ORACLE
INSURANCE

Oracle Health Insurance Back Office

Database/Application Server Configuration

Version 1.15

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Change History

Release	Version	Changes
10.12.2.0.0	1.1	• Checked translation
10.14.2.0.0	1.2	• Minor adjustments.
10.15.3.0.0	1.3	• No relevant updates, only republished
10.16.1.0.0	1.4	• No changes
10.16.2.0.0	1.5	• No changes
10.17.1.0.0	1.6	• No changes
10.17.2.0.0	1.7	• No changes
10.18.1.0.0	1.8	• No changes
10.18.2.0.0	1.9	• Republished with different part nr.
10.19.1.0.0	1.10	• No changes. Republished with different part nr.
10.19.2.0.0	1.11	• No changes, republished with different part nr.
10.20.1.0.0	1.12	• Npo changes, republished.
10.21.1.0.0	1.13	• No changes, republished with new part number.
10.22.1.0.0	1.14	• No changes, republished with new part number.
10.23.1.0.0	1.15	• No changes, republished with new part number.

Introduction

This document describes the most important aspects that must be considered when setting up a production configuration for Oracle Health Insurance Back Office.

This document specifically discusses the choice between one or two production servers; after all, from a technical perspective a client can choose to install both the Database Server software and the Application Server software on one physical machine, or to set up two separate machines connected by a very fast, dedicated network connection. In addition to this type of 'functional' separation across two machines, other divisions are possible in which more than one machine is used as a server, but this would involve true cluster set-ups, such as those used to implement a Grid configuration. This document does not discuss this type of cluster-based solution (although these are of course supported).

The initial, standard advice to new clients is to use two separate production server machines that are connected to each other by a fast, dedicated network connection. This type of set-up offers more flexibility and options for expansion but certainly has its disadvantages too. It is up to the client to decide which aspects play the most significant role, before a choice is made.

Please note: The choice for separate servers for amongst others the Pre-Production, Acceptance, Test, Custom Development and training environments (in short, Non-Production), to provide separation from Production environments is a separate issue to the considerations described here.

Oracle Health Insurance recommends that the Production and Non-Production environments are physically separated from each other at all times.

Categories

A number of possible positive or negative considerations in relation to 1 or 2 servers are shown in the following table:

Category	1 Server	2 Servers
Physical	+ Less space needed.	+ More space needed; requires additional network cards and connection and overhead infrastructure (extra power, UPS).
Operating System installation	+ Less effort required, also in relation to network set up.	+ In principle two different platforms can be used if desired/required (more freedom of choice).
Oracle software installation	- Slightly more complex due to keeping database and application software separate (risk of errors exists).	
Implementation		

Category	1 Server	2 Servers
Backup & Recovery		+ In principle only the database server needs to run backups regularly as this is where the main data is stored. The contents of the application server software only need to be backed up after changes to the software or configuration. The output files may require regular backups. - The static data (software / configuration) on two machines must be included in the backup after changes have been made.
Startup & Shutdown	+ Startup/shutdown on 1 server brings the entire environment up/down making it easier to achieve complete control.	- Synchronization is important as the environments are active on both servers simultaneously. The batch handling processes on the application server can only be started after the correct processes have been started on the database server.
Access Control & Security Privileges	+ Simpler - The database server is accessible to end users (internal and/or external).	+ Only the Application Server has to be made accessible to end-users (internal and/or external). This means that it is easier to protect the data on the database server. + In principle only a true DBA requires privileges on the database server.
Performance Tuning & Monitoring	+ Simpler, but fewer options. - Competition between various types of processes fighting for the same resources is more difficult to avoid and prioritization of such processes in relation to one another is more difficult to achieve. This is one of the main reasons for recommending two servers.	+ Servers can be tuned for specific Application and Database tasks. + Specific Load Balancing for various tasks can be achieved by simply splitting the tasks between two machines.
Capacity Planning	+ The full capacity can be utilized for both online screen work and for batch processing. + Simpler to expand through virtualization on a large server that can be sized 'on demand'.	- An unequal distribution of the work (one server is heavily loaded while the other is doing almost nothing) cannot easily be corrected. In particular Back Office batch processing, which mainly involves the database, will make little use of the application server. Because of this the database server must still be equally dimensioned for this aim as if a single server were chosen. Likewise during office hours the application server will be heavily used by user interface processes meaning this server also must still be equally dimensioned as if a single server was chosen.
Upgrade, Migration & Version Control		+ 1 server available in the event of upgrade to the other server (i.e. database can still be accessed during maintenance of the application server or, as a back-up, everything can be run on 1 server if the server is undergoing a major upgrade).

Category	1 Server	2 Servers
Space & Storage Management		- Output that is generated from the database must be saved on a shared file system that can be accessed by both servers. This is because the results must be accessible via the application server. Additional work is required setting up the file system for the servers.
License Control		+ CPU based licensing of database and application server licenses may prove to be cheaper if both servers are a little smaller than one single server.
Networking	+ Oracle*Net configuration is in a single location for both environments.	- Oracle*Net configuration required on both servers (although not a strict necessity).
Pricing Please note: Very significantly dependent on the client's requirements, incl. in relation to administration, availability & scalability.	+ Often cheaper for smaller, less complex environments.	+ Often cheaper for larger, more complex environments (two cheaper machines with the same total capacity are often cheaper than a higher range model). Another option is to purchase a number of cheaper application servers and 1 powerful database server. The administration costs can however be higher if this is not set up in an efficient manner.
Scalability	- The server should provide more expandability options than when divided over more than one server (more expensive).	+ Easier to add-in more Application servers if the bottleneck occurs there first (often the case with large numbers of users). - Is no more scalable than 1 server if the database server is the bottleneck.
Availability	- Server is single point of failure	+ If one of the machines fails, the remaining machine can in principle be used for both tasks. Naturally, this is only possible if account has been taken of this eventuality during set-up as the application and database software will have to have be installed on both machines or the file system must be very easy to switch by swapping (preferably redundant) disks (beware of license impact!). In addition the remaining server must have sufficient processing capacity. This is often one of the most significant considerations for choosing 2 servers, particularly when they can be installed in physically separate locations. In this case the need to consider a fallback contract for pure server capacity will be less urgent. - Fast network connection between both servers is an additional failure risk.

Category	1 Server	2 Servers
Separation of Production / Acceptance	+ Simpler to introduce by purchasing a 2nd server (if necessary less powerful, but then not representative for performance testing).	- As separate hardware is required for Acceptance, and under ideal circumstances a test environment must be able to simulate the Production environment as closely as possible (and therefore should be as similar as possible), another 2 servers would have to be purchased for this environment.
Specification requirements		+ More detailed specification is possible in relation to the application used.
Administration specifications		+ In principle the database server can be administered by a true DBA while the application server can be administered by a purely technical application administrator without these interfering with each other and possibly influencing each other's configuration. Also, two separate individuals could be used for this if one single individual does not possess the knowledge required (although in terms of workload this is probably not necessary).

Finally, another factor when choosing between 1 or 2 servers can be the servers the customer currently has.