



19^c ORACLE[®]
Database

De-support of Oracle RAC in SE2

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Oracle 19c : de-support of Oracle RAC in SE2

Introduction

Oracle Real Application Clusters (Oracle RAC) is the only solution to build an active – active cluster using shared storage for your Oracle database. Up to Oracle 18c Oracle RAC is available as a feature within Standard Edition 2 (SE2) and comes as an extra-cost option with Enterprise Edition.

Oracle RAC typically protects your database against node failure. It does not protect your database against storage failure (it is shared by two nodes) or against human errors.

As from Oracle 19c (corresponding with 12.2.0.3 in the old version numbering!), Oracle announced that Oracle RAC will no longer be supported / allowed within Standard Edition 2. Oracle RAC will still be available as an extra-cost option within Enterprise Edition.

Removing Oracle RAC from Standard Edition 2 brings customers using Oracle RAC on Standard Edition 2 a new challenge: configure a high available database environment without RAC.

Let us have a look at what the options are. The first questions you should ask yourself:

- What are your business requirements?
- Why did you choose RAC on SE2? To perform patching operations online? To protect against what kind of failure (instance, host failure etc)?

In this article we describe six alternative solutions, their pros and their cons:

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Scenario 1: configure active – passive cluster using Oracle clusterware

The first alternative, based on the same idea as scenarios one and two, is to install the Oracle clusterware on two or more nodes that share the same storage. On top of this clusterware you create a single instance database and write your own resource script in the clusterware to failover a single instance database between the nodes.

This scenario resembles the original RAC set-up the most. Downtime to failover is limited to a few minutes. Your data is protected against site / node failure.

Scenario 2: configure active – passive cluster using operating system clustering

Another alternative is to build an active – passive cluster using operating system technology. Most operating systems have their own technology to configure an active – passive cluster:

- Linux clustering
- Solaris clustering
- Oracle Fail safe for Windows clustering
- HP Service Guard
- ...

Storage will still be shared, you will have two or more nodes in the cluster but only one node will be active. The other node is prepared to take over in case of a failure of the active node. Downtime is limited up to a few minutes. Your data is protected against site / node failure.

If your cluster is limited to two nodes and you use the failover node less than 10 calendar days a year you don't have to license the failover node (see Licensing data recovery environments : <https://www.oracle.com/assets/data-recovery-licensing-070587.pdf>)!

Scenario 3: configure active – passive cluster using Oracle VM

Oracle VM allows you to build a cluster containing multiple physical machines hosting one or more virtual database servers, each hosting one or more database(s). If one physical machine fails, the virtual machine will be started on another physical host. Downtime to failover is limited to a few minutes. Your data is protected against site / node failure.

A strong advantage of Oracle VM is that it can be used to isolate resources and even use hard partitioning to only license a subset of the cpu cores:

- Soft partitioning: every virtual machine can run on every physical host. The complete physical Oracle VM environment has to be licensed.

- Hard partitioning: a virtual machine is pinned on certain cpu's. This mean that you can use the Oracle VM environment to host your virtual database servers plus other virtual servers without the need to license your complete physical environment.

Oracle VM itself comes without a license cost. Support contracts are available from Oracle for a (small) fee.

Scenario 4: move to the Oracle cloud

Where Oracle VM introduces a new technology stack to maintain, the same can be achieved without the additional maintenance by migrating to the Oracle cloud: Oracle Cloud Infrastructure (OCI). In the Oracle cloud you can run a single instance database that can be restarted in another datacenter in the same region or in a different region (depending on your configuration). Your data is protected against site / node failure.

An additional advantage is that Oracle cloud has multiple billing options: a fixed monthly burn rate or pay as you go.

Scenario 5: configure disaster recovery using Dbvisit Standby

Dbvisit Standby is a third party technology we have been working with for years. Dbvisit Standby allows you to configure a database instance that only applies changes it receives from the primary production instance. This instance can be activated within a few minutes. Dbvisit Standby cannot guarantee that there will be no data loss (if there is data loss it is limited to a few minutes).

This solution is rather considered as a disaster recovery solution, more than a high availability solution but it offers the extra advantage that your storage is no longer the single point of failure.

Scenario 6: upgrade to Enterprise Edition

Last but not least.... it is also possible to upgrade your database to Enterprise Edition and use the RAC option. The concept remains the same: two or more active nodes, one shared storage but no limitations on the number of sockets or nodes within the cluster.

While this is the most robust solution, its drawback is the steep increase in cost as customers will have to upgrade to Enterprise Edition and purchase the RAC option.

Conclusion

There are alternative scenarios available to protect your application against the failure of a node. Your business requirements will determine the scenario you will choose. The table below lists the most important pros and cons.

	PRO	CON
ORACLE CLUSTERWARE	<ul style="list-style-type: none"> - No new technology - No extra license cost - Automatic failover 	<ul style="list-style-type: none"> - No 100% availability - Short database downtime in case of node failure
OS CLUSTERING	<ul style="list-style-type: none"> - Extra license cost for OS clustering software - Automatic failover 	<ul style="list-style-type: none"> - No 100% availability - New technology - Short database downtime in case of node failure
ORACLE VM	<ul style="list-style-type: none"> - No extra license cost - Automatic failover 	<ul style="list-style-type: none"> - No 100% availability - New technology - Short database downtime in case of node failure
MOVE TO THE ORACLE CLOUD	<ul style="list-style-type: none"> - Billing options - No more need for a local resources - Automatic failover - Resources become elastic 	<ul style="list-style-type: none"> - Untraditional approach that requires a different way to manage your data / applications
CONFIGURE DR USING DBVISIT STANDBY	<ul style="list-style-type: none"> - Storage ≠ SPOF - DR solution - Automatic failover 	<ul style="list-style-type: none"> - New technology - Dbvisit Standby licenses required - No data loss is not guaranteed - Short database downtime in case of node failure
ENTERPRISE EDITION	<ul style="list-style-type: none"> - 100% availability - No new technology - No database downtime - Extra features within EE 	<ul style="list-style-type: none"> - Extra license cost



Need help choosing the right scenario?

Click **here** and we will get back to you as soon as possible.

Sources

Oracle 18c Licensing guide: <https://docs.oracle.com/en/database/oracle/oracle-database/18/dblic/Licensing-Information.html#GUID-0F9EB85D-4610-4EDF-89C2-4916A0E7AC87>

Oracle 19c Licensing guide: <https://docs.oracle.com/en/database/oracle/oracle-database/19/dblic/Licensing-Information.html#GUID-0F9EB85D-4610-4EDF-89C2-4916A0E7AC87>

Licensing data recovery environments: <https://www.oracle.com/assets/data-recovery-licensing-070587.pdf>

Dbvisit Standby : <https://www.dbvisit.com/>