**Best Practices and Recommendations for RAC databases with SGA size over 100GB (Doc ID 1619155.1)**

**In this Document**

|  |  |  |
| --- | --- | --- |
|  | [Purpose](https://support.oracle.com/epmos/faces/DocumentDisplay?_afrLoop=159322360337678&id=1619155.1&_adf.ctrl-state=axs9y4jfm_116#PURPOSE) | |
|  | [Scope](https://support.oracle.com/epmos/faces/DocumentDisplay?_afrLoop=159322360337678&id=1619155.1&_adf.ctrl-state=axs9y4jfm_116#SCOPE) |

|  |  |
| --- | --- |
|  | [Details](https://support.oracle.com/epmos/faces/DocumentDisplay?_afrLoop=159322360337678&id=1619155.1&_adf.ctrl-state=axs9y4jfm_116#BODYTEXT) |
|  | [Database - RAC/Scalability Community](https://support.oracle.com/epmos/faces/DocumentDisplay?_afrLoop=159322360337678&id=1619155.1&_adf.ctrl-state=axs9y4jfm_116#aref_section31) | |

|  |  |
| --- | --- |
|  | [References](https://support.oracle.com/epmos/faces/DocumentDisplay?_afrLoop=159322360337678&id=1619155.1&_adf.ctrl-state=axs9y4jfm_116#REF) |

**Applies to:**

Oracle Database - Enterprise Edition - Version 11.2.0.3 and later

Information in this document applies to any platform.

**Purpose**

The goal of this note is to provide best practices and recommendations to users of Oracle Real Application Clusters (RAC) databases using very large SGA (e.g. 100GB) per instance (note that RAC assumes homogeneously sized SGAs across the cluster). This document is compiled and maintained based on Oracle's experience with its global RAC customer base.

This is not meant to replace or supplant the Oracle Documentation set, but rather, it is meant as a supplement to the same. It is imperative that the Oracle Documentation be read, understood, and referenced to provide answers to any questions that may not be clearly addressed by this note.

All recommendations should be carefully reviewed by your own operations group and should only be implemented if the potential gain as measured against the associated risk warrants implementation. Risk assessments can only be made with a detailed knowledge of the system, application, and business environment.

As every customer environment is unique, the success of any Oracle Database implementation, including implementations of Oracle RAC, is predicated on a successful test environment. Oracle Support has identified 100 GB as a baseline for large SGA's that would benefit from the recommendations provided in this note. However, this is just a baseline, and it is possible for similar(but smaller) SGA's to benefit from these recommendations. It is thus imperative that any recommendations from this note are thoroughly tested and validated using a testing environment that is a replica of the target production environment before being implemented in the production environment to ensure that there is no negative impact associated with the recommendations that are made

**Scope**

This article applies to all new and existing RAC implementations.

**This is for RAC databases only as most of the parameters listed in here are for RAC Database only.**

**Details**

 Note that the recommendations presented in this note are a result of the experience from working on databases with SGA of 1 TB and 2.6 TB.

Also, the databases with SGA of 100GB and 300GB also benefited from the recommendations

**init.ora parameters:**

a.      **Set \_lm\_sync\_timeout to 1200**

           Setting this will prevent some timeouts during reconfiguration and DRM. It's a static parameter and rolling restart is supported.

b.      **Set \_ksmg\_granule\_size to 134217728**

           Setting this will cut down the time needed to locate the resource for a data block. It's a static parameter and rolling restart is supported.

c.      **Set shared\_pool\_size to 15% or larger of the total SGA size.**

        For example, if SGA size is 1 TB, the shared pool size should be at least 150 GB. It's a dynamic parameter.

d.      **Set \_gc\_policy\_minimum to 15000**

        There is no need to set \_gc\_policy\_minimum if DRM is disabled by setting \_gc\_policy\_time = 0. \_gc\_policy\_minimum is a dynamic parameter, \_gc\_policy\_time is a static parameter and rolling restart is not supported. To disable DRM, instead of \_gc\_policy\_time, \_lm\_drm\_disable should be used as it's dynamic.

e.      **Set \_lm\_tickets to 5000**

        Default is 1000.   Allocating more tickets (used for sending messages) avoids issues where we ran out of tickets during the reconfiguration. It's a static parameter and rolling restart is supported. When increasing the parameter, rolling restart is fine but a cold restart can be necessary when decreasing.

f.      **Set gcs\_server\_processes to the twice the default number of lms processes that are allocated.**

        The default number of lms processes depends on the number of CPUs/cores that the server has,

        so please refer to the gcs\_server\_processes init.ora parameter section in the Oracle Database Reference Guide

        for the default number of lms processes for your server.  Please make sure that the total number of lms processes

        of all databases on the server is less than the total number of CPUs/cores on the server.  Please refer to the [Document 558185.1](https://support.oracle.com/epmos/faces/DocumentDisplay?parent=DOCUMENT&sourceId=1619155.1&id=558185.1)

        It's a static parameter and rolling restart is supported.

**Following patches are recommended:**

11.2.0.3.5 DB PSU or above is highly recommended to address known issues with large SGA sizes.

**For SGA that is larger than 4 TB and for Linux platform,**

**BUG 18780342 - LINUX SUPPORT FOR > 4TB SGA**

**Database - RAC/Scalability Community**

Still have questions? Use the communities window below to search for similar discussions or start a new discussion on this subject.

Note: Window is the **LIVE** community not a screenshot.

Click [here](https://community.oracle.com/community/support/oracle_database/database_-_rac_scalability) to open in main browser window.