INFORMATION TECHNOLOGY
INTELLIGENCE CONSULTING

ITIC 2013 - 2014 Database Reliability & Deployment Trends Survey

October/November 2013

Executive Summary

High reliability and system availability are absolutely crucial for database and the underlying server hardware. A 67% majority of organizations now require that their databases deliver a minimum of four, five or six "nines" of uptime for their most mission critical applications. That is the equivalent of 52 seconds to 52 minutes of unplanned downtime per database/per annum.

Those are the results of ITIC's 2013 - 2014 Database Reliability and Deployment Trends Survey, an independent Web-based survey which polled 600 organizations worldwide from August through October 2013. IBM DB2 and Informix databases, followed closely by Microsoft SQL Server, achieved the highest overall reliability and customer satisfaction ratings for product performance, security, technical service and support and the value of its pricing and licensing agreements. Oracle DB scored high for reliability and performance but lagged far behind IBM and Microsoft in customer satisfaction with pricing, licensing and technical support.

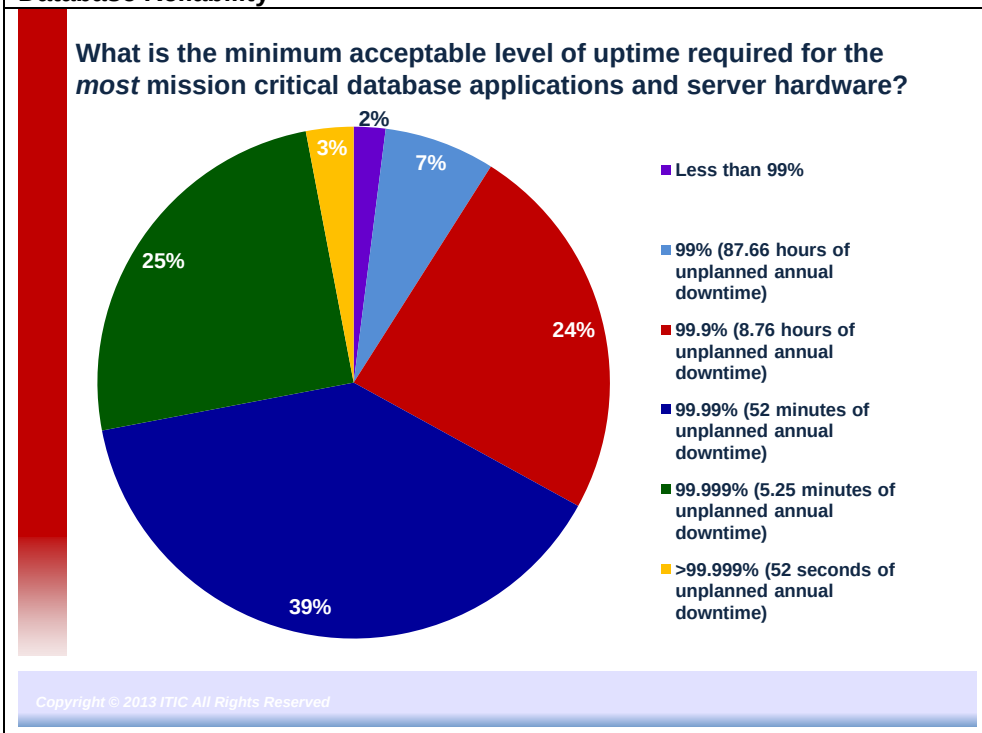
Among the survey highlights:

- **IBM DB2 and Informix DB users:** Eight out of 10 or 86% of IBM DB2 customers chose the platform for its reliability, followed by 76% of DB2 customers and 73% of Informix users who selected it on the basis of its high performance. Over three-quarters of survey respondents said they purchased the DB2 and Informix databases because of the strength and stability of the IBM brand and its recognized position as database market leader. The results were similar for IBM's Informix DB with 80% opting for the platform based on reliability.
- **Microsoft SQL Server DB users:** Just over three-quarters or 76% of SQL Server users said they opted for the DB because of its reliability, followed by 61% who chose it for price while 69% selected it for performance and 52% chose the database because Microsoft is a market leader.
- **Customer Satisfaction:** Eight out of 10 survey participants (80%) rated their satisfaction with IBM's service and support of both DB2 and Informix as "excellent" or "very good." None of the respondents gave IBM service and support a "poor" or "unsatisfactory" rating. Microsoft SQL Server 2008, 2008R2 and SQL Server 2012 also scored high vendor approval ratings with 75% giving Microsoft "excellent" or "very good" marks for serviceability. Oracle received the lowest serviceability scores with just 35% of participants giving the Oracle DB an "excellent" or "very good" rating; although 46% of respondents rated Oracle technical service and support as "good." Oracle MySQL fared even worse: only 30% -- or one in three customers polled gave it an "excellent" or "very good" rating.

- **Overall DB Performance:** A 56% majority of survey participants indicated the reliability of their databases and their server hardware declined when they significantly increased the workloads; however only 12% of IBM DB2 users who participated in the survey said they saw a decline in reliability due to higher workloads. By contrast 42% of Oracle customers experienced a drop in reliability
- **Oracle DB users:** Just over half --- 56% of survey respondents said they selected the Oracle DB platform for its reliability; 50% purchased Oracle because it is a market leader in the database industry while 71% said they opted for Oracle because of its performance and 51% indicated their firm's strong relationship with Oracle influenced their purchasing decision.

The survey results indicate the inherent reliability of the major database platforms continues to improve as technology advances. A 58% majority of organizations are satisfied with the overall performance of their databases. However, there is growing concern among IT departments that the database vendors must also deliver a high degree of manageability, security, ease of use and deployment and provisioning capabilities as workloads increase. Organizations are also holding their vendors accountable for executing against their product roadmaps; delivering top technical support to assist with complex virtualization and cloud deployments and providing value.

Exhibit 1. **Over Two-Thirds of Businesses Now Require 99.99% and 99.999% Database Reliability**



Source: ITIC October/November 2013

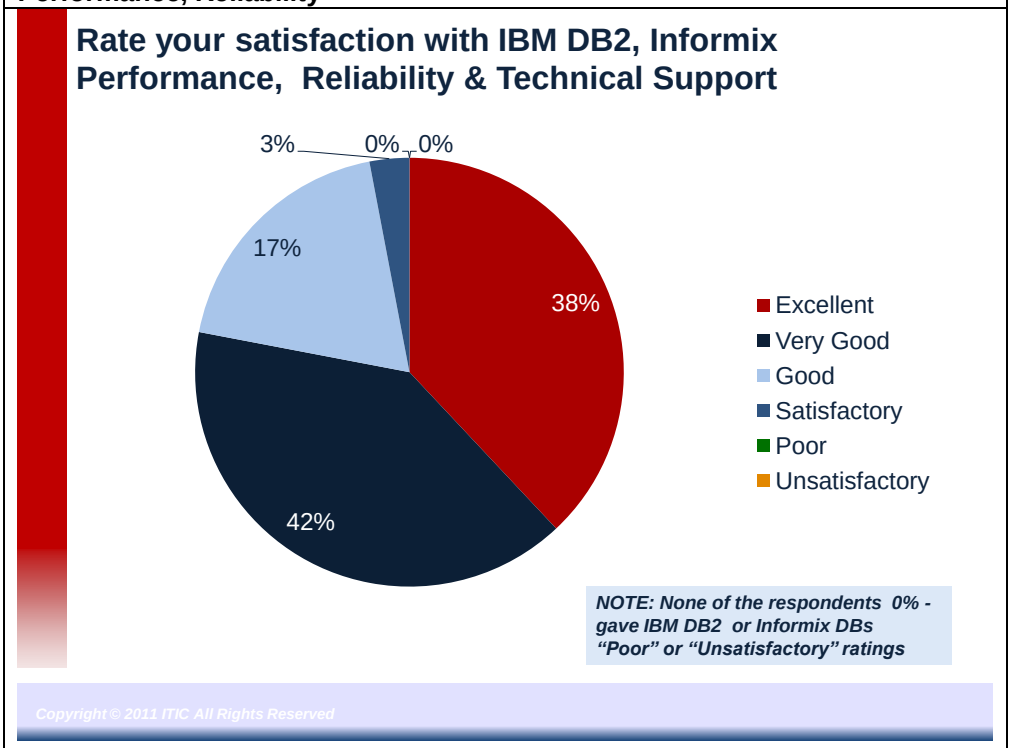
Introduction

Databases are an organization's online electronic filing system. They house all of the business' crucial data. The information contained in the database directly influences and impacts every aspect of the organization's daily operations, including relationships with customers, business partners, suppliers and its own internal knowledge workers/employees. Corporate users and database managers must have the ability to quickly, efficiently and securely locate access and manipulate data irrespective of where the data or the user resides. Any disruption of database availability will have an immediate and deleterious ripple effect throughout the organization.

Data Analysis

To reiterate, the ITIC 2013-2014 Database Reliability and Deployment Trends Survey Report results indicate that the ***inherent*** reliability of the major database platforms remains strong and continues to improve as the technology advances. IBM's DB2 and Informix databases recorded the highest scores among customers for performance, reliability and technical support with Microsoft's SQL Server 2012 notching the biggest improvement gains, particularly with respect to security. The ITIC 2013 – 2014 Database Reliability and Deployment Trends Survey Results indicate a 58% majority of organizations were satisfied with the overall performance of their databases. However, there is growing concern among IT departments that their databases deliver a high degree of manageability, ease of use and deployment and provisioning capabilities as database workloads become increasingly larger and more data intensive in virtualized and cloud environments. IBM's DB2 and Informix databases and Microsoft's SQL Server customers were the most satisfied in this regard. An overwhelming 97% of Big Blue survey respondents gave DB2 and Informix' s reliability "excellent," "very good" or "good" ratings **(See Exhibit 2)**. By comparison 94% of Microsoft SQL Server users rated its uptime/reliability as "excellent," "very good" or "good." And 89% of Oracle DB survey respondents gave those platform "excellent or very good" reliability ratings.

Exhibit 2 **Enterprises Give IBM DB2, Informix Databases High Marks for Performance, Reliability**



Source: ITIC October/November 2013

The ITIC Database survey queried customers on a wide range of technology topics to determine the issues that positively or negatively impact the reliability and availability of corporate databases and impact daily. These issues include:

- Inherent database reliability, high availability
- Impact of increased workloads on reliability
- Satisfaction with their vendors' technical service and support and product warranties
- Specific situations that negatively impacted database reliability
- Manageability and ease of use
- Security
- Mission critical confidence of the database to support data intensive workloads
- Load performance/reliability of databases

The survey also polled businesses on a variety of business issues that influence their purchasing decisions including:

- Customer satisfaction with vendor technical service and support
- Pricing

- The value derived from licensing and maintenance contracts
- The ability of the database to meet Service Level Agreements (SLAs)

The survey findings emphasized that organizations irrespective of size or vertical market, believe that many issues such as vendor responsiveness in terms of technical service and support, security patches and fixes, ease-of-deployment, embedded product features (e.g. virtualization and cloud) and embedded management capabilities all play a pivotal role in reliability and their ability to quickly perform remediation activities.

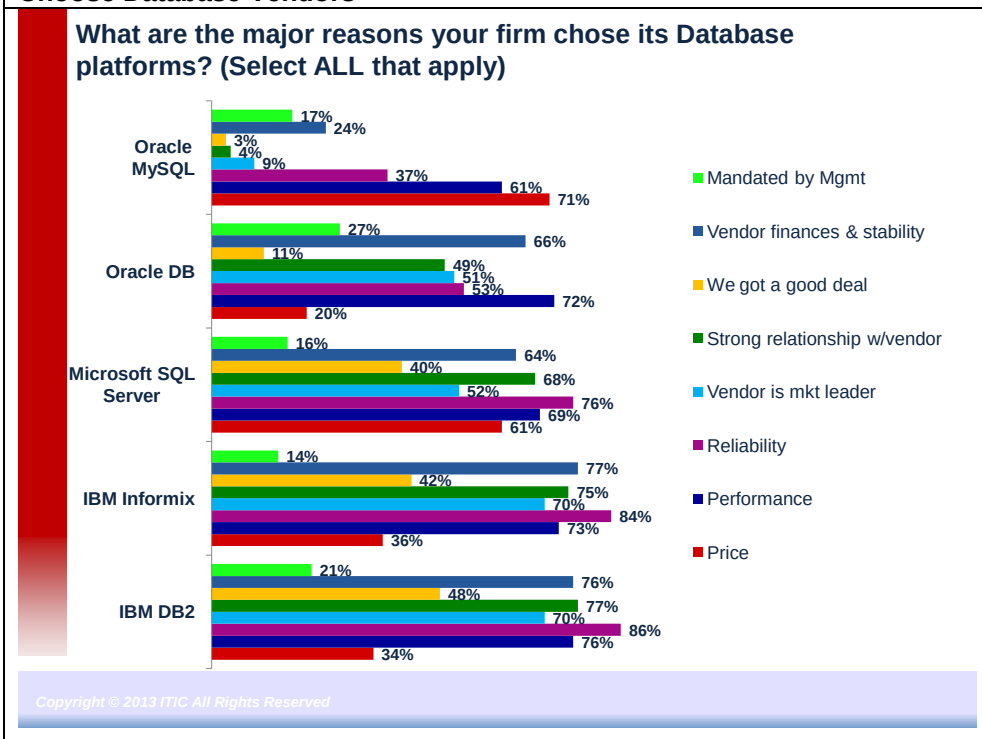
Among the other survey highlights:

- **Reliability, Performance, Vendor Finances and Stability are Top Influencers in Choosing a Database.** The survey responses clearly showed that pragmatic concerns like reliability, performance and the stability and finances of their respective vendors were key drivers in their Database choices **(See Exhibit 3).**
- **Database Size Increases.** Four out of 10 businesses – 40% - now keep 1 to 5 Terabytes of data in their Databases compared with 26% who store less than 1TB of data. Another 10% keep 6 to 10TBs of data; 7% store 11 to 50TBs of data; 11% store 51 to 100TBs and 6% keep over 100TBs of data. Not surprisingly, these numbers will continue to increase.
- **Issues Impacting DB Availability.** Some 39% of survey respondents said DB integration and interoperability issues have the most impact on DB reliability, second only to the 56% that cited "increasing DB workloads" reduced database availability/uptime. Another 32% of participants cited mixed workloads as a cause of reduced database reliability. Only six percent of participants said that increasing the number of DB users lowered DB uptime and just 19% of respondents indicated that an increase in the number of concurrent users had a negative impact on DB availability.
- **Performance Improvements:** An overwhelming 84% of IBM DB2 survey participants indicated the performance improved "significantly" or "somewhat" in the past 12 to 24 months; while 82% of IBM Informix DB said that platform showed significant gains. Some 89% of Microsoft SQL Server customers indicated that its performance improved "significantly" or "somewhat." By contrast, 54% of Oracle DB respondents indicated that' platform's performance improved "significantly" or "somewhat" during the same time period. At the same time, Oracle customers expressed confusion over the company's product roadmap, packaging and pricing plans. And some were disappointed that Oracle 12c, the company's newest multitenant cloud DB did not ship until summer 2013.
- **Majority of Users Stick with Same DB Vendor.** A 79% majority of businesses said they have not done a total database replacement in the last three years compared with only 17% of survey respondents who said they had switched DB vendors and platforms during that same three-year timeframe. Among the 17% minority who did switch; 36% said they opted to do so based on dissatisfaction with their former vendor's product

features and support, followed by 27% who were dissatisfied with the terms of their licensing agreements.

- **IBM DB2 and SQL Server Gain from Oracle Defections**. Among the 17% minority of participants that switched platforms, the greatest majority defected from Oracle to IBM DB2 with 34% followed closely by the 31% that migrated from Oracle DB to SQL Server. Only 3% of the 17% of those swapping DBs went from IBM DB2 to Oracle DB while only 6% left SQL Server for Oracle DB.
- **One-third of companies will consider new DB platforms.** Nearly one-third of companies said they would consider opting for a rival DB platform when they add new databases to their existing environments compared to 44% that responded "No," 19% who said they were "Undecided" and six percent who said they were "Unsure."
- **Manageability:** Some 87% of IBM DB2 users and 86% of IBM Informix customers gave the database high marks for manageability, including ease of use, deployment and provisioning and the ability to perform tasks with a single click. Some 81% of SQL Server database users gave the Microsoft database similarly high manageability approval ratings. Only about half as many Oracle DB users – 46% -- gave the platform high marks for manageability compared with 62% of Oracle MySQL users.

Exhibit 3. **Reliability, Performance, Vendor Brand are Top Reasons Users Choose Database Vendors**



Source: ITIC October/November 2013

User DB Reliability Concerns Exacerbated by New Technologies, Increased Workloads, Complexity

Corporate concerns regarding database reliability/availability are amplified by a number of factors. These include:

- The demand for a minimum of 99.99% uptime
- Increased DB workloads
- The transition to more complex virtualized and cloud-based environments.

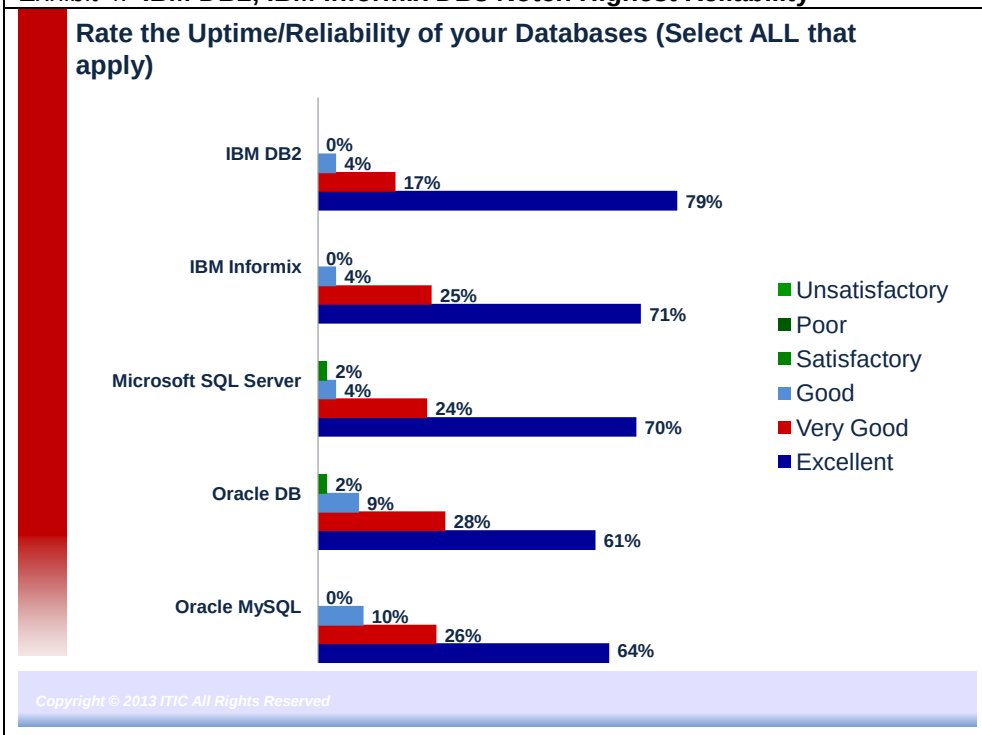
Database administrators are among the most specialized and skilled managers in IT. However even they are hard pressed to keep pace with the ever increasing daily demands of their job and stay abreast of the rapid changes in virtualization and cloud technology. When properly configured, deployed and managed virtual and cloud deployments can deliver greater economies of scale that enable organizations to consolidate hardware resources. However, improper configurations and difficulties in managing these environments can have the opposite effect leading to higher costs and greater inefficiencies. DB managers like their peers in IT must rely on documentation and expert technical support from their respective vendors to assist them with new product rollouts, upgrades and routine configuration and management changes.

Once again, IBM's DB2 and Microsoft's SQL Server customers were the most satisfied in this regard; with 96% of Big Blue survey respondents rating DB2's reliability "excellent" or "very good" **(See Exhibit 4).** By comparison 94% of Microsoft SQL Server users rated its uptime/reliability as "excellent" or "very good" and 89% of Oracle DB survey respondents gave that platform "excellent" or "very good" reliability ratings.

The anecdotal evidence obtained from the essay comments and first person customer interviews underscored the importance that customers attached to the confidence they have that their respective vendors will execute and deliver against their announced product roadmaps and also work with them as partners. The overwhelming majority of customers gave IBM and Microsoft high grades in both these categories. Over and over again, users praised the stability of the IBM organization and the savoir-faire and willingness of IBM' DB2 and Informix technical service and support organizations to work with them to quickly resolve any issues that arose. Microsoft SQL Server customers were equally effusive regarding the merits of the Redmond, Washington software maker's platform, particularly with respect to the enormous strides the company has made in the past decade with respect to security and integration between SQL Server and the Azure cloud environment.

For their part the Oracle DB and MySQL customers expressed satisfaction with the reliability and product capabilities of those database platforms. They took umbrage however with Oracle's somewhat nebulous product roadmaps and inflexible licensing and pricing policies.

Exhibit 4. **IBM DB2, IBM Informix DBs Notch Highest Reliability**



Source: ITIC October/November 2013

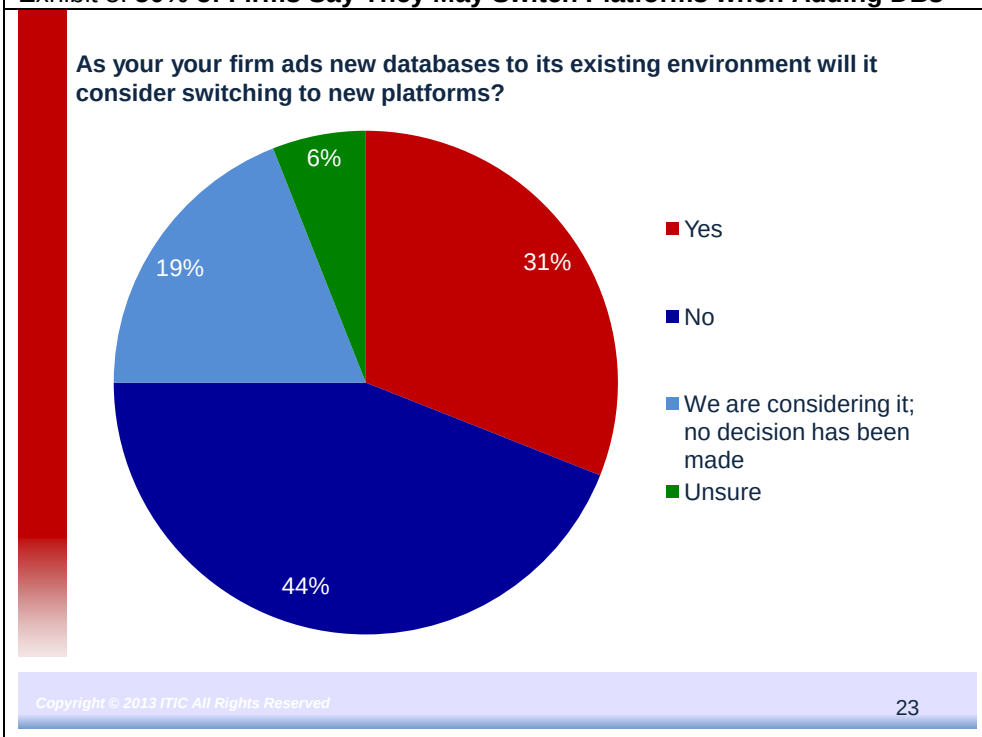
Companies May Switch when Adding New DBs

The survey data indicates the overwhelming majority of organizations will remain with their chosen database platform provider, ***unless*** they have a compelling reason to change loyalties. Nearly three-quarters — 79% — of survey respondents indicated that they have not migrated or switched any of their major line of business (LOB) applications from one database platform to another during the last three years. This is understandable: Any upgrade or migration entails a great deal of time, effort and capital investment, as well as testing and training. Even under the most ideal circumstances, a major server based application migration or installation, like a new database platform, is almost always disruptive to daily IT operations. This is particularly true for large enterprises with over one thousand end users, for whom a switch means dedicating even more money, resources and time to test, de-bug and deploy a new database.

The sheer enormity of a major server-based application upgrade explains why only 17% of ITIC survey respondents said their organizations migrated DB platforms during the past three years.

However, 50% of survey participants indicated they would be willing to switch to a rival database platform when adding a new database to their existing environment versus 44% who answered "No." **(See Exhibit 5)**.

Exhibit 5. **50% of Firms Say They May Switch Platforms when Adding DBs**



Source: ITIC October/November 2013

So what would cause an organization to switch databases? The top five reasons selected by respondents are:

- Upgrade of an existing application
- The need to improve performance
- The addition of a new application
- The need to improve security
- The need to improve integration with an existing application

When organizations do elect to change databases, IBM DB2 and Microsoft SQL Server are the top choices among the 17% of respondents whose organizations switched platforms during the past three years. The survey also polled organizations worldwide on their database concerns.

Interoperability, cost and performance topped the list of challenges end users face with respect to their current and planned database and server strategies.

Similarly, a majority of survey respondents also replied negatively to the question, "What is the likelihood that your organization will switch its applications from one DB to another?" More than half — 56% — said it was "Very Unlikely" and that they would only switch because of an unforeseen circumstance, while another 17% said it "was not an option" and under no circumstances would they abandon their current DB platform and applications. Another 17% said it was a possibility depending on the circumstances, while a 5% minority answered their organizations would "likely switch if there was a compelling business reason" and small 5% minority was "Unsure."

Tellingly, the survey data indicates that only a small minority of organizations make the decision to switch DB platforms and/or vendors based on the personal preference of an individual executive, database administrator or because of a management change or merger/acquisition. This indicates that organizations recognize the need to install the DB platform that most closely aligns with the present and future needs of the business.

Vendors cannot take customer loyalty for granted. This is particularly true in "green field" situations. Most organizations are loathe to initiate a wholesale DB "rip out and replace" because of the sheer effort, energy, complexity, time and expense involved. However no such reticence exists when it comes to installing a new database in a remote office or branch location if the competing vendor can provide the proper inducements: competitive pricing; guaranteed interoperability/integration with the legacy infrastructure; technical service and support and other appropriate terms.

Conclusions and Recommendations

Databases are among the most crucial corporate applications. It is absolutely essential that the corporate database delivers the highest degree of reliability/availability and uptime. Downtime of even a few minutes duration can cost the company hundreds of thousands or even millions per minute depending upon the timing, the application and nature of the business. It can also damage the company's reputation, result in lost business and raise the risk of litigation.

In summary the ITIC 2013-2014 Database Reliability and Deployment Trends Survey findings indicates that all of the database platforms have achieved a high degree of reliability. However, the IBM DB2, IBM Informix and Microsoft SQL Server databases achieved the best all-around scores for reliability and customer satisfaction for technical support, product features, ability to deliver and execute against published product roadmaps and the value offered with pricing and licensing packages.

The advances in database technology suggested by the ITIC 2013-2014 Database Reliability and Deployment Trends Survey Report Survey results are encouraging. Now companies must tackle other equally important and challenging issues to ensure the highest levels of reliability.

Vendors bear the responsibility to deliver reliable products and top notch technical service and support. Corporations are responsible for keeping their IT departments well staffed and providing the necessary training and certification to their database administrators. Achieving optimum uptime means upgrading the databases and refreshing/retrofitting the associated server hardware as needed in order to support more data intensive workloads and physical, virtual and cloud environments. Close attention must be paid to system integration and interoperability, patch management and documentation. Business performance will almost certainly suffer if server configurations are inadequate for current database workloads and requirements.

The ITIC survey results show that even the most inherently reliable databases and server hardware platforms can be undone by human error or lack of adequate manpower in the IT department. Companies should monitor their service level agreements (SLAs) to ensure that their databases meet the desired reliability levels. If they do not, corporations should ascertain the cause and make the necessary adjustments.

The vendors' ability to deliver top notch technical service and support – including a quick response with updates, fixes and patches to known flaws and security vulnerabilities – will also figure prominently in reliability. Technical service and support – good and bad – also distinguishes and differentiates vendors from their competitors. How promptly, efficiently and courteously a vendor responds to its customers definitely plays a role when it comes time to upgrade and purchase new databases and renew service contracts.

Database Vendors

IBM

IBM's position appears to be the most unassailable. Its' DB2 and Informix' platforms are well entrenched among enterprises in the banking, finance, government, insurance and healthcare verticals. IBM has it all: hardware, software, database, virtualization, cloud and a technical service and support organization that is second to none. IBM DB2 customers are among the most satisfied in the industry. Additionally, IBM also fields the Informix Dynamic Server (IDS) 11.5 that runs on commodity x86 based hardware. IDS comes in four editions and appeals to price sensitive SMB shops that want a well known brand that has all the necessary tools, service and support for application development, data warehousing and storage. The breadth and depth of IBM's experience, technology and service and support are hard to beat. IBM also boasts the best stability of any of the major database vendors and it rarely makes a management misstep.

Microsoft

Microsoft's SQL Server 2012 and 2014 are the "up and comers" in this field, coming off the pace and looming as a strong contenders to Oracle. SQL Server has been well established for years among SMBs and SMEs, who appreciate the integration and interoperability with other Microsoft applications and software. Additionally, Microsoft has done an exemplary job of shoring up security and making SQL Server "secure by design, secure by default and secure in operation." Microsoft has also incorporated many virtualization and cloud capabilities into the

SQL Server platform, most notably the links to Microsoft and SQL Azure. The improvements in SQL Server have many SME and even large enterprises installing and adopting the platform. Microsoft's more flexible licensing terms and Software Assurance maintenance program are also pluses that work in SQL Server's favor. Microsoft's broad reseller network also aggressively and effectively promoted SQL Server and according to the survey responses user satisfaction with Microsoft and SQL is very high. Two-thirds – 66% of participants rated Microsoft product performance and support Excellent or Very Good and an 81% majority of Windows shops say that SQL Server is their preferred DB platform.

Oracle

Oracle's 11g is also well respected and entrenched. The big question marks surround Oracle's comparatively new Oracle 12c cloud-based DB offering as well as how users respond to its pricing/licensing and technical service and support. Oracle consistently got the lowest customer satisfaction marks across the board. Oracle also elicited the most vociferous comments from outraged users regarding heavy handed tactics that ranged from threats of audits to even lawsuits when customers complained of high pricing or attempted to renegotiate for better licensing terms. Oracle is hardly the only vendor who has dissatisfied customers. But it is certainly the company that appears to have the largest and most vocal base of unhappy users. Both IBM and Microsoft are well aware of this and are actively targeting Oracle customers with positive results. Neither IBM nor Microsoft executives will confirm exact figures on how many Oracle customers they have lured away, but they do acknowledge they are making positive inroads.

Cost and complexity will be two major trends that will impact database deployment trends actor throughout 2014 and for the foreseeable future. Corporate customers continue to be price sensitive regarding total cost of acquisition, total cost of ownership and return on investment of databases. Licensing renewals and maintenance programs are expensive. Database vendors that do not offer seamless integration/interoperability amongst their hardware platforms, DBs and applications and those that fail to deliver top notch technical service, support and security may find their customers deferring upgrades, opting for rival offerings for a new upgrade or switching altogether when their current products reach end of lifecycle.

Methodology

The ITIC 2013-2014 Database Reliability and Deployment Trends Survey Report is based on a Web survey that polled 600 organizations in during October and November 2013 on the leading database business and technology issues and challenges facing their firms over the next 12 to 18 months. The survey consisted of multiple choice questions and one essay response question. ITIC supplemented the Web survey with two dozen first person customer interviews. To deliver the most unbiased, accurate information, ITIC did not accept any vendor sponsorship money for the online poll or the subsequent first-person interviews.

The survey participants came from 23 countries worldwide; approximately 80% of the respondents hailed from North America.

Respondents were culled from 46 vertical market segments and all sizes of companies were represented. Some 31% of the participants were from SMB firms with fewer than 200 employees; 35% came from midsize and smaller enterprises with 201 to 500 end users and 34% of survey participants were from large enterprises with 500 to over 10,000 workers. Some 80% of respondents hailed from North America compared with 20% of international respondents.