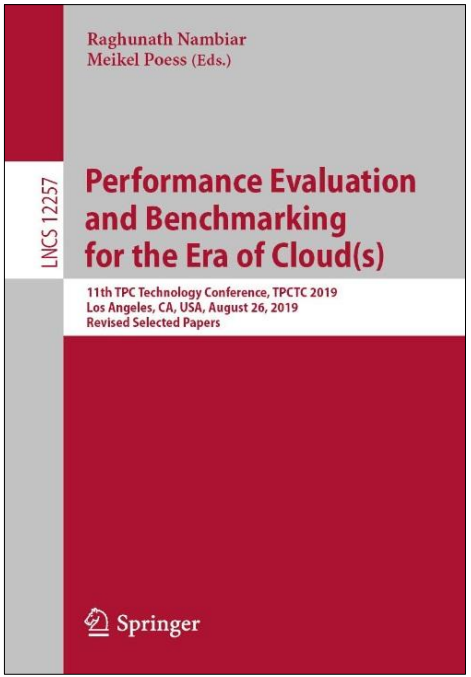
peakmarks® Configuration

February 2025



peakmarks® presented its software at the 11th Technology Conference of the Transaction Processing Performance Council (TPC) 2019 in Los Angeles.

Copyright Information

Naming Conventions

Database name	ORA19C / ORA21C / ORA23AI	
Instance names	ORA19C / ORA21C / ORA23AI	for a single instance
	ORA19C1 / ORA21C1 / ORA23AI1	for RAC instance 1
	ORA19C2 / ORA21C2 / ORA23AI2	for RAC instance 2
peakmarks® PDB	PMK	
Connect string SYSTEM user	system/manager@SYSAWR	
Connect string peakmarks user	bench/bench@PMK	
peakmarks® base directory	../pmk	

Agenda

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peakmarks

Performance is not everything.
But without performance, everything is worth nothing.

Introduction

peakmarks® Configuration Parameters

peakmarks® maintains a central repository with its configuration parameters

peakmarks® stores the actual configuration parameter set for each run

Check actual configuration parameters (run 0) with

- SQL> @show_peakmarks

Some rules apply when changing peakmarks® configuration parameters; therefore

- Increase values in the following sequence: DBSIZE, DBCACHE, CPUCOUNT, and LOADER
- Decrease values in the following sequence: LOADER, CPUCOUNT, DBCACHE, and DBSIZE

peakmarks® Configuration Parameters

```
BENCH@PMK SQL> @show_peakmarks

Thu 09-Jan-2025 20:39:07

peakmarks Configuration Parameters
----------------------------------

Run.........:
Parameter...:

Database....:  PMK               Oracle......:  19.25.0
Instance....:  ORA19C1           Build.......:  250101
RAC nodes...:  2                 Platform....:  twx01dbadm02.lab.tw.

     peakmarks
 Run Parameter       Value                          Remark                                                                  Last change
---- --------------- ------------------------------ ----------------------------------------------------------------------- -----------------
   0 AWRFORMAT       BOTH                           format of Oracle AWR reports: NONE, TEXT, HTML, BOTH                    09-JAN-2025 20:24
     CPUCOUNT        96                             number of logical CPUs: 2 ... 2048 per instance                         09-JAN-2025 20:24
     DBCACHE         382                            size of database buffer cache in [GByte]: 8 ... 32768 per instance      09-JAN-2025 20:24
     DBSIZE          64                             size of peakmarks database in [GByte]: 64 ... 65536 per instance        09-JAN-2025 20:24
     FLASHCACHE      DEFAULT                        database or Exadata flash cache usage: NONE, DEFAULT, KEEP              09-JAN-2025 20:24
     LOADER          4                              number of peakmarks loader processes: 4 ... 128 per instance            09-JAN-2025 20:24
     PLATFORM        twx01dbadm02.lab.tw.local      platform description, mixed case supported, max. 32 character           09-JAN-2025 20:24
     RUNTIME         3                              runtime target in [min]: 1 ... 720                                      09-JAN-2025 20:24

8 rows selected.

There are some rules for changing the peakmarks configuration parameters
. Increase values in following sequence: DBSIZE, DBCACHE, CPUCOUNT, LOADER and INCREMENT
. Decrease values in following sequence: INCREMENT, LOADER, CPUCOUNT, DBCACHE and DBSIZE

BENCH@PMK SQL>
```

peakmarks® Configuration Parameters

Configuration parameters for peakmarks run 0 show the current values; these values will be used for the next run

As soon as a new peakmarks run is started, all configuration parameters are copied and saved together with the new peakmarks run ID for documentation purposes

peakmarks

Simple. Representative. Fast.

Configuration Parameter AWRFORMAT

peakmarks® Configuration Parameter AWRFORMAT

Purpose

- Defines format of AWR reports

Supported values (default value underlined)

- {NONE, HTML, TEXT, BOTH}

Changing value

- SQL> exec pmk.set_awrformat ('text');
- SQL> exec pmk.set_awrformat ('html');
- SQL> exec pmk.set_awrformat ('both');
- SQL> exec pmk.set_awrformat ('none');

peakmarks® Configuration Parameter AWRFORMAT

```
BENCH@PMK SQL> exec pmk.set_awrformat ('Text');

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--------------------------------------------------------------------------------
Release.....................: 10.3
Build.......................: 250201

peakmarks command...........: pmk.set_awrformat
Parameter AWRFORMAT set.....: TEXT

PL/SQL procedure successfully completed.

BENCH@PMK SQL>
```

```
BENCH@PMK SQL> exec pmk.set_awrformat ('Both');

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--------------------------------------------------------------------------------
Release.....................: 10.3
Build.......................: 250201

peakmarks command...........: pmk.set_awrformat
Parameter AWRFORMAT set.....: BOTH

PL/SQL procedure successfully completed.

BENCH@PMK SQL>
```

Configuration Parameter CPUCOUNT

peakmarks® Configuration Parameter CPUCOUNT

Purpose

- Controls the number of logical CPUs per **instance**
- Serves as a basis for all process-related Oracle configuration parameters

Supported values

- {1, ..., 2048}
- Value increased from 1024 to 2048 in peakmarks® Version 10.3
- Takes default value from Oracle CPU_COUNT during installation

Changing value

- SQL> exec pmk.set_cpucount (32);

peakmarks® Configuration Parameter CPUCOUNT

```
BENCH@PMK SQL> exec pmk.set_cpucount (16);

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--------------------------------------------------------------------------------
Release.....................: 10.3
Build.......................: 250201

peakmarks command...........: pmk.set_cpucount
Parameter CPUCOUNT set......: 16

PL/SQL procedure successfully completed.

BENCH@PMK SQL>
```

Notes

- This parameter becomes effective only after
  - executing the pmk.set_instance command
  - executing peakmarks generated scripts to apply new instance configuration parameters
  - restarting all instances

- peakmarks needs at least 1 GByte database cache for each logical CPU
- Many other process-related parameters are derived from this value
- Overprovisioning is possible as long as the memory rule is followed

Configuration Parameter DBCACHE

peakmarks® Configuration Parameter DBCACHE

Purpose

- Size of database buffer cache in GByte (Oracle parameter SGA_MAX_SIZE) per **instance**
- Serves as a basis for all memory-related Oracle configuration parameters

Supported values

- Integer value between 1 and 8192
- Takes 50% of server RAM as default during installation

Changing value

- SQL> exec pmk.set_dbcache (512);

peakmarks® Configuration Parameter DBCACHE

```
BENCH@PMK SQL> exec pmk.set_dbcache (384);

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--------------------------------------------------------------------------------
Release.....................: 10.3
Build.......................: 250201

peakmarks command...........: pmk.set_dbcache
Parameter DBCACHE set.......: 384 GByte

PL/SQL procedure successfully completed.

BENCH@PMK SQL>
```

peakmarks® Configuration Parameter DBCACHE

Notes

- The max value of this parameter is limited to 60% of the main memory capacity
- This parameter becomes effective only after
  - executing the pmk.set_instance command
  - executing peakmarks generated scripts to apply new instance configuration parameters
  - restarting all instances
- Many other memory-related parameters are derived from this value

Configuration Parameter DBSIZE

peakmarks® Configuration Parameter DBSIZE

Purpose

- Approximate size of peakmarks® data in [GByte] per **instance**
- Each instance has a local data set to reduce inter-instance communication
- peakmarks ® uses 85% of this capacity for permanent data and 15% of this capacity for temporary data of some workloads

Supported values (default value underlined)

- Integer value between 64 and 65536 (64 TByte)

Changing value

- SQL> exec pmk.set_dbsize (8192);

peakmarks® Configuration Parameter DBSIZE

```
BENCH@PMK SQL> exec pmk.set_dbsize (1024);

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--------------------------------------------------------------------------------
Release.....................: 10.3
Build.......................: 250201

peakmarks command...........: pmk.set_dbsize
Parameter DBSIZE set........: 1,024 GByte

PL/SQL procedure successfully completed.

BENCH@PMK SQL>
```

peakmarks® Configuration Parameter DBSIZE

Notes

- Changing this value requires a new database load

Recommendations

- Smaller values like 64, 128, and 256 are usually used on smaller test systems
- For representative testing, use the size of production databases; the most common values for DBSIZE are 2048, 4096, 8192, and 16384
- To avoid high storage system cache hit rates, the database should be larger than the storage system cache

Configuration Parameter FLASHCACHE

peakmarks® Configuration Parameter FLASHCACHE

Purpose

- Controls usage of database flash cache or Exadata flash cache for peakmarks® data

Supported values (default value underlined)

- {KEEP, DEFAULT, NONE}

Changing value

- SQL> exec pmk.set_flashcache ('default');
- SQL> exec pmk.set_flashcache ('keep');
- SQL> exec pmk.set_flashcache ('none');

peakmarks® Configuration Parameter FLASHCACHE

```
BENCH@PMK SQL> exec pmk.set_flashcache ('keep');

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Release.....................: 10.3
Build.......................: 250201

peakmarks command...........: pmk.set_flashcache
Parameter FLASHCACHE set....: KEEP

PL/SQL procedure successfully completed.

BENCH@PMK SQL>
```

```
BENCH@PMK SQL> exec pmk.set_flashcache ('default');

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Release.....................: 10.3
Build.......................: 250201

peakmarks command...........: pmk.set_flashcache
Parameter FLASHCACHE set....: DEFAULT

PL/SQL procedure successfully completed.

BENCH@PMK SQL>
```

Notes

- The database flash cache feature is only available on Solaris and Oracle Linux platforms with server internal flash storage
- The Exadata flash cache feature is only available on Oracle Exadata Engineered Systems
- Changing this value requires a new data load

Configuration Parameter LOADER

peakmarks® Configuration Parameter LOADER

Purpose

- Controls the number of processes to load the peakmarks database per **instance**
- Each loader generates and loads its own tablespace to avoid contention - peakmarks features a very efficient and scalable load architecture

Supported values (default value underlined)

- Integer {4, ..., 128}
- The max value depends on the parameter DBSIZE

Changing value

- SQL> exec pmk.set_loader (6);

peakmarks® Configuration Parameter LOADER

```
BENCH@PMK SQL> exec pmk.set_loader(12);

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--------------------------------------------------------------------------------
Release.....................: 10.3
Build.......................: 250201

peakmarks command...........: pmk.set_loader
Parameter LOADER set........: 12

PL/SQL procedure successfully completed.

BENCH@PMK SQL>
```

Notes

- This parameter has an impact on the load times of the peakmarks database
- For smaller databases, there is a threshold, which reduces the maximum number of loader processes
- The optimal value depends on several factors, like
  - Number of cores
  - Database buffer cache size
  - Number of log writer and database writer processes
  - Storage performance

Configuration Parameter PLATFORM

peakmarks® Configuration Parameter PLATFORM

Purpose

- Platform name is used for documentation purposes

Supported values

- Any text string (decimal ascii code between 32 and 125), max 32 char
- Value increased from 20 char to 32 char in peakmarks® Version 10.3
- Default is hostname

Changing value

- SQL> exec pmk.set_platform ('peakmarks Ref System')

peakmarks® Configuration Parameter PLATFORM

```
BENCH@PMK SQL> exec pmk.set_platform ('peakmarks Ref System');

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--------------------------------------------------------------------------------
Release.....................: 10.3
Build.......................: 250201

peakmarks command...........: pmk.set_platform
Parameter PLATFORM set......: peakmarks Ref System

PL/SQL procedure successfully completed.

BENCH@PMK SQL>
```

Configuration Parameter RUNTIME

peakmarks® Configuration Parameter RUNTIME

Purpose

- Approximate runtime target of each single performance test in [minutes]

Supported values

- Integer value between 1 and 720
- Default value 3

Changing value

- SQL> exec pmk.set_runtime (3);

peakmarks® Configuration Parameter RUNTIME

```
BENCH@PMK SQL> exec pmk.set_runtime (10);

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--------------------------------------------------------------------------------
Release.....................: 10.3
Build.......................: 250201

peakmarks command...........: pmk.set_runtime
Parameter RUNTIME set.......: 10 min

PL/SQL procedure successfully completed.

BENCH@PMK SQL>
```

Notes

- Longer runtimes lead to more reliable and consistent outcomes (dependent on workload)

Recommendations

- Choose 3 minutes for short tests
- Choose 5, 10, or 15 minutes for official performance reports

peakmarks

Swiss precision in performance measurement.

Summary of Scripts and Commands

Summary of Scripts and Commands

Scripts to report peakmarks® parameter

SQL> @show_peakmarks

Scripts to report the Oracle platform

SQL> @show_database
SQL> @show_instance
SQL> @show_storage
SQL> @show_server

SQL> @show_all

Commands to change peakmarks® parameter

SQL> exec pmk.set_awrformat
SQL> exec pmk.set_cpucount
SQL> exec pmk.set_dbcache
SQL> exec pmk.set_dbsize
SQL> exec pmk.set_flashcache
SQL> exec pmk.set_loader
SQL> exec pmk.set_platform
SQL> exec pmk.set_runtime

peakmarks Mission

Identify Key Performance Metrics for Oracle Database Platforms.

On-Premises and in the Cloud.

For Quality Assurance, Evaluations, and Capacity Planning.