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Compliance and Data Security: Still A Work in Progress

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Data collection and analysis performed with Vovici Enterprise Management Feedback.

SUMMARY AND BACKGROUND

It's now been several years since the most significant compliance mandates swept through businesses, up-ending long baked-in routines and causing untold numbers of sleepless nights. The 800-pound gorilla of mandates, Sarbanes-Oxley, has marked its fifth year of existence, and it's been eight years since the Financial Modernization Act (Gramm-Leach-Bliley) arrived. It's been more than 11 years since the Health Insurance Portability and Accountability Act (HIPAA) was passed and put into action. Most organizations and the auditors charged with policing these mandates have had some time and experience, then, to develop or recognize best practices in data management, security, and accountability. However, there is still much work to be done. Many organizations still have significant room for improvement in the data security and compliance practices they have implemented to date.

To examine the challenges of compliance and security, Unisphere Research conducted a survey for the Professional Association for SQL Server (PASS), the leading association of SQL Server technology and database professionals, to gauge the state of organizations' compliance and security efforts to date. The survey was conducted in May 2007, in cooperation with Idera.

The survey was announced via an email notification to the PASS membership list, which directed participants to a Web-based survey instrument. A total of 234 responses were collected by the survey deadline.

Respondents came from a variety of organizations and represented a wide range of job titles. Company sizes were diverse, with close to 34 percent of the survey group coming from organizations with more than 5,000 employees. Another 35 percent came from small businesses or organizations with 500 or fewer employees. (For details, see Figures 26 through 30 in the Appendix at the end of this report.)

This diversity in sizes was also reflected in the company revenue sizes of respondents, in which close to a third, 30 percent, came from organizations with $1 billion or more in annual revenues. A majority of respondents were based in North America (83%), followed by 15 percent in Europe.

The survey also reflected SQL Server's strength in the software development, financial services, and government or education services markets. Database administrators made up the largest segment of the group (50%), while the remainder held an assortment of titles or roles, including IT directors, architects, and developers.

Among its many findings, the survey tracked the following trends:

- Many organizations still have significant room to improve database security and compliance practices. For example, most cannot ensure an immutable source of audit data, and many others do not have processes in place to report or alert on compliance violations.

- For most organizations, data required to meet compliance standards is locked up inside of core enterprise financial, ERP and HR systems. Ensuring the integrity of this data for auditing - as well as lining up organizational support and funding - are the greatest challenges cited by respondents.

- Most data managers are relying on home-grown or cobbled-together solutions to manage compliance.

- Compliance is generating more data, which requires more software, hardware, and human resources. Most companies will be diverting more resources to aid in compliance management. However, it is likely that data managers will have to redirect funds originally earmarked for other IT projects to satisfy compliance needs.

- Many organizations see improved data security, better relationships between departments and greater automation as important byproducts of their compliance investments.

To meet the challenge of addressing compliance mandates, many IT executives and managers are taking a hard look at their infrastructure, and putting processes in place to better align systems with business requirements. For many, this is a long-term effort to transform IT operations, delivered in incremental stages as compliance demands. But the benefits of such initiatives - more data security, greater alignment with the business, and more process automation - are being seen by companies that take more far-reaching approaches to compliance management.

As one respondent put it, “We have designed a roadmap document which gives elaborate process mechanisms for improvement of data management practices.”

COMPLIANCE CHALLENGES

For most organizations, data required to meet compliance standards is locked up inside of core enterprise financial, ERP and HR systems. Ensuring the integrity of this data for auditing - as well as lining up organizational support and funding - are the greatest challenges cited by respondents.

A majority of respondents to the survey, 56 percent, said their department plays some kind of direct role in compliance management. About a third, 32 percent, considered this to be an “active role,” consisting of engaging with auditors and planning workflows. Another 24 percent said their department’s role is mainly “passive or peripheral,” such as supplying requested reports.

This role is far more pronounced among respondents with larger organizations. Only nine percent of those in the smallest companies (100 or fewer employees) reported that their departments are actively engaged with compliance management. This percentage jumps to 44 percent of respondents with organizations of 500 or more employees, and stays constant all the way up to the largest organizations (10,000 or more employees).

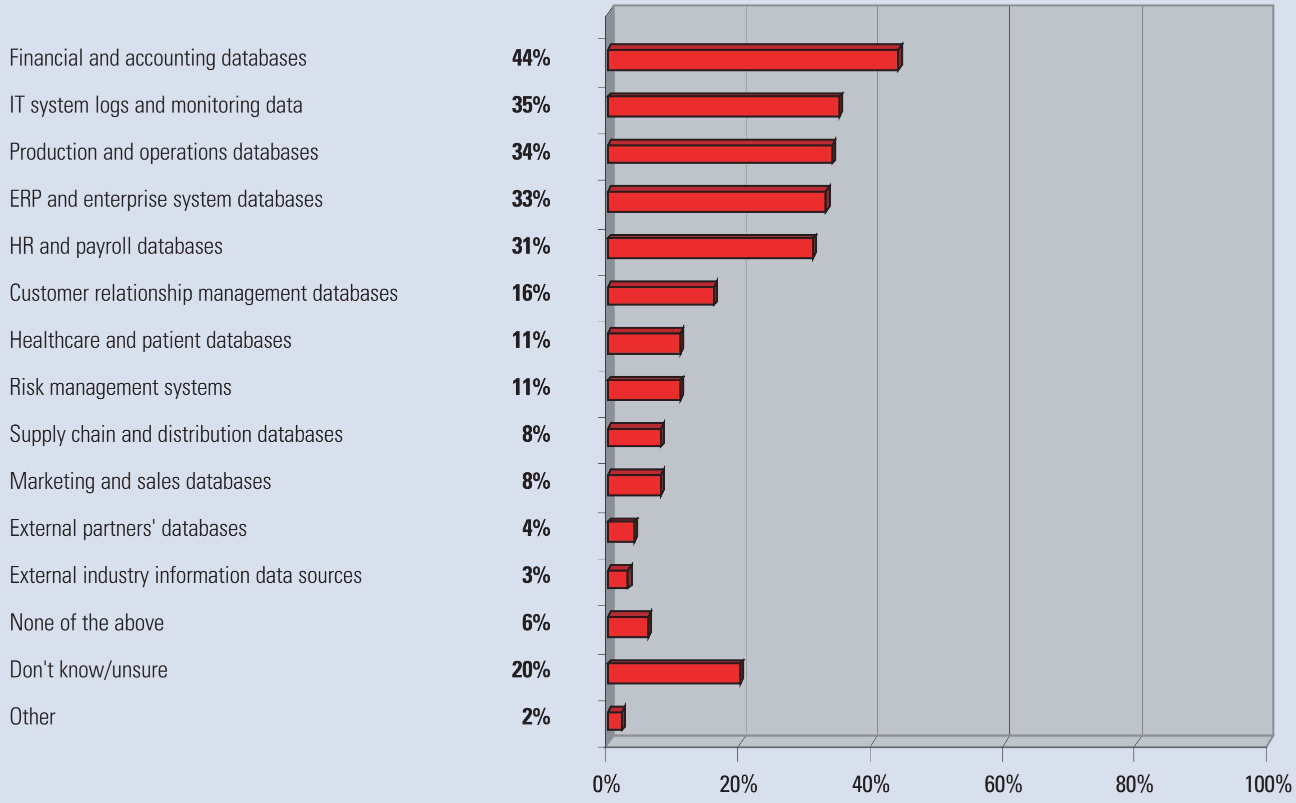
By industry group, most of the involvement in compliance efforts is seen from respondents in the financial services and healthcare sectors. In both cases, 57 percent of respondents from these sectors reported that their departments are “actively engaged” with the compliance management processes of their organizations.

Compliance auditing is a regular part of doing business for up to two out of three respondents. About a quarter, 24 percent, said their company conducts compliance audits on a frequent basis to meet various mandates. About seven percent said these audits occur monthly or even more than once a month, while another 17 percent reported having audits on a quarterly basis. Another 41 percent said they face compliance audits of six months to a year.

Compliance auditing frequency is most intensely seen within the financial services organizations participating in this survey. More than a third of respondents from this sector (35%) said that their organizations are subject to audits on a monthly basis, or even more frequently. Along with financial services, up to a third of retail and services organizations reported that they experience compliance audits at least on a quarterly basis.

There are five main sources for compliance data. The most prevalent is financial and accounting databases, cited by 44 percent of respondents. IT system logs and monitoring data, production and operations databases, and ERP and enterprise system databases follow at 35 percent, 34 percent, and 33 percent, respectively. HR and payroll databases were tapped for compliance data by 31 percent of the survey group. (See Figure 1.)

FIGURE 1: Primary Sources of Compliance Data



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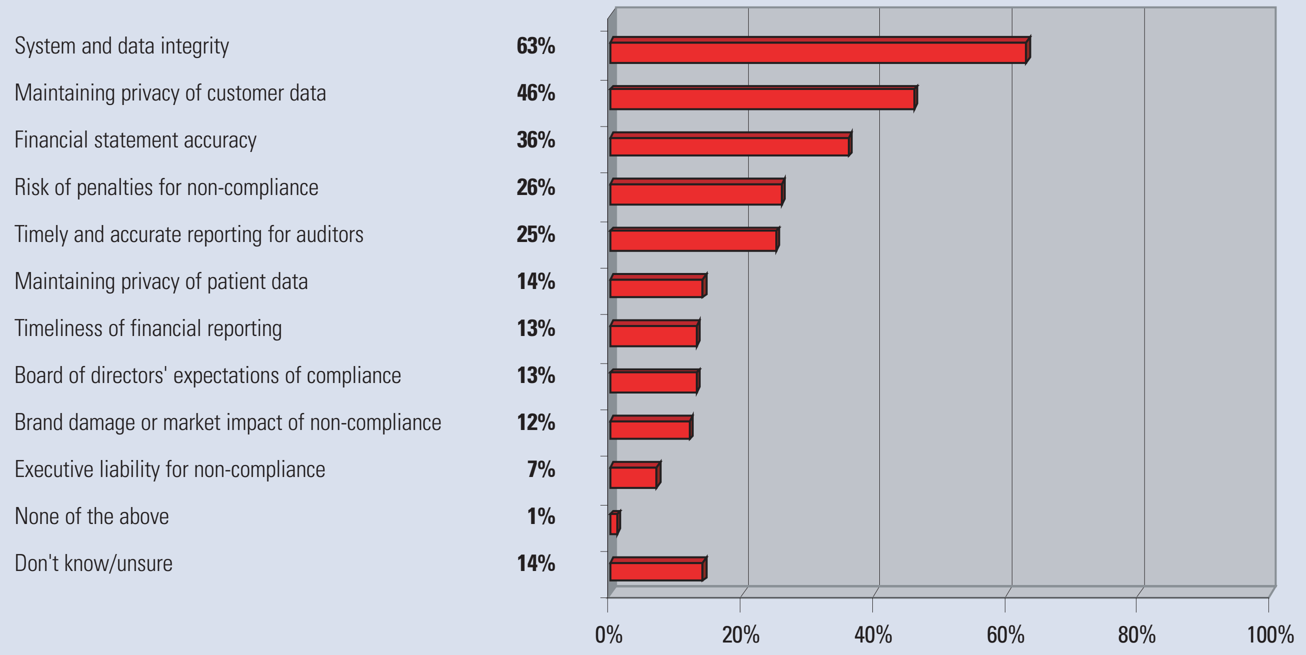
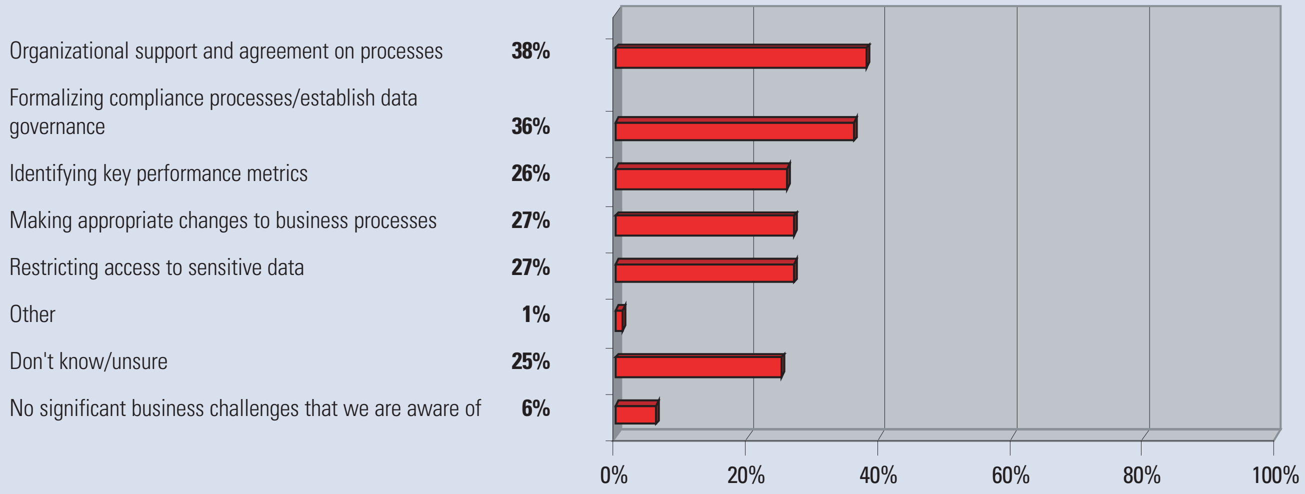
What is driving compliance efforts at the companies that participated in this survey? Topping the list, as cited by almost two out of three respondents, is system and data integrity. (See Figure 2.) Often, data managers need to identify and extract data from new - and perhaps unfamiliar - sources in other parts of their enterprises. As shown later in this report, respondents reported that compliance data is being leveraged from a range of functions, from supply chains to marketing systems. Such efforts also need to be in line with the demands of the law or regulation being met.

FIGURE 2: Areas of Concern in Compliance Management



Close to seven out of 10 respondents, 69 percent, reported challenges in garnering support and managing compliance initiatives. The ability to leverage organizational support and agreement on processes for compliance management initiatives represents the greatest challenge, cited by 38 percent of respondents. Another 36 percent said data governance and process management represents the most significant challenge. More than a quarter of respondents are concerned with establishing key performance metrics that can be used to measure the success of compliance management programs. (See Figure 3.)

FIGURE 3: Business Challenges to Addressing Compliance Mandates



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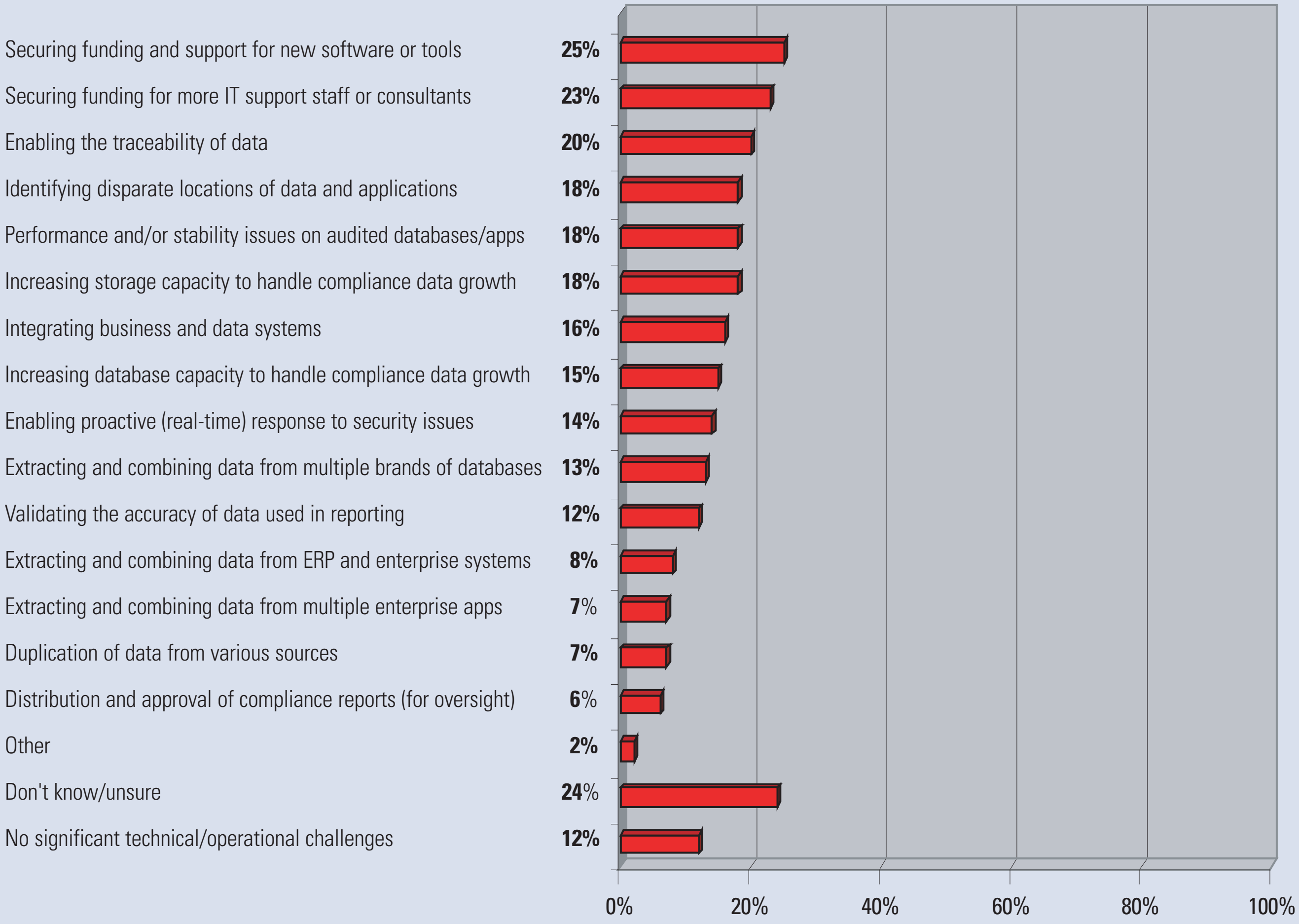
Another 64 percent of the respondents cited technical or operational issues with their compliance management efforts. The most pronounced technical or operational challenge to managing compliance efforts, cited by a quarter of respondents (25%), is securing funding for new software or tools to support the effort. Another 23 percent reported challenges in gaining financial support for more staffing or consulting time. As shown later in this survey report, while spending for compliance efforts is up, there has been little additional support from organizations. Another 20 percent cited issues with enabling the traceability of data. As this data exists across numerous databases, within incompatible legacy systems, and within multiple silos, tracing this data is a challenge. (See Figure 4.)

FIGURE 4: Technical or Operational Challenges to Addressing Compliance Mandates



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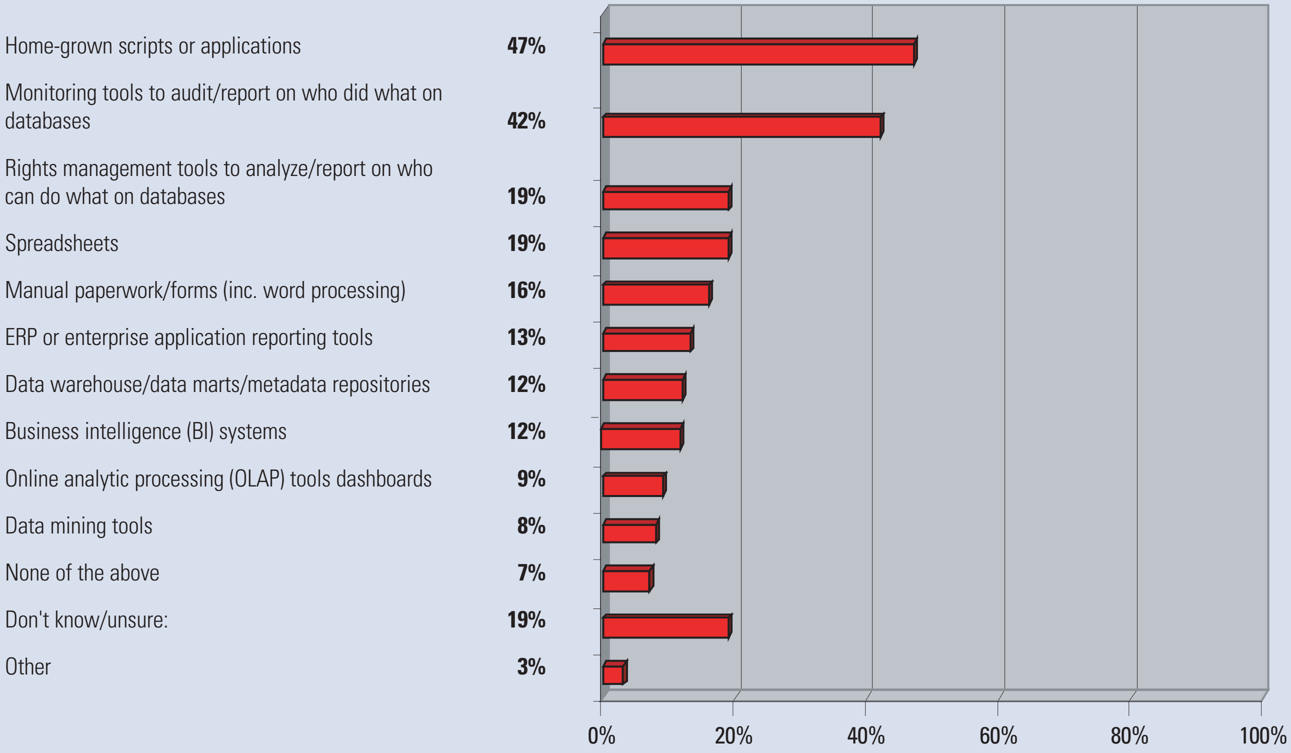
TOOLS AND TECHNOLOGIES

Most data managers are relying on home-grown or cobbled-together solutions to manage compliance.

The survey found that close to half of the respondents rely on cobbled-together solutions, for the most part, to manage their compliance efforts. A total of 47 percent of respondents reported they rely on home-grown applications or scripts to extract or manage data for compliance. Monitoring tools also ranked high in the survey. About 42 percent of respondents reported they rely on monitoring tools to audit and report on who did what on their databases. At the low end of the scale, few companies rely on traditional business intelligence or analytical tools to assist them in their efforts. (See Figure 5.)

FIGURE 5: Tools or Technologies Employed for Compliance



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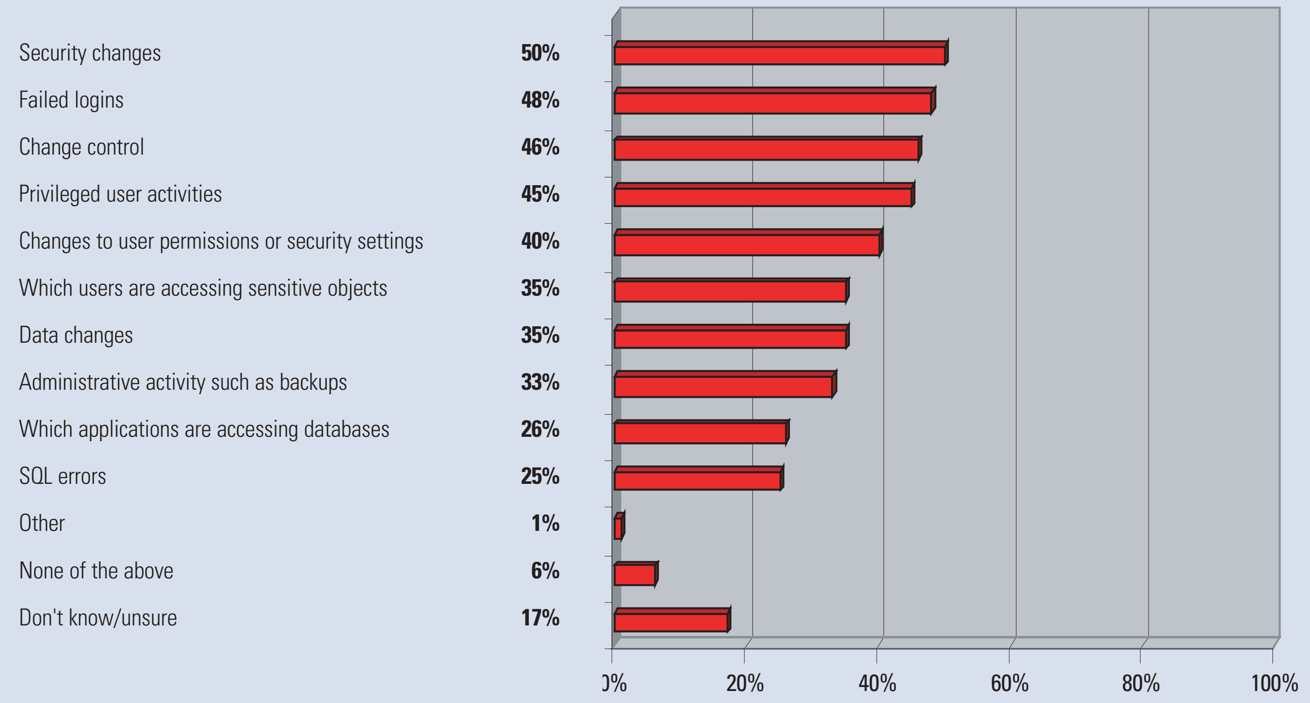
What kind of data is gathered for compliance audits? Security changes rank at the top, cited by 50 percent of the respondents. The top categories of data that follow include failed logins (48%), change control (46%), and data on privileged user activities (45%). Fewer companies are focused on tracking administrative activity such as backups, applications are accessing databases, or SQL errors. (See Figure 6.)

FIGURE 6: Information is Collected and Analyzed for Compliance Audits



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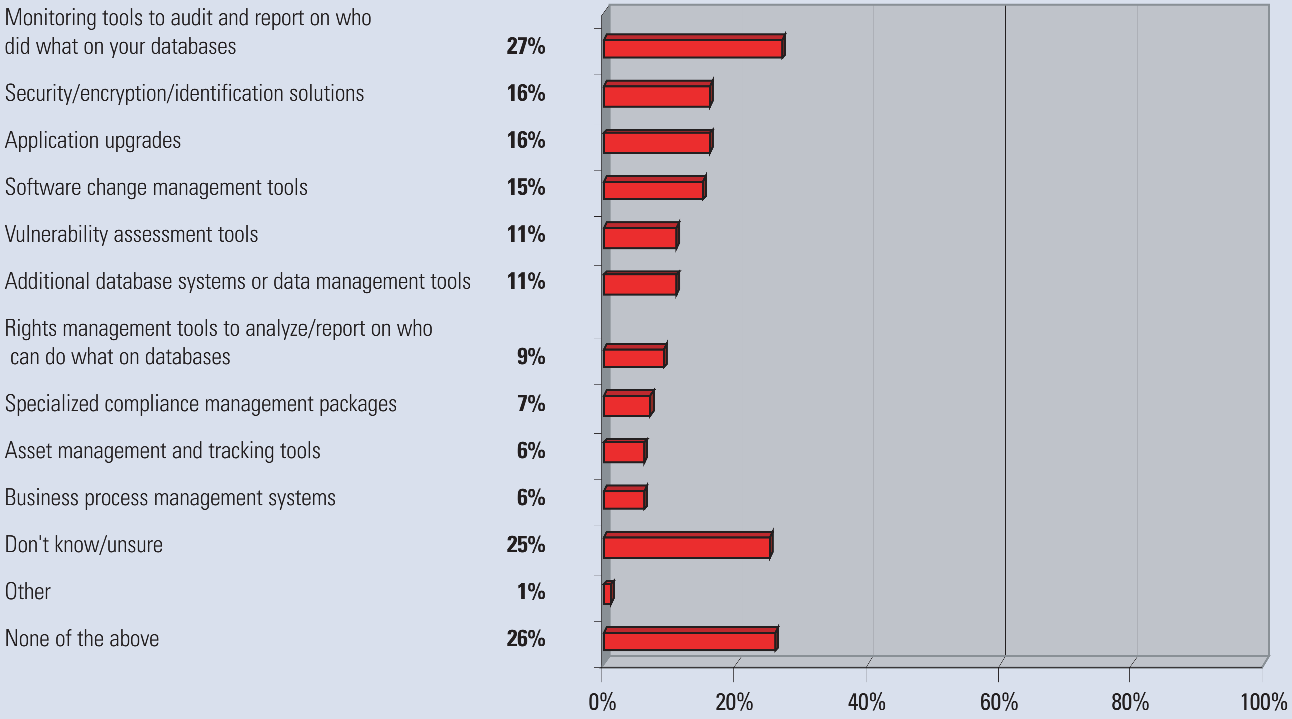
At least 49 percent of the companies participating in this survey reported they intend to make additional software purchases to round out their compliance management efforts. Leading the list of intended purchases are monitoring tools to audit and report on who did what on databases, cited by 27 percent, followed by 16 percent planning to add security/encryption/identification solutions, or make application upgrades. An additional 15 percent indicated they will be looking into software change management tools over the coming year. (See Figure 7.)

FIGURE 7: Additional Software Purchases Required to Meet Compliance Efforts



Interestingly, few intend to purchase specialized compliance management packages to address their compliance management requirements, indicating that the market will continue to rely on best-of-breed approaches.

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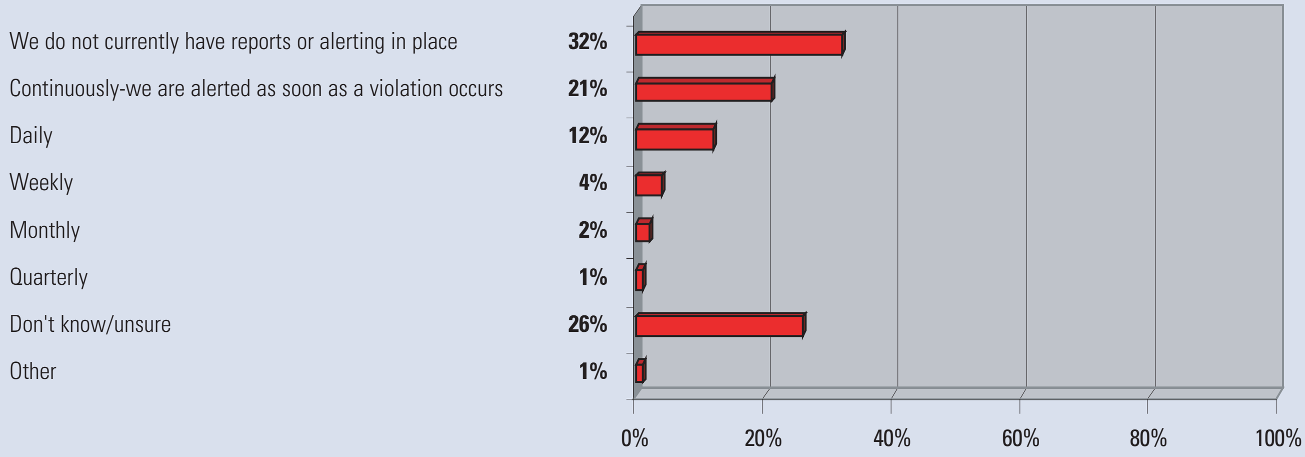
DATABASE SECURITY AND AUDITING PRACTICES

Many organizations still have significant room to improve database security and compliance practices.

For example, most cannot ensure an immutable source of audit data, and many others do not have processes in place to report or alert on compliance violations. Figures 8 -13 illustrate these and other areas where companies need to improve their practices in order to ensure data security.

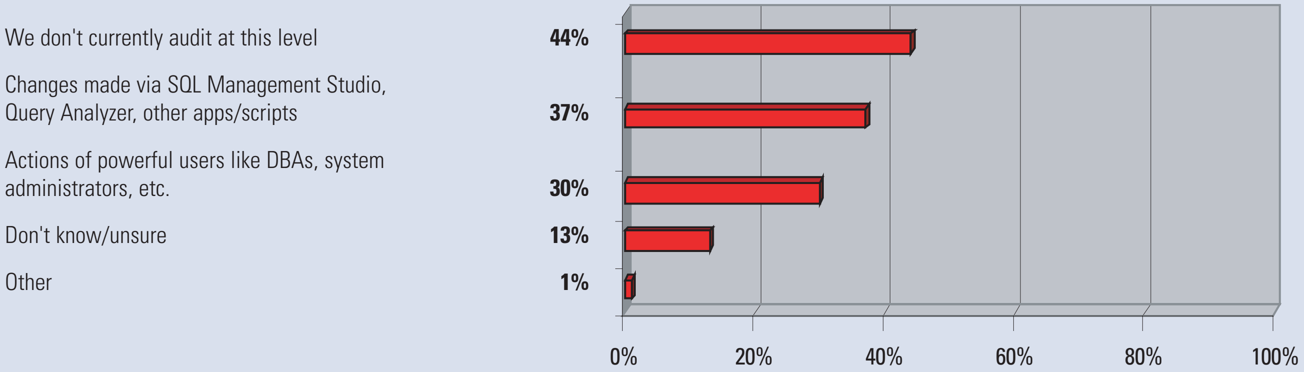
As shown in Figure 8, only 37 percent of respondents have procedures in place to notify administrators at least within a weeks' time when a violation of the company's compliance or security policy has been detected. This can be problematic, as typically the more time that passes between a violation and detection/reporting of that violation, the higher the resulting business impact.

FIGURE 8: Do You Have Alerting or Reports in Place to Notify You When Database Related Violations to Your Compliance/Security Policies and Controls Occur? If So, How Often Do You Get This Information?



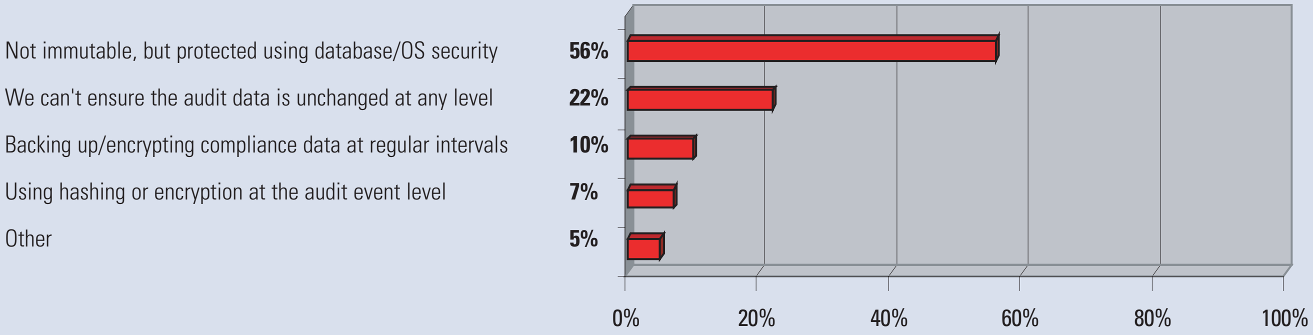
A majority of respondents, 57 percent, are not able to audit changes made directly to the database, versus those made via a business application. This leaves open a “back door” where privileged users in the organizations could potentially violate compliance and data security policies with no audit trail of that activity. (See Figure 9.)

FIGURE 9: For Your Business Applications, Do You Audit Changes Made Directly to the Database (i.e., Changes Not Made Via the Business Application)? If So, What Actions Do You Audit?



In addition, as Figure 10 shows, most companies do not take measures beyond basic database or operating system security to assure that data subject to audit has not been changed at any level. As a result, users with access to the audit data could potentially clear their tracks after accessing confidential financial or customer databases.

FIGURE 10: How Do You Ensure an Immutable Source of Compliance or Security Data on Your Databases?



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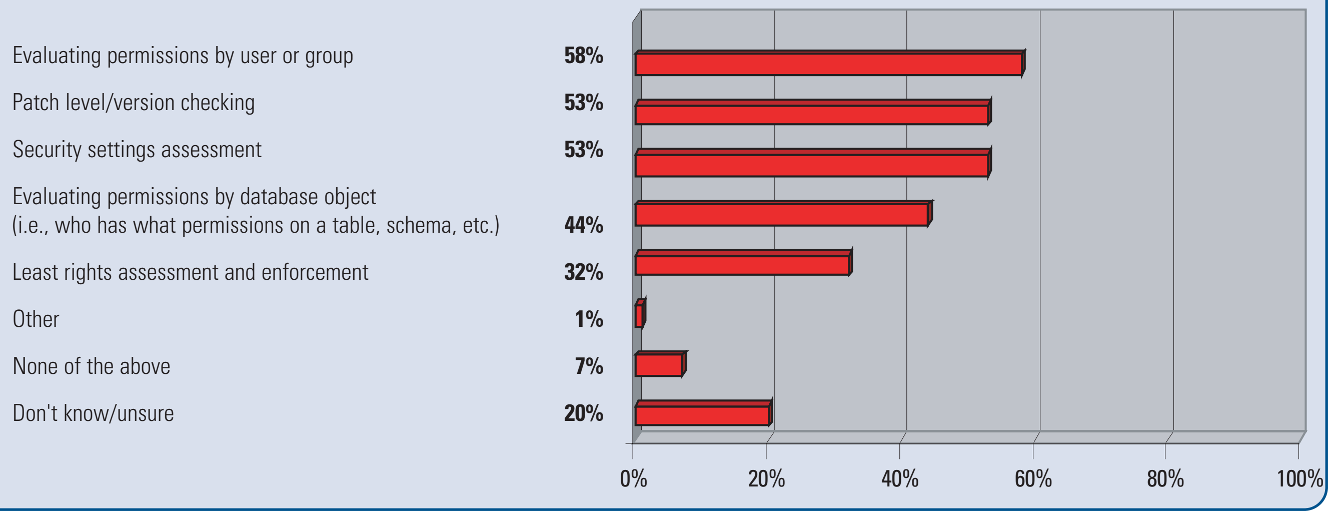
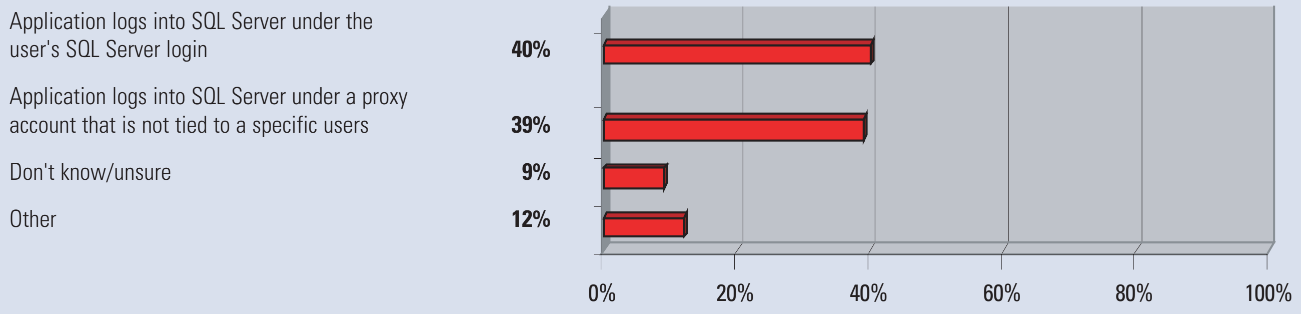
Most companies do, however, undertake evaluations of user and group permissions against their databases, as well as engage in patch level and version checking. A majority also regularly assess their security settings. These are all part of security best practices that companies should be vigilant about following. (See Figure 11.)

Figure 11: What Risk And Vulnerability Assessment Activities are Part of Your Compliance/Security Work Flow?



In addition, as shown in Figure 12, almost 40 percent of companies have applications that authenticate connections to the SQL Server via proxy accounts which are not tied to a specific user. This is a security concern since any auditing done at the database cannot identify the particular user who completed the action. So, in the event that suspect activity occurs, it is impossible to trace back to the actual user.

Figure 12: When a User Logs Into Your Business Applications, Are the Users' Credentials Used to Allow Access to the Database?



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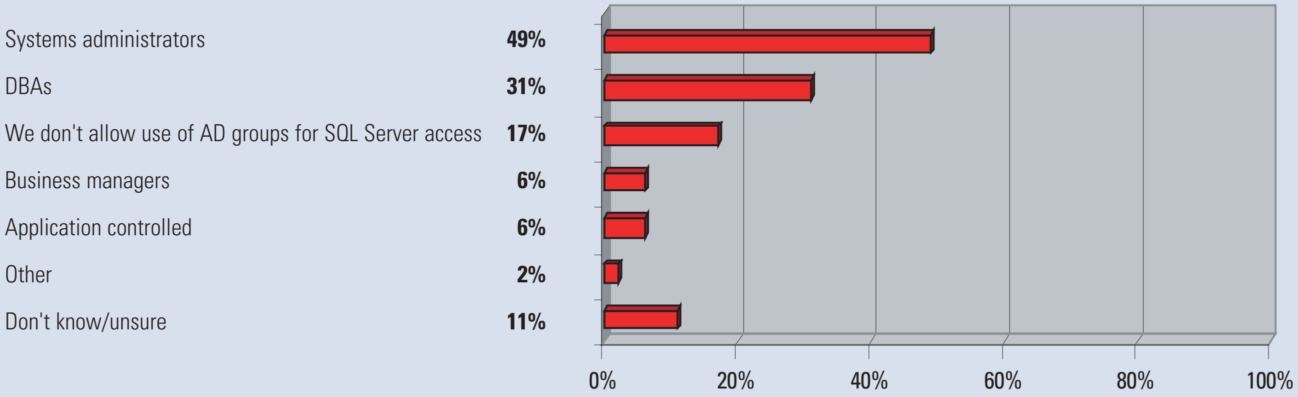
Finally, Figure 13 shows that the majority of organizations do create SQL Server logins in Active Directory, and in most cases, someone other than the DBA controls that group membership. This can be a security issue since the person creating the AD groups is generally not tasked with ensuring SQL Server security. And, if the AD group memberships are not updated when an employee's role changes, they may still have access to SQL Servers even after their role no longer requires it.

Figure 13: Who Controls Active Directory Group Membership for SQL Server Logins?



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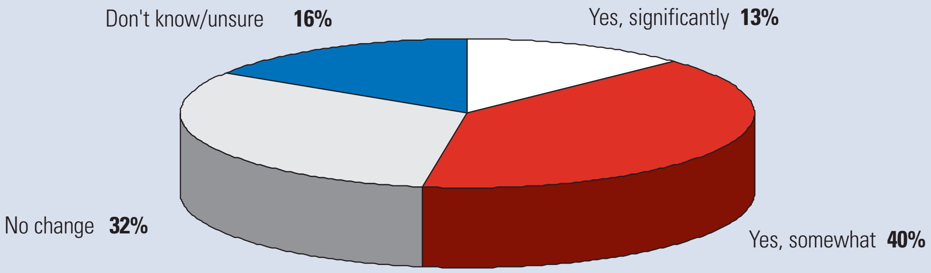
RESOURCE ISSUES

Compliance is generating more data, which requires more software, hardware, and human resources. Most companies will be diverting more resources to aid in compliance management. However, it's likely that data managers will have to redirect funds originally earmarked for other IT projects to satisfy compliance needs.

Compliance management initiatives are resource-intensive for many organizations - in terms of additional data capacity required, as well as additional human resources to manage and maintain the process.

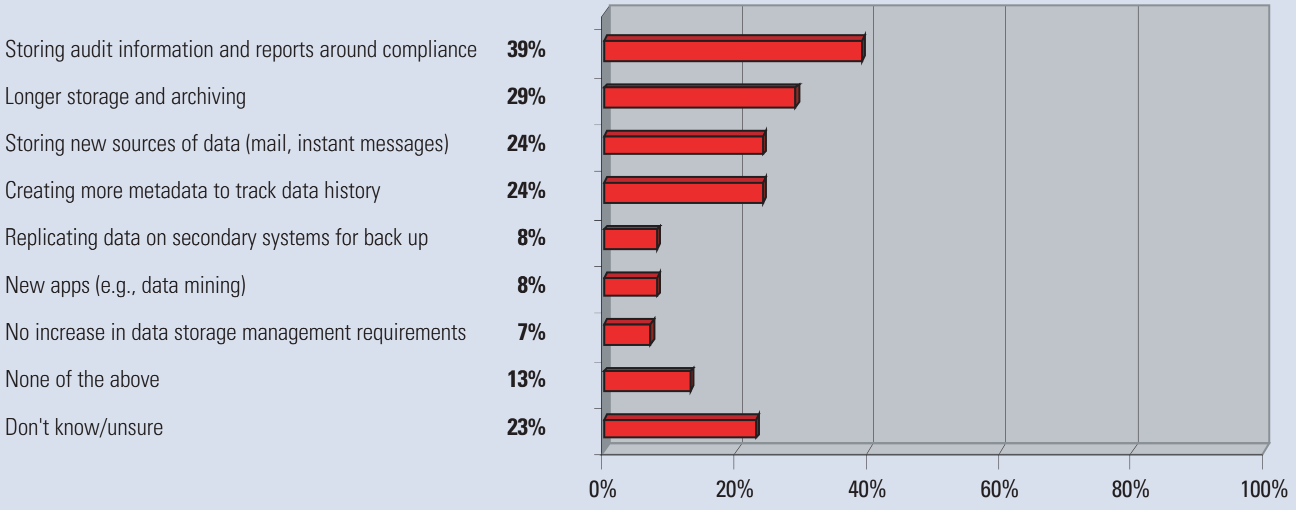
On the data side, a majority of survey respondents, 53 percent, reported that compliance mandates have increased the volumes of data their organizations need to store and archive. (See Figure 14.)

FIGURE 14: Has the Amount of Data You Manage Increased as a Result of Compliance-Related Mandates?



This data growth has occurred in three places, respondents reported: First, the information about compliance itself is contributing many megabytes of additional data to systems (cited by 39%). Then, there are new requirements - driven both by mandates and by the threat of litigation - that data be stored and archived for longer periods of time - up to seven years and beyond, in many cases (29%). For some companies even, the safest course has been to attempt to store everything, forever. In addition, there are new forms of data requiring storage - not only all emails that flowed through the organization, but also instant messages and a new breed of collaborative social computing messages (24%). In addition, about a quarter of companies are creating more metadata to track data history. (See Figure 15.)

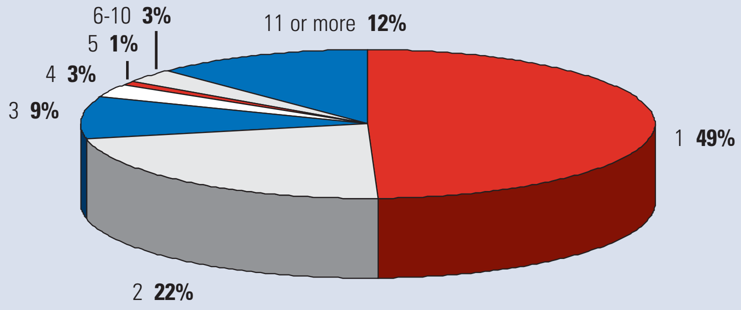
FIGURE 15: How Compliance Mandates Have Increased Data Volume



Compliance often requires additional levels of business process documentation and data identification and verification of sources from across the enterprise. Many enterprises have responded to this challenge by bringing in staff and armies of accountants to check and double-check documents, generate reports, and go out to data sources - a process that gets repeated every quarter.

Compliance management is a people-intensive process. The study found that 71 percent of the survey group devotes the time of two or more full-time employees to the tasks of meeting various compliance mandates. For at least 15 percent of the group, this involves the commitment of more than five full-time staff members. (See Figure 16.)

FIGURE 16: Annual Staff Time Devoted to Database Monitoring and Compliance Reporting *(Average number of full-time equivalent [FTE] employees)*



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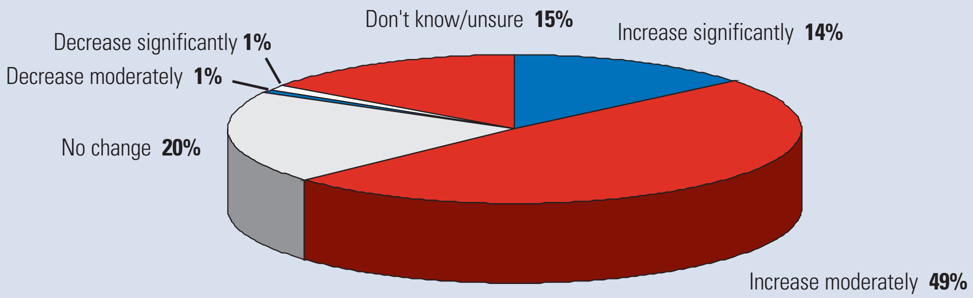
This number varies according to company size, of course. Most of the smallest firms in the survey (100 employees or fewer) reported that, on the average, they have one full-time employee engaged in compliance management. Among larger companies with at least 500 to 1,000 employees, the group is split between those with one employee dedicated to compliance (48%) and two to three (44 %). Companies with 1,000 to 5,000 employees were more likely to report having two to three employees on the effort (48%) than a single staff member (41%).

Unfortunately, things will not be getting any better any time soon in terms of staff time spent handling compliance matters. A total of 63 percent of the executives and managers participating in the survey predicted they will be investing even more staff time in compliance management over the next five years. (See Figure 17.)

FIGURE 17: How Employee Time Commitment to Compliance Will Change Over the Next Five Years



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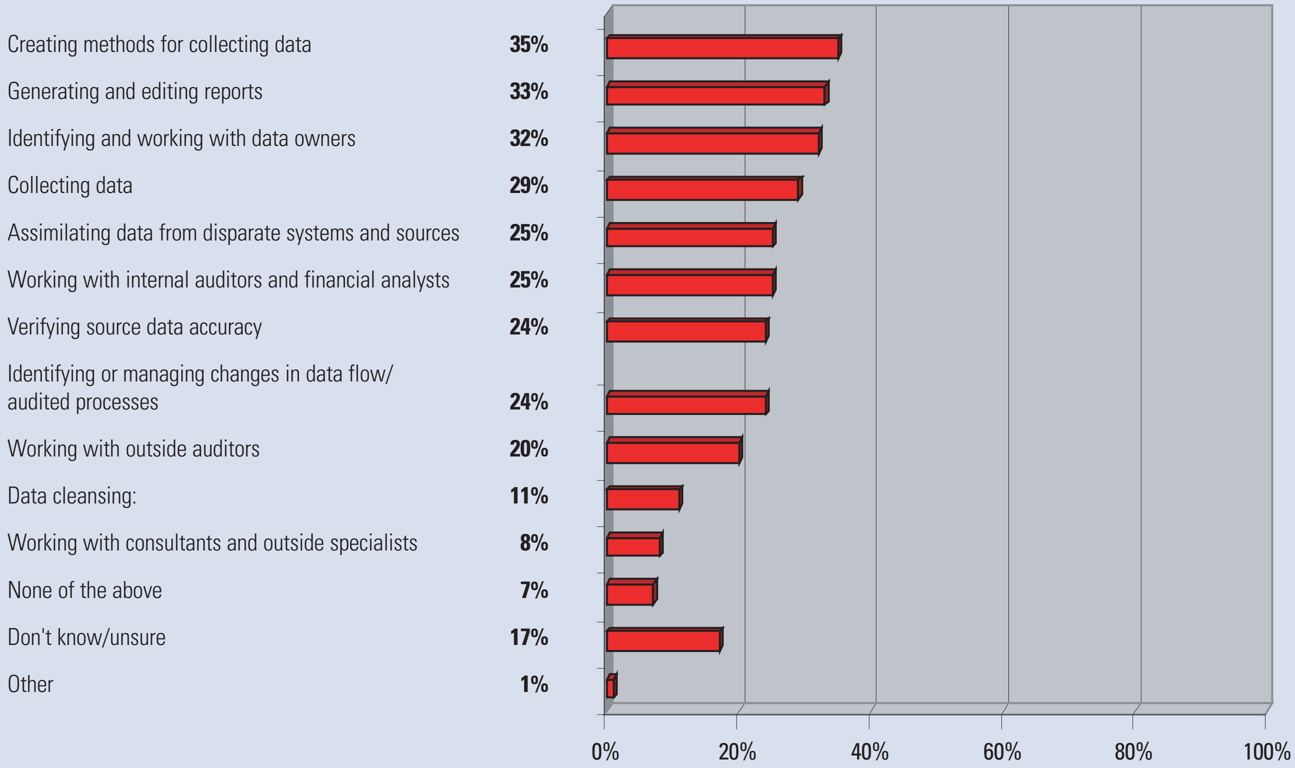
What kinds of tasks are demanding most of this staff time? More than a third, 35 percent, spend most of their time creating methods for collecting necessary data for compliance audits. Another third of the respondents said the most time is spent on generating and editing compliance reports. Another 32 percent reported that the most staff time is used to communicate with data source owners. (See Figure 18.)

FIGURE 18: How Staff Time is Spent in Compliance



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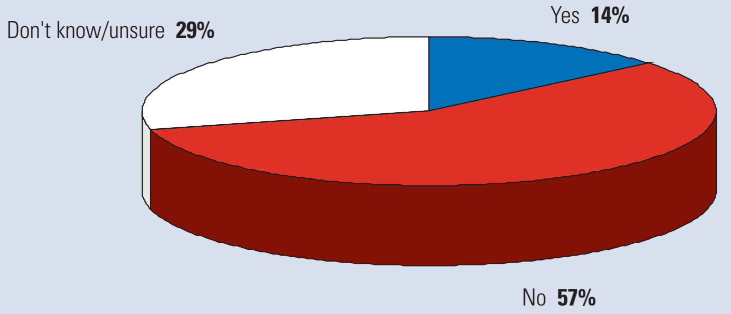
As with any cross-enterprise initiative, compliance management costs money. New systems and software need to be purchased and installed, employees need to spend time managing these new processes, and outside services need to be retained. However, it appears that much of the compliance spending that is taking place within IT departments is off budget. A majority of IT respondents, 86 percent, reported they either have not received additional funding to help meet mandates, or are uncertain if they did. (See Figure 19.)

FIGURE 19: Companies Receiving Additional Compliance Funding



However, many respondents still were forced to allocate additional spending on hardware, software, or services. About 42 percent increased their IT spending to get new compliance-enabled systems in place, and 27 percent increased spending for staff or consulting time. It's likely, then, that this money came out of IT budgets, putting other projects on hold. (See Figures 20 and 21.)

FIGURE 20: Have You Increased Your spending on Tools and Software as a Result of Compliance Mandates?

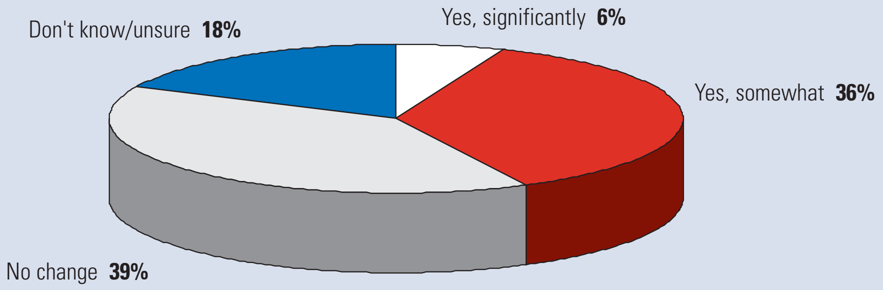
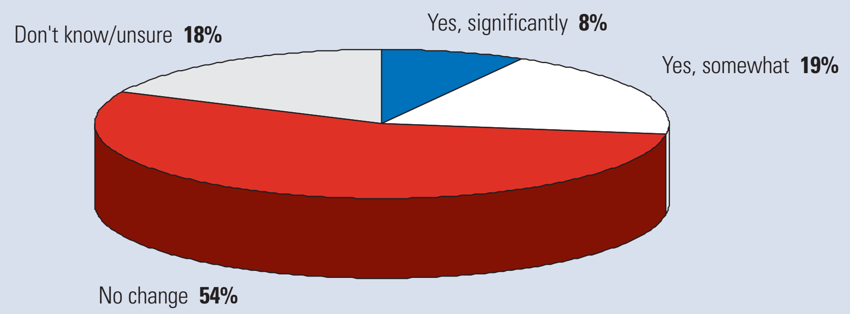


FIGURE 21: Have You Increased Your Spending on Outside Services or Staff Time as a Result of Compliance Mandates?



As one respondent put it, “More is expected without additional FTE allocation. Upper management is saying, ‘get it done now,’ yet no clear communication is taking place between disciplines.”

Another respondent remarked that “Management wants perfected audit and reporting capability at no additional cost; Operations wants additional headcount to manage the extra workload; Development doesn't want to redesign/rework code that has been in production for many years; Users don't want to suffer additional performance hits due to auditing.”

The greatest amount of additional spending on software and hardware systems to augment compliance management is being seen within the financial service sector, the survey found. More than six out of 10 respondents from this sector (61%) reported they are increasing spending on compliance systems. Healthcare organizations follow at 57 percent, and overall services with 54 percent. (See Figure 22.)

FIGURE 22: Compliance Spending Increases - By Industry *(Percent increasing spending for each category)*

	Systems	Staff/consulting
Software	**27%**	**8%**
Government/non-profit	**46%**	**26%**
Manufacturing	**28%**	**21%**
Retail	**50%**	**17%**
Services	**54%**	**46%**
Financial services	**61%**	**47%**
Healthcare	**57%**	**29%**
Utilities	**50%**	**60%**

“Our parent company is quite diligent with ensuring compliance with HIPAA and other state regulations on the use of patient information,” a respondent observed. “The head of our department is himself a physician, so he is very aware of where our vulnerabilities are and is always thinking three steps ahead so we do not get off track.”

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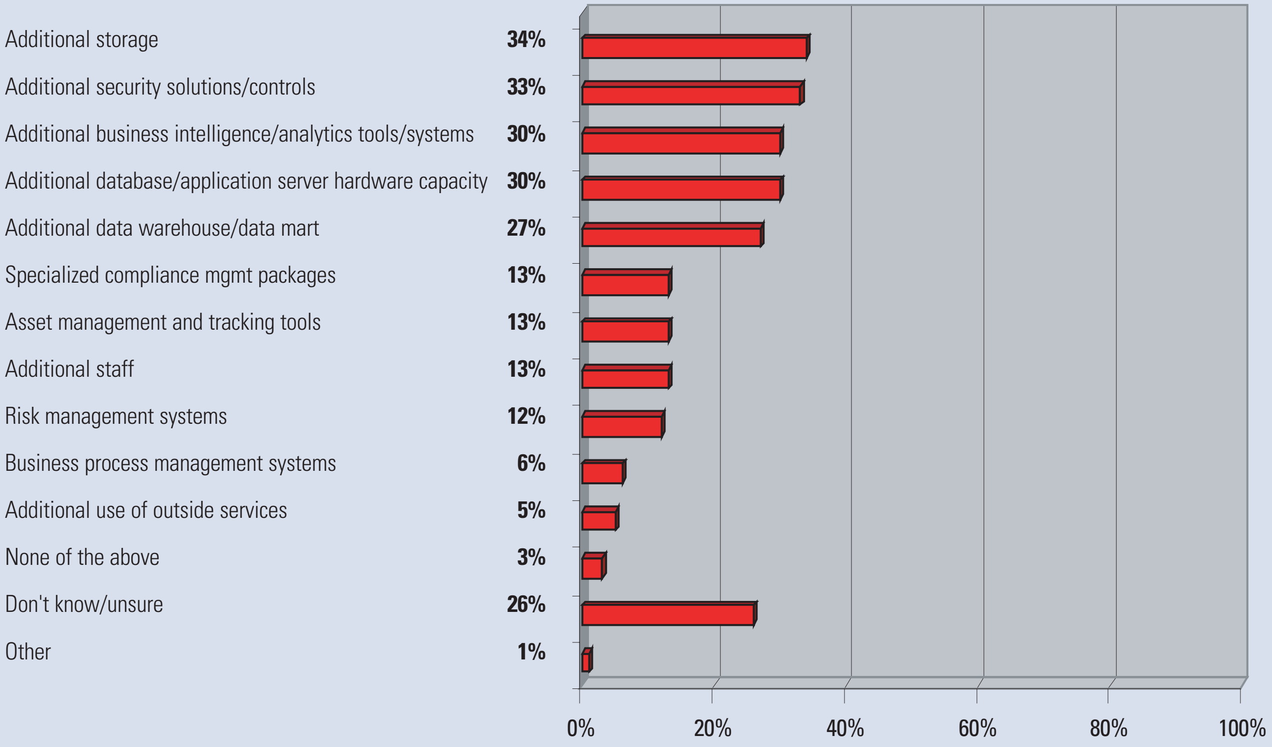
Data collection and analysis performed with Vovici Enterprise Management Feedback.

However, even in compliance-intensive industries, management support is not always automatic. “I would say that being in the financial industry this has always been a part of everyday business,” said one respondent. “However, it is increasingly harder to secure the funding necessary to provide value added reporting to internal and external auditors alike.”

Human resources - in terms of internal staff and consulting - are another area of spending, especially within the utilities/transportation sector. In this survey, 60 percent of respondents from these organizations are increasing spending to cover additional staff time and consulting services for compliance. Close to half of financial services organizations (47%) are also increasing spending on staff and consulting, followed closely by overall services organizations (46%).   (See Figure 22.)

As noted earlier in this report, compliance management efforts - especially with compliance data and increased archiving requirements have resulted in increased database sizes and the need for additional capacity - especially in the area of hardware. More than a third of respondents, 34 percent, reported that their compliance efforts have resulted in the need for additional storage, and 30 percent need more server hardware. Another 33 percent said they need additional security solutions and controls, and about 30 percent said they require more business intelligence and analytics software. (See Figure 23.)

FIGURE 23: What are the top three areas where you expect compliance spending to increase over the next year? *(Please only check the top three.)*



While compliance has resulted in increased data stores that require additional capacity spending, some respondents said that it’s difficult to free up funding for new purchases. “We've had to add encrypted columns for sensitive fields, which tends to bloat our databases, so applications have to be rewritten to accommodate these and other requirements-mandated changes,” said one respondent, a data manager for a major publishing company. “It now takes longer to back up and/or replicate our more bloated databases. We use up LUNs in our SANs at a faster rate. We have to sit through more meetings and more security reviews - which take time where we could be doing other things. Management is not eager to drop a dime unless it is absolutely necessary, so making the case for more, more, more is not always easy or even successful.”

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BEYOND COMPLIANCE

Many organizations see improved data security, better relationships between departments and greater automation as important byproducts of their compliance investments.

To a large degree, mandates such as Sarbanes-Oxley have benefited companies in ways beyond simply meeting the letter of the law. Effective governance, in which professionals from various functions are brought together - through oversight committees, regular meetings, and project initiatives - not only serve to better plan and manage compliance activities, but also build more bridges between formerly siloed departments.

SOX gives organizations the board-level visibility - and IT budgets - they have needed to implement best practices controls around corporate financial data, such as implementing real-time security and automated monitoring of privileged users to prevent unauthorized changes. Such standards and controls are now being extended to other areas of the enterprise where sensitive data is managed.

For many enterprises in the survey, compliance is more than simply generating reports and auditing processes. The improvements in business processes and IT infrastructures can potentially deliver a competitive advantage through streamlined data processing, greater data accuracy and better governance of processes. Most compliance mandates demand that companies be able to deliver accurate, timely and quality information, which is an essential part of business success as well. In total, more than eight out of 10 of the companies in this survey, 85 percent, reported some type of benefit to the business beyond compliance as a result of their investment. About 65 percent reported a benefit in terms of improved operational or technical capabilities. (See Figures 24 and 25.)

FIGURE 24: Business Benefits from Tightening Controls for Compliance

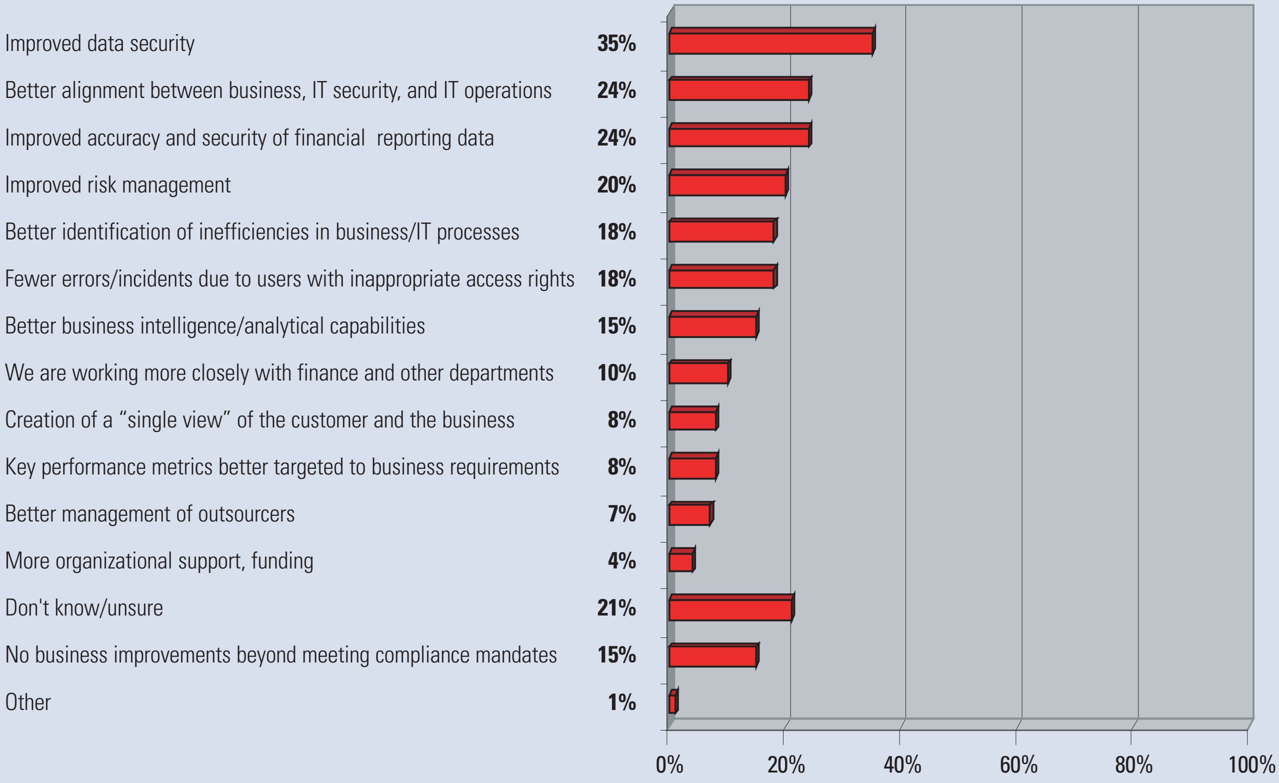

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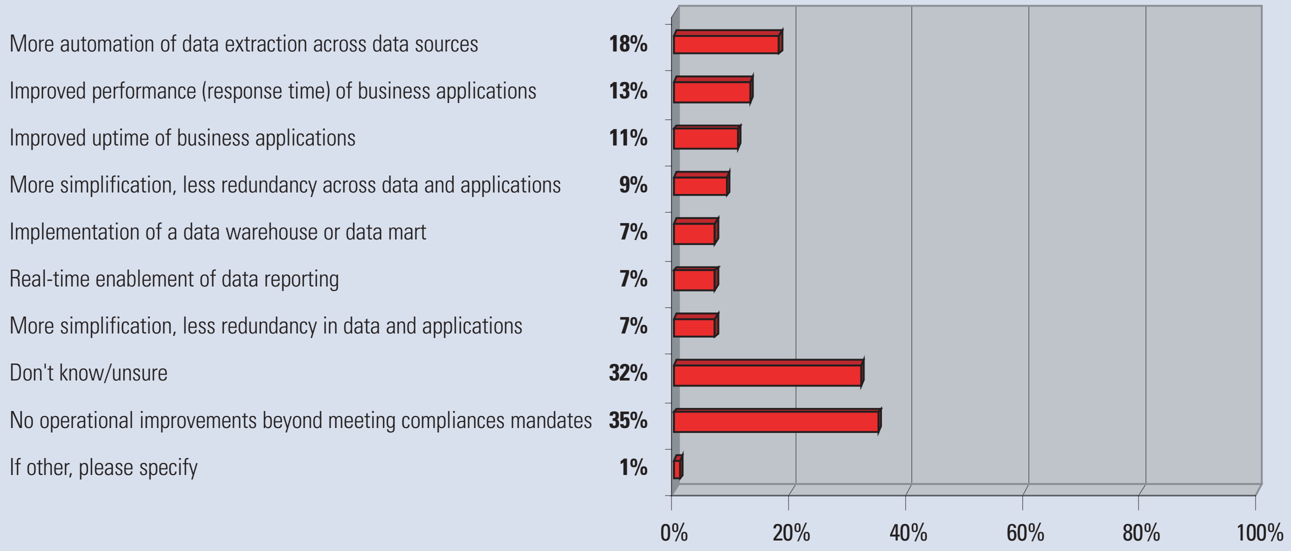
FIGURE 25: Technology/Operational Benefits from Tightening Controls for Compliance



Compliance efforts can deliver value through the adoption of repeatable and cost-effective processes that employ information identified, collected and integrated from various business units across the enterprise.

In terms of business-related improvements, more than a third of respondents, 35 percent, reported that compliance has helped raise security levels for their corporate data. About one out of four (24%) said they are seeing better alignment between business and IT as a result of compliance management. Twenty-four percent also reported improved accuracy and security in reporting financial data.

As for technical or operational improvements, the most oft-cited benefit was that compliance efforts resulted in more automation of data extraction across data sources (18%), while another 13 percent cited improved performance (response time) of business applications. Ranking third at 11 percent was improved uptime of business applications.

CONCLUSION

A disciplined, well-structured effort to manage, maintain, and store data is critical to stay in compliance with the blizzard of laws and regulations that affect corporate operations. Data from all key areas of the business needs to be accessible - yet secure - on an automated and near real-time basis. Such improved methodologies may also pay dividends in terms of more streamlined data management processes and improved productivity. Initiatives such as IT governance, change management, and hierarchical storage management and archiving not only help meet the letter of the law, but also help businesses gain more value from their IT assets.

To meet the challenges of compliance, enterprises are more closely re-examining and re-aligning their IT infrastructures with business processes, policies and rules. This PASS survey found that compliance management has become more than just another "IT project." Rather, compliance is evolving to a comprehensive and ongoing effort to transform business operations. Beyond meeting the letter of the law, organizations are finding that compliance management efforts are delivering benefits to businesses in the form of market, regulatory, and organizational changes.

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APPENDIX

Demographics

FIGURE 26: Company Size - By Number of Employees

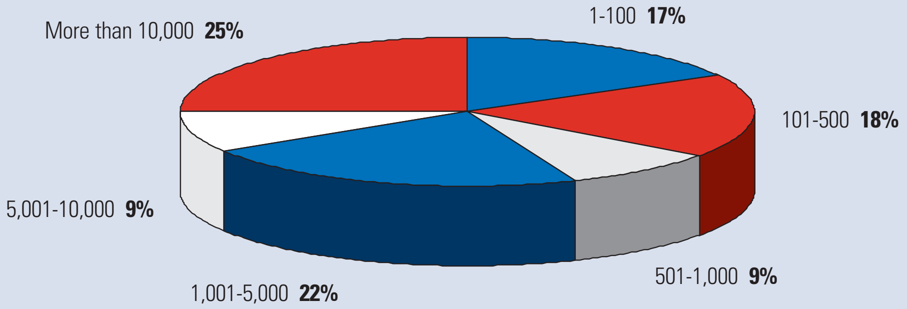

FIGURE 27: Company Size - By Annual Revenues

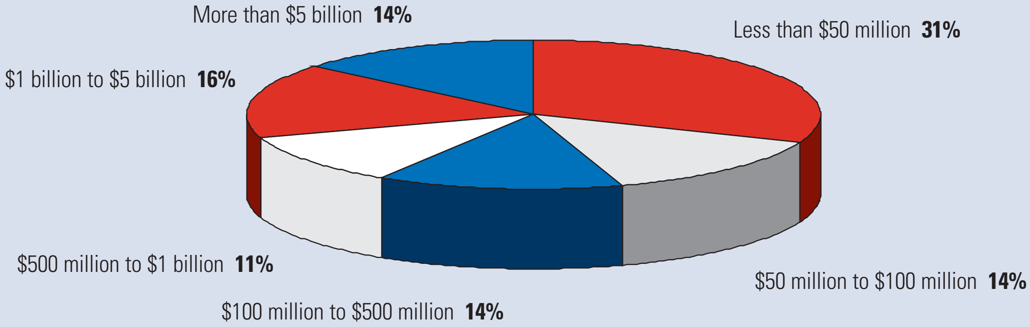

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FIGURE 28: Respondents' Locations

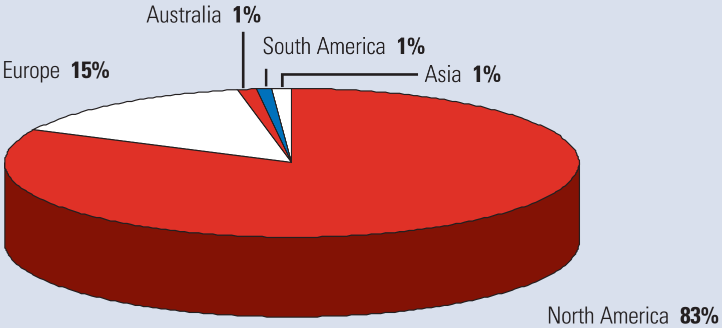

FIGURE 29: Respondents' Primary Industries

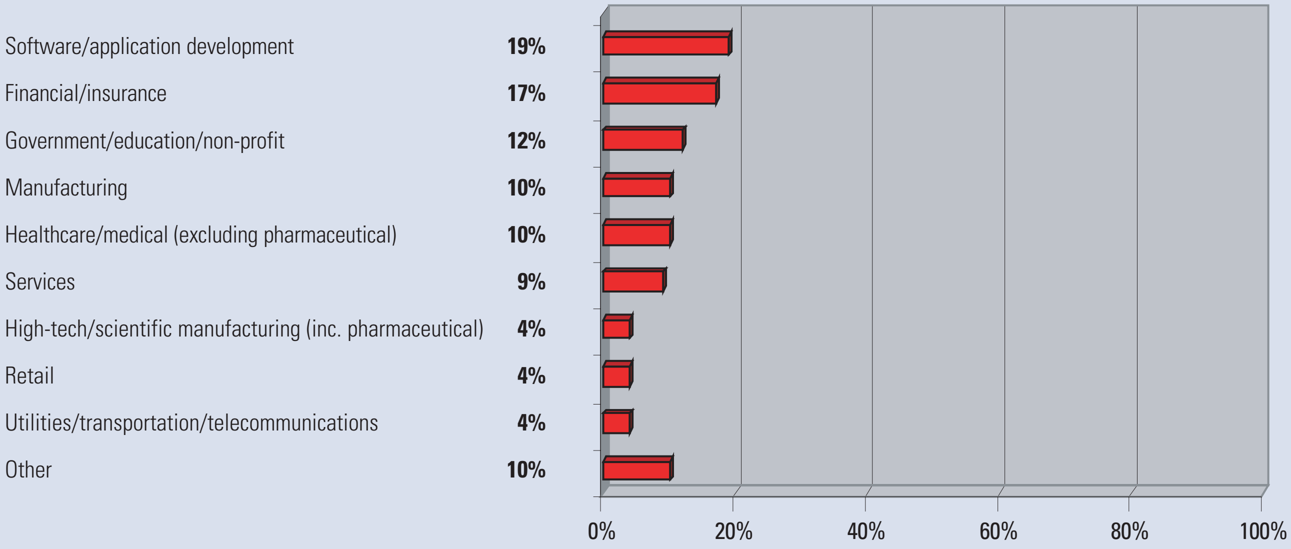

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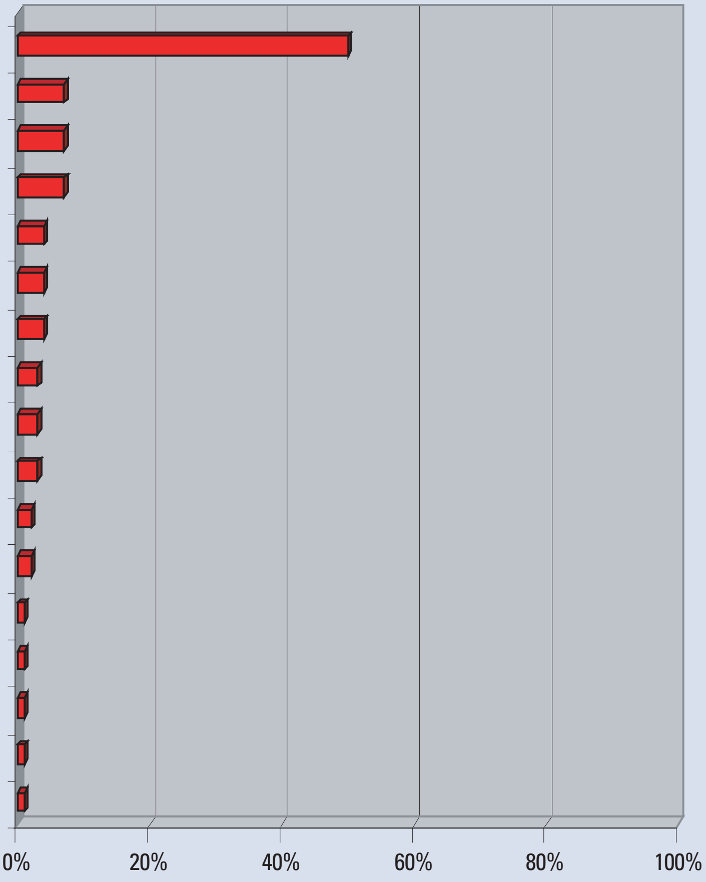
FIGURE 30: Respondents' Job Titles

Database administrator	**50%**
IT/MIS director/manager	**7%**
Data architect	**7%**
Database developer	**7%**
Application developer	**4%**
Data analyst	**4%**
Technical manager	**4%**
Network/systems administrator	**3%**
Consultant	**3%**
Team leader	**3%**
Project manager	**2%**
Systems architect	**2%**
Executive management (C-level)	**1%**
Information architect	**1%**
Finance, admin, mktg, engineering, mgmt	**1%**
Programmer	**1%**
Other	**1%**



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