

Utilizing the PMDB

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Prerequisites for configuring the PMDB in an SQL Server

Install the Precise environment before configuring the SQL Server-based PMDB. Before applying the information in this section, refer to the [Precise Installation Guide](#).

For an SQL Server-based PMDB, use an MS-SQL dedicated instance.

To avoid using the MS-SQL fully automatic configuration function, change the following parameters:

- **Maximum server memory (MB).** Should be 80% of the server's RAM.
- **Minimum memory per query (KB).** Should be 512 instead of 1024.

An example to configure a parameter is the following command from the Query Analyzer:

```
EXEC sp_configure 'max server memory (MB)', [new value] RECONFIGURE WITH OVERRIDE
GO
```

Maintenance operations

Check the table and index status by running the following command:

```
dbcc showcontig ({table name}) with all_indexes
```

The results should be that the "Extent Scan Fragmentation" is less than 50 and the "Logical Scan Fragmentation" is low; otherwise, it will damage the index scans.

If one of the above conditions is confirmed, perform a reorganization on the indexes with the following command:

```
dbcc dbreindex ('{databasename.tableName}')
```

 Be aware that the index and the table will not be available during the rebuild.

Backing up the database and creating archiving

Use the Database Maintenance Plan function to create a backup plan for the database. Verify that the SQL Server agent is automatically started at database startup.

If you choose the simple recovery mode for the database (the transaction log can be deleted after a commit or checkpoint), the recovery will not be able to work to a point in time, but only to the backup time.

If you choose a full recovery mode for the database, verify that you also backup the transaction log and shrink the database periodically, to stop the transaction log from growing infinitely.

If you do not create a backup, information will be lost when you have a database crash and you will not be able to recover data.

Additional DBA settings for an SQL Server-based PMDB

To improve performance, the DBA on site must check that the settings in the following table contain the correct values.

Table 1 Additional DBA settings for the SQL Server-based PMDB

Setting	Description	Value
Size of the datafile	The default size when the PMDB is created.	2 GB
Size of the log file	The default size when the PMDB is created.	500 MB

Auto Extent size for datafiles and logs	The size of the new segment to be allocated.	30% of initial datafile (for example, if the datafile is initially 1 GB, the auto extent size should be 300 MB).
Tempdb location	Put the tempdb database on a fast I/O system.	

Prerequisites for configuring the PMDB in an Oracle Server

Install the Precise environment before configuring the Oracle-based PMDB. Before applying the information in this section, refer to the *Precise Installation Guide*. For an Oracle-based PMDB, use an Oracle dedicated instance.


Verify that you are creating the database with the proper NLS_CHARACTERSET. When the monitored Oracle instances use a multiple byte character set, use UTF8. AL32UTF8 is not supported by the PMDB.

The configuration that is recommended when the PMDB is based on an Oracle database can be found in the following paragraphs. For updated information, also see: my.precise.com/

If you install the PMDB on an Oracle legacy database, verify that the database block size is at least 8 KB. If not, try to install the PMDB on a different Oracle instance.

The following table specifies the database block size prerequisite.

Table 2 Oracle Server Database block size prerequisite

Parameter	Value	Improvement
db_block_size	Minimum 8 KB (16 KB recommended)	<p>This value defines the Oracle block size. The block size is set when creating the database and cannot be changed afterwards.</p> <p>A value of at least 8 KB ensures that the PMDB can perform smoothly. A lower value may cause serious performance problems.</p> <p>If you are installing on a legacy database, verify that the database block size is 8 KB or higher. If not, try to install the PMDB on a different Oracle instance.</p> <div>  The default block size on Windows NT is 2 KB, which is too small. To review this value, check the db_block_size parameter in the init.ora file. </div>

Required INIT.ORA changes

To improve performance, change some parameter values and verify that the values match those listed in the appropriate table.

The parameter values can be changed on a new and on an existing Oracle instance. The following tables describe the general and Oracle version specific parameters.

Table 3 General parameters for the Oracle-based PMDB

Parameter	Value	Improvement / Remarks
log_checkpoint_timeout	900	
open_cursors	300	Verify that you have enough open cursors for the application to execute.
Processes	300	Verify that you have enough processes for the application to execute.

Table 4 Oracle 9i parameters

Parameter	Value	Improvements / Remarks
session_cached_cursors	300	
DB-cache_advice	Verify that this parameter is set to <code>off</code> because the default value is <code>on</code> .	This parameter checks the work on the database and helps determine the recommended size of the Buffer pool. But this damages performance, so verify that it is <code>on</code> only for a short period.

Table 5 Oracle 10g parameter

Parameter	Value	Improvement / Remarks
sga_target	Automatic memory management. 1/4th of the physical memory.	Replaces the following parameters: <ul style="list-style-type: none"> db_cache_size shared_pool_size large_pool_size java_pool_size Verify that they are initialized with either 0 or the minimum value you need.

INIT.ORA example

The following is an example of the `init.ora` file for an Oracle 12.2 instance.

```
db_name='ORCL' memory_target=1G processes=300 db_block_size=8192
db_domain='' db_recovery_file_dest='<ORACLE_BASE>/flash_recovery_area'
db_recovery_file_dest_size=2G diagnostic_dest='<ORACLE_BASE>'
dispatchers='(PROTOCOL=TCP) (SERVICE=ORCLXDB)'
open_cursors=300 remote_login_passwordfile='EXCLUSIVE'
undo_tablespace='UNDOTBS1'
undo_retention=900 # 15 minutes
# You may want to ensure that control files are created on separate physical
# devices
control_files = (ora_control1, ora_control2)
compatible = '12.0.0'
```

How to disable the recycle bin in Oracle

Our recommendation is to disable the recycle bin and this section describes the background and the action on how to disable the recycle bin.

The recycle bin is actually a data dictionary table containing information about dropped objects. Dropped tables and any associated objects such as indexes, constraints, nested tables, and the likes are not removed and still occupy space. They continue to count against user space quotas, until specifically purged from the recycle bin or the unlikely situation where they must be purged by the database because of tablespace space constraints.

The following information is taken from the *Oracle Database Administration Guide*. In version 10.0 and 10.1 use the following command:

```
alter system set "_recyclebin"=FALSE scope=BOTH;
```

In version 10.2, use the following command:

```
alter system set recyclebin=off scope=BOTH
```

About backing up the database and creating archiving

The PMDB holds information for up to 3 years by default. If you want to backup this information, you should enable the Redo log archiving, and create a backup using RMAN. For more information, refer to the official Oracle Backup and Recovery documentation. If you do not create a backup, information will be lost when you have a database crash and you will not be able to recover data. If you create a backup without using the archive mode, you will be able to recover data to the time of the backup. All new operations (after the logs were archived) will be lost.

Enabling Automatic Undo Management (AUM)

To enable Automatic Undo Management (AUM), you must create a new tablespace and set the `init.ora` parameters. For additional information on how to enable AUM, see the Oracle Database Administrator's Guide, "Managing Undo Space."

To enable Automatic Undo Management (AUM)

1. Create the undo tablespace by running the following command:

```
CREATE UNDO TABLESPACE tablespace_name DATAFILE 'datafile name' SIZE 32M REUSE AUTOEXTEND ON EXTENT
MANAGEMENT LOCAL
```
2. Set the following `init.ora` parameters:
 - undo_management = AUTO
 - undo_tablespace = tablespace_name
 - undo_retention = 900

If the undo tablespace size is too large, you may decrease the number of seconds.

About backing up the database and creating archiving

The PMDB holds information for up to three years by default. If you want to back up this information, you should enable the Redo log archiving, and create a backup using RMAN or the Precise backup utility. For more information, refer to the official Oracle Backup and Recovery documentation.

If you do not create a backup, information may be lost when you have a database crash and you cannot recover data. If you create a backup without using the archive mode, you can recover data to the time of the backup. All new operations after the logs were archived are lost.

About maintenance operations

Every week the maintenance process analysis the PMDB, but to improve the database performance, the DBA must check and perform a rebuild to the indexes using the `alter index {name} rebuild` command.

About changing the size of tables and index extents

The PMDB uses the `products\dbms\files\tables_definition\ps_00_db_entities.xml` file to create the tablespaces for the tables and the indexes. To change the default sizes you can change the file before the PMDB installation or alter the tablespaces after the installation.

The following table shows the default extents sizes.

Table 6 Default extents sizes

Tablespace	Size
Large table	2 MB
Medium table	512 KB
Small table	80 KB
Large index	1 MB
Medium index	256 KB
Small index	80 KB