

The State of Open-Source RDBMSs, 2015

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VIEW SUMMARY

Open-source relational DBMSs have matured significantly and can be used to replace commercial RDBMSs at a considerable TCO saving. Information leaders, DBAs and application development management can now consider them as a standard choice for deploying applications.

Overview

Impacts

- Open-source relational DBMSs (RDBMSs) have matured and today can be considered by information leaders, DBAs and application development management as a standard infrastructure choice for a large majority of new enterprise applications.
- An increasing proportion of third-party and in-house applications can be used on open-source RDBMSs, meaning DBAs and application development management can now use them to replace existing internal commercial RDBMSs.
- Information leaders who opt for an open-source DBMS (OSDBMS) licensing model can benefit from much lower costs than using a commercial model, even with today's hosted cloud and database platform as a service (dbPaaS) offerings.

Recommendations

- Add an open-source RDBMS to your organization's RDBMS standards for new uses, and to replace a commercial RDBMS where it and specific functionality are not required.
- Evaluate the use of an open-source RDBMS, when offered by a third-party application vendor, as the implementation platform of choice for existing deployments.

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STRATEGIC PLANNING ASSUMPTION

By 2018, more than 70% of new in-house applications will be developed on an OSDBMS, and 50% of existing commercial RDBMS instances will have been converted or will be in process.

EVIDENCE

- 1 Statistics compiled from Gartner inquiry data over the period 2013 through 2015.
- 2 See Infor's open-source stack [press announcement](#).
- 3 See Oracle's technology [price list](#).
- 4 See Oracle's MySQL [price list](#).
- 5 See EnterpriseDB's Postgres Plus [subscription plans and prices](#).

NOTE 1 SAMPLE LIST OF OPEN-SOURCE RDBMS VENDORS AND PRODUCTS

Note: This is a sample list so should not be treated as comprehensive.

- Look for subscription-based pricing models, even if not open source — most offer the same cost model and lower total cost of ownership (TCO).

- ◆ Actian — Ingres
- ◆ EnterpriseDB — Postgres Plus Advanced Server
- ◆ MariaDB — MariaDB
- ◆ Oracle — MySQL
- ◆ VoltDB — VoltDB

Analysis

Today, there are many OSDBMSs available in the market; however, this research is specifically about open-source *relational* DBMSs. In 2009, we wrote about the state of the OSDBMS and noted that it was increasing in maturity and its use in the market. Rolling ahead five years, as stated in the "Hype Cycle for Information Infrastructure, 2014," OSDBMSs have advanced off the Hype Cycle — they have entered into full market productivity and reached at least 25% of the target market. Since 2009, there have been several new entrants to the market, most notably MariaDB (originally a fork of the popular MySQL) and VoltDB (an in-memory, open-source RDBMS). The open-source RDBMS is used for both transaction systems and data warehousing. Although the predominant use is for transaction systems, there is an increasing use for data warehousing and analytics. Typically these data warehouses are smaller — generally less than one or two terabytes in size.

What has really changed over the past five years? First and likely most important is that the use of these OSDBMS products has greatly increased. According to "Market Share: All Software Markets, Worldwide, 2014," EnterpriseDB and MariaDB both grew revenue and market share from 2013 to 2014, the latter at 46.5% and 55.6% respectively. The total open-source RDBMS market was \$253.6 million in 2014 while the total OSDBMS market was \$562.0 million, representing almost 31% growth over 2013. It should be noted that the overall DBMS market only grew at about 5.4% in 2014, demonstrating the large growth of the OSDBMS segment. This has occurred even with only subscriptions as the primary revenue source; no revenue from licenses.

Revenue numbers for OSDBMS arguably do not map to usage as strongly as commercial numbers do; usage is far higher for commercial open source than numbers show. The potential impact of OSDBMS capturing workloads that would otherwise go to commercial products will manifest in declining growth rates for the latter. The overall market slowdown in 2014 may reflect this phenomenon, as well as the transition to cloud- and subscription-based pricing beginning to have a measurable effect on the market. Developer choice, an increasingly important determinant of product usage, often occurs without reference to corporate standard preferences, as usage increasingly falls outside of IT organizations. Once these products are in use, some may add support with subscriptions and licenses, even while a sizable footprint is retained by "free" use.

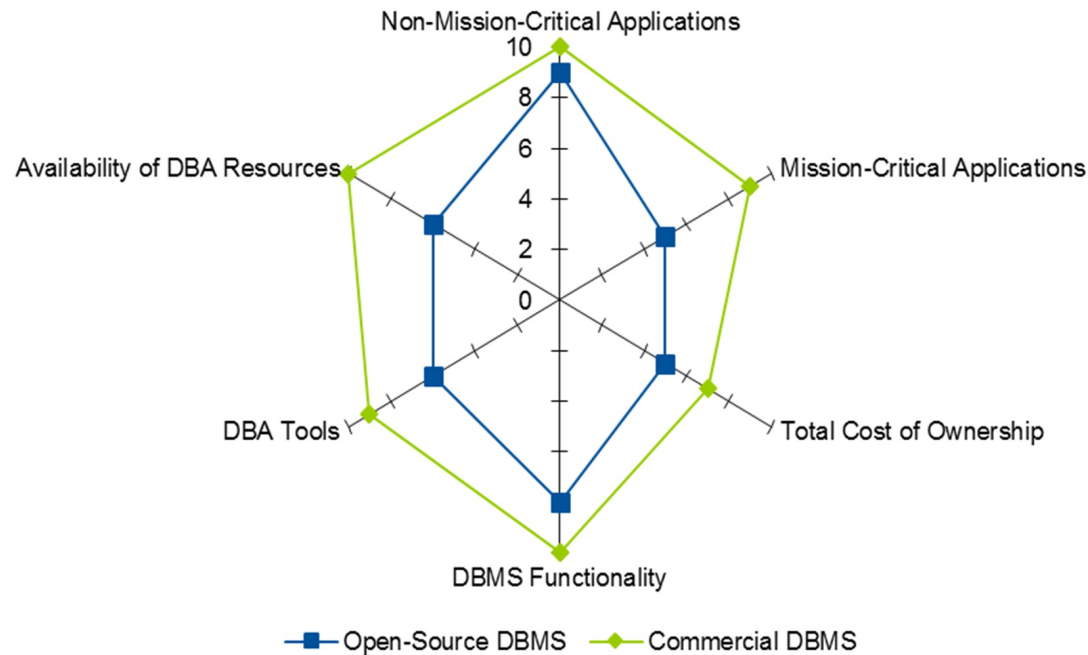
One key driver of the growth in use is greater product maturity, shown by increases in:

1. Available database administrator (DBA) resources with skills in the OSDBMSs
2. Available tools for administration of the OSDBMSs, not only from the vendors providing these RDBMSs but also from third-party DBA tool vendors such as Dell (formerly Quest Software) and Embarcadero Technologies
3. Functional completeness necessary to support rich applications (even compatibility with leading products, as with EnterpriseDB's support for Oracle PL/SQL)
4. Mature functionality necessary to support mission-critical applications, such as high availability, scalability and clustering

When these are combined with greater awareness of the technology and a wide array of verified use cases, OSDBMS products are being considered for a greater number of applications in all industries, geographies and organization sizes, ranging from small or midsize businesses (SMBs) to global enterprises.

In Figure 1, we show the maturity chart from "Open-Source DBMS 2009; Gaining in Maturity and Use." In Figure 2, we evaluate the relative maturity of OSDBMSs today across six criteria. Together, they demonstrate the large change in maturity over the past five years.

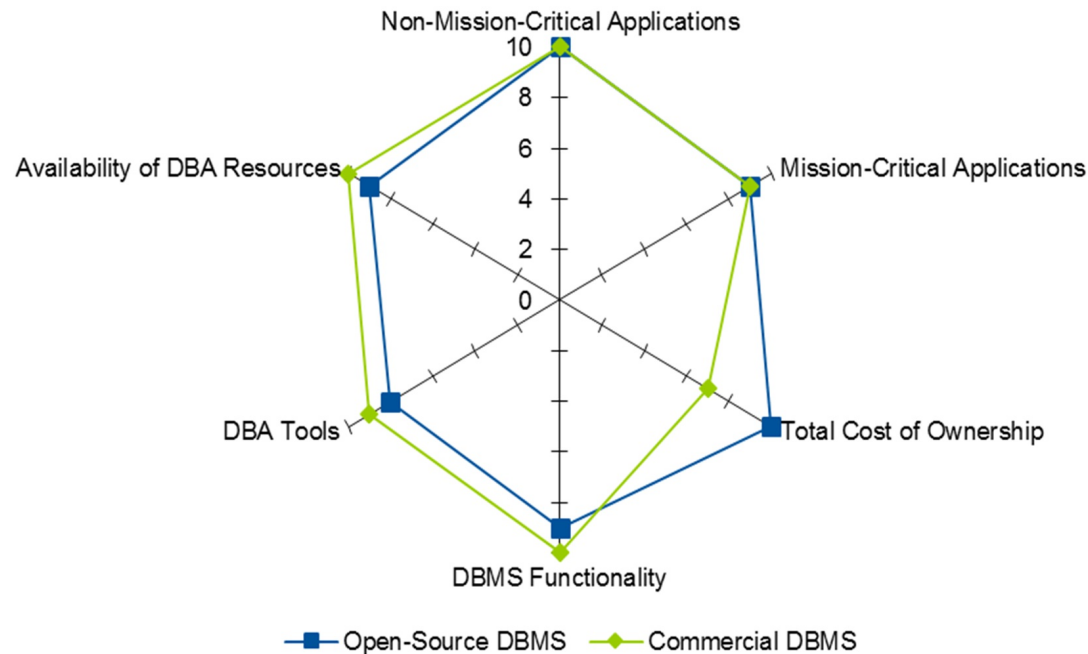
Figure 1. Relational Open-Source DBMS Maturity Evaluation, 2009



DBA = database administrator; DBMS = database management system

Source: Gartner (April 2015)

Figure 2. Relational Open-Source DBMS Maturity Evaluation, 2015



DBA = database administrator; DBMS = database management system

Source: Gartner (April 2015)

The most demonstrable benefit of OSDBMSs, given their increasing suitability from a technology perspective, is the TCO of these products. When skills were at a minimum, management tools were few and the software was relatively immature, the TCO was not necessarily lower than those of commercial vendor offerings. That has changed to the point where we now believe that the cost of managing OSDBMSs and the availability of skills are now close to parity with those of the commercial DBMS offerings. We therefore believe there are clear savings in TCO for the OSDBMS. With software costs skyrocketing, this has become a major focus of IT management and is a major impact of the OSDBMS.

Figure 3 outlines the impacts and top recommendations for the open-source RDBMS. This is relevant not only to technical, DBA and application management, but also to CIOs, CTOs, procurement and other IT management concerned with rising costs.

Figure 3. Impacts and Top Recommendations for the Open-Source RDBMS

Impacts

Top Recommendations

| | |
|---|--|
| <p>Open-source RDBMSs have matured and today can be considered as a standard infrastructure choice for most new enterprise applications.</p> | <ul style="list-style-type: none">• Acquire and deploy at least one open-source RDBMS in a testing environment to understand use cases and build expertise.• Add an open-source RDBMS to your organization's DBMS standards for new uses, and to replace a commercial RDBMS where not required. |
| <p>Third-party and in-house applications can increasingly be used on open-source RDBMSs, which can now therefore be used to replace existing internal commercial RDBMS choices.</p> | <ul style="list-style-type: none">• Begin to replace the RDBMS platform of less-critical applications with an open-source RDBMS.• Evaluate the use of an open-source RDBMS as the implementation platform of choice for existing deployments. |
| <p>Information leaders who opt for an OSDBMS licensing model can yield much lower costs than using a commercial model.</p> | <ul style="list-style-type: none">• Evaluate the TCO of an OSDBMS as a replacement for commercial DBMS products.• Look for subscription-based pricing models, even if not open source — most offer the same cost model and lower TCO. |

dbPaaS = database platform as a service; OSDBMS = open-source database management system; RDBMS = relational database management system; TCO = total cost of ownership

Source: Gartner (April 2015)

Impacts and Recommendations

Open-source RDBMSs have matured and today can be considered by information leaders, DBAs and application development management as a standard infrastructure choice for a large majority of new enterprise applications

As stated above, the open-source RDBMS products have matured in the availability of DBA skills, availability of DBA tools and near-equality of RDBMS functionality. OSDBMS is being used successfully in mission-critical applications in a large percentage of organizations. Further evidence of this is in the "Magic Quadrant for Operational Database Management Systems," where — for the first time — two OSDBMSs have appeared in the Leaders quadrant. Both MariaDB and EnterpriseDB references show pervasive use throughout an organization for both non-mission-critical and mission-critical applications.

We also believe that many new applications classified as "systems of innovation," where there is a preference among developers for using open-source DBMSs, are making use of the open-source DBMS.

Gartner inquiry statistics show over 110 inquires about open-source RDBMSs (EnterpriseDB, Ingres, MariaDB and MySQL) in the past 24 months, and an increase in 2014 to greater than five inquires per month.¹ Five years ago, we estimated that we had fewer than 10 or 12 during the entire year. There is a clear increase in awareness and demand for OSDBMS products. Also, the majority of our inquiries are from end-user organizations, as opposed to third-party software vendors. This demonstrates a willingness of organizations to use OSDBMSs for new development and increasingly to replace existing RDBMS platforms. Furthermore, as described above, much use by developers and in SMBs is taking place, who are not submitting inquiries to Gartner.

We find many of our clients adopting a dual-RDBMS strategy: an open-source RDBMS combined with one of the commercial DBMS engines. We also find that many clients are beginning to use OSDBMS for more applications than originally planned — and that vendors are eager to tell us about their "expanding footprint" after their first few deployments are in place in an organization. We believe this trend will continue so that, by 2018, more than 70% of new in-house applications will be developed on an OSDBMS.

Recommendations:

- Acquire and deploy at least one open-source RDBMS in a sandbox or testing environment to understand the use cases and build expertise.
- Identify applications requiring functionality or SLAs that can only be met with commercial RDBMS, as these are not candidates for migration.
- Add an open-source RDBMS to your organization's DBMS standards for new uses, and to replace commercial RDBMS where commercial RDBMS and specific functionality are not required.

An increasing proportion of third-party and in-house applications can be used on open-source RDBMSs, meaning DBAs and application development management can now use them to replace existing internal commercial RDBMSs

As the capabilities, reliability, availability and functionality of the open-source RDBMS have improved, two trends are emerging.

- An increase in the use of open-source RDBMS by third-party software providers.
- Many organizations are considering open-source RDBMS as an additional standard to be used for modernizing existing applications, in addition to or instead of the incumbent RDBMS they were built on.

Many smaller application vendors offer their products on an open-source RDBMS platform; some have for many years. Recently, however, there is an increase in larger application vendors beginning to offer applications based on OSDBMS platforms. The best example is Infor, one of the major application

platform vendors. In April 2014, Infor announced the availability of the Infor LN ERP on an open technology stack, including the EnterpriseDB Postgres Plus DBMS.² We believe this to be the first major application vendor to offer an OSDBMS as a platform choice for its applications. This migration is possible because of the Oracle compatibility feature and the maturity of the Postgres Plus product, allowing Infor to take advantage of the lower cost of ownership from the OSDBMS. By 2018, 50% of existing commercial RDBMS instances will have been converted or will be in process.

Inquiries to Gartner about replacing traditional DBMS platforms in applications written in-house have been increasing substantially.¹ Several years ago, we had one or two per month; today, we have two or more per week. Although the most frequent reason cited by Gartner clients is cost, replacement would not be possible, even at a lower cost, if it were not for the other changes shown in Figure 2:

- Increased maturity of the OSDBMS software
- Greater availability of tools to manage the OSDBMS products
- An increase in the available skills

We believe that there is a large percentage of in-house applications whose functional requirements allow them to be successfully migrated to an OSDBMS. Although it is difficult to "draw a line" in the mix of applications (separating those that can and cannot be migrated), starting at the low end allows an organization to build or acquire the necessary skills for the new DBMS and then further decide which applications can be migrated. We believe that as much as 80% of the in-house developed application portfolio may be candidates to migrate, and 50% of existing commercial RDBMS instances will be converted by 2018. This will allow organizations to move to an open-source RDBMS while minimizing risk and reducing license and maintenance costs.

Recommendations:

- Inventory the organization's in-house-developed applications and evaluate the less-critical and less-risky applications for conversion.
- Begin to replace the RDBMS platform of less-critical applications with an open-source RDBMS.
- Evaluate the use of an open-source RDBMS, when offered by a third-party application vendor, as the implementation platform of choice for existing deployments.

Information leaders who opt for an OSDBMS licensing model can benefit from much lower costs than using a commercial model, even with today's hosted cloud and dbPaaS offerings

Many inquiries taken by Gartner about OSDBMS initially ask for information about open-source software. While well intentioned, the majority of end-user organizations are not interested in the actual source code, because they have no intention of:

- Changing any code
- Adding new features

- Fixing bugs in the software

These Gartner clients are really interested in the open-source pricing model — they do not want to pay substantial, upfront license fees for software, and prefer to pay only the yearly subscription support fees, which normally are less than the associated yearly maintenance fees based on the license cost of commercial licensed software. The initial entry cost of OSDBMS is substantially less (without license fees) and the ongoing subscription support fee is normally far less than that of licensed software. This is true not only for the OSDBMS, but also normally for the commercial software offered with subscription support by the same vendors. This is true for the software and vendors listed in Note 1.

Table 1 contains a pricing comparison of Oracle Database Enterprise Edition,³ MySQL Enterprise Edition⁴ and EnterpriseDB Postgres Plus Advanced Server,⁵ using a standard x86 server with two sockets, each with six cores.

Table 1. Pricing Comparison Chart

| | License Metric | License Fee | Yearly per Metric | License per Server | Yearly Support | Total Three-Year Cost |
|---|----------------|-------------|-------------------|--------------------|----------------|-----------------------|
| Oracle Database Enterprise Edition | Two cores | \$47,500 | \$10,450 | \$285,000 | \$62,700 | \$473,100 |
| MySQL Enterprise Edition | Server | n/a | \$5,000 | n/a | \$5,000 | \$15,000 |
| EnterpriseDB Postgres Plus Advanced Server | Socket | n/a | \$6,900 | n/a | \$13,800 | \$41,400 |

Source: Gartner (April 2015)

Assuming a 50% discount for the Oracle EE licenses (net \$236,550), this would still represent a cost 15 times greater than MySQL and almost six times greater than EnterpriseDB, yielding three-year cost savings of \$221,550 and \$195,150, respectively.

We have predicted over the years that the pricing pressure on the commercial vendors would increase as OSDBMS software matured. Now that it has matured, we believe that many traditional vendors are looking to what can be done to reduce the cost of commercial software. One clear answer has emerged: database platform as a service (dbPaaS) and cloud hosting of RDBMS instances (see "Market Guide for Database Platform as a Service"). The major vendors (IBM, Microsoft, Oracle and SAP) now offer cloud-hosted versions of their commercial DBMSs, at a yearly fee including the infrastructure. Although these fees today are typically more than the OSDBMS subscription support fees, there are no upfront license fees for the hosted versions. This should not be confused with the pure hosting model where customers bring their own licenses to the cloud infrastructure. In this case, the customer will continue to pay the normal maintenance and support fees, and the cost savings will only come from the infrastructure as a service (IaaS) model.

Customers must take care when comparing the different models available. First, be sure to compare the total cost of running on-premises (including infrastructure) with the hosted cloud model cost. Note that pricing tiers for cloud-hosted versions of closed-source products may bundle options that require additional payments when on-premises deployments are used. This can dramatically increase the relative cost disadvantage for on-premises usage. Further, many of the cloud-hosted models include some RDBMS management in the price (such as patching and upgrading to new versions), which can reduce your TCO or permit redeployment of staff to other activities. The cost of the technical support time and effort must be factored into the comparison. Although we believe that the total cost will continue to be less for the on-premises OSDBMS, the cloud-hosted model will bring the commercial software costs more in-line with those of OSDBMSs. Additionally, there are OSDBMS dbPaaS offerings that further reduce the costs for cloud-based software. If there is interest in a cloud-based solution, then those costs should be used in any cost comparison.

Recommendations:

- Evaluate the TCO of an OSDBMS as a replacement for commercial DBMS products.
- Use care when comparing on-premises OSDBMS platforms with cloud hosting from a commercial vendor. Be sure to capture all the costs.
- Look for subscription-based pricing models, even if not open source — most offer the same cost model and lower TCO.

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