQ: SAP HANA SQL Optimization	2177064	FAQ: SAP HANA Service Restarts an
2000003	FAQ: SAP HANA	2177604	FAQ: SAP HANA Technical Performar
2014562	FAQ: SAP HANA LT Replication Server (SLT)	2180119	FAQ: SAP HANA Smart Data Access
2039883	FAQ: SAP HANA Database and Storage Snapshots	2180165	FAQ: SAP HANA Expensive Statemer
2044468	FAQ: SAP HANA Partitioning	2185556	FAQ: SAP HANA Cockpit
2053330	FAQ: SAP HANA Operations Recommendation for Alerts	2186744	FAQ: SAP HANA Parameters
2057046	FAQ: SAP HANA Delta Merges	2200772	FAQ: SAP HANA Statement Routing a
2057595	FAQ: SAP HANA High Availability	2220627	FAQ: SAP HANA LOBs
2073112	FAQ: SAP HANA Studio	2222110	FAQ: SAP HANA Load History
2081591	FAQ: SAP HANA Table Distribution	2222200	FAQ: SAP HANA Network
2082286	FAQ: SAP HANA Graph	2222220	FAQ: SAP HANA DBACOCKPIT
2100009	FAQ: SAP HANA Savepoints		
2100040	FAQ: SAP HANA CPU		
2101244	FAQ: SAP HANA Multitenant Database Containers		
2112604	FAQ: SAP HANA Compression		
2114710	FAQ: SAP HANA Threads and Thread Samples		
2115815	FAQ: SAP HANA Database Patches and Upgrades		
2116157	FAQ: SAP HANA Consistency Checks and Corruptions	DOC-35203	FAQ: SAP BW on SAP HANA
2124112	FAQ: SAP HANA Parsing	DOC-62942	FAQ: SAP HANA Tailored Data Cente
2127458	FAQ: SAP HANA Loads and Unloads	DOC-64640	FAQ: SAP HANA Operations
2142945	FAQ: SAP HANA Hints	DOC-66702	FAQ: High Availability for SAP HANA

2. How can I determine SAP HANA topology details?

Topology details like involved hosts, services and roles can be determined in different ways:

Tool	Det
M_SERVICES	This monitoring view contains information about the available SAP HANA services and their roles. You can use *SQL: "HANA_Services_Overview"* (SAP Note 1969700) for displaying this information.
M_TOPOLOGY_TREE	This monitoring view provides further topology details. It must be started with an equal predicate on the PATH colum
landscapeHostConfiguration.py	You can use the script landscapeHostConfiguration.py in the python_support folder in order to display topology infor

3. What do SAP HANA error codes mean?

SAP HANA server error codes are positive numbers. You can determine further details including a short description via *SQL: "HANA_ErrorCodes"* (

If client connections are done using SQLDBC, negative SQLDBC error codes can be thrown. SAP Note 1929772 provides an overview.

4. What has to be considered for BW on SAP HANA?

General information for operating BW on SAP HANA is available in SAP Note 1600929. Sizing SAP HANA for BW is described in SAP Note 16371

SAP Note 1729988 provides checks that can be performed when migrating an existing NetWeaver BW installation to SAP HANA.

SAP HANA scale out scenarios with BW take advantage of special table distribution and partitioning features. SAP Notes 1908073, 1908075 and S

Large tables on BW side can be handled as described in SAP Note 2019973.

If you want to run BW on a scale-out solution, at least three SAP HANA nodes should be used (SAP Note 1702409).

5. What has to be considered for Suite on HANA?

The minimum requirement for Suite on HANA is NetWeaver release 7.40.

SAP cluster and pool tables are changed to transparent tables on SAP HANA, so compared to other SAP databases you can see some new physica

- Transparent table KONV instead of cluster table KOCLU
- Transparent table BSEG instead of cluster table RFBLG
- Transparent table CDPOS instead of cluster table CDCLS
- Transparent table EDID4 instead of cluster table EDI40

SAP Note 1950470 describes the hardware prerequisites for Suite on HANA.

SAP Notes 1793345 and 1872170 contain sizing information for Suite on HANA.

SAP pilot Note 1781986 describes the prerequisites for scale-out scenarios on Suite on HANA. Customers interested in piloting SoH scale-out can
scale-out scenarios.

6. How can the configuration and performance of the SAP HANA hardware, firmware and operating system be checked?

Information about certified and supported hardware in SAP HANA environments can be found in the SAP hardware directory.

For optimal performance you should make sure that the /tmp directory resides on a local file system (see SAP Note 2100296).

SAP Note 1943937 describes a hardware configuration check tool that provides functionality to check if the hardware performance is sufficient for a

See SAP Note 1922310 related to firmware changes in SAP HANA environments.

The following SAP Notes provide information related to specific OS or hardware products:

SAP Note	Product	Area
1824819	SLES	SAP HANA DB: Recommended OS settings for SLES 11 / SLES for SAP Applications 11 SP2
1954788	SLES	SAP HANA DB: Recommended OS settings for SLES 11 / SLES for SAP Applications 11 SP3
2240716	SLES	SAP HANA DB: Recommended OS settings for SLES 11 / SLES for SAP Applications 11 SP4
2205917	SLES	SAP HANA DB: Recommended OS settings for SLES 12 / SLES for SAP Applications 12
1944799	SLES	SAP HANA Guidelines for SLES Operating System Installation
1944415	SLES	Configuration Guide for Hardware Platforms of SuSE Linux Enterprise Server
2013638	RHEL	SAP HANA DB: Recommended OS settings for RHEL 6.5
2136965	RHEL	SAP HANA DB: Recommended OS settings for RHEL 6.6
2247020	RHEL	SAP HANA DB: Recommended OS settings for RHEL 6.7
1650046	Lenovo	Lenovo Solution for SAP HANA - Operations Guide
1661146	Lenovo	Lenovo/IBM Check Tool for SAP HANA appliances
1880960	Lenovo	Lenovo Systems Solution for SAP HANA Platform Edition FW/OS/Driver Maintenance
1930395	Lenovo	HANA Server Disk Quota Administration
2100566	Lenovo	Frequently Asked Questions for Lenovo/IBM saphana support script
2055470	IBM	HANA on POWER Planning and Installation Specifics - Central Note
2133369	IBM	SAP HANA on IBM Power Systems: Central Release Note

7. What has to be considered when opening an SAP incident?

SAP Note 1976729 contains an overview of application components that can be used for SAP HANA incidents.

SAP Note 1758890 lists the information that is required by SAP support to analyze the problem efficiently.

See SAP Note 1747042 and make sure that a database user with sufficient privileges is provided in case the SAP support needs to connect to the d

SAP support may require a data export in order to reproduce a problem. SAP Note 1785797 describes how to perform an export.

8. What are the requirements for SAP support service deliveries in SAP HANA environments?

SAP Note 1892593 describes the necessary preparations that are required for a successful SAP support service delivery in SAP HANA environmen

9. What has to be considered for sizing SAP HANA?

Detailed sizing information for different environments can be found in the following SAP Notes:

Sizing Area	SAP Note
General information	1514966
BW	1637145 1736976 BW 3.5: 2021372
Suite on HANA	1793345 1872170
Dynamic tiering	2086829
Smart data streaming	2184297
Remote data sync	2210231

10. How can I check the technical consistency of the SAP HANA database?

SAP Note 1977584 provides an overview of tools that can be used to verify the technical consisteny of the SAP HANA database and of related areas

11. Where can I find information about backup, restore and recovery of SAP HANA?

See SAP Note 1642148 for popular questions and answers in the area of backup, restore and recovery of SAP HANA. SAP Note 2091951 provides

SAP Note 2031547 lists the available 3rd party software products for backup operations (backint).

SAP Note 2039883 answers questions around storage snapshots in SAP HANA environments.

12. Which trace options exist in the SAP HANA environment?

SAP HANA provides many trace options for various purposes. Several of them can be found in the "Administration" --> "Trace Configuration" section

See SAP Note 2119087 for more information.

13. Which limitations exist for the SAP HANA database?

See SAP Note 2154870 for limitations in the SAP HANA environment.

14. What are rule of thumbs for the performance and throughput of SAP HANA operations?

The following table lists some typical performance values for SAP HANA operations. The actual performance depends on many factors including para and can't be taken for granted.

Activity	Duration / Throughput	
R3load export	100 - 500 GB / h	Export from source database (different from SAP HANA)
R3load import	100 - 1000 GB / h	Import into SAP HANA database (throughput based on source database size)
Row store load	10 GB / min	Throughput of loading row store information into memory during SAP HANA startup
Quick selection (row store)	0.02 ms	Time an optimal selection from a SAP HANA row store table takes (server side) Measured values on client side much higher due to network / communication overhead
Quick selection (column store)	0.05 ms	Time an optimal selection from a SAP HANA column store table takes (server side) Measured values on client side much higher due to network / communication overhead
Data backup	100 - 1000 GB / h	Backup of data to disk
Data recovery (restore)	100 - 1000 GB / h	Restore of a data backup
Log recovery	80 - 800 GB / h	Recovery of logs
Column store startup after log recovery	100 - 1000 GB / h	A log recovery builds up potentially large delta storages (SPS <= 09). They are merged table amount of recovered data which influences the sizes of the delta storages.

15. Is it possible to run multiple SAP applications on a single SAP HANA appliance?

See SAP Note 1681092 that describes under what circumstances you can implement multiple SAP HANA databases on a single SAP HANA applia

See SAP Notes 1661202 and 1826100 that describes under what circumstances you can implement multiple SAP applications in a single SAP HAN

SAP Note 1953429 describes in which situations it is possible to run SAP HANA and a SAP NetWeaver application server ABAP on one host.

SAP Note 2024433 describes the prerequisites to run more than one SAP HANA virtual machine (VM) on one host.

SAP Note 2248291 describes details for running multiple applications on the same machine of a S/4HANA on-premise system.

Further information on SAP landscape recommendations can be found in the SAP HANA System Landscape Guide (http://www.saphana.com/docs/I

16. Which clients are supported for SAP HANA?

SAP Note 1577128 provides information related to clients supported in SAP HANA environments.

17. Which timeouts exist on SAP HANA side?

The most important timeouts on SAP HANA side are:

Parameter	Default	Unit	SAP Note	Descriptio
`global.ini -> [backup] -> data_backup_savepoint_lock_timeout`	7200 (2 hours)	s	2100009	Time after which a backup is terminated when its savepoint is not finished successfully
				Time after

`global.ini -> [persistence] -> log_backup_timeout_s`	900 (15 minutes)	s	1642148	which a log backup is performed a latest
`global.ini -> [system_replication] -> logshipping_timeout`	30	s	1999880	Time after which a synchronou replication a log buffer is terminated
`<service>.ini -> [communication] -> default_read_timeout`	-1 (no timeout)	ms		Time after which a rea request is terminated; internally certain operations may use specific timeouts
`indexserver.ini -> [transaction] -> lock_wait_timeout`	1800000 (30 minutes)	ms	1999998	Time after which a record or table lock wait is terminated
`indexserver.ini -> [session] -> idle_connection_timeout`	1440 (1 day)	min	1836774	Time after which an id connection is terminated
`indexserver.ini -> [session] -> idle_connection_timeout_application_<app_name>`	-1 (idle_connection_timeout)	min	2036111	Time after which an id connection of a specifi application is terminated
`indexserver.ini -> [session] -> tcp_keepalive_time`	600 (10 minutes)	s	1836774	Time after which a dead connection is terminated
`xsengine.ini -> [httpserver] -> max_request_runtime`	300 (5 minutes)	s	2159899	Maximum runtime of xsengine requests
`xsengine.ini -> [httpserver] -> sessiontimeout`	900 (15 minutes)	s	2159899	Time after which an xsengine session is terminated

Furthermore the following timeout can be configured as SAP ABAP profile parameter:

Parameter	Default	Unit	
dbs/hdb/connect_property = CONNECTTIMEOUT=<ms>	Primary connection: 0 (no timeout) Service connection, DBSL >= 7.42 (23): 0 (no timeout) Service connection, DBSL <= 7.42 (22): 30000 Secondary connections: 30000	ms	Time after which a client cor CONNECTTIMEOUT setting

18. What kind of Auto Commit options exist for SAP HANA?

SAP HANA provides the following Auto Commit options:

Auto Commit Type	Description
Auto Commit after each DML statement	*SAP HANA Studio -> SQL Editor -> Properties -> Sessions -> Auto Commit* On: COMMIT is issued after each executed SQL statement (default) Off: Manual execution of COMMIT is required *HDBSQL interactive option: \a* \a ON: COMMIT is issued after each executed SQL statement (default) \a OFF: Manual execution of COMMIT is required *HDBSQL command line option: -z* -z: Manual execution of COMMIT is required
Auto Commit after each batch of rows during a DML statement	*SQL command: ALTER TABLE ... COLUMN BATCH <size>* *SQL command: IMPORT .. BATCH <size>* BATCH <size>: COMMIT is issued after <size> records are processed
Auto Commit after each DDL statement	*SQL command: SET TRANSACTION AUTOCOMMIT DDL [ON | OFF]* ON: COMMIT is issued after each DDL operation (default) OFF: Manual execution of COMMIT is required Used e.g. by online repartitioning (SAP Note 2012533), but not officially documented

In addition some undocumented parameters exist that can control the COMMIT frequency of DML operations in the row store by defining batch sizes:

- indexserver.ini -> [transaction] -> parallel_batch_insert_threshold
- indexserver.ini -> [row_engine] -> bulk_delete_threshold

It is not recommended to touch these parameters unless explicitly requested by SAP.

19. Where do I find logs and traces of SAP HANA?

The log and trace files are written to directory /usr/sap/<HANA_SID>/HDB<inst_number>/<host>/trace.

Example:

```
/usr/sap/C11/HDB00/saphana01/trace
```

20. How can logs and traces of SAP HANA be purged?

The parameters maxfiles (default: 10 files) and maxfilesize (default: 10 MB) in the [trace] section of global.ini or a specific service control the trace file reached the maxfilesize limit.

The parameter global.ini --> [trace] --> maxalertfilesize defines the maximum size of alert files (default: 50 MB). When the configured size is reached,

Avoid increasing these settings unless there is a specific need. Otherwise more and / or larger files are kept for a longer time.

In ABAP stack environments you can delete files via transaction DBACOCKPIT:

```
DBACOCKPT -> Diagnostics -> Diagnosis Files -> Delete File(s)
```

On operating system level you can manually delete files if required.

From SAP HANA side you can purge SAP HANA logs and traces using the following commands:

Command	Details
`ALTER SYSTEM REMOVE TRACES ('<host>', '<file1>' [, '<file2>', ...])`	Deletes the individually specified trace files (unless they are currentl
`ALTER SYSTEM CLEAR TRACES <trace_type> [WITH BACKUP]`	Deletes all trace files belonging to the specified trace type (e.g. 'ALE If WITH BACKUP is added, the traces are compressed and saved i

SQL: "HANA_TraceFiles_Overview" (SAP Note 1969700) can be used to show files exceeding a defined retention time and generate the related cle

21. Which tables should be located in row store and column store in SAP Netweaver environments?

As a rough rule of thumb tables with frequent changes (e.g. communication tables) may take advantage of the row store.

The majority of SAP Netweaver tables should be located in column store. The list of row store tables for release 7.30 can be found in the attachment c patch levels of 7.40. SAP Note 2097876 provides additional information about reducing the number of row store tables with SPS 08 and 09.

The report RSDU_TABLE_CONSISTENCY provides an expert check to determine tables that are located in the wrong store ("Check all tables (stora

Starting with BW 7.40 (SPS 08) several tables are moved to column store per default. The conversion happens during the upgrade. SAP Note 20440 runtimes during the upgrade.

Starting with BW 7.40 (SPS 12) some more BW tables are moved to the column store. See SAP Note 2145480 for more information.

22. Does the size of a table differ between row store and column store?

Tables in row store are not compressed while there is an efficient compression algorithm available for the column store. As a consequence the size o

Row store:

```
-----------------------------------------
|TABLE_NAME       |S|TAB_MEM_GB|IND_MEM_GB|
-----------------------------------------
|RSBKDATAPAKID    |R|     15.13|      3.67|
|RSBKDATAPAKSEL   |R|      9.23|      3.79|
-----------------------------------------
```

Column store:

```
---------------------------------------
|TABLE_NAME    |S|TAB_MEM_GB|IND_MEM_GB|
---------------------------------------
|RSBKDATAPAKID |C|      6.57|      2.87|
|RSBKDATAPAKSEL|C|      1.44|      4.34|
---------------------------------------
```

23. What are typical differences between SAP HANA and Oracle?

SAP Note 1969815 describes some differences in the SQL area between SAP HANA and Oracle.

The following table contains typical differences in technical aspects between SAP HANA and Oracle:

Area	Details
Amount of generated (redo) logs	Typically 50 % to 100 % of the Oracle redo log generation is observed on SAP HANA side.

24. What has to be considered for SAP HANA sidecar scenarios?

SAP HANA can be used for specific functionalities in parallel to a classic SAP database. This scenario is called sidecar or side-by-side. SAP Note 1

25. Can a SAP HANA database be renamed?

You can use the SAP HANA tool hdbrename in order to change the SAP HANA database name or the involved host names.

26. Can a SAP HANA schema be renamed?

No, it is not possible to modify the name of a SAP HANA schema.

27. Where do I find more information related to SAP HANA extended storage?

Extended storage typically contains "warm" data that is accessed from time to time. So there is neither a need to treat it as "hot" data (processed in S

See SAP Note 1983178 and the documents attached to it for further information of using extended storage in BW environments.

28. Where can I find information related to SAP HANA Live?

SAP HANA Live allows real-time operational reporting. See http://www.saphana.com/docs/DOC-2923 and SAP Note 1778607 for further details.

29. Is it possible to configure an e-mail notification in case of critical SAP HANA states?

It is possible to configure e-mail notifications for SAP HANA alerts. See the related information in the SAP HANA administration guide (http://help.sa
case of certain problems you should check if an alert can be used to identify these problem situations. If that is not possible, you have to use other too

For the future it is planned to set up individual alerts with SAP HANA which can then be used as basis for e-mail notifications.

30. Is there a standard recommendation for setting SAP HANA parameters?

In most cases the default SAP HANA parameters are working fine, but for some reasons (e.g. workaround for bugs, individual optimizations or admin
"HANA_Configuration_Parameters" (SAP Note 1969700) can be used to check for parameters which might have to be adjusted. See SAP Note 21

31. Does SAP HANA support timezones?

Yes, see SAP Note 1791342 for more details.

32. What has to be considered in terms of the daylight saving time and leap seconds?

The document Preparing Your SAP Environment for Daylight Savings Time provides an overview of DST related recommendations in SAP environm

Leap seconds are small time adjustments which can have critical impact like high load on Linux boxes. See SAP Note 1738172 for more information

33. Where can fragmentation occur in SAP HANA environments?

Fragmentation in this context means space, which is allocated, but not used. In SAP HANA environments it can happen in the following areas:

Area	Level	Details
Heap allocators	Memory	The allocated space of heap allocators can be much higher than the used space. For efficiency reasons SAP HANA often do memory requirements SAP HANA will start a memory garbage collection. This is the normal behavior, usually no action is required.
Row store	Memory	The row store can fragment over time. It is possible to reorganize the row store in order to eliminate this space overhead.
Data volumes	Disk	The disk volumes with the table data can be much larger than the actually used space. This increases the disk space utilizatic based backup approaches. The standard SAP HANA backup generally only saves the used space, so it is not impacted. It ca

34. Which administration and monitoring tools exist in SAP HANA environments?

The main administration and monitoring tool in SAP HANA environments is the SAP HANA Studio. See SAP Note 2073112 for more information.

An additional common monitoring option is the DBACOCKPIT transaction in ABAP environments. For all ABAP systems on SAP HANA you can use from an ABAP system, e.g. Solution Manager. See SAP Note 2222220 for more information.

SAP Note 1969700 contains a SQL statement collection for SAP HANA that can be used for analyzing and optimizing the SAP HANA database.

35. What has to be considered when using liveCache in SAP HANA environments?

See SAP Notes 2037585, 2074788 and 2074843 related to the patch strategy and the versions of liveCache databases integrated in SAP HANA.

36. Where can I find an overview of SAP HANA features introduced with certain patch levels?

Information about new features can be found in "What's new" document of the SAP HANA Platform Release Notes.

37. Does SAP HANA provide a history of DDL operations?

SAP HANA doesn't record histories of DDL operations. If you want to determine details about executed DDL operations, you have to set up appropri

38. What is the difference between the SAP HANA enterprise edition and the SAP HANA platform edition?

The software for both editions is identical, only the underlying contracts are different. See SAP Note 1817105 for more information.

39. Are there any special SAP HANA options that can be purchased on top of the standard SAP HANA edition?

Several options like Dynamic Tiering or Smart Data Streaming are available on top of the standard SAP HANA edition. See SAP Note 2091815 for

40. Where can I find central information about SAP HANA host and service startups and shutdowns?

The daemon trace file records all activities like service startup and shutdown, and so it can be used to check when SAP HANA or specific services w

41. How can a critical SAP HANA session be terminated?

Long running SAP HANA sessions can become critical due to resource consumption, MVCC issues or locks. See SAP Note 2092196 for more infor

42. Which types of dumps can be created in SAP HANA environments?

The following dump types exist in SAP HANA environments:

Dump type	File name pattern	
Crash dump	<service>_<host>.<port>.**crashdump**.<timestamp>.trc	Automatic dump during a service crash (se
Emergency dump	<service>_<host>.<port>.**emergencydump**.<timestamp>.trc	Special kind of crash dump triggered by SA
Out of memory cleanup dump	<service>_<host>.<port>.**rtedump**.<timestamp>.**after_oom_cleanup**.trc	Automatic dump to document the memory be purged successfully)
Statement memory limit dump	<service>_<host>.<port>.**rtedump**.<timestamp>.**compositelimit_oom**.trc	Automatic dump in case a SQL statement
Out of memory dump	<service>_<host>.<port>.**rtedump**.<timestamp>.**oom**.trc	Automatic dump in case of an out of memc
Out of memory dump caused by OS limitation	<service>_<host>.<port>.**rtedump**.<timestamp>.**oom_memory_release**.trc	Automatic dump in case of an out of memc This situation should normally not happen, an OS perspective. In case of misconfigure Note 1999997 for more information.
Page dump	<service>_<host>.<port>.**rtedump**.<timestamp>.**page**.trc	Automatic dump in case of page inconsist
Runtime dump	<service>_<host>.<port>.**rtedump**.<timestamp>.trc	Manual creation of a runtime dump (SAP N
Runtime dump (in progress)	<service>_<host>.<port>.**rtedump_tmp**.<timestamp>.trc	Manual creation of a runtime dump (SAP N removed by renaming the file.

43. How can standalone databases or individual tables be migrated to SAP HANA?

In order to migrate a standalone database to SAP HANA, the following SAP tools are available:

- SAP HANA LT Replication Server (SLT, see SAP Note 2014562)
- Sybase Replication Server
- BOBJ Data Services

The choice of the proper tool depends on aspects like technical requirements, downtime considerations and data cleansing / manipulation.

44. How can system copies be performed in SAP HANA environments?

The SAP HANA Administration Guide describes in chapter "Copying a Database Using Backup and Recovery" how a homogeneous system copy ca

SAP Note 1844468 describes the steps required for a homogeneous system copy on SAP HANA using SWPM.

SAP Note 1775293 describes problems and provides tips for system copies and migrations in the SAP HANA context.

Additionally the SAP HANA BW System Copy Guide provides details how to copy BW systems on SAP HANA.

45. How are fetch sizes defined in SAP HANA environments?

If a database request returns a larger amount of data, it is processed in multiple individual fetches. The size of these fetches depends on the scenario

Tool	Setting	Default	
SAP ABAP client	dbs/hdb/cmd_buffersize dbs/hdb/max_array	1048576 100000	The fetch size of SAP ABAP requests is controlled by the two ABA Per default the SAP ABAP client retrieves up to 1048576 byte (1 M `#records = MIN ( dbs/hdb/max_array, ( dbs/hdb/cmd_buffers` The same formula also applies to bulk DML operations like INSER If LOBs are involved in a bulk DML operation, the following rules a • piece-wise LOB writes: bulk size is 1, so every record is pro • Otherwise: rather small bulk size, because LOB length is not
SAP HANA Studio -> SQL console	Session -> Single Fetch For Result	1024	Per default the SQL console in SAP HANA Studio fetches up to 10
JDBC client	Statement.setFetchSize()	32766	The default fetch size is typically 32766 and can be adjusted indivi ResultSet.

46. What can be reasons for unexpected or wrong results of SAP HANA database requests?

See SAP Note 2222121 for an overview of typical reasons for unexpected or wrong results.

47. What kind of temporary and non-persisted tables can be created with SAP HANA?

The following options exist for creating temporary and non-persisted tables on SAP HANA:

Type	Visibility (table)	Visibility (data)	Persisted	Life time (table)	Life time (data)	
Global temporary	global	session	metadata	permanent	session	SQL engine when processing stack COL0, COL1, ...)
Local temporary	session	session	-	session	session	
No logging	global	global	metadata	permanent	limited (retention, restart)	Certain BW functionalities
No delta log	global	global	metadata, data	permanent	inconsistent data in case of crash	

Be aware that NO LOGGING is not comparable with NOLOGGING options of other relational databases because of the restricted data life time. Inste

48. How can the content of this and other SAP Notes with broad tables be transformed to PDF and printed without lines being cut?

Converting SAP Notes to PDF using "PDF Version" and printing it, may result in truncated lines in case of broad tables. As a workaround you can co

49. How can a SAP HANA connection for SAP support be established?

The following SAP Note describes how to set up a SAP HANA Studio support connection:

SAP Note	Title	Details
1592925	SAP HANA Studio Service Connection	This SAP Note describes the required steps to configure a SAP HANA Studio connection. See

Header Data

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Priority Normal

Category How To

Product

This document is not restricted to a product or product version

References

This document refers to:

SAP Knowledge Base Articles

2222220 FAQ: SAP HANA DBACOCKPIT
2222200 FAQ: SAP HANA Network
2222121 SAP HANA Wrong Result Sets
2222110 FAQ: SAP HANA Load History
2220627 FAQ: SAP HANA LOBs
2200772 FAQ: SAP HANA Statement Routing and Client Distribution Mode
2186744 FAQ: SAP HANA Parameters
2185556 FAQ: SAP HANA Cockpit
2180165 FAQ: SAP HANA Expensive Statements Trace
2180119 FAQ: SAP HANA Smart Data Access
2177604 FAQ: SAP HANA Technical Performance Optimization Service
2177064 FAQ: SAP HANA Service Restarts and Crashes
2169283 FAQ: SAP HANA Garbage Collection
2160391 FAQ: SAP HANA Indexes
2159014 FAQ: SAP HANA Security
2154870 SAP HANA Limitations
2147247 FAQ: SAP HANA Statistics Server
2143736 FAQ: SAP HANA Table Distribution for BW
2142945 FAQ: SAP HANA Hints
2128928 Unexpected results when query a Calculated Column and a Counter
2127458 FAQ: SAP HANA Loads and Unloads
2124112 FAQ: SAP HANA Parsing
2119087 SAP HANA Traces
2116157 FAQ: SAP HANA Consistency Checks and Corruptions
2115815 FAQ: SAP HANA Database Patches and Upgrades
2114710 FAQ: SAP HANA Threads and Thread Samples
2112604 FAQ: SAP HANA Compression
2101244 FAQ: SAP HANA Multitenant Database Containers
2100040 FAQ: SAP HANA CPU
2100009 FAQ: SAP HANA Savepoints
2091951 Best Practice: SAP HANA Database Backup & Restore
2057046 FAQ: SAP HANA Delta Merges
2053330 FAQ: Operations Recommendation on SAP HANA Alerts
2014562 FAQ: SAP HANA LT Replication Server (SLT)
1999998 FAQ: SAP HANA Lock Analysis
1999880 FAQ: SAP HANA System Replication
1977242 How to handle HANA Alert 53: 'Pagedump files'
1930395 HANA Server Disk Quota Administration
1645763 Performance - Results from HANA JDBC driver returned in small packets

CSS SAP Notes

2248291 Multiple applications running with SAP S/4HANA On Premise Ed
2247020 SAP HANA DB: Recommended OS settings for RHEL 6.7
2240716 SAP HANA DB: Recommended OS settings for SLES 11 / SLES for
2210231 SAP HANA remote data sync Sizing Guide
2206359 SAP HANA DB: SELECT on tables with data aging enabled return
2205917 SAP HANA DB: Recommended OS settings for SLES 12 / SLES for
2196759 Unexpected results for Query on Column Store Table with Conc
2184297 Sizing guidelines for SAP HANA smart data streaming
2171760 Wrong results on virtual tables with remote Column Views
2170436 Result filtered by comparing integral number and real number
2165547 FAQ: SAP HANA Database Backup & Recovery in an SAP HANA Syst
2159899 Release Notes for SAP HANA Application Lifecycle Management
2145480 P12; row store/column store; changeover for large STATMAN ta
2137597 SAP HANA: NULL values in LOB column after executing DDL or D
2136965 SAP HANA DB: Recommended OS settings for RHEL 6.6
2134881 Wrong results or query execution failures in MDX prior to SA

2133369 SAP HANA on IBM Power Systems: Central Release Note for SPS
2130083 Successive DML operations on Global Temporary Column Table m
2107959 Potential data inconsistency after renaming column store tab
2106531 SQL function LEAD/LAG(arg1, arg2, arg3) can return wrong res
2103360 Wrong results in fractional part of DECIMAL columns for UNIO
2100566 Frequently Asked Questions for Lenovo/IBM saphana support sc
2091815 SAP HANA Options: Additional Information
2088371 known limitation for calculated keyfigures when using calcul
2086574 Wrong results for TREXviaDBSL queries with CountOnly
2086261 Wrong results SQL using hint OLAP_PARALLEL_AGGREGATION
2045050 SAP HANA DB: Enterprise search query may return too few resu
2044047 Pre-BW7.4 SP08 RowStore-to-ColumnStore conversion
2036111 Configuration parameters for the SAP HANA system
1993033 Wrong result for query on analytic view
1991414 Duplicate rows are returned when using queries with WHERE ..
1983888 Wrong results when executing BW queries on HANA Revision 70
1983389 DBCON entry for SAP HANA
1980765 Operations with columns containing only one value may lead t
1980667 SAP HANA DB: Wrong result with comparison between a grouping
1976994 Wrong data results on persisted indexes
1969700 SQL statement collection for SAP HANA
1958063 Unexpected results when mixing complex SQL functionalites wi
1940039 Wrong result in some cases of redundant conjunction within d
1844468 Homogeneous system copy on SAP HANA
1816578 SAP HANA: Wrong Results When Selecting From DSO Change Log
1783880 Duplicate dimension values for query on Calculation View
1778607 SAP HANA Live for SAP Business Suite
1775293 Migration or system copy to SAP HANA using the latest softwa
1764662 Select on a calculated attribute returns empty result
1764658 HANA Calculation Engine Instantiation Process
1738172 Linux: High Machine Load due to Leap Second

SAP Help Portal

SAP Landscape Transformation for SAP HANA Operations Guide
SAP HANA Documentation
SAP HANA Online Help
SAP HANA Troubleshooting and Performance Analysis Guide
SAP HANA Security Guide
What's New - SAP HANA Platform Release Notes
SAP Software Download Center
SAP HANA Live - Real-time operational Reporting
SQL and System Views Reference
SAP HANA Administration Guide

SAP Community Network

SAP HANA BW System Copy Guide
FAQ: SAP HANA Operations
FAQ: SAP HANA Tailored Data Center Integration
FAQ: SAP BW on SAP HANA
FAQ: High Availability for SAP HANA
Preparing Your SAP Environment for Daylight Savings Time
SAP HANA Landscape Redistribution with SP6
When to upgrade your SAP HANA System
SAP HANA SCN Community
Landscape Recommendations

External Hyperlink

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SAP HANA System Landscape Guide