

Summary

Symptom

This note contains SAP's recommendations for the configuration of Oracle Database 10g.

Other terms

init.ora, SPFILE, server parameter file

Reason and Prerequisites

This note contains SAP's recommendations for the optimal configuration of the Oracle database with Release 10g in SAP environments.

For Oracle Release 9i or lower, refer to Note 124361 and the notes referenced there.

Note that the recommendations given in this note may be changed. Therefore, we recommend that you check the latest version of this note once a month and make the necessary changes.

Previously, some parameter settings for the Oracle database (for example, for the cost-based optimizer) depended on whether your system was a normal R/3 system or a BW-based system. As of Oracle 10g, there is a uniform parameterization recommendation for all systems, which is described in this note. A few exceptions to this are indicated explicitly.

General recommendations

You should delete **obsolete initialization parameters** from the profile. To determine which obsolete parameters are currently set, proceed as follows:

```
SELECT NAME FROM V$OBsolete_PARAMETER WHERE ISSPECIFIED = 'TRUE';
```

You should not set any parameters that are not explicitly mentioned in this note. Exceptions:

- o The parameter is recommended as the solution or workaround for a problem in another note.
- o The parameter is required for implementing an individual configuration (for example, multiple archiver destinations, check functions, special memory settings).

Further comments on parameterization:

- o For detailed information about the maintenance of parameters with SFILES, see Note 601157.
- o If several EVENT parameters are specified in init<sid>.ora, they

must appear in consecutive rows. You must avoid entering several events separated by ":" in one row.

- o You should not set parameters that are indicated with "Do not set!" and parameters that are not mentioned at all in the note (and for which there is no individual customer requirements). In this case, you use the Oracle default value, which then also appears in V\$PARAMETER or in the ST04 parameter overview. This is the intended behavior. If you want to ensure that a parameter has not been explicitly set, you can enter the following query (<parameter_name> in lower case):

```
SELECT ISDEFAULT FROM V$PARAMETER2  
WHERE NAME = '<parameter_name>';
```

If this returns the TRUE statement, then the parameter has not been explicitly set.

- o You can only optimize memory parameters and resource parameters such as DB_CACHE_SIZE or DB_WRITER_PROCESSES individually. Therefore, this note cannot give any general recommendations. However, you can determine options for optimization on the basis of a database performance analysis (see Notes 618868, 619188, 789011).
- o The parameterization described below is directed towards the use of the features of the dynamic SGA (Note 617416) and the automatic PGA administration (Note 619876).
- o <SAPDATA_HOME> refers to the value of the environment variable SAPDATA_HOME.
- o Paths are given in UNIX syntax. On WINDOWS, you must replace the forward slashes ("/") with back slashes ("\").
- o The terms OLAP system and OLTP system have the following meaning:
 - OLAP system: These are systems with mainly BW functions (BW / BI, APO with mainly DP usage, SEM-BPS, BW-based SEM-BCS).
 - OLTP system: Systems with mainly non-BW functions (this also includes, for example, Bank Analyzer systems)
- o Configure systems with a pure Java stack as you would an OLTP system.
- o Configure double stack systems (that is, systems with both ABAP and JAVA stacks) as you would an OLTP or OLAP system, depending on degree to which you use BW functions (see above).
- o In a few exceptional cases, if you have a system without OLAP, you can refrain from setting OLAP specific parameters such as STAR_TRANSFORMATION_ENABLED, _FIX_CONTROL or _INDEX_JOIN_ENABLED to avoid problems (for example, ORA-04031 due to _FIX_CONTROL, Note 997889) or to use functions (for example, index joins). Note that such scenarios are only relevant in very rare situations. Therefore, you do not usually have to deviate from the standard recommendations.

- o If you set parameters depending on a bugfix implementation, the relevant bugfix is specified. The notes referenced contain dependent fixes such as WINDOWS patches or merge fixes.

As of October 10, 2008, this note will be updated regularly once a month. Beyond that, changes will only be made in exceptional cases for critical Oracle parameters.

The next updates for this note are scheduled for the following dates:

- o 10. August 2010
- o 10. September 2010
- o 10. October 2010

Change history:

- o 10.07.2010:
 - 10.2.0.4: `_FIX_CONTROL` 9196440
- o 10.06.2010:
 - 10.2.0.4: Adjustments `_FIRST_SPARE_PARAMETER`, `_SECOND_SPARE_PARAMETER`
- o 10.05.2010:
 - 10.2.0.4, OLTP: `_B_TREE_BITMAP_PLANS` = FALSE
 - 10.2.0.4 with Fix 9495669: `_FIX_CONTROL` '9495669:ON'
- o 10.04.2010: No Changes
- o 10.03.2010: No Changes
- o 10.02.2010: No Changes
- o 10.01.2010: Do not set `NLS_LENGTH_SEMANTICS`.
- o 10.12.2009: No Changes
- o 10.11.2009: No Changes
- o 10.10.2009:
 - 10.2.0.4: EVENT 10891 no longer necessary
- o 10.09.2009: No Changes
- o 10.08.2009: No Changes
- o 10.07.2009:
 - 10.2.0.4: EVENT 10753 (Level 2)

- o 10.06.2009:
 - 10.2.0.4 without Fix 8366255: EVENT 10753 (Level 2)
 - 10.2.0.4 with Fix 5099019: `_FIX_CONTROL '5099019:ON'`
- o 10.05.2009:
 - OLTP: Do not set `OPTIMIZER_DYNAMIC_SAMPLING`
 - 10.2.0.4 with Fix 7891471: `_FIX_CONTROL '7891471:ON'`
- o 10.04.2009:
 - 10.2.0.x with Fix 6399597: `_FIX_CONTROL '6399597:ON'`
 - 10.2.0.4 with Fix 6795880: `_CURSOR_FEATURES_ENABLED = 10`
- o 10.03.2009:
 - 10.2.0.4: `_OPTIMIZER_BETTER_INLIST_COSTING = OFF`
 - 10.2.0.4 with Fix 7692248: `_FIX_CONTROL '7692248:ON'`
- o 10.02.2009:
 - 10.2.0.2: `_FIX_CONTROL '6120483:OFF'` adjusted
 - 10.2.0.4: set `_FIRST_SPARE_PARAMETER` if required
- o 10.01.2009:
 - 10.2.0.2: `_IN_MEMORY_UNDO` generally set to FALSE
 - 10.2.0.2 with fixes: `_FIX_CONTROL '6430500:ON'` and `'7325597:ON'`
 - 10.2.0.4: `_FIX_CONTROL '6670551:ON'`
- o 10.12.2008:
 - 10.2.0.2: EVENT 44951 (Level 1024)
 - 10.2.0.4: Event 10142 (Level 1)
 - 10.2.0.4: `_FIX_CONTROL 5765456` from Level 7 to Level 3
- o 14.11.2008: `_FIX_CONTROL` changes for 10.2.0.4
- o 10.11.2008: `OPTIMIZER_INDEX_CACHING` Do not generally set
- o 10.10.2008: No Changes
- o 23.09.2008: EVENT 10049 (LEVEL 2)
- o 17.09.2008: `"_FIX_CONTROL"='6329318:OFF'`
- o 25.08.2008: EVENT 10091 (LEVEL 1)

- o 14.08.2008: "_FIX_CONTROL"='6120483:OFF'
- o 17.07.2008: Parametrization for Oracle 10.2.0.4 is integrated.
- o 27.06.2008: HPUX_SCHED_NOAGE = 178, _DB_BLOCK_NUMA = 1, _ENABLE_NUMA_OPTIMIZATION = FALSE
- o 21.05.2008: "_FIX_CONTROL"='6626018:ON', "_FIX_CONTROL"='6660162:ON', "_FIX_CONTROL"='6440977:ON'
- o 18.04.2008: LOG_ARCHIVE_DEST replaced with LOG_ARCHIVE_DEST_1
- o 28.11.2007: _BLOOM_FILTER_ENABLED = FALSE
- o 08.11.2007: EVENT 10891 (LEVEL 1)
- o 01.11.2007: _TABLE_LOOKUP_PREFETCH_SIZE = 0
- o 08.10.2007: EVENT 38087 (LEVEL 1)
- o 11.09.2007: "_FIX_CONTROL"='5705630:ON'

Solution

The following section provides information about the standard parameter recommendations for 10.2.0. These recommendations are relevant for all SAP products.

For information about the automatic check of the parameter, see Note 1171650.

For more information on individual parameters, see Note 1289199.

STANDARD PARAMETER RECOMMENDATIONS FOR ORACLE 10.2.0

Parameter	Recommendation
-----	-----
BACKGROUND_DUMP_DEST	<SAPDATA_HOME>/saptrace/background
COMMIT_WRITE	Do not set
COMPATIBLE	10.2.0
CONTROL_FILES	At least three copies on different disk areas
CONTROL_FILE_RECORD_KEEP_TIME	30 or higher
CORE_DUMP_DEST	<SAPDATA_HOME>/saptrace/background
DB_BLOCK_SIZE	8192
DB_CACHE_SIZE	Size depends on the available memory (Notes 789011, 617416)
DB_FILES	Larger than the number of data files to be expected in the short term
DB_FILE_MULTIBLOCK_READ_COUNT	Do not set
DB_NAME	<db_name>
DB_WRITER_PROCESSES	Only set in case of increased DBWR load (Notes 79341, 793113)

EVENT

"10027 trace name context forever, level 1" (Note 596420)
 "10028 trace name context forever, level 1" (Note 596420)
 "10049 trace name context forever, level 2" (Note 1253845,
 only WINDOWS, 10.2.0.4 with mini patch 5 to 9)
 "10091 trace name context forever, level 1" (Note 1227227,
 10.2.0.2 or 10.2.0.4 without fix 7188932)
 "10142 trace name context forever, level 1" (Note 1284478,
 >= 10.2.0.4)
 "10162 trace name context forever, level 1" (Notes 977319,
 1040300, 10.2.0.2)
 "10183 trace name context forever, level 1" (Note 128648)
 "10191 trace name context forever, level 1" (Note 128221)
 "10411 trace name context forever, level 1" (is required to

activate

fix 6768114, Note 1137346, 10.2.0.4)
 "10629 trace name context forever, level 32" (Note 869521,
 other settings of events 10626 / 10629 also allowed)
 "10753 trace name context forever, level 2" (Note 1351737,
 10.2.0.4)
 "10891 trace name context forever, level 1" (Note 1037651,
 10.2.0.2)
 "14532 trace name context forever, level 1" (Note 1031682,
 10.2.0.2 with fix 5618049 or 10.2.0.4 or higher)
 "38068 trace name context forever, level 100" (Note 176754)
 "38085 trace name context forever, level 1" (Note 176754,
 >= 10.2.0.4)
 "38087 trace name context forever, level 1" (Note 948197,
 10.2.0.2 with fix 5842686 or 10.2.0.4 or higher)
 "44951 trace name context forever, level 1024" (Note 1166242,
 10.2.0.2 with fix 6376915 or 10.2.0.4 or higher)

FILESYSTEMIO_OPTIONS

SETALL (Note the restrictions from
 Note 999524)

HPUX_SCHED_NOAGE

178 (HP-UX only, without RAC)

LOG_ARCHIVE_DEST

Do not set!

LOG_ARCHIVE_DEST_1

"LOCATION=<SAPDATA_HOME>/oraarch/<sid>arch"

LOG_ARCHIVE_FORMAT

%t_%s_%r.dbf

LOG_BUFFER

1048576 (Actual value may
 be different, see Note 1289199)

LOG_CHECKPOINTS_TO_ALERT

TRUE

MAX_DUMP_FILE_SIZE

20000

NLS_LENGTH_SEMANTICS

Do NOT set

OPEN_CURSORS

800 (up to a maximum of 2000)

OPTIMIZER_DYNAMIC_SAMPLING

OLTP: Do not set.
 OLAP: 6 (>= 10.2.0.4)

OPTIMIZER_FEATURES_ENABLE

Do not set

OPTIMIZER_INDEX_CACHING

Do not set!

OPTIMIZER_INDEX_COST_ADJ

OLTP: 20
 OLAP: Do not set.

OPTIMIZER_MODE

Do not set

PARALLEL_EXECUTION_MESSAGE_SIZE

16384

PARALLEL_MAX_SERVERS

#DB-CPU-Cores * 10

PARALLEL_THREADS_PER_CPU

1

PGAAggregateTarget

OLTP: 20 % of available memory
 OLAP: 40 % of available memory

PROCESSES

#ABAP work processes * 2 +
 #J2EE server processes *

	<max-connections> + PARALLEL_MAX_SERVERS + 40
QUERY_REWRITE_ENABLED	FALSE
RECYCLEBIN	OFF
REMOTE_OS_AUTHENT	TRUE
REPLICATION_DEPENDENCY_TRACKING	FALSE (if no replication is used)
SESSIONS	2 * PROCESSES
SHARED_POOL_SIZE	400 MB or greater, refer to Note 690241
STAR_TRANSFORMATION_ENABLED	TRUE
UNDO_MANAGEMENT	AUTO (Note 600141)
UNDO_RETENTION	set if required (refer to Note 600141)
UNDO_TABLESPACE	PSAPUNDO (Note 600141)
USER_DUMP_DEST	<SAPDATA_HOME>/saptrace/usertrace
_B_TREE_BITMAP_PLANS	FALSE (10.2.0.2) FALSE (10.2.0.4, OLTP, Note 1461804)
_BLOOM_FILTER_ENABLED	FALSE (10.2.0.2, Note 1119194)
_CURSOR_FEATURES_ENABLED	10 (10.2.0.4 with Fix 6795880 from Note 1273790)
_DB_BLOCK_NUMA	1 (HP-UX only, see Note 1225732)
_ENABLE_NUMA_OPTIMIZATION	FALSE (HP-UX only, see Note 1225732)
_FIRST_SPARE_PARAMETER	1 (WINDOWS, 10.2.0.4 or higher, w/ fix 6904068 from Note 1273790; UNIX, 10.2.0.4 or higher, w/ fix 6904068 from Note 1273790 and without fix 7291739 from Note 1475173)
_FIX_CONTROL	
'4728348:OFF'	(10.2.0.2 without fix 5397482 from Note 981875, refer to Notes 964858 and 997889)
'5099019:ON'	(10.2.0.4 with fix 5099019 from Note 1165319)
'5705630:ON'	(10.2.0.2 with fix 5705630 from Note 981875 or 10.2.0.4 or higher)
'5765456:3'	(>= 10.2.0.4)
'6120483:OFF'	(10.2.0.4 or lower with fix 6120483 and without fix 7325597 from Note 981875 (10.2.0.2) or Note 1165319 (10.2.0.4))
'6221403:ON'	(10.2.0.4 or higher, Note 1165319)
'6329318:OFF'	(10.2.0.4 with fix 6329318 and without fix 7211965 from Note 1165319)
'6329318:ON'	(10.2.0.4 with fix 7211965 from Note 1165319)
'6399597:ON'	(10.2.0.2 with fix 6399597 from Note 981875, 10.2.0.4 with fix 6399597 from Note 1165319)
'6430500:ON'	(10.2.0.2 with fix 6430500 from Note 981875, 10.2.0.4 with fix 6430500 from Note 1165319)
'6440977:ON'	(10.2.0.2 with fix 6440977 from Note 981875 or 10.2.0.4 or higher)
'6626018:ON'	(10.2.0.2 with fix 6626018 from Note 981875 or 10.2.0.4 or higher)
'6660162:ON'	(10.2.0.2 on UNIX with fix 6660162 from Note 981875)
'6670551:ON'	(10.2.0.4)
'6972291:ON'	(10.2.0.4 or higher, Note 1165319)
'7325597:ON'	(10.2.0.2 with fix 7325597 from Note 981875, 10.2.0.4 with fix 7325597 from Note 1165319)
'7692248:ON'	(10.2.0.4 with fix 7692248 from Note 1165319)
'7891471:ON'	(10.2.0.4 with fix 7891471 from Note 1165319)

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'9196440:ON' (10.2.0.4 with fix 9196440 from Note 1165319)
'9495669:ON' (10.2.0.4 with fix 9495669 from Note 1165319)
_INDEX_JOIN_ENABLED                FALSE (10.2.0.2, refer to Notes
                                     964858 and 1165319)
_IN_MEMORY_UNDO                    FALSE (10.2.0.2)
_OPTIM_PEEK_USER_BINDS             FALSE (see Note 755342)
_OPTIMIZER_BETTER_INLIST_COSTING   OFF (10.2.0.4, OLTP,
                                     Note 1298485)
_OPTIMIZER_MJC_ENABLED             FALSE (Note 176754 (30))
_PUSH_JOIN_UNION_VIEW              FALSE (10.2.0.4, if fix
                                     7155655 from Note 1248584 is not
                                     implemented)
_SECOND_SPARE_PARAMETER            1 (UNIX, 10.2.0.4 or higher, w/ fix
6904068                             from Note 1273790 and with fix
                                     7291739 from Note 1475173)
_SORT_ELIMINATION_COST_RATIO       10 (see Note 176754 (16))
_TABLE_LOOKUP_PREFETCH_SIZE        0 (10.2.0.2, refer to Notes
                                     1109753 and 1165319)

```

Header Data

```

Release Status:                Released for Customer
Released on:                   13.07.2010      07:55:39
Master Language:              German
Priority:                      Recommendations/additional info
Category:                     Installation information
Primary Component:            BC-DB-ORA Oracle

```

The Note is release-independent

Related Notes

Number	Short Text
1476753	NetWeaver BPM: Performance issues on Oracle Database
1475345	Oracle 10.2.0.4 underscore spare parameter
1475173	Contention with auto-tuned undo retention
1472386	ORA-04031 out of memory error in BW systems
1468914	ORA-55567 after install SAP Bundle Patch SAP_102044_201005
1342593	Account search: Performance issue with name and address
1336972	BW Oracle RSRV parameter COMPATIBLE
1325833	Error in Console: The MDM repository is invalid

Number	Short Text
1289199	Information about Oracle parameters
1284478	Poor performance when using Btree bitmap plans
1284406	MISSING_STATISTICS warning after new installation
1273790	kks* merge fix for Oracle 10.2.0.4
1238487	Update of threshold values of database system check
1233458	Error during startup: ORA-00940: invalid ALTER command
1227227	SQL statement runs endlessly or times out (kkompr)
1225732	Oracle ccNUMA optimization on HP-UX
1171650	Automated Oracle DB parameter check
1165319	Optimizer merge fix for Oracle 10.2.0.4
1137346	Oracle 10.2.0: Patches/patch collections for Oracle 10.2.0.4
1122246	Central note SAP NetWeaver 7.0 Rapid Installer for SPS 14
1119194	10.2.0.2: Incorrect result set with Bloom filters
1117785	RW: Wrong data / bad performance with ORACLE 10g
1085874	Performance in International Financial Reporting Standards
1085873	Performance in BaselIII Capital Accord
1075118	SAP on HP-UX: FAQ
1044174	Recommendation for CC 5.x running on Oracle 10G Database
1040300	Wrong values with Star Transformation Hint 9.2.0.8 /10.2.0.2
1037651	Oracle 10.2.0.2: Long parsing times for complex joins
1031682	ORA-04031 due to shared pool component "mvobj part des"
1013912	FAQ: Oracle BW performance
1013476	ORA-600 kcbzpbuff_1 during array insert causes corruption
1009332	Central note SAP NetWeaver 2004s Rapid Installer for SPS 11
999524	Oracle 10.2 platform support for Async IO
999126	Performance improvement for star queries
997889	Error ORA-04031 due to "_fix_control"
980805	ORA-600 kdtigetrow-2 w/ array insert leads to corruptions
977319	Incorrect values in Oracle 10.2 (II)
964858	Incorrect vals w/ STAR_TRANSFORMATION_ENABLED in Oracle 10.2
960790	Upgrade to SAP NetWeaver 7.1 AS ABAP/AS Java ORACLE
960633	Merge Join Cartesian in complex join
948294	AIX JFS2: mount options to use with Oracle 10g
934808	Further configuration of Oracle10g for SAP Enterprise Portal
914177	File system reiserfs Oracle parameter filesystemio_options
900345	Backward Release of ORACLE 10.2 - Upgrade Information
899070	ORA-01406 reported on SELECT against SAP Tables (eg.TRDIR)
885167	Add. info.: Upgrade to SAP NetWeaver 7.0 Java ORACLE
848708	Oracle Database Configuration for NWDI server
819830	Oracle Database 10g: Additional Information on upgrade:UNIX
819655	Add. info.: Upgrade to SAP NW 2004s ABAP ORACLE
789011	FAQ: Oracle memory areas
755342	Incorrect execution plans with bind variable peeking
720886	Oracle Database 10g: Integration into the SAP environment
690241	The Shared SQL Area in the Shared Pool and large SQL Stmnts

Number	Short Text
632556	Oracle 9.2.0.* database parameterization for BW
619876	Oracle9i: Automatic PGA Memory Management
619188	FAQ: Oracle wait events
618868	FAQ: Oracle performance
617416	Oracle9i: Dynamic SGA
601157	Oracle9i: Server Parameter File
600141	Oracle9i: Automatic UNDO Management
596423	Events and SPFILE
596420	System standstill during deadlock (ORA-60)
592393	FAQ: Oracle
527481	tRFC or qRFC calls are not processed
378509	Oracle DB parameter setting for APO
192055	Warnings despite correct parameter values
180605	Oracle database parameter settings for BW
176754	Problems with CBO and RBO
132551	Overflow log sequence numbers on NT
128221	Increased memory consumption with Oracle >8.0.X
124361	Oracle parameterization (R/3 >= 4.x, Oracle 8.x/9.x)
79341	Checkpoint not complete

Attachments

File Type	File Name	Language	Size
TXT	script_moved_to_note_1171650.txt	E	1 KB