SAP **1139904 - FAQ: SAP MaxDB/liveCache database parameters**

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Symptom

This SAP Note contains frequently asked questions (FAQs) about the database parameters. It provides answers and refers you to other information sources.
The note is by no means complete.

1. What are database parameters?
2. With which tool do you display and change database parameters?
3. Where do you save the database parameters?
4. Is there a history for the database parameter files?
5. How can I activate an old version of a database parameter file?
6. How can I read the database parameter file from a backup?
7. Is there a history that logs the changes to individual database parameters?
8. What types of database parameters exist?
9. How can I display the properties of database parameters?
10. What do the individual properties of the database parameters mean?
11. Can I change database parameters while the database is in operation? When do these parameter changes become active?
12. Where can I find information about which calculation formulas have been defined for individual database parameters?
13. How do I ensure that dependent database parameters are recalculated after a parameter change?
14. How can I determine whether a database parameter has the "Usermodified" indicator set?
15. How can I reset the "Usermodified" indicator?
16. Where can I find information about database parameter recommendations?
17. Where can I find information about database parameter recommendations for OneDB systems or BusinessByDesign systems with SAP MaxDB?
18. If I have changed database parameters due to an error in the software, does the database report whether a change can be reset?
19. Where can I find more information about database parameters?
20. Where can I find detailed information about database parameters that influence the SQL optimizer?
21. As of SAP MaxDB Version 7.7.03, new names were assigned to the database parameters. Where can I find a list that contains both the old and the new database parameter names in comparison?
22. What is the importance of the database parameter TIME_MEASUREMENT?
23. Where can I find information about database parameters which can be used to alter database Task Scheduling?

Other Terms

FAQ, frequently asked questions, SAP MaxDB/liveCache, database parameters, "cserv.pcf"

Reason and Prerequisites

You use an SAP MaxDB database in the OLTP, SAP Content Server, or SAP liveCache environment.
The SAP MaxDB/liveCache database version you use is Version 7.6 or higher.
You can find an overview of all the available SAP MaxDB FAQ notes in the SCN at:
https://wiki.scn.sap.com/wiki/x/GkM

Solution

1. What are database parameters?

   You use database parameters to configure an SAP MaxDB/liveCache database.

2. With which tool do you display and change database parameters?

   You can use the tools Database Studio, Database Manager CLI, or - in earlier database versions - Database Manager GUI to configure, display, and change the database parameters.
   In the SAP environment, you can use the DBA Cockpit (transaction DBACOCKPIT) or the database assistant (transaction DB50 or LC10) to display and change database parameters.
   For further information about displaying and changing database parameters, refer to the SAP MaxDB documentation or SAP Note 767598.

3. Where do you save the database parameters?

The system stores the database parameters in a parameter file. This database parameter file is saved in binary format in the file system in the configuration directory (<indep_data>/config, as of SAP MaxDB-Version 7.8 <global_data_path/config). The name of the database parameter file corresponds to the database name. You can retrieve the parameter file only with a database tool. When you carry out data backups of the type SAVE DATA (full data backup) or SAVE PAGES (incremental data backup), the system writes the content of the database parameter file to the backup medium.

4. Is there a history for the database parameter files?

Yes. When you make database parameter changes, the system copies the old parameter file to <indep_data>/config/<database_name>.<number>
As of MaxDB Version 7.8: <global_data_path/config/<database_name>.<number>
The system stores a maximum of 10 versions of the database parameter file.
After you add a new volume, the system deletes all the versions of the database parameter file that are not current because these have then become unusable for the current configuration.
You can use the DBM command param_gethistory to display the database parameter history.

5. How can I activate an old version of a database parameter file?

Use the DBM command param_restore and specify the required version to activate an older version of a database parameter file. For example, this is useful if a database parameter file was destroyed due to a "Filesystem Full".
Note the following: Before you execute this DBM command, you must first back up the current database parameter file.

6. How can I read the database parameter file from a backup?

You can use the DBM command recover_config to read the database parameter file from the backup.

7. Is there a history that logs the changes to individual database parameters?

You can use the DBM command param_gethistory to display the changes to all the database parameters, or you can use param_gethistory <parameter_name> to display the change to the named database parameter.
In SAP systems, you can display the changes to database parameters using the database assistant (transaction DB50 or LC10) or the DBA Cockpit (transaction DBACOCKPIT). Here, you can trace changes to database parameters back to the creation of the database. The history is not restricted to 10 versions.

8. What types of database parameters exist?

Database parameters are divided into three classes:
General: These database parameters are configured by the database administrator.
Extended: These database parameters are set in consultation with SAP MaxDB Support or by implementing SAP Notes from the database administrator.
Support: These support parameters are set by SAP MaxDB Support or by implementing SAP Notes from the database administrator.

Important: If you change extended parameters or support parameters, specify the note number or the customer message number in the comment field so that you can reproduce why a database parameter was changed.
param_put   [-running] [-permanent] <key_name> <value> [<comment>]
If the comment contains blank characters, set the comment in double quotes.

9. How can I display the properties of database parameters?

The properties of database parameters determine, for example:
- whether you can change a database parameter while the system is running, and whether the change is immediately active as a result
- whether you must assign a value to the database parameter
- whether a database parameter has dependencies on other parameters
You can use the DBM command param_getfull <parameter_name> to display the properties of a database parameter.

10. What do the individual properties of the database parameters mean?

The most important properties of the database parameters are as follows:
CHANGE
If the property CHANGE has the value RUNNING, you can change the database parameter while the system is running. The value OFFLINE means that the database parameter change becomes active only after you restart the database offline.
INTERN
The value of this database parameter is not contained in the database parameter file (YES).
MANDATORY
The database parameter value must be assigned (YES | NO).
CLEAR
During a database copy, the database parameter is not copied (YES | NO).
DYNAMIC
Automatic numbering (for example, DATAVOL_?) (YES | NO).
MODIFY
The parameter may be changed after generation of the instance. (YES | NO).
GROUP
Classification (General, Extended, ...).
VALUESET
Permitted values <values>
MAX
Maximum database parameter value (numeric)<value>
MIN
Minimum database parameter value (numeric)<value>
DEPRECATEDID
The database parameter has an alias name that is not visible externally in the database tools.
After you change from a version lower than Version 7.7.03 to Version 7.7.03 or higher, the old

database parameter name is recorded here.

11. Can I change database parameters while the database is in operation? When do these parameter changes become active?

    If database parameters have the property **CHANGE RUNNING**, you can change these database parameters in the ONLINE operation mode (while the system is running) and they also become active without a database restart.
    If database parameters have the property **CHANGE** OFFLINE, changes to these database parameters become active only after a db_offline.

12. Where can I find information about which calculation formulas have been defined for individual database parameters?

    Calculation formulas for database parameters are saved in the file cserv.pcf in the directory <installation_path>/env. You must not change the file cserv.pcf unless you are instructed to do so by the SAP MaxDB support team.

13. How do I ensure that dependent database parameters are recalculated after a parameter change?

    You can use the DBM command param_checkall to ensure that the database parameters are consistent with each other. If you make changes to database parameters using the Database Manager GUI or Database Studio, param_checkall is executed implicitly.

    If a user explicitly sets a database parameter value, the system sets the "Usermodified" indicator for the parameter. The "Usermodified" indicator prevents automatic calculation if the database parameter has a dependency with other parameters, too.

    SAP MaxDB versions >= 7.9.08.22 or >= 7.8.02.40
    If the user enters an invalid value that infringes upon the constraint conditions of the database parameter during database parameter entry, the system automatically calculates the **database parameter value and removes the "Usermodified" indicator.**

14. How can I determine whether a database parameter has the "Usermodified" indicator set?

    <u>**SAP MaxDB Version: < 7.9.08.22 and < 7.8.02.40**</u>
    You can use the DBM command param_extgetall USERDEFINED=YES to list all parameters for which the "Usermodified" indicator is set.

    <u>SAP MaxDB Version: >= 7.9.08.22 and >= 7.8.02.40</u>
    You can use the DBM command param_extgetall USERMODIFIED=YES to list all parameters for which the "Usermodified" indicator is set.

    With the DBM command param_getproperties <database_parameter>, you can check whether a database parameter was changed by the user, which means that the "Usermodified" indicator is set.

    For example:
    dbmcli -U c param_getproperties TaskCluster01

    Among other things, the following is displayed in the result: USERDEFINED YES

    As of SAP MaxDB Version 7.9.08.22 and 7.8.02.40, the new column USERMODIFIED has been introduced in the system table ACTIVECONFIGURATION. If it has the value YES, this indicates that the database parameter value has been changed by the user and was not calculated by the system.

15. How can I reset the "Usermodified" indicator?

    As of Version 7.9.08.22 and Version 7.8.02.40, you can remove the "Usermodified" indicator with the DBM command *param_resetusermod <database_parameter>* . This resets the database parameter value to the default value and causes the dependencies to be recalculated.

    <u>Note the following:</u> The direct resetting of the "Usermodified" flag is only possible for a parameter that is read-only (CHANGE=NO in cserv.pcf) as of SAP MaxDB Version 7.9.08.33 (PTS 1254000) and 7.8.02.42 (PTS 1254001). In lower versions, the function for directly resetting the "Usermodified" flag of a read-only parameter is not offered.

16. Where can I find information about database parameter recommendations?

    Initial database parameter recommendations that differ from the default are available in the following SAP Notes:
    SAP MaxDB Version 7.5:
    SAP Note <u>767635</u> recommendations for database parameters
    In addition, for BW systems, SAP Note: <u>901377</u>
    SAP Note <u>817934</u> parameters that can be changed in the operating state ONLINE
    SAP MaxDB-Version 7.6:
    SAP Note <u>814704</u> recommendations for database parameters
    In addition, for BW systems, SAP Note: <u>901377</u>
    SAP MaxDB-Version 7.7:
    SAP Note <u>1004886</u> recommendations for database parameters
    SAP MaxDB-Version 7.8:
    SAP Note <u>1308217</u> recommendations for database parameters
    SAP MaxDB-version 7.9:
    SAP Note <u>1346964</u> recommendations for database parameters
    SAP liveCache:
    SAP Note <u>719652</u> Setting initial parameters for SAP liveCache 7.5 or 7.6
    SAP Note <u>817884</u> Parameter values as of SAP liveCache Version 7.5.00
    SAP Note <u>833216</u> Database parameters SAP liveCache versions 7.6 and 7.7
    SAP Note <u>1567117</u> Parameter values as of SAP liveCache Version 7.9
    These database parameter notes do not contain all the database parameters because we cannot provide general recommendations for all database parameters. Database parameters (for example, CACHE_SIZE or CacheMemorySize) that depend on the installation, the hardware

configuration, and so on, cannot be listed in these SAP Notes.

17. Where can I find information about database parameter recommendations for OneDB systems or BusinessByDesign systems with SAP MaxDB?

    Refer to SAP Note 1147936.

18. If I have changed database parameters due to an error in the software, does the database report whether a change can be reset?

    The database analyzer can check database parameter settings that differ from the recommendations. For more information, refer to SAP Note 1111426.

19. Where can I find more information about database parameters?

    For further information on database parameters as described in SAP Note 767598, refer to the SAP MaxDB documentation.
    The MaxDB Internals Workshop WB550 also contains a chapter about the SAP MaxDB kernel parameters. You have access to the documentation via maxdb.sap.com/training -> SAP MaxDB Internals.

20. Where can I find detailed information about database parameters that influence the SQL optimizer?

    The SCN provides extensive information about the database parameters that affect the optimizer. Use the following link: https://wiki.scn.sap.com/wiki/x/Fd

21. As of SAP MaxDB Version 7.7.03, new names were assigned to the database parameters. Where can I find a list that contains both the old and the new database parameter names in comparison?

    The SAP MaxDB documentation lists the old and new database parameter names and the obsolete database parameters:
    General Database Parameters, Obsolete Database Parameters
22. What is the significance of the database parameter TIME_MEASUREMENT?

    You can use this database parameter to activate the time measurement in Version 7.6. Information for SAP MaxDB Version 7.6 is available in SAP Note 814704, which deals with database parameters. In SAP MaxDB Version 7.7, there is currently no database parameter that corresponds to the database parameter TIME_MEASUREMENT (PTS 1153399).

23. Where can I find information about database parameters which can be used to alter database Task Scheduling?

    See SAP Note 1153461.

Validity

This document is not restricted to a software component or software component version

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References

This document refers to:

SAP Notes
1567117 Database parameter values for liveCache Version 7.9
1308217 SAP MaxDB 7.8 database parameter recommendations
1173395 FAQ: SAP MaxDB and liveCache configuration
1158963 MAXLOCKS parameter value for SapDB database
1153461 Altering MaxDB task scheduling
1147936 Parameter recommendations for OneDB systems
1111426 Database parameter check for SAP MaxDB/liveCache
1004886 SAP MaxDB 7.7 database parameter recommendations
 833216 Database parameters for SAP liveCache Version 7.5, 7.6 and 7.7
 820824 FAQ: SAP MaxDB/liveCache technology
 819641 FAQ: SAP MaxDB performance
 817934 MaxDB 7.5 kernel parameters that can be changed online
 814704 MaxDB Version 7.6 parameter settings for OLTP/BW
 767635 MaxDB Version 7.5 parameter settings for OLTP/BW
 719652 Setting initial parameters for liveCache 7.5, 7.6, 7.7

This document is referenced by:

SAP Notes (15)
1111426 Database parameter check for SAP MaxDB/liveCache
1173395 FAQ: SAP MaxDB and liveCache configuration
1308217 SAP MaxDB 7.8 database parameter recommendations
1158963 MAXLOCKS parameter value for SapDB database
 719652 Setting initial parameters for liveCache 7.5, 7.6, 7.7