

Benchmarking the Relationship of Database Management Systems and Application Servers on the Web

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E-commerce websites are only prosperous if they are well designed, implemented, and adequate hardware and software configurations are applied. Narrowing down to such software configuration includes selecting the appropriate combination of database management system, application server and operating system.

I have examined five database management systems, such as Apache Derby, Sun MySQL, Oracle Database, PostgreSQL and IBM DB2. They belong to database servers which are nowadays most frequently used. Four application servers were combined with them under test. They are Apache Tomcat, JBoss, Sun Glassfish and Oracle Weblogic. Operating system was the third dimension: Microsoft Windows and a Linux distribution.

A benchmark named TPC-W (Transaction Processing Performance Council Web benchmark) made it possible to compare the alternatives above.

TPC-W is a transactional web benchmark. The workload is performed in a controlled internet commerce environment that simulates the activities of a business-oriented transactional web server. Among numerous TPC-benchmarks, TPC-W is appropriate for benchmarking the co-operation of database and application servers. Its performance metric is the number of web interactions processed per second (WIPS). It offers three different profiles by varying the ratio of browsing (reading processes) to buying (writing processes): browsing (WIPsb), shopping (WIPSs) and ordering (WIPSo).

The primary metrics is the WIPS rate which shows the efficiency of the combination of operating system with database and application server.

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