Chapter 1.2
# A Generalized Comparison of Open Source and Commercial Database Management Systems

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## ABSTRACT

This chapter attempts to bring to light the field of one of the less popular branches of the open source software family, which is the open source database management systems branch. In view of the objective, the background of these systems will first be briefly described followed by presentation of a fair generic database model. Subsequently and in order to present these systems under all their possible features, the main system representatives of both open source and commercial origins will be compared in relation to this model, and evaluated appropriately. By adopting such an approach, the chapter's initial concern is to ensure that the nature of database management systems in general can be apprehended. The overall orientation leads to an understanding that the gap between open and closed source database management systems has been significantly narrowed, thus demystifying the respective commercial products.

## INTRODUCTION

The issue of data storage, organization, protection, and distribution has grown in importance over the years. This is justified by the fact that data, in increasing quantities and of multiple origins, serving possibly different operational divisions, were required to be processed by companies and organizations in order to be viable and, if that was achieved, to flourish appropriately (Loney & Bryla, 2005).

This chapter will initially examine the field of database software, while pinpointing and briefly examining the most important representatives of both open source and commercial origins. Subsequently, a generalized structure of the database

model will be deployed and the most significant database system software will be evaluated according to the model's component specifications. The chapter will conclude by presenting the results of the comparison along with our views on the future of open source database software.

## BACKGROUND

The open source vs. closed source (alternatively called proprietary development) debate has been a topic of continuous quarrel between experts affiliated to either of the two camps.

The notion of making money through traditional methods, such as the selling of individual copies is incompatible with the open source philosophy. Some proprietary source advocates perceive open source software as damaging to the market of commercial software. However, this complaint is countered by a large number of alternative funding streams such as (Wikipedia. org, 2006a):

- Giving away the software for free and, in return, charging for installation and support as in many Linux distributions
- Making the software available as open source so that people will be more likely to purchase a related product or service you do sell (e.g., OpenOffice.org vs StarOffice)
- **Cost avoidance/cost sharing:** Many developers need a product, so it makes sense to share development costs (this is the genesis of the X-Window System and the Apache Web server).

Moreover, advocates of closed source argue that since no one is responsible for open source software, there is no incentive and no guarantee that a software product will be developed or that a bug in such a product will be fixed. At the same time, and in all circumstances, there is no specific entity either of individual or organizational status to take responsibility for such negligence.

However, studies about security in open source software vs. closed source software (Winslow, 2004) claim that not only each significant commercial product has its counterpart in the open source arsenal but also that open source software usually provides less time for flaw discovery and, consequently, for a relative patch or fix.

Besides, open source advocates argue that since the source code of closed source software is not available, there is no way to know what security vulnerabilities or bugs may exist.

The database system software twig of the open source software family has been highly criticized especially during the last 10 years. This is due to the fact that the early versions of such products included relatively few standard relational database management system (RDBMS) features. This has led some database experts, such as Chris Date (Wikipedia.org, 2006b), a database technology specialist, who was involved in the technical planning of DB2, to criticize one of the major representatives of the field, MySQL, as falling short of being a RDBMS. Open source RDBMSs advocates reply (BusinessWeek.com, 2006) that their products serve their purposes for the users, who are willing to accept some limitations (which are fewer with every major revision) in exchange for speed, simplicity, and rapid development. Developers and end-users alike have been using more and more open source database management systems (DBMSs). Such experimentation has laid the groundwork for open source DBMSs to follow in the footsteps of Apache and Linux, two open source code products that have already penetrated the enterprise wall. Nonetheless, analysts Scott Lundstrom, Laura Carrillo and David O'Brien are of the opinion that open source DBMSs are not going to get the boost from IBM and Oracle that Linux and Apache did (Informationweek.com, 2004) due to the apparent competitive adversity of the former with the database commercial products published by these two companies.

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