For the Complete Technology & Database Professional

Open Source in the Stack:

IOUG 2006 Survey on Open Source Trends

Joe McKendrick, Research Analyst

Produced by UNISPHERE RESEARCH

6 TABLE OF CONTENTS

Join the IOUG - If you're not already an IOUG member and would like to continue receiving key information like this, visit the IOUG at http://w3.ioug.org/join/today for information on how to join this dynamic user community for Oracle technology and database professionals.

EXECUTIVE SUMMARY

Open source software is now part of doing business for a majority of Oracle enterprise database sites. A new survey out of the Independent Oracle Users Group (IOUG) finds that 60 percent of database sites now use open source operating systems in their operations. Another 56 percent are running an open source application server or framework, and 37 percent are also running at least one of the major brands of open source databases along with their Oracle implementation.

These are the latest findings of a new survey conducted by the Independent Oracle Users Group (IOUG), the leading association of Oracle technology and database professionals. The IOUG initiated this survey of its members to develop a more comprehensive picture of the ways Oracle-based enterprises are incorporating open source solutions into their enterprises.

The survey was distributed via e-mail to the IOUG members in June 2006. Overall, 269 usable responses were returned, for a margin of error of plus or minus seven percentage points. Almost half of respondents, 49 percent, are database administrators, 28 percent come from the development and architecture community, and 20 percent are managers or executives. Respondents come from a range of industries, including services (18 percent), government and education (16 percent), software and high-tech (15 percent), finance/insurance (11 percent), and utilities/transportation (10 percent). About 35 percent come from larger organizations (with 5,000 or more employees), 33 percent from mid-size companies (500-4,999 employees), and 30 percent from small companies with fewer than 500 employees.

The survey identified four major classes of open source users in the Oracle database community:

- Non-users (14 percent): This segment of respondents indicate they do not use open source at any level of the technology stack, and have no plans for adoption in the near future.
- Beginners (16 percent): This segment indicates they generally have less than a year of experience with open source applications.
- Average users (45 percent): This segment has between one up to three years experience with open source technologies.
- Advanced users (25 percent): This group has had open source implementations for three years or more for at least one level of the technology stack.

This survey explores the ways in which Oracle-based enterprises are deploying open source at various key points in the software stack, future plans for open source, as well as challenges organizations are facing in their implementations.

Key findings from the survey include the following:

- Most open source deployments are still at the edge-of-the-enterprise applications, such as Web servers or single-function servers, versus core enterprise application areas such as ERP. Open source middleware or application servers are most likely to see enterprise-class deployments.
- Ironically, enterprises don't use open source for its 'open source' qualities. Only 19 percent report that developers in their company have made changes or modifications to the source, and most (17 percent) said those were only a few changes.
- Open source databases, operating systems and middleware are more prevalent at smaller organizations that were more likely to have been attracted by favorable price points and licensing terms.

Open Source and the Enterprise

At this point, only nine percent of respondents to this survey say that a majority of their enterprise applications are open source. (See Figure 1.) Two out of three say that there is some open source in their enterprise stacks, but in most cases, they do not encompass more than 10 percent of their enterprise application portfolios.

Join the IOUG - If you're not already an IOUG member and would like to continue receiving key information like this, visit the IOUG at http://w3.ioug.org/join/today for information on how to join this dynamic user community for Oracle technology and database professionals.

While the philosophy and intent of open source is to enable users to dig into the code and make modifications as they see fit, few enterprises at this time are doing so. Most open source deployments are still at the edge-of-the-enterprise applications, such as Web servers or single-function servers, versus core enterprise application areas such as ERP. Open source middleware or application servers are most likely to see enterprise-class deployments.

Driving Open Source

There are many reasons to go with open source solutions, but the original advantage of open source – its low or non-existent up-front acquisition price – continues to drive adoption to this day. Overall, the survey finds, a majority of open source users (57 percent) say costs savings is their greatest motivation for going with this type of software. (See Figure 2.) Another 24 percent cite the favorable licensing options of open source, which is related to the low start-up costs associated with the software.

Another 22 percent of respondents say open source software tends to be more reliable than many proprietary commercial solutions, citing better performance and uptime. In addition, 22 percent say maintenance around open source software is an advantage – often, fixes or upgrades are readily available through the community, versus relying on a single vendor's release schedule. "Open source solutions are generally more robust and well tested than more popular commercial packages," said one respondent. "Open source solutions do not always have the same level of support as commercial packages, but open source user communities are active and we can tap into those resources." Another respondent observed, "My experience is that the open source technology deployed has been very stable. Since it keeps working as needed, we have not had a need to keep changing it."

Advanced users of open source solutions tend to reinforce the cost-savings aspect, as well as the performance aspect of the software. (See Figure 3.) More than nine out of 10 users with three or more years experience with open source say cost savings is an important benefit, versus 68 percent of those just starting their open source implementations. Along with the increased licensing options open source offers, about 41 percent of experienced users also mention the enhanced performance offered. Only 26 percent of beginners have seen the advantages of performance so far.

The greater agility offered through open source is another plus. "Open source also allows for more flexibility and customization by corporations to tailor to their specific business needs," said one respondent."

Issues

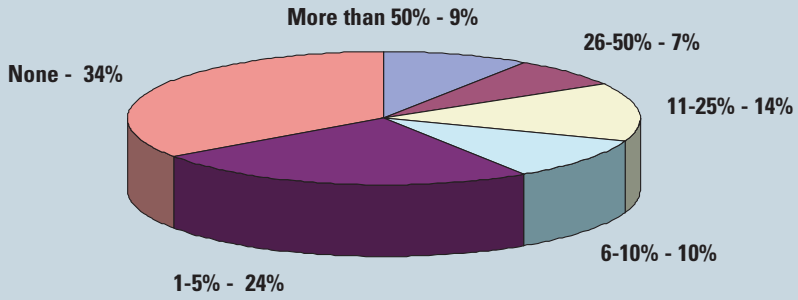
There are concerns that need addressing with open source, however. The largest number of respondents, in fact, says maintenance and support are important issues that open source does not address as effectively as commercial products. More than a third of respondents, 35 percent, say that maintenance and support is getting more difficult. (See Figure 4.)

In a related matter, another third of the group, 32 percent, say that open source solutions lack enterprise-grade support that many commercial packages offer. Security is also an issue for 28 percent of respondents. "The open source solutions provide the needed functionalities at a reduced price," said one respondent. "But my reservation is about security as it is an open system."

Beginners were more likely to raise these issues, the survey finds. For example, as shown in Figure 5, half of the beginner group said they were concerned about the lack of enterprise support relative to commercial products. In contrast, only 35 percent more experienced users said this was an issue, ranking second to maintenance and support issues.

Join the IOUG - If you're not already an IOUG member and would like to continue receiving key information like this, visit the IOUG at http://w3.ioug.org/join/today for information on how to join this dynamic user community for Oracle technology and database professionals.

FIGURE 1: PERCENT OF MISSION-CRITICAL APPLICATIONS RUNNING ON OPEN SOURCE



(Does not equal 100% due to rounding.)

FIGURE 2: FACTORS DRIVING OPEN SOURCE ADOPTION

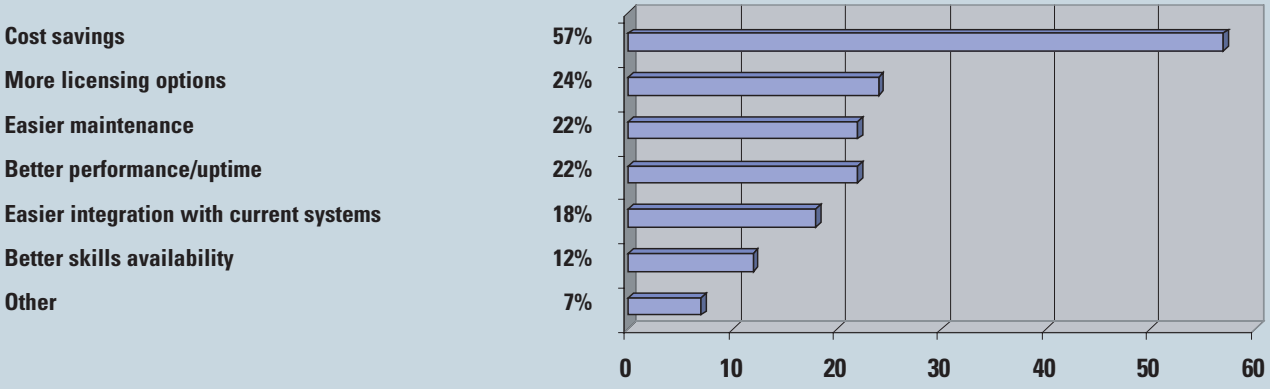


FIGURE 3: TOP FACTORS DRIVING OPEN SOURCE ADOPTION - BY EXPERIENCE LEVEL

(Rank shown in parenthesis.)

	Beginner (<1 yr)	Advanced (3+ yrs)
Cost savings	68% (1)	91% (1)
More licensing options	34% (2)	41% (2)
Easier maintenance	32% (3)	29% (3)
Better performance/uptime	26% (4)	41% (2)

Join the IOUG - If you're not already an IOUG member and would like to continue receiving key information like this, visit the IOUG at http://w3.ioug.org/join/today for information on how to join this dynamic user community for Oracle technology and database professionals.

FIGURE 4: MAIN LIMITATIONS OF OPEN SOURCE

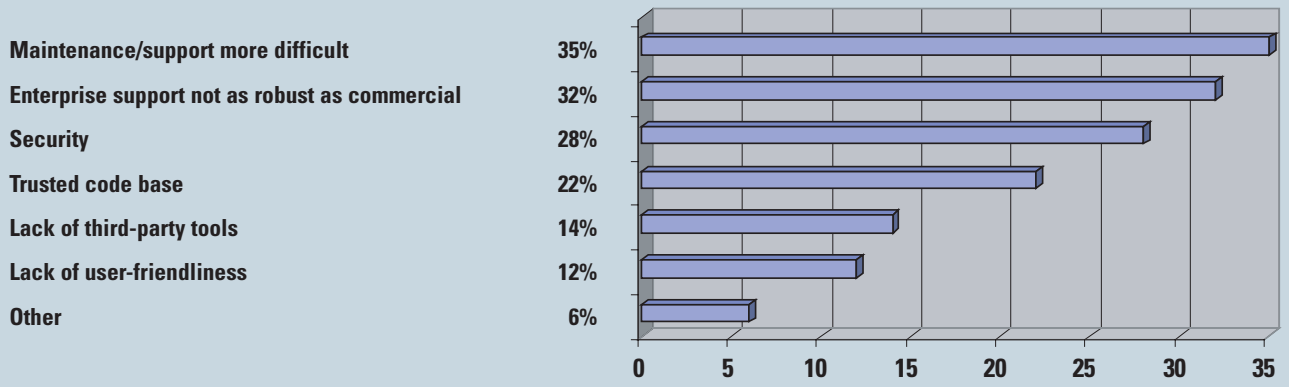


FIGURE 5: TOP LIMITATIONS OF OPEN SOURCE - BY EXPERIENCE LEVEL

(Rank shown in parenthesis.)

	Beginner (<1 yr)	Advanced (3+ yrs)
Enterprise support not as robust as commercial	50% (1)	35% (2)
Maintenance/support more difficult	43% (2)	38% (1)
Security	29% (3)	29% (3)
Trusted code base	27% (4)	16% (5)
Lack of third-party tools	27% (5)	16% (5)
Locating/recruiting skills	21% (6)	25% (4)
Scalability	16% (7)	12% (7)
Lack of user-friendliness	11% (8)	15% (6)

OPEN SOURCE DATABASES

To some observers, open source represents a challenge that is shaking up the established order of the commercial database world. Others, however, say their time has yet to come, and they still only represent a minuscule fraction of the $14-billion annual global database market.

However, the larger database vendors recognize that their enterprise products do not have traction in the small business market, and are attempting to offer "lightweight" versions of their products at little or no cost to compete with the open source threat. Oracle is embracing that business model with its Express Edition, while IBM and Microsoft have also followed suit with lightweight versions of their own relational database systems aimed at for small to medium businesses.

The IOUG survey confirms that the perceived threat is real. Small companies are the most inclined to have adopted open source databases at this time. Close to half of the small businesses in the survey (45 percent of those with fewer than 500 employees) have adopted one of the leading open source brands. (See Figure 6.) This compares with 29 percent of medium size firms (500 to 5,000 employees)

Join the IOUG - If you're not already an IOUG member and would like to continue receiving key information like this, visit the IOUG at http://w3.ioug.org/join/today for information on how to join this dynamic user community for Oracle technology and database professionals.

and 38 percent of large organizations (5,000 or more). Overall, about 37 percent of the respondents reporting they were using at least one of the leading open source databases shown in Figure 7. One third of the group (33 percent) has instances of MySQL at their sites, followed by PostgreSQL at second place with nine percent.

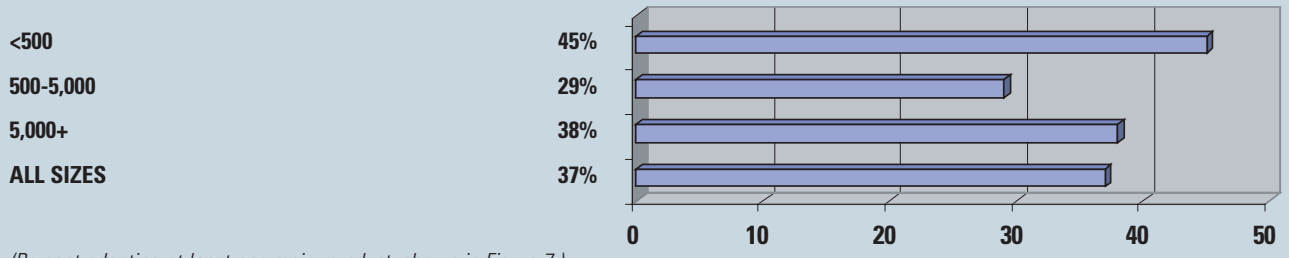
While the percentage of respondents planning to use specific open source databases by next year climbs only a notch to 39 percent, there is growing interest in this space. The percentage that does not use open source databases at all will drop from 53 percent this year to 40 percent in 12 months. While many respondents could not name specific implementation plans, the percentage of "don't knows" increases from eight percent to 19 percent. This suggests there is rising interest in the open source model in general, but evaluations of the open source products are still underway. Almost seven out of 10 of the respondents currently using open source databases (69 percent) intend to increase their usage over the coming year. (See Figure 8.)

While open source databases are prevalent, they are still at the edge of the enterprise. The IOUG survey finds that only 10 percent of open source databases are deployed to support enterprise applications. (See Figure 9.) The most predominant use of open source databases is for specific, single-function systems (reported by 37 percent of open source database users), followed by custom home-grown applications (32 percent) and Websites (32 percent). However, some respondents say open source databases are ready for more mission-critical tasks. "I think open source databases and Web servers have matured to the point where they are finally 'enterprise ready,' " said one respondent. "We've had only minor support issues so far. Eventually there will be a case for heavy vendor support and we will see how good it really is."

Still, as noted in the previous section, many respondents are still a bit nervous about the idea of going with open source for the enterprise. As one respondent put it, "I am still skeptical about the use of open source software at the enterprise level, specifically with databases. Security, scalability, and functionality are my major concerns."

The reasons for adoption of open source databases vary significantly by company size, the survey finds. For example, the leading purpose of the database among small companies is to support Websites, while larger companies are more interested in these databases for single-function systems. (See Figure 10.)

FIGURE 6: OPEN SOURCE DATABASE ADOPTION - BY COMPANY EMPLOYEE SIZE



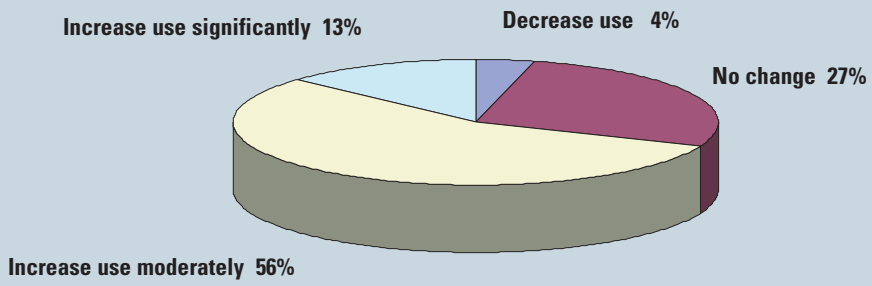
(Percent adopting at least one major product, shown in Figure 7.)

Join the IOUG - If you're not already an IOUG member and would like to continue receiving key information like this, visit the IOUG at http://w3.ioug.org/join/today for information on how to join this dynamic user community for Oracle technology and database professionals.

FIGURE 7: OPEN SOURCE DATABASE ADOPTION

	This year	Next year
MySQL	33%	34%
PostgreSQL	9%	11%
Firebird	2%	2%
Sleepycat/Berkeley DB	1%	3%
Ingres	3%	4%
Don't know/unsure	8%	19%
Don't/won't use open source DBs	53%	40%

FIGURE 8: OPEN SOURCE DATABASE CHANGES



Join the IOUG - If you're not already an IOUG member and would like to continue receiving key information like this, visit the IOUG at http://w3.ioug.org/join/today for information on how to join this dynamic user community for Oracle technology and database professionals.

FIGURE 9: HOW OPEN SOURCE DATABASES ARE USED

(Among users of open source databases.)

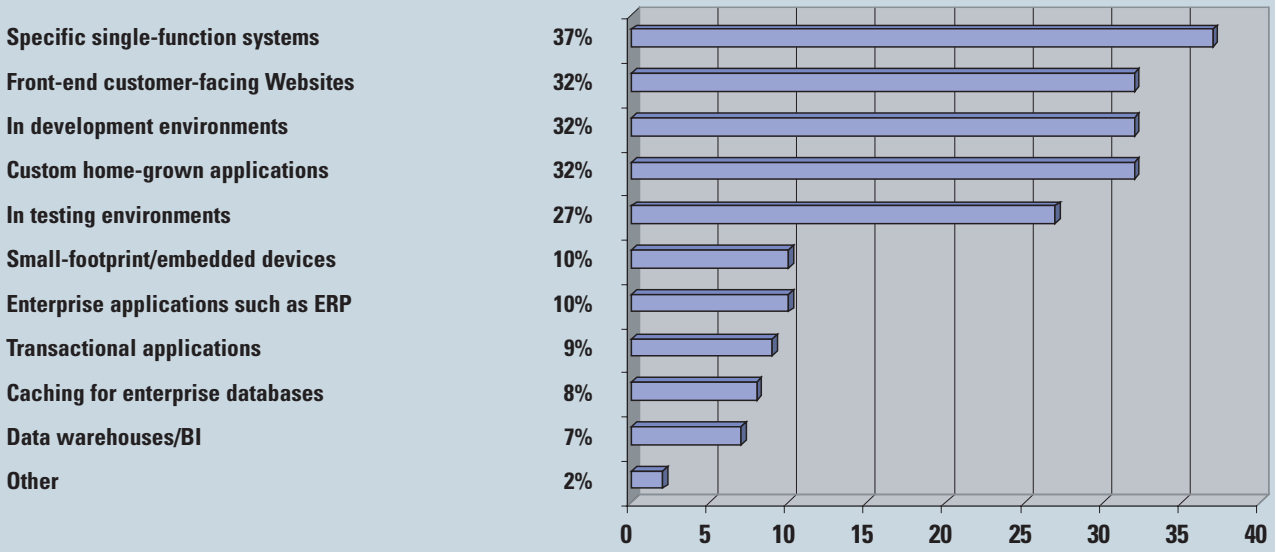


FIGURE 10: HOW OPEN SOURCE DATABASES ARE USED - BY COMPANY SIZE

(Among users of open source databases. Rank shown in parenthesis.)

	Company employee size		
	<500	500-5,000	5,000+
Front-end customer-facing Websites	56% (1)	22% (5)	17% (4)
In development environments	43% (2)	25% (4)	28% (2)
Custom home-grown applications	37% (3)	35% (2)	28% (2)
Specific single-function systems	35% (4)	37% (1)	37% (1)
In testing environments	26% (5)	30% (3)	26% (3)
Enterprise applications such as ERP	15% (6)	7% (6)	7% (5)
Small-footprint/embedded devices	15% (6)	7% (6)	7% (5)
Caching for enterprise databases	11% (7)	5% (7)	5% (6)
Data warehouses/BI	11% (7)	5% (7)	5% (6)
Transactional applications	9% (8)	5% (7)	7% (5)

Join the IOUG - If you're not already an IOUG member and would like to continue receiving key information like this, visit the IOUG at http://w3.ioug.org/join/today for information on how to join this dynamic user community for Oracle technology and database professionals.

OPEN SOURCE OPERATING SYSTEMS

The benefits to moving to an open source operating system – the most well-known being Linux – can result in cost savings for many organizations, resulting from low-to-no upfront licensing costs, as well as freedom from lock-in to expensive proprietary systems. The survey shows that Linux – which has been supported by Oracle since 1999 – is popular at a majority of Oracle database sites. "We have been pleased by the performance and stability of Oracle on Linux," said one respondent. "There are only a few things that seem not to work, for example, for supporting multiple cache sizes."

As is the case with open source databases, the IOUG survey finds that Linux and other open source operating systems are gaining the most traction among smaller businesses. Small companies are the most inclined to have adopted an open source OS at this time. More than seven out of 10 of the small businesses in the survey (71 percent of those with fewer than 500 employees) have adopted one of the leading open source brands. (See Figure 11.) This compares with 52 percent of medium size firms (500 to 5,000 employees) and 62 percent of large organizations (5,000 or more).

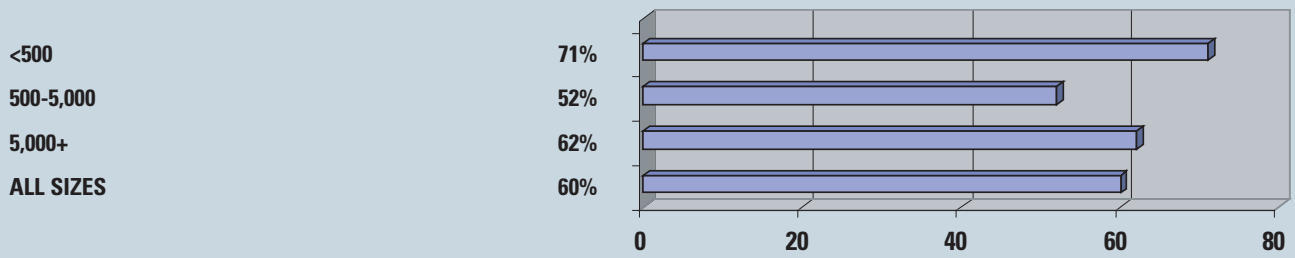
Overall, about 60 percent of the respondents report they were using at least one of the leading open source operating systems shown in Figure 12. More than half of the group (56 percent) is running either Red Hat or SUSE Linux at their sites, followed by Sun Solaris 10 at a distant second place with 13 percent.

More than three quarters of the respondents currently using open source operating systems (76 percent) intend to increase their usage over the coming year. (See Figure 13.) One open source operating system that may see significant growth over the coming year is Sun Solaris 10, which will see usage grow by almost 40 percent. As found in the IOUG study earlier this year on the state of the technology stack, Linux is projected to catch up and begin to overtake Solaris as the leading platform for Oracle implementations. Sun's open sourcing of Solaris may be helping to maintain its presence in this segment of the market.

As with open source databases, open source operating systems are still mainly deployed at the edge of the enterprise. The IOUG survey finds that only 27 percent of open source databases are deployed to support enterprise applications. (See Figure 14.) The most predominant use of open source operating systems is to support database servers (51 percent), followed by testing environments (41 percent) and for specific, single-function systems (reported by 33 percent of open source operating system users).

Small companies generally have the same reasons for adoption of open source operating systems as their larger counterparts, the survey finds. The leading purpose of the operating system among companies of all size ranges is to support database servers. A greater proportion of smaller companies (63 percent) is inclined to be running open source OSs for this purposes, versus the larger corporations (46 percent). (See Figure 15.)

FIGURE 11: OPEN SOURCE OPERATING SYSTEM ADOPTION - BY COMPANY EMPLOYEE SIZE



(Percent adopting at least one major product, shown in Figure 12.)

Join the IOUG - If you're not already an IOUG member and would like to continue receiving key information like this, visit the IOUG at http://w3.ioug.org/join/today for information on how to join this dynamic user community for Oracle technology and database professionals.

FIGURE 12: OPEN SOURCE OPERATING SYSTEMS

	This year	Next year
Linux (Red Hat, SUSE)	56%	59%
Linux (Debian, Turbo, Mandrake)	4%	5%
Linux (all other)	2%	3%
OpenBSD	2%	2%
Sun Solaris 10	13%	18%
Other	1%	1%
Don't know/unsure	10%	13%
Don't/won't use open source OSs	28%	22%

FIGURE 13: OPEN SOURCE OPERATING SYSTEM CHANGES

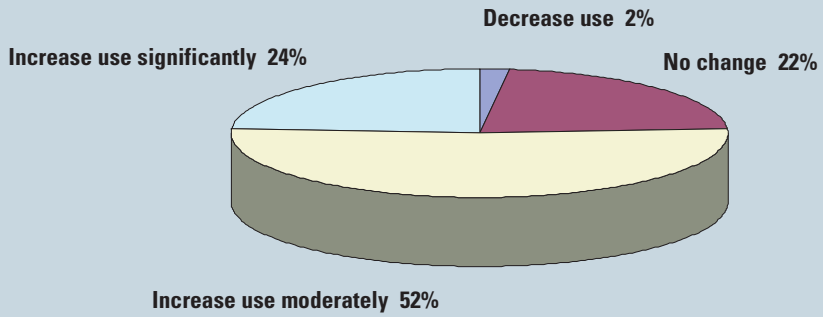


FIGURE 14: HOW OPEN SOURCE OPERATING SYSTEMS ARE USED

(Among users of open source operating systems.)

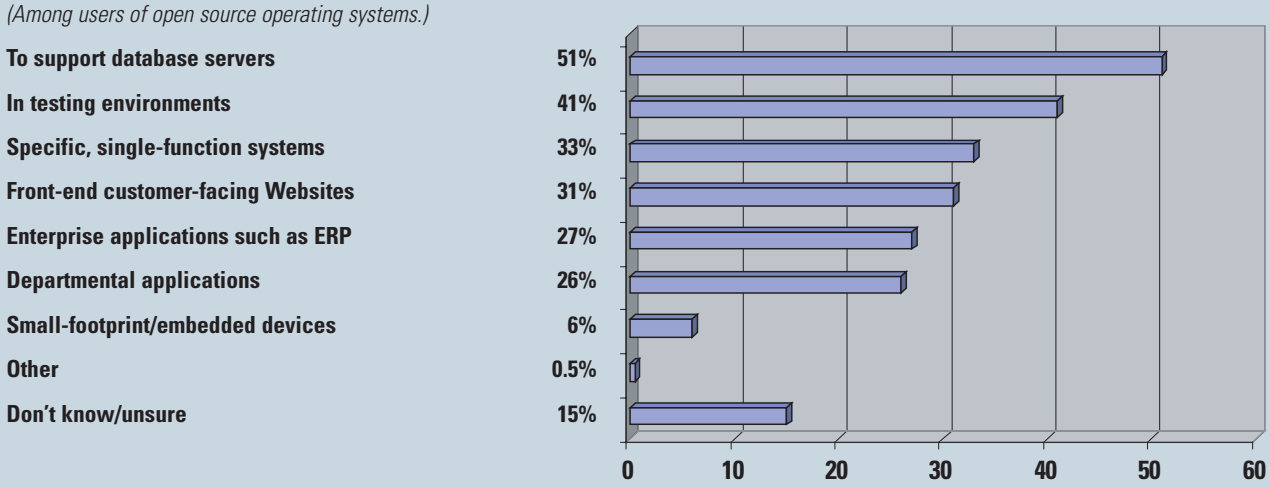


FIGURE 15: HOW OPEN SOURCE OPERATING SYSTEMS ARE USED - BY COMPANY SIZE

(Among users of open source operating systems.)

	Company employee size		
	<500	500-5,000	5,000+
Database servers	63% (1)	45% (1)	46% (1)
In testing environments	51% (2)	42% (2)	35% (3)
Front-end customer-facing Websites	41% (3)	31% (3)	25% (5)
Specific single-function systems	35% (4)	29% (4)	36% (2)
Enterprise applications such as ERP	24% (5)	29% (4)	29% (4)
Departmental applications	22% (6)	18% (5)	24% (6)
Small-footprint/embedded devices	6% (7)	1% (6)	8% (7)

OPEN SOURCE MIDDLEWARE

Increasingly, middleware is becoming part of the LAMP (Linux-Apache-MySQL-PHP/Perl/Python) and LAMJ (Linux-Apache-MySQL-J2EE) stacks. Many of the services in a service-oriented architecture —and the supporting infrastructure underneath — will be built and maintained on open-source components. And, open-source applications rely on — and encourage the use of — standardized Web services components and interfaces.

In the IOUG survey, about 62 percent of the respondents reported that they were using at least one of the leading open source middleware frameworks. Small companies are the most inclined to have adopted open source middleware at this time, the survey finds. (See Figure 16.) Close to two thirds of the small businesses in the survey (66 percent of those with fewer than 500 employees) have adopted

Join the IOUG - If you're not already an IOUG member and would like to continue receiving key information like this, visit the IOUG at http://w3.ioug.org/join/today for information on how to join this dynamic user community for Oracle technology and database professionals.

one of the leading open source brands. This is slightly greater than 62 percent of medium size firms (500 to 5,000 employees) and 61 percent of large organizations (5,000 or more).

Close to half of respondents (47 percent) have the Apache Web server at their sites, followed by Apache Tomcat at 38 percent. (See Figure 17.)

Almost seven out of 10 of the respondents currently using open source middleware (69 percent) intend to increase their usage over the coming year. (See Figure 18.)

Open source middleware is more likely to be deployed at the core of mission-critical applications than open source databases or operating systems, the survey finds. More than a third of respondents, 35 percent, deploy open source middleware to support enterprise applications. (See Figure 19.) The most predominant use of open source middleware is for front-end Websites (reported by 42 percent of open source middleware users), followed by departmental or end-user applications (41 percent).

Of course, adoption trends for open source middleware solutions are likely to be heavily influenced by the emergence of Oracle's Fusion suite of middleware applications. The survey finds that there is more uncertainty about this class of solutions than for open source operating systems, or even open source databases. Overall, in aggregate, while 62 percent of respondents currently use at least one of the open source middleware packages now on the market, this is projected to decline to 56 percent a year from now. While the percentage declaring they do not run (or intend to run) open source middleware will remain the same (26 percent this year versus 24 percent next), the percentage that simply do not know their middleware strategy will grow from 12 to 18 percent.

In addition, adoption of some solutions will increase. JBoss use will grow thirteen-fold, from a starting base of one percent, while use of IBM's WebSphere CE will remain steady. Use of Apache project solutions, which are supported by Oracle, will decrease.

Some other large vendors have been positioning in the open source middleware space. In September 2005, for example, IBM launched an open source version of its core Java EE offering, called WebSphere Application Server, Community Edition (CE). The product is based on Glue Code's Java EE-compliant Geronimo server, which IBM acquired a few months earlier. For IBM, this is an entree into the small to medium size business market, and in response to the growing prevalence of open source products such as JBoss and JonAS. Glassfish is a Java EE-compliant project backed by Sun Microsystems.

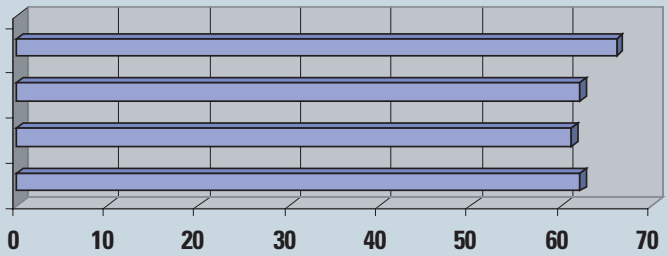
The open-source JBoss and Apache application servers are also open-source phenomena that are becoming a huge part of the Web services/SOA scene. Industry experts now say an SOA-based middleware layer can be constructed entirely on commercial software with standardized interfaces.

The main reason for adoption of open source middleware – to support Web site deployments – cuts across the smallest and largest companies in the survey, the survey finds. However, mid-size companies are more inclined to implement open source middleware to support departmental-level applications. Also, mid-size companies are more inclined to turn to open source middleware to support their enterprise application back ends. (See Figure 20.)

Join the IOUG - If you're not already an IOUG member and would like to continue receiving key information like this, visit the IOUG at http://w3.ioug.org/join/today for information on how to join this dynamic user community for Oracle technology and database professionals.

FIGURE 16: OPEN SOURCE MIDDLEWARE ADOPTION - BY COMPANY EMPLOYEE SIZE

<500	66%
500-5,000	62%
5,000+	61%
ALL SIZES	62%



(Percent adopting at least one major product, shown in Figure 17.)

FIGURE 17: OPEN SOURCE MIDDLEWARE/FRAMEWORKS

	This year	Next year
Apache Geronimo	2%	3%
Apache Tomcat	38%	35%
Apache Web server	47%	40%
IBM WebSphere CE	11%	10%
JBoss	1%	13%
Mono (.NET)	3%	6%
Struts	13%	14%
Glassfish	1%	2%
Don't know/unsure	12%	18%
Don't/won't use open source middleware	26%	24%

Join the IOUG - If you're not already an IOUG member and would like to continue receiving key information like this, visit the IOUG at http://w3.ioug.org/join/today for information on how to join this dynamic user community for Oracle technology and database professionals.

FIGURE 18: OPEN SOURCE MIDDLEWARE CHANGES

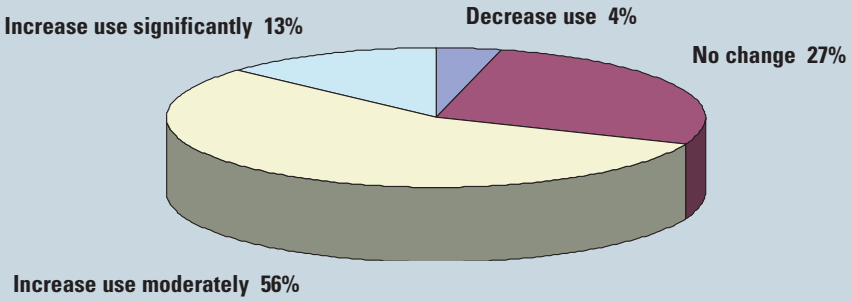


FIGURE 19: HOW OPEN SOURCE MIDDLEWARE/FRAMEWORKS ARE USED

(Among users of open source middleware.)

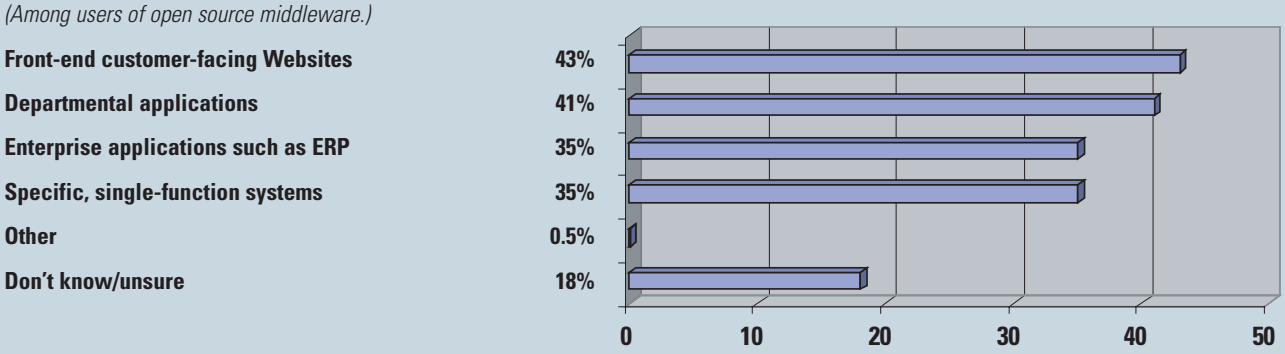


FIGURE 20: HOW OPEN SOURCE MIDDLEWARE IS ARE USED - BY COMPANY SIZE

(Among users of open source middleware.)

	Company employee size		
	<500	500-5,000	5,000+
Front-end customer-facing Websites	46% (1)	41% (2)	42% (1)
Specific single-function systems	37% (2)	34% (4)	34% (2)
Enterprise applications such as ERP	36% (3)	40% (3)	31% (4)
Departmental applications	34% (4)	48% (1)	42% (1)
In testing environments	26% (5)	28% (5)	33% (3)

Join the IOUG - If you're not already an IOUG member and would like to continue receiving key information like this, visit the IOUG at http://w3.ioug.org/join/today for information on how to join this dynamic user community for Oracle technology and database professionals.