

Informatics Licensing FAQ

Licensing

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1. Which Waters informatics products contain an Oracle database?

An embedded Oracle database is include in the Empower, Breeze, NuGenesis, AWM and Unifi informatics products. These products will be referred to in this document as Waters Laboratory Informatics Suite (WLIS) applications.

See the document "Letter from Oracle on Waters-Oracle Contract 20130709.pdf"

2. What Oracle licenses are included with the purchase of Empower?

None.

Waters does not grant or sell an Oracle license to its customers; rather Waters grants the users of WLIS application(s) the use of its Oracle license under a sub-license distribution agreement with Oracle.

3. Can Waters supply a WLIS informatics application without including an Oracle sub-license?

No.

As a component of the Waters / Oracle distribution agreement, an Oracle sub-license is required to be a component of each WLIS application sale regardless of whether or not the end-user is currently covered under an Oracle license which was obtained from Oracle or an alternate third party.

4. What is the Oracle license agreement with Waters?

Please refer to the document "Letter from Oracle on Waters-Oracle Contract 20130709.pdf"

5. How can a customer use the Oracle database?

Please refer to the document "Waters Embedded Oracle License Rules.pdf"

6. Can a customer call Oracle for support?

No. Waters is responsible for all support of the embedded database.

See "Waters Embedded Oracle License Rules.pdf", "Support and Services" section, point 3

7. Can the customer directly interact with the database, outside of the WLIS application and associated tools supplied by Waters?

No, this would be a violation of the sub-license.

See "Waters Embedded Oracle License Rules.pdf", "Access" section and "Support and Services" section, point 4

8. Are there any licensing issues when migrating between versions?

No.

See the next question for more detail.

9. How long can a customer use an old and new version simultaneously during a migration?

We understand customers are going to need time to migrate systems when not performing in place upgrades. Situations where new servers are going to be installed and the older version and new version of software shall be operational for a period of time, are 100% supported under our license model (both Waters and Oracle).

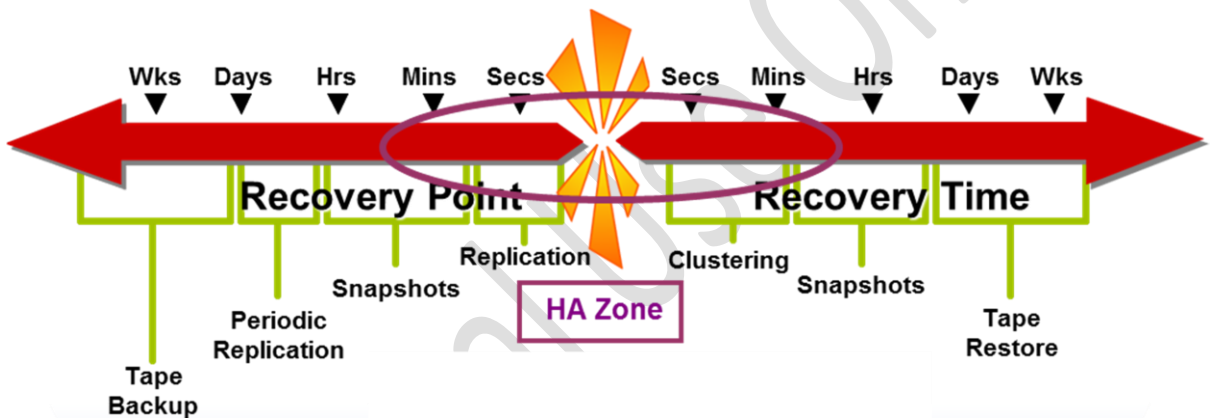
Customers can operate both environments side by side for a 3-month period during this type of migration process.

10. **What is 'disaster recovery'?**

'Disaster Recovery' is involves a set of policies and procedures to enable the recovery of vital technology systems following a natural or human-induced disaster.

Disaster recovery focuses on the IT or technology systems supporting critical business functions, as opposed to business continuity, which involves keeping all essential aspects of a business functioning despite significant disruptive events. Disaster recovery is therefore a subset of business continuity.

Disaster recovery plans in a WLIS environment may be based on two metrics: Recovery Point Objectives (RPO) and Recovery Time Objectives (RTO), both measured in units of time.



The RPO defines how much data can afford to be lost. In some cases this may be minimal to none, in which case a highly disaster tolerant system needs to be configured. In other cases, one day is a common allowable value since a day of samples can usually be re-run.

The RTO defines how long it is acceptable for the system to be unavailable. In some cases where sample output is part of a high-valued added production chain this value must be minimal, in other cases (for example in a teaching university) the value may be much higher.

Based on an individual customer situation, and only definable by the customer, Water can configure a solution to meet any combination of RTO and RPO. Generally, the shorter the RPT and RTO, the higher the cost of the solution but the greater the protection for the customers business.

In addition, for short RPO and/or RTO values, this may be termed a High Availability (HA)

environment.

11. What is 'high availability'?

A High Availability (HA) configuration as defined by Waters for WLIS applications is one where multiple instances of a single production database are available for immediate, or very fast, access in the event of a system failure. An instance is defined as a combination of a server and a database.

Note that the second database does NOT need to be active or even commonly accessible to be considered a HA solution, simply having a second database on a computer is sufficient. For example, if an Empower database is loaded on a server and the server is then physically disconnected from the network and powered off, this instance is still considered part of a HA configuration.

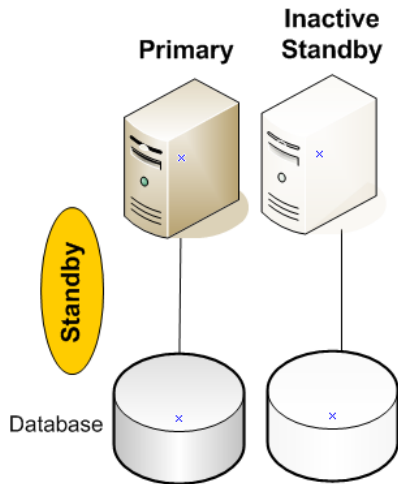
The one allowed exception to the inclusion of a second database is (under specific conditions) during the migration of a Waters WLIS product from one version to another. This is not considered a HA configuration and is discussed in question 9.

Multiple databases, where each database is independent and is operated to work with different data, are not considered a HA solution but simply as multiple database instances. In this case each database should be separately licensed. One example of this would include the case where an end-user want to have a 'Test' database for examining new patches and testing new custom field outside their validated 'Production' database. Another example of this would be where an end-user wants to have one database for R&D and a different database for QA.

Waters and Oracle licensing requirements will differ for HA configurations and are discussed below.

12. What are the common high availability configurations and how are they different?

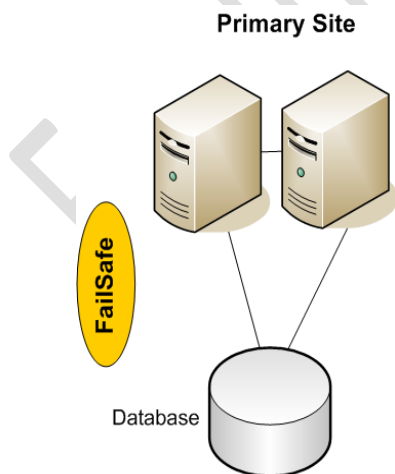
(i) Snapshot or Standby Database



The inactive standby server is manually maintained through backups and restores of the primary database at periodic intervals. If the primary server fails, the standby server can be brought online manually with (optionally) the latest database back being restored before making it available.

This option provides the lowest cost HA option but requires the most management and will provide for RTO's between hours to days, and RPO's of 1 day or more depending on backup strategies used.

(ii) Oracle FailSafe configurations

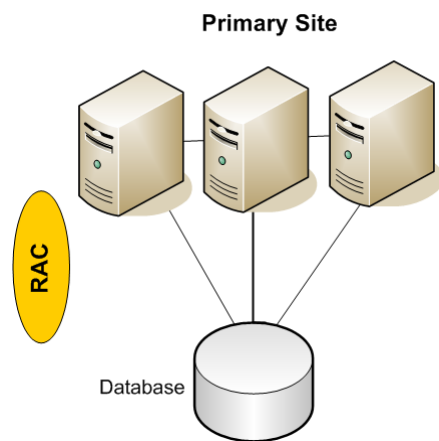


In this configuration two servers share a single database. This software option works with Microsoft Cluster Server (MSCS). One node at a time may be active with automatic failover

performed by the clustering software. FailSafe is managed as a single configuration with one server active, and the other available for failover when needed.

This option is moderate cost and requires moderate Microsoft Cluster Server and Oracle skills for management. This option will provide RTO's and RPO's approaching zero in cases where the database device has not failed. If the database itself fails, the RTO will be minutes to hours while RTO's of 1 day or more are achievable. In cases where the database hardware fails, the achievable RTO will be based on the availability of replacement hardware, and the achievable RPO will remain 1 day or more depending on backup strategy used.

(iii) Oracle Real Application Cluster (RAC) configurations

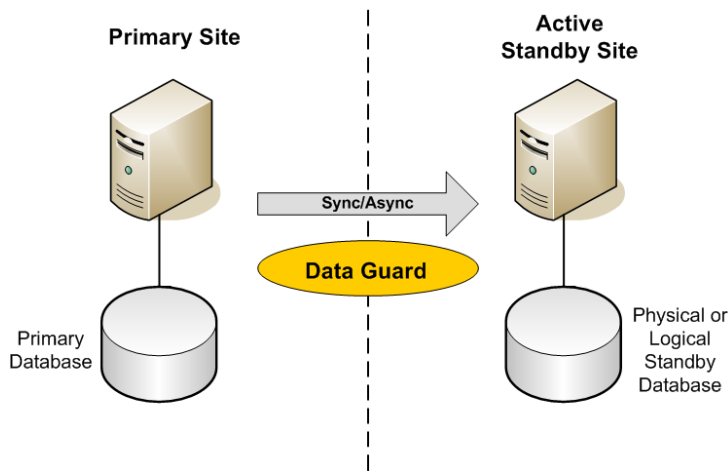


RAC is a proprietary Oracle technology where multiple servers at the same site serve the same database for high availability, performance, and redundancy in case of server failure. All servers are active and participate in balancing the load for large implementations.

This option is high cost and requires expert Microsoft Cluster Server and Oracle skills for management. This option will provide RTO's and RPO's approaching zero in cases where the database device has not failed. If the database itself fails, the RTO will be minutes to hours while RTO's of 1 day or more are achievable. In cases where the database hardware fails, the achievable RTO will be based on the availability of replacement hardware, and the achievable RPO will remain 1 day or more depending on backup strategy used.

This option is usually only chosen when the number of **simultaneous** users for a single database instance exceeds 300-400, and speeds of the WLIS application are being affected by the high user load.

(iv) Oracle DataGuard configurations

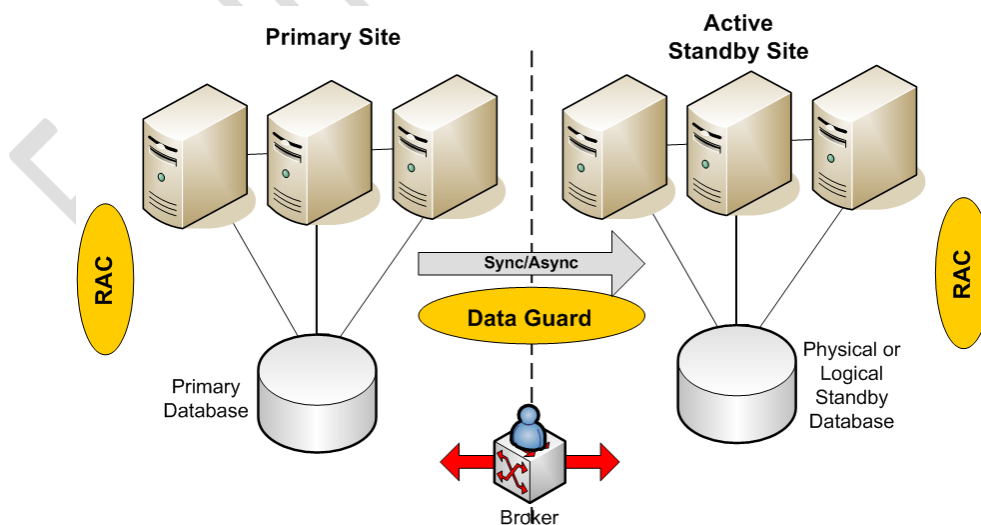


DataGuard is an Oracle proprietary technology where mirrored servers are used for redundancy in case of site failure. A remote, hot, synchronized standby database is ready to take over processing activities if the primary site fails. Provides disaster protection against planned or unplanned outages at the production site.

This option is very high cost and requires expert Microsoft Cluster Server and Oracle skills for management. This option will provide RTO's and RPO's approaching zero in all cases. The performance of the system for a specific user may be impacted during failover since the remote database will have a different, and potentially very distant, connection to the user's client or acquisition hardware.

This option is usually only chosen when the work being done on the system is so critical that no interruption can be allowed, even if an individual site is not available due to major disasters.

(v) Oracle RAC + DataGuard configurations



RAC and DataGuard are complementary technologies providing the highest possible level of scalability, availability, and data protection. This is managed as a single configuration.

This option is very high cost and requires expert Microsoft Cluster Server and Oracle skills for management. The characteristics of this configuration are the combination of those for the individual RAC and DataGuard configurations discussed previously.

(vi) Other configurations

There are other high availability configurations supported by vendors other than Microsoft and Oracle, VMWare for example. These options are available as required and but are not discussed here. If an end-user requests a specific solution, please discuss this with your nearest regional or HQ informatics solution architect

13. How is licensing affected by configuring for HA solutions?

All HA solutions require, at a minimum, the purchase of either an additional set of WLIS licensing to match what is loaded on the standby/replica servers or (if available) they should purchase a HA option for their WLIS application.

The Empower 3 Enterprise High Availability option is part number 667003951.

For Oracle FailSafe configurations no additional Oracle licensing is required. The capability to operate in a FailSafe environment is supported by the Waters ESL with Oracle.

For Oracle DataGuard or Oracle RAC, the embedded Oracle license with the WLIS application cannot be used. The end-user must purchase the appropriate Oracle licensing directly from Oracle. Please see the document *"FAQ Regarding Waters Empower 3 Enterprise High Availability Option.pdf"* for more details

For other HA options, the embedded Oracle license with the WLIS application cannot be used. The end-user must purchase the appropriate Oracle licensing directly from Oracle. Please discuss this directly with your nearest regional or HQ Oracle licensing specialist.