GEM SYSTEM

The Availability of Data

Data Always at your Fingertips

A Very Practical Solution!

One of the roles of security is to ensure data availability. During the life cycle of an information system, the demands on it increase, it is necessary to process more data, to ensure higher throughput and availability. One of the systems that are prepared for such needs is Oracle, which offers a complete solution from a small database with hundreds of MB of data to large ones in the order of TB.

CASE STUDY

Availability Overview

Availability	Length of outage in a year
90 %	36,5 days
99 %	3,65 days
99,9 %	8,76 hours
99,99 %	52,55 minutes
99,999 %	5,25 minutes
99,9999 %	31,5 seconds

Even at 99.9% availability with a relatively high time to remedy, it may not be easy to ensure timely hardware service to restore availability in the required time. In these cases, it is advisable to ensure the availability of the data by using a database cluster. Oracle databases are prepared for these needs.

SERVICES PROVIDED

For most information systems, it is not a problem to ensure high availability at the application level. Client-server systems have the availability of the application assured by definition, for multi-tier applications the application server can be operated mostly in the form of a cluster or farm.

However, the problem may be the security of data availability from the database. The database, as a complex part of the system ensuring data consistency and transaction processing, is not always ready for the cooperation of multiple servers.

In planning your company's database availability requirements, it is important to first find out what options the current market offers. While it may seem that 99.9% data availability is not much different from 99.99% availability, it is actually a difference of nearly eight hours. At 99.9% availability, the annual downtime allowed is up to nine hours. At 99.99% availability, it is less than an hour.

Data Protection Options

For high availability needs, it is essential to have a database that can run on multiple servers, or that can automatically start on another when one server fails. Based on the required availability, High Availability (HA) databases are divided into Active/Passive and Active/Active.

A common requirement for both types of HA databases is the need for quality shared storage. Typically this is a disk array that has all components redundant (source, controller).

An integral part of data security is the use of quality hardware supported by top-quality service to ensure that any problems are quickly resolved to keep the cluster in optimal condition.

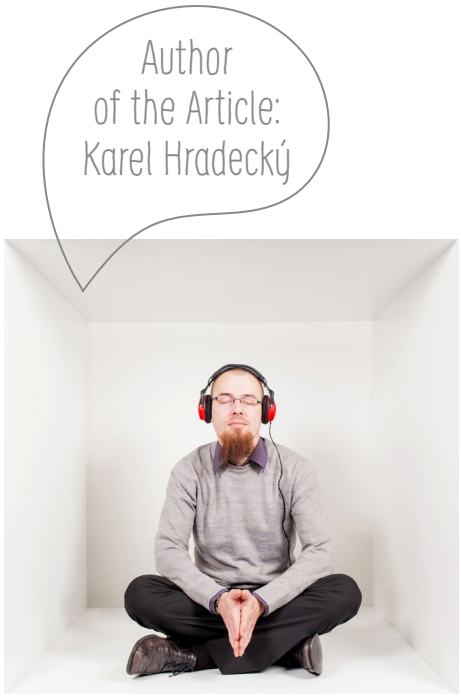
GEM System | Na Pankráci 1062/58, 140 00 Praha 4, Czech Republic | sales@gemsystem.cz | www.gemsystem.cz

Solutions from GEM System

GEM System has been dealing with database management, cluster construction, analysis and implementation of custom software in the area of insurance, banking and on-line applications for a long time. We offer clusters not only with respect to the required availability and latency, but also the financial cost of the client.

We can provide the entire transition from a single database to a cluster, including the necessary analyses, choosing the appropriate type of clustering. If necessary, we also provide a complete analysis of the information system and its modifications. At GEM System, in addition to our experience, we have the necessary Oracle certifications, especially in the areas of database administration and performance tuning.

The author is a consultant of the company GEM System a. s..



Active/Passive

In this mode, the database is running on only one server and the other server is „waiting" in the backup to take over the function of the main server in case of its failure. At the time of the switchover, the database is not available within minutes. The Active/Passive solution is suitable for companies that need to increase database availability at minimal cost.

GEM System has extensive experience in installing Active/Passive solutions. For example, at one alternative energy supplier, we replaced the original unclustered database of the operational and billing system with an Active/Passive database. Its deployment time was in the order of days and the transition from the original database to the new cluster took place with only a short downtime thanks to the Oracle database backup options.

The delivery also included the modernization of the customer's server infrastructure. Once the project is complete, the new system ensures that if one of the servers fails, it can continue to operate without compromising critical business processes.

Active/Active

In this mode, the database is running on both (or more) servers at the same time and clients are connected to all of them. If one server fails, its activity is almost immediately taken over by another server in the cluster. Active/Active mode is suitable for companies that need to have data available at all times and are at risk of major losses in case of data unavailability.

We have experience with this type of HA database in GEM System. For an international ticketing company operating on the market in Central and Eastern Europe we have created a cluster solution in Active/Active mode by using Oracle RAC functionality.

It was an investment in infrastructure of hundreds of thousands of crowns and the deployment, including initial analysis and testing of the system, took place within 20 days. Subsequent system optimizations were already underway in full production operation. In the three years of the ticketing system's operation, there has been only one unplanned outage. The availability of the system in Active/Active mode was therefore 99.99%.

Transition Issues

Moving from a non-clustered system to Active/Passive is simple, fast and typically requires no further licensing costs. Therefore, this solution is suitable for anyone who needs to increase data availability with minimal investment.

Planning the transition to Active/Active requires a comprehensive system analysis as well as expert knowledge of the Oracle RAC database add-on behavior. This is because its deployment requires that the server, network and software infrastructure match not only the client's requirements, but also the add-on itself.

CERTIFICATION/
PARTNERSHIP

Hewlett Packard Enterprise

ORACLE Gold Partner

Microsoft

IBM