

About large environments

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System configuration requirements for large environments

Precise configuration

Precise registry parameters should be set in the <Precise_root>\products\i3fp\registry\products\infrastructure\sts\settings.xml file:

Table 1 Registry parameters in the settings.xml file

Parameter	Value
correlation-queue-max-size	700000000
queue-max-size	200000000
backup-max-total-files-size	3000000000

 To reserve more space in the backup folder, you can increase the size of the backup-max-total-files-size parameter. This may be useful when your database or PMDB is down or experiences a data load delay.

After changing the above parameters, you need to restart the Precise FocalPoint and Precise Listeners.

In the <Precise_root>\products\i3fp\registry\products\pw\maintain\db-sizes.xml file:


Table 2 Registry parameters in the db-sizes.xml file

Parameter	Value
save-oracle-db-sizes	false

In the <Precise_root>\products\i3fp\registry\products\insight\focalpoint.xml file:

Table 3 Registry parameters in the focalpoint.xml file

Parameter	Value
sts-max-number-of-threads-for-correlation	5
sts-max-files-in-processor-files-folder	50000

 After changing the above parameters, you need to restart the Insight FocalPoint.


In large environments you have to update the memory configuration for the Precise framework JVMs in the relevant XML files. The following code example indicates where you have to insert the parameter in those files (replace <number> with a number). The <jvm-options> section appears in all files:

```
- <main>
...
...
...
- <jvm-options>
  <option>-Xmx<number>m</option>
  ...
  ...
</jvm-options>
...
...
...
</main>
```

The memory configuration for the Precise framework JVMs (XMX configuration) should be as follows:

Table 4 Memory configuration

Component	Size	Location
Precise FocalPoint	1024 MB	<Precise_root>\products\i3fp\bin\psin_i3fp_init.xml
J2EE FocalPoint	512 MB	<Precise_root>\products\j2ee\bin\psje_focal_init.xml
PMDB FocalPoint	768 MB	<Precise_root>\products\pw\bin\pspw_focal_init.xml
Insight FocalPoint	2048 MB	<Precise_root>\products\insight\bin\psis_focal_init.xml
Web FocalPoint	768 MB	<Precise_root>\products\www\bin\psww_focal_init.xml
Web Data Loader	768 MB	<Precise_root>\products\www\bin\psww_dataloader_init.xml
GUI FocalPoint	1024 MB	<Precise_root>\products\gui\website\bin\psin_gui_init.xml



After making changes in size of one or more of the components above, you will need to restart the related component(s).


If you define multiple alerts, you may want to increase the XMX-size of the Alerts FocalPoint and Informpoint.

If you intend to create several reports, you may want to increase the XMX-size of the Report Manager FocalPoint.

The memory configuration for each production server with either J2EE, Web, or .NET should be as follows

Table 5 Memory configuration

Component	Size	Location
Listener	356 MB	<Precise_root>\infra\bin\psin_listner_java_init.xml



After making changes in size of the component above, you will need to restart the related component .

Oracle-based PMDB configuration

This section is divided into information for Oracle 11g and 10g


Oracle 11g

In Oracle 11g the automated maintenance tasks infrastructure known as AutoTask enables Oracle to automatically schedule Automatic Maintenance Tasks. AutoTask schedules automatic maintenance tasks to run in a set of Oracle Scheduler windows known as maintenance windows. Maintenance windows are those windows that are members of the Oracle Scheduler window group MAINTENANCE_WINDOW_GROUP.

Oracle 11g includes three automated database maintenance tasks:

- Automatic Optimizer Statistics Collection - Gathers stale or missing statistics for all schema objects. The task name is auto_optimizer_stats_collection.
- Automatic Segment Advisor - Identifies segments that could be reorganized to save space. The task name is auto_space_advisor.

- Automatic SQL Tuning Advisor - Identifies and attempts to tune high load SQL. The task name is `sql_tuning_advisor`.

 If you experience performance problems in Precise during the default maintenance times, we recommend to change the maintenance schedules or ask advice from your Oracle DBA.

It is recommended to use a block size of 16 Kbytes.

The following tables describe the Oracle-based PMDB configuration parameters and sizing recommendations that need to be inserted in the `init.ora` file for Oracle 11g:

Table 6 Oracle 11g-based PMDB configuration parameters

Parameter	Value
MEMORY_TARGET	45 GB
MEMORY_MAX_TARGET	45 GB
LOG_BUFFER	5 MB
SESSIONS	1500
PROCESSES	1000
UNDO_RETENTION	7200
DB_WRITER_PROCESSES	4

Table 7 Oracle 11g-based PMDB sizing recommendation

Description	Value
Redo Log	500 MB for 90 instances 1000 MB for 180 instances 2000 MB for 450 instances
PMDB Temporary Tablespace	4 files and each file 32 GB
Undo Tablespace	4 files and each file 32 GB


If on a Linux server you get an ORA-845 error, `/dev/shm` needs to be mounted with its proper size. The size is directly influenced by the SGA size of your PMDB. If you set it too low you will get this error.

To mount it, log in as a root user and use the following command: `# mount -t tmpfs shmfs -o size=<SGA size> /dev/shm`

To activate the setting and make it permanent after a restart, add the entry in `/etc/fstab`.


Oracle 10g

By default Oracle 10g automatically gathers optimizer statistics using a scheduled job called `GATHER_STATS_JOB`. By default this job runs within a maintenance window between 10 P.M. to 6 A.M. week nights and all day on weekends. The job calls the `DBMS_STATS.GATHER_DATABASE_STATS_JOB_PROC` internal procedure which gathers statistics for tables with either empty or stale statistics, similar to the `DBMS_STATS.GATHER_DATABASE_STATS` procedure using the `GATHER AUTO` option. The main difference is that the internal job prioritizes the work such that tables most urgently requiring statistics updates are processed first.

 If you experience performance problems in Precise during the default maintenance times, we recommend to change the maintenance schedules, or ask advice from your Oracle DBA.

It is important to understand that there are two scheduled activities related to the collection of Oracle "statistics". These are very different:

- **AWR statistics.** Oracle has an automatic method to collect AWR "snapshots" of data that is used to create elapsed-time performance reports.
- **Optimizer statistics.** Oracle has an automatic job to collect statistics to help the optimizer make intelligent decisions about the best access method to fetch the desired rows.

 It is recommended to use a block size of 16 Bytes.

The following tables describe the Oracle-based PMDB configuration parameters and sizing recommendations that need to be inserted in the `init.ora` file for Oracle 10g:

Table 8 Oracle 10g-based PMDB configuration parameters

Parameter	Value
SGA_TARGET	45 GB
SGA_MAX_TARGET	45 GB
LOG_BUFFER	5 MB
SESSIONS	1500
PROCESSES	1000
UNDO_RETENTION	7200
DB_WRITER_PROCESSES	4

Table 9 Oracle 10g-based PMDB sizing recommendation

Description	Value
Redo Log	500 MB for 90 instances 1000 MB for 180 instances 2000 MB for 450 instances
PMDB Temporary Tablespace	4 files and each file 32 GB
Undo tablespace	4 files and each file 32 GB

If on a Linux server you get an ORA-845 error, `/dev/shm` needs to be mounted with its proper size. The size is directly influenced by the SGA size of your PMDB. If you set it too low you will get this error.

To mount it, log in as a root user and use the following command: `# mount -t tmpfs shmfs -o size=<SGA size> /dev/shm`

To activate the setting and make it permanent after a restart, add the entry in `/etc/fstab`.

SQL Server-based PMDB configuration

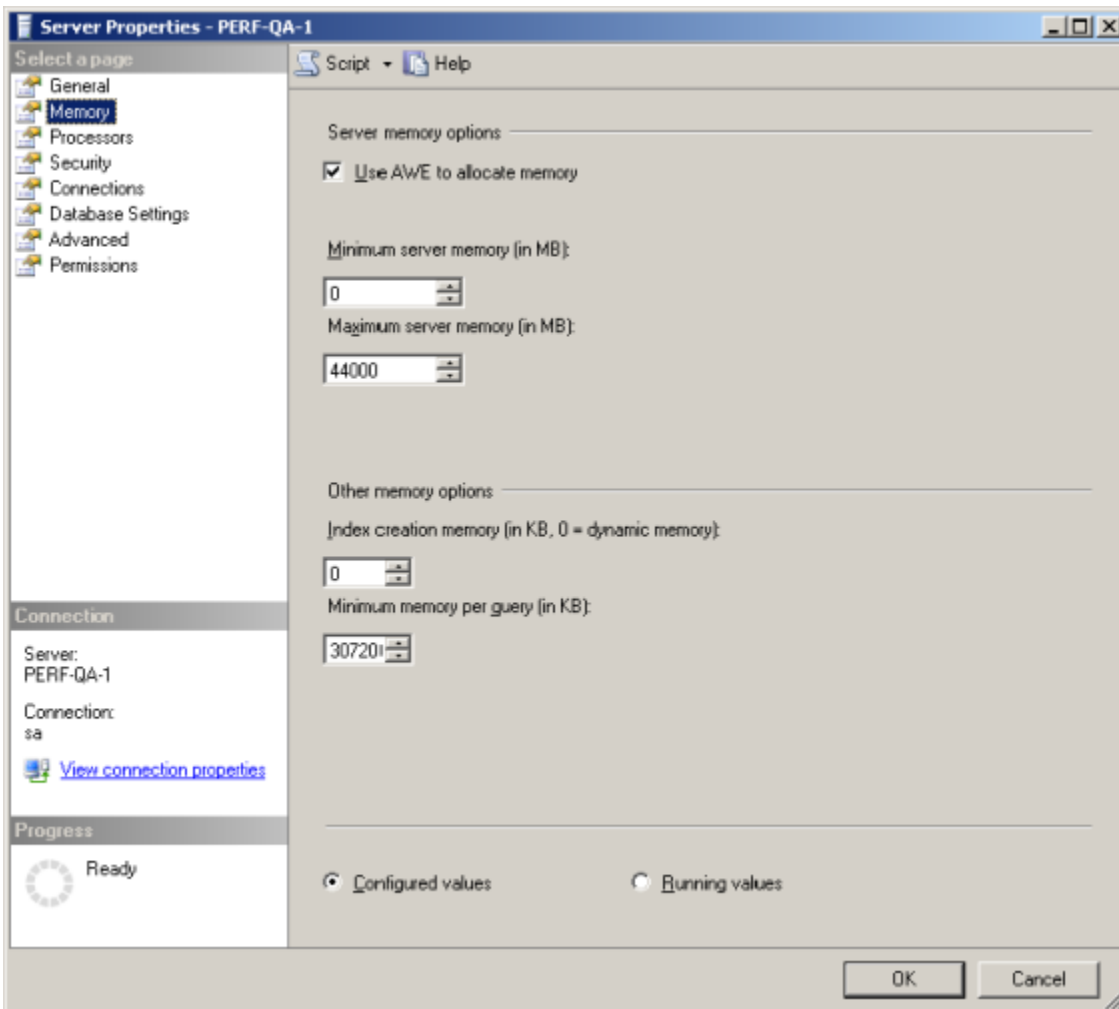
 You should place the data and log files on different disks.

The following table describes the SQL Server-based instance configuration parameters as displayed in Figure 1:

Table 10 SQL Server-based instance configuration parameters

Parameter	Value
SQL Server memory	44000 MB
Minimum memory per query	307200 KB

Figure 1 Server Properties with SQL Server-based instance configuration parameters



The following table describes the SQL Server-based PMDB (database) configuration parameters for the files as displayed in Figure 2:

Table 11 SQL Server-based PMDB (database) configuration parameters for the files

Parameter	Value
Data	5000 MB
Log	1000 MB


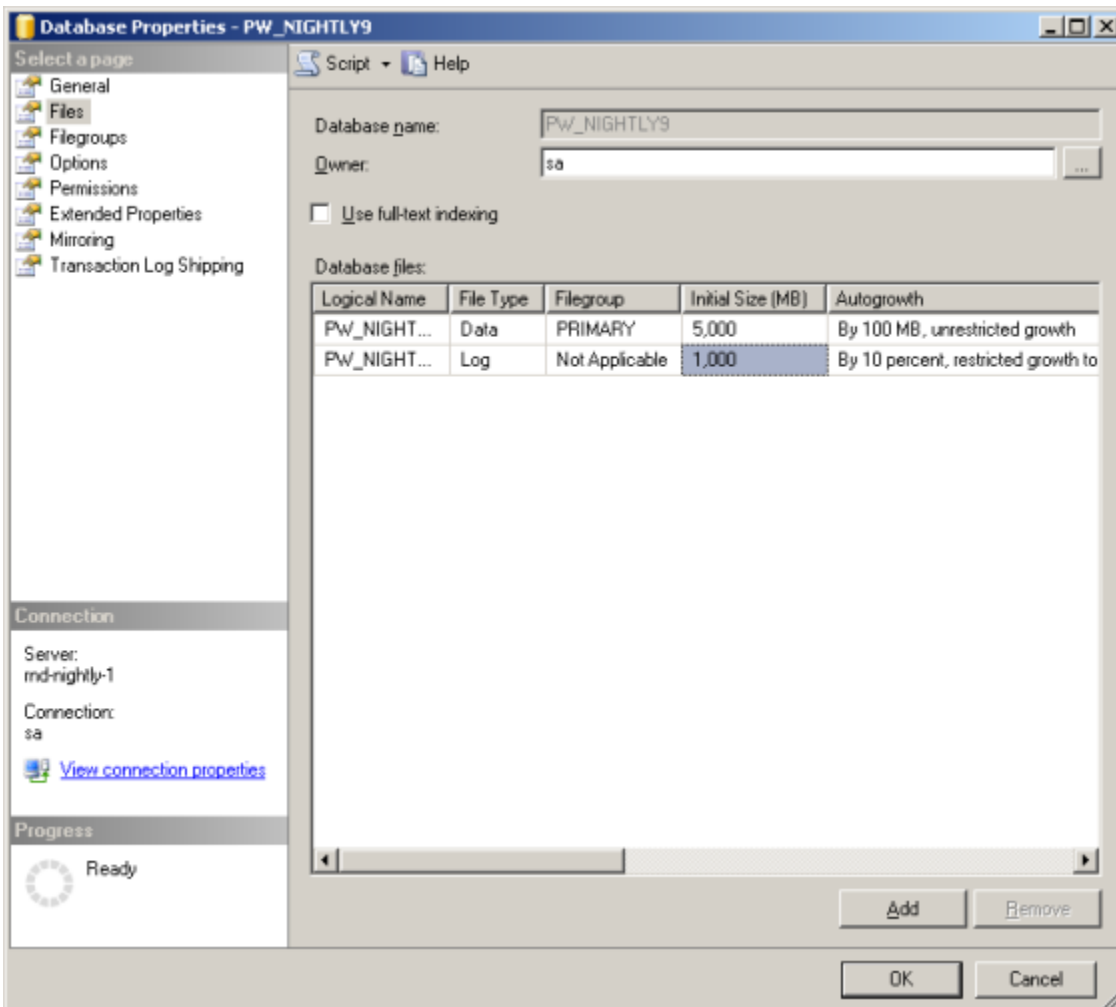
 The autogrowth parameter should be 100 MB.

Figure 2 Database Properties with SQL Server-based PMDB (database) configuration parameters for the files

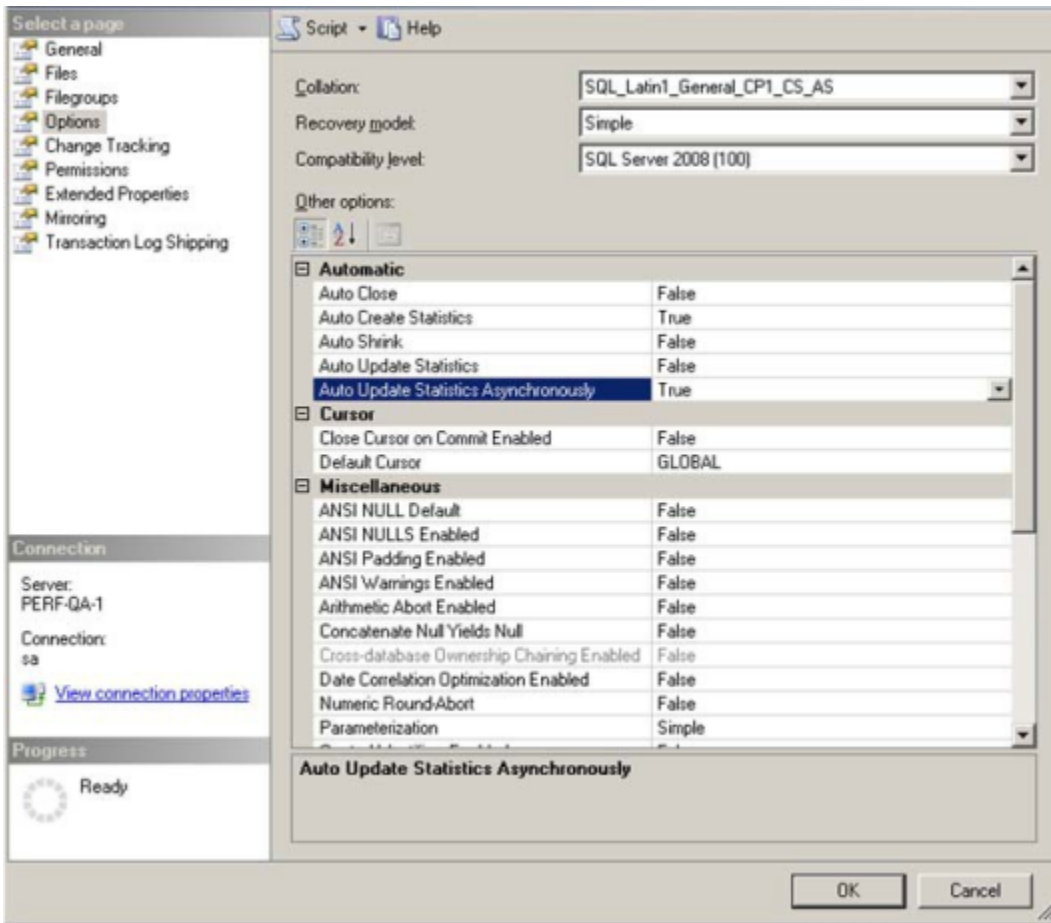


The following table describes the SQL Server-based PMDB (database) configuration parameters for the options as displayed in Figure 3:

Table 12 SQL Server-based PMDB (database) configuration parameters for the options

Parameter	Value
Auto Update Statistics	True
Auto Update Statistics Asynchronously	True
Auto Create Statistics	On
Recovery Model	Simple

Figure 3 Database Properties with SQL Server-based PMDB (database) configuration parameters for the options

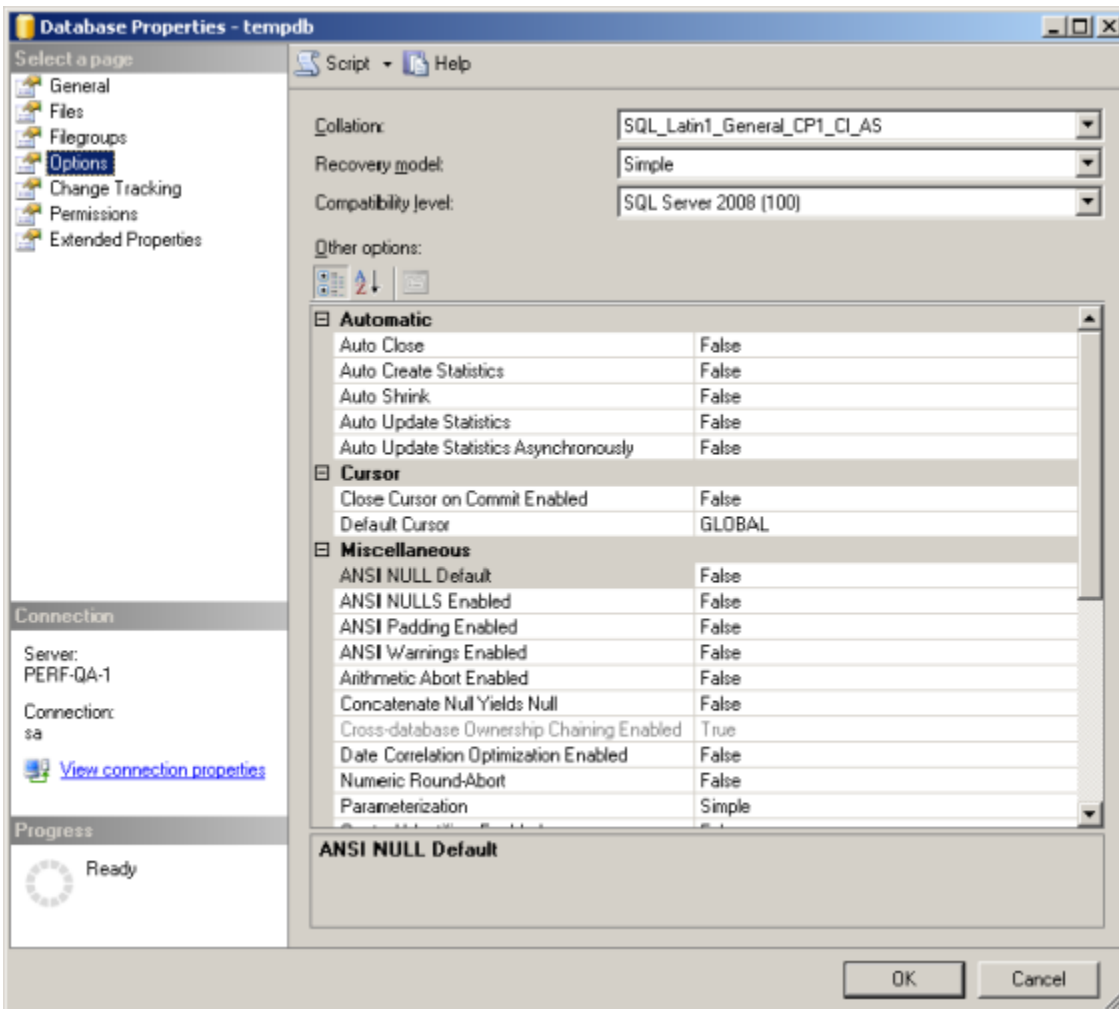


The following table describes the SQL Server-based tempdb configuration parameters as displayed in Figure 4:

Table 13 SQL Server-based tempdb configuration parameters

Parameter	Value
tempdb Auto Update Statistics	False
tempdb Auto Update Statistics Asynchronously	False
tempdb Auto Create Statistics	False

Figure 4 Database Properties with SQL Server-based tempdb configuration parameters



In our laboratory-tested environments

The following table shows the environments that we tested in our laboratory:

Table 14 Tested environments

Criteria	Oracle-based PMDB	SQL Server-based PMDB
J2EE instances	300	180
Web instances	150	90
Total number of instances	450	270
Server platform	Linux 64-bit	Windows 2008 64-bit
Processors	Dual quad core CPU X5570 (8 core)	Dual 6 core CPU X5670 (12 core)
Physical memory	68 GB (Oracle SGA - 45 GB)	60 GB (SQL Server memory - 44 GB)
Storage for data files	EMC Symmetrix VMAX	Local 15 K SAS disks
Data files size	1.5 TB	1 TB