

ISPIRIAN INSIDER

VOL. 18 NO. 8 AUGUST 2005

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Quincy IT?

Ispirian Incorporated aids organizations in complying with corporate policies and federal regulations through the use of computer forensics.

Many of us became familiar with the term "forensics" with the airing of Quincy ME, the popular 1970s television series. Then, medical examiners were the primary evidence extractors in the forensics field. Today, technology has brought a different breed of forensics specialist to the forefront – computer forensics specialists.

Computer forensics specialists deal with crimes ranging from homicide to identity theft. In the business world, however, computer forensics is being used to aid in corporate governance and regulatory compliance.

HIPAA, the Gramm-Leach-Bliley Act and Sarbanes-Oxley Act were enacted years ago but companies are still struggling with regulatory compliance. While most have come to grips with the need for firewalls, virus protection and general network security, many organizations still overlook computer security incident response.

Most people think of incident response only after a malicious attack has occurred. However, Tom Smith, president of Ispirian Incorporated, recommends that organizations use a combination of in-house network security expertise and computer forensics consultants to form an incident response plan to tackle compliance-related security breaches.

Computer forensics — the process

of determining if computer-based devices have been used for improper or illegal activities — is a key component of incident response. It ensures that digital evidence isn't corrupted or contaminated from a legal standpoint.

"Computer forensics is a form of data recovery," said Smith. "The difference is that data retrieval for the purpose of possible litigation should only be performed by properly trained and experienced personnel. Otherwise, the evidence retrieved from the machine could be rendered unusable in a court of law."

Smith has completed the Computer Forensics Boot Camp at the Southeast Cybercrime Institute at Kennesaw State University in Kennesaw, Ga., and the AccessData BootCamp at Northcentral Technical College in Wausau, Wis. This training complements his 36 years of experience in technology and six-plus years in law enforcement. Smith is also completing a Windows forensics class.

These credentials and Ispirian's membership with the International High Technology Crime Investigation Association (HTCIA) puts the St. Louis-based IT solution provider in a position to help organizations prepare for possible litigation as a result of network intrusion or computer misuse.

"We now have the training that allows us to identify evidence for what it is," said Smith. "We know how to identify key evidentiary data that may be hidden or encrypted and perform extraction, analysis and reporting of evidence while preserving data integrity and the chain of custody."

First, Ispirian must receive custody of media with proper authority. In other words, the owner of the data must voluntarily surrender the data to Ispirian, or a court order or subpoena must be in place.

Next, Smith must make sure above all that no damage is done or change is made to the original media when data is being extracted and copied.

"It's kind of like the Boy Scouts," said Smith. "When they go into the woods and set up camp, they do no harm. They leave the area exactly as they found it."

The actual process of extracting data involves using a tool called a hardware write blocker. The write blocker is attached to the original media so that when data is being pulled from that device, there is no way that the operating system could add or change anything inadvertently.

"When a hard drive is attached to an XP computer, for example, the very first thing the operating system tries to do is add a recycle bin to it," said Smith. "The write blocker prevents this sort of thing from happening."

Next, Smith makes a bit stream image of the original media. The hard drive is copied bit-by-bit — adding nothing and omitting nothing.

To verify that this worked properly, a process called hashing is used. Smith's team uses a mathematical formula called an MD5 hashing algorithm. All of the values from the original drive and all of the values from the copied drive are entered into the algorithm. If the totals of each equation do not match one another, then something has not been extracted properly.

"It's a very stringent and methodical process," said Smith. "The application of forensics techniques to computer-based materials must be followed properly in order to make a case for litigation purposes, and given the capacity of storage devices on today's systems, it is equally important to know when to stop the process."

"While dark crime is a problem, our main focus is helping companies respond effectively to computer security incidents that may result in litigation. An in-house incident response team, combined with our expertise in computer forensics could literally mean the difference between a successful or unsuccessful case."

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Does IT Drive Productivity?

IT's 'soft' benefits create real bottom-line value.

It seems common sense that “automation” drives “productivity.” Automating processes enables organizations to produce more, faster and with less staff.

Yet the link between IT and productivity is far from clear. Organizations often report that they fail to quantify returns on their IT investments. The implication is that the same people are doing the same things, just with newer tools.

However, IT does and will continue to contribute significant gains in productivity, according to Eric Brynjolfsson, management professor and director of the Center for eBusiness at the Massachusetts Institute of Technology's Sloan School of Management. Brynjolfsson said the majority of companies that invest heavily in IT improve their productivity and competitiveness.

The Real Productivity Impact

In an interview conducted by Gartner Fellow Kenneth G. McGee, Brynjolfsson

said IT adds to productivity in several ways. One is by allowing work to be completed faster and more efficiently. The second “more interesting” way is by changing how work gets done, allowing new techniques of production to be created.

“Productivity growth comes from new technologies and new ways of doing things — new techniques of production,” Brynjolfsson said.

Another is the “micro-inventions” made by millions of information workers and blue-collar workers in organizations when they are given new tools.

“There are millions of those innovations that collectively have added up to a tremendous amount of productivity improvement,” he said.

Brynjolfsson's research at the Center for eBusiness has identified factors separating companies that generated significant productivity gains from other heavy IT investors that achieved mediocre or poor results. These factors define what Brynjolfsson describes as “the digital organization.”

Habits of Productive Organizations

A key step is to convert analog work practices to digital work practices. The shift to electronic-based systems from paper-based systems speeds up the organizational metabolism, Brynjolfsson says. Highly productive organizations also have more lateral and vertical sharing of information through e-mail, intranets and other such tools, which supports distributed decision-making.

Brynjolfsson also recommends distributing decision rights broadly throughout the organization. Quantifiable, rule-based processes can be centralized through computer-based systems; decisions requiring human interaction, judgment, exception processing and creativity need to be pushed out to applicable personnel.

The remaining factors involve human issues — hiring the best employees, investing in comprehensive training and establishing strong performance-based incentives. Brynjolfsson recommends pruning out unprofitable lines and investing heavily and explicitly in a corporate culture that clarifies reasonable organizational goals.

“In my research, nine-tenths of the costs and nine-tenths of the benefits of big IT projects are not in computer hardware or even software,” Brynjolfsson said. “They're in the organizational and human capital changes” of creating business process change. “Those are the ones that tend to be the roadblocks to success or the ones that allow you to really do things differently.”

Cost Cutting Isn't the Answer

An IT strategy that focuses on cost cutting doesn't benefit the bottom line, however. In fact, Brynjolfsson said reduced IT investment in the 2001-2003 period will limit IT-driven productivity growth in the short term.

“Ultimately, I'm optimistic about productivity growth being at the high end of economists' estimates,” he said. “But it's not necessarily going to be a smooth and steady path.”

Other independent research bears this out. According to Gartner, IT needs to reinvent itself from being focused on cost-driven initiatives and instead help key employees create higher impact growth objectives that promote business agility through non-routine activities.

“Raising productivity by cutting the cost of production time is running out of steam,” said Tom Austin, group vice president and Gartner Fellow. “To increase competitive advantage, organizations

need to look for opportunities to increase market impact, including value and agility, by investing in a high-performance workplace.”

High-performance workplace approaches augment the ability of people to perform non-routine tasks that support or facilitate unstructured, exploratory, creative, teaming, leading and learning activities.

“Businesses must help people deal with non-routine situations, empower individuals and raise the quality and impact of what people do,” Austin said. “This shift is driven by major changes in the nature of work, the skills of the workforce and the upcoming fall off in opportunities for new ‘big bang’ automation projects.”

As a traditional discipline, IT systemizes and structures. It displaces jobs, even as it creates new industries and new jobs. It is primarily focused on driving down costs. However, Gartner analysts said enhancing people's ability to discover and innovate drives business.

“IT has been a roadblock to agility, innovation and creativity; it has been anti-creative and anti-collaborative,” Austin said. “The high-performance workplace is focused on the unstructured, on transformational agility, innovation and creativity without losing sight of structured obligations.”

Top Five Technologies

Five technologies have a significant role in innovation programs. They include content and knowledge base management, expertise location, search and classification, collaboration support, and business and competitive intelligence.

“Collectively, these technologies provide information access; relationship mapping across multiple sources of information; patterns and trends information; and tools to allow people to find each other, connect and collaborate,” Austin said. “The collective benefits of these technologies can be measured as high productivity, increased idea generation, and improved relevance and quality innovation program deliverables.”

A high-performance workplace will enhance the structured and unstructured activities that are key to creating competitive advantage, driving long-term, top-line growth and enhancing productivity.

“High-performance workplace strategies raise the impact of skilled people,” Austin said. “Skilled workers earn more and companies want more from them. Ultimately, the returns from augmenting non-routine activities will exceed the returns we've seen from automating business applications.”

VoIP Boosts Productivity

A recent Web poll by the Computing Technology Industry Association asked which of nine different converged voice/data applications would provide the greatest productivity gain for an organization. By a wide margin — 34.2 percent — respondents said voice over IP (VoIP) will deliver the greatest productivity improvements to their organization.

Call center applications, such as automatic call distributors and screen pops, ranked second in the poll at 12 percent; followed by Web conferencing applications at 9.7 percent. Other converged applications mentioned in the poll results included IP phones and softphones (8.5 percent); unified messaging systems (8 percent); video phones (6.8 percent); find-me/follow-me phone and messaging services (4.4 percent); fax servers (4 percent); and interactive voice response systems (3.2 percent).

Organizations that have deployed VoIP networks and other IP-enabled converged services and applications are finding they can significantly improve their communications, both internally among co-workers and externally with customers and business partners.

The proprietary architecture of

most traditional telephony systems makes it cost-prohibitive for many organizations to add new features and functionalities. With an IP-based communications network system, enhancements are done with software downloads and require minimal new hardware.

For example, a business with a VoIP network can easily add an IP-based voice mail system within its main data center as a central repository for all voice messages, lowering costs by eliminating legacy voice mail systems deployed in multiple locations. From there it's a short jump to a unified communications application that gives employees convenient one-stop access to all messages (voice mail, e-mail and fax) using their choice of access device — phone, PC, e-mail client, Web browser, wireless handset or personal digital assistant.

Another advantage made possible by VoIP is the ease in which employee moves, adds and changes can be accomplished. Traditional telephony typically requires costly service calls to physically relocate hardware and modify system software. With IP-based systems, moving a phone is comparable to relocating a laptop computer within the office.

IM Attacks Skyrocket

Instant messaging (IM) is under attack by spammers, hackers and virus writers. According to the IMlogic Threat Center, IM attacks — including viruses, worms, spam over IM (SPIM), malware and phishing — increased a whopping 2,747 percent in the second quarter of 2005. More than 541 unique threats, including IM-specific attacks and “blended threats” that target IM, were reported.

Eighty-six percent of reported incidents included IM virus or worm propagation, with the Kelvir, Opanki and Gabby worms the top three IM infections. Several new reported incidents of IM “phishing” and identity theft were reported on the consumer IM networks.

The report highlights the increase in targeted IM attacks on corporate environments and the need for both enterprises and small businesses to defend against emerging IM threats. More than 70 percent of externally reported incidents were attributed to organizations using popular IM applications.

Microsoft, IBM Resolve Antitrust Issues

Microsoft and IBM have entered into an agreement to resolve antitrust issues between the two companies.

The settlement resolves claims arising from the United States v. Microsoft antitrust case of the mid-1990s, in which U.S. District Judge Thomas Penfield Jackson found that IBM had been impacted by certain Microsoft practices. Under the agreement, Microsoft will pay IBM \$775 million and extend \$75 million in credit toward deployment of Microsoft software at IBM.

In addition to addressing all discriminatory pricing and overcharge claims based on the findings in the U.S. antitrust case, the settlement resolves all antitrust claims except those involving IBM’s server hardware and server software businesses. IBM agreed not to assert claims for server monetary damages for two years or to seek damages on such claims incurred prior to June 30, 2002.

Companies Can’t Measure Risk

A recent survey by nCircle found that while reducing network security risk is the No. 1 concern for businesses this year, half of all respondents had no way to measure and report on that risk.

Sixty percent of the 1,700 IT security executives polled by the company said they were unable to determine whether their network security risk was increasing or decreasing over time. More than half said they have no way to verify and manage compliance with their own internal security policies.

“These results highlight the need for enterprises to implement solutions and processes that will enable them to more effectively measure, manage and ultimately reduce their risk,” said Elizabeth Ireland, vice-president of marketing, nCircle.

In terms of future investments in security technology, respondents indicated that they are planning to add identity, access and vulnerability management technology in the next year.

Group to Promote Healthcare Smart Cards


The Smart Card Alliance has formed a Healthcare Council to promote the adoption of smart cards to give U.S. healthcare organizations secure access to patient information.

“Smart cards can play an important role in the implementation of privacy-sensitive access to secure personal health information, support safer patient care and help reduce the overall costs associated with the delivery of that care,” said Frank Avignone, Council co-chair and business development manager for Healthmeans.

Dr. Paul Davis, Council co-chair and CEO of Uniliance Health, outlined the priorities for the Council. “There are numerous initiatives around the world using smart cards for a variety of secure healthcare applications. One of the group’s initial projects will be to examine current implementations and describe the benefits and best practices for smart card deployment in various healthcare environments.”

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What Employees Think of IT

Help desk support rates low in end-user survey.

Have you ever been frustrated with your company's IT help desk because it wasn't able to solve your problem in a timely fashion? Do you lack a clear understanding of the IT department's goals and constraints as they apply to your department? Have you felt that your business initiatives fail to get the technology support they need to truly succeed?

According to a Forrester Research survey of more than 2,000 corporate end-users, you're not alone. Forrester spoke with business users of IT in U.S. companies across a variety of industries and mix of job functions, including professional, managerial and technical/operational positions. Thirty-two percent directly influence IT budgets and purchases. Ninety-one percent are from firms with 1,000 or more employees.

The evaluation measured these users' opinions of their IT organizations and the technologies they deploy. Low ratings for internal help desk support, IT's ability to communicate with end-users and its support for key business initiatives indicate that business users are less than satisfied with their relationships with their IT departments.

Help Desk Needs Help

The corporate help desk fell in at the bottom of the list in terms of end-user satisfaction with IT. Not only are end-users dissatisfied with help desk support, but they also rank it last when asked about the importance to their jobs of various IT department functions and resources.

The more frequently employees use the help desk, the less likely they are to be satisfied, the survey found. The ability to resolve requests on the first try and the timeliness of updates — not the courtesy of help desk staff — were the sources of end-user frustration.

The survey also indicates that communication between the IT department and end-users needs improvement. Fewer than half of the respondents report satisfaction with the IT department's efforts to communicate changes in the organization and new technology releases.

Relief Through Outsourcing

While the survey focused exclusively on user opinions, it's important to recognize the dynamics that cause these problems in many organizations. Overextended IT departments struggle to balance day-to-day needs with tactical initiatives and strategic planning, as well as communicate effectively with both management and the larger user population.

Business process outsourcing — defined by Gartner as the delegation of one or more IT-intensive business processes to an external provider — can

bring relief if managed properly. The whole-department outsourcing deals of several years ago have given way to smaller-scale agreements, and help desk outsourcing has proven especially successful.

Outsourcing the help desk has helped many organizations improve quality while reducing IT overhead. Also, simply working with the outsourcing provider to define service levels and processes can streamline help desk functions.

Not All Bad News

How did users in the Forrester survey rate the technologies in place at their organizations? Overall, users agree that desktop technologies, such as office productivity software, are performing well — 75 percent are satisfied with those tools. What's more, 94 percent of respondents rank them first in terms of importance of technology to their jobs. PC reliability was also important.

Three-quarters of those surveyed are satisfied with their e-mail and calendaring

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software, and Microsoft Outlook users are the most satisfied. Sixty-five percent use Outlook for e-mail and calendaring.

Forrester also collected users opinions regarding enterprise applications and found those applications were less important than desktop tools but meet users' needs. While users are generally satisfied with these applications, integration and training need improvement. The one-half of respondents who use custom applications are less satisfied than the users of packaged applications.

Half of respondents are on the fence or are dissatisfied with the complexity of managing user IDs and passwords. However, respondents are generally satisfied with their ability to access systems remotely.

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Safeguarding Storage

High-profile breaches highlight the need for effective storage security.

Securing stored data used to be a bit of an afterthought, but that has all changed on the heels of several high-profile data thefts and losses in recent months. IT professionals now recognize that storage security has become an unavoidable challenge.

Since February, security breaches have caused the loss of unencrypted data from companies such as CitiFinancial, Bank of America, Ameritrade Holding, Time Warner, ChoicePoint and LexisNexis Group. San Diego, Calif.-based Privacy Rights Clearinghouse has compiled a list of more than 40 breaches affecting the personal consumer data of nearly 10 million people during the first half of 2005.

With a variety of regulatory agencies keeping a watchful eye on companies to ensure they are following the appropriate steps to secure information assets, such incidents are proving more costly than ever before. In addition to the traditional financial risks, the bad publicity and possible brand damage, organizations now also face stiff fines and possible jail time for failure to ensure data privacy. This is why nearly one-third of the IT professionals who responded to a recent Web poll by the Computing Technology Industry Association (CompTIA) now rank protecting and securing stored data as their most difficult tasks.

"Given the potential cost of a security breach or data loss and its negative impact on a company's bottom line, the emphasis on security is not surprising," said John Venator, president and CEO, CompTIA. "The security landscape is made even more complicated by the massive amount of data that needs to be stored; the increasing scale and complexity of storage systems; and the requirements for record retention to comply with government regulations. That is why it is absolutely essential for every organization to have in place a well-designed, well-managed and well-secured IT infrastructure."

Networked Storage Heightens Risk

The rise of networked storage, with more and more storage devices and networks interconnected, has placed a premium on storage security. When networks are opened to exploit revenue opportunities, improve business efficiencies and reduce costs, it also increases the risks and associated costs of security incidents.

Safeguards such as firewalls and intrusion detection systems that protect the entire network provide a sufficient line of defense for storage directly attached to a

server, but fall well short of securing data "in flight" across a storage area network (SAN) or network-attached storage (NAS) environment. Experts say some of the chief vulnerabilities of storage networks include insecure Fibre Channel switch configurations, open management interfaces, clear-text data and a lack of authentication.

"It is crucial to safeguard data, regardless of whether it is retained at rest inside storage systems, or in flight across the storage network, LAN or WAN."

"Network storage has changed the way enterprises manage their storage environments," said Jamie Gruener, Yankee Group Enterprise Computing & Networking senior analyst. "It is crucial to safeguard data, regardless of whether it is retained at rest inside storage systems, or in flight across the storage network, LAN or WAN. However, the significant complexity of deploying and managing storage networks makes security a fragile proposition."

Storage security will become even more important over the next few years as storage and IP networks become ever more intertwined through the continued development of Information Lifecycle Management and IP SANs. This means organizations increasingly need to consider storage security in the design of storage networks, management strategies and storage consolidation. Companies should evaluate which applications and data sets need more advanced security, and ensure proper safeguards are in place to protect data.

Make a Plan

Experts say every company should have a storage security policy in place. According to the Storage Network Industry Association (SNIA), the policy should cover privacy, authentication, confidentiality of specific types of information, requirements for backup and restore, and required levels of monitoring and auditing. Wherever possible, the implementation of the policy should result in overlapping and reinforcing layers of security protection. Both data residing on storage devices and data in transit through the

infrastructure should be considered. The policy should seek to protect the operation of the storage network and control or eliminate attack points that have the most effect on the operation of the storage network.

The SNIA says the following items should specifically be considered for inclusion in the security policy:

- System upgrades should be promptly installed, but only after first testing them on an isolated non-production system.
- Only proven technologies should be installed in the storage network. Specifically, references should be sought for all new technologies in exactly the same way as they would be sought for new employees.
- Collaboration with other organizations with similar storage networks and configurations should be encouraged. Regular pooling of resources and experience of security problems can be most beneficial in raising storage network security.
- Wherever possible, key servers in a

storage network should be "hardened." This involves strictly restricting the types of applications that can be installed on the servers, as well as the credentials that give access to the servers.

- Security audits should be performed frequently, and system logs should routinely be scrutinized for unusual activity.
- An awareness program should be conducted for key employees to keep them up to date with known threats and countermeasures.

"Protecting the privacy of personal information and meeting regulatory compliance requirements are now top priorities for business managers and IT storage professionals," said Michael Milligan, president and CEO of storage security provider Kasten Chase. "When personal information entrusted to a company is lost or stolen, the impact to that company is now abundantly evident. Organizations are recognizing the need for a higher standard of care for the information assets in their control."

Senate Ponders Tough Measures

A new bill proposed by Sen. Patrick Leahy, a Vermont Democrat, and Sen. Arlen Specter, a Pennsylvania Republican, would require companies storing information on more than 10,000 people to report security breaches to affected clients. The Personal Data Privacy and Security Act of 2005 also defines strict penalties for people guilty of concealing security breaches or facts pertaining to a breach where sensitive personal information has been endangered, with a fine and/or up to five years of prison time.

"Reforms like these are long overdue," Leahy said in a floor speech. "This issue and our legislation deserve to become a key part of this year's domestic agenda so that we can achieve some positive changes in areas that affect the everyday lives of Americans."

Coincidentally, Leahy is among several members of the U.S. Senate whose personal information was contained on the backup tapes lost earlier this year by Bank of America. The

tapes contained Social Security numbers and other account information on as many as 1.2 million federal employees.

Among its provisions, the Personal Data Privacy and Security Act would create a new computer crime classification — aggravated fraud — that would add two years of additional jail time for obtaining or accessing another's digital ID, and it would give government the power to invoke racketeering charges using the RICO statute to prosecute criminal gangs trading in identities.

It would also severely restrict the use of Social Security numbers as account identifiers or numbers, and it would ban the sale of Social Security numbers — one of the data bits sold to fraudsters by ChoicePoint in 2004 and disclosed in February 2005.

In addition, the bill would require businesses not already covered by the Gramm-Leach-Bliley Act or HIPAA (Health Insurance Portability and Accountability Act of 1996) to create a data privacy and security program.

Bill Seeks Paperless Medical Records

Senator Mike Enzi (R-Wyo.) has introduced a bill that would begin shifting health records from a paper-based system to a secure electronic format to help patients keep track of medical records.

The Better Healthcare Through Information Technology Act would create a public-private collaborative effort for developing technical standards and provide start-up money for hospitals and physicians to utilize new technology. Enzi said patients in rural and underserved areas would particularly benefit from the technology.

"The technology is there — it's just a matter of clearing away the obstacles so we can apply it to healthcare. If we move from a paper-based system to secure electronic medical records, we will reduce mistakes, save lives, time and money," said Enzi, Chairman of the Health, Education, Labor and Pensions (HELP) Committee.

CDs, FM Radio Still Rule

U.S. consumers are experimenting with new audio technologies — from online music services to terrestrial and satellite digital radio and multi-channel audio formats — but they still rely on CDs and FM radio as primary sources of music.

According to a new survey from IDC, 53 percent of respondents reported owning portable CD players, compared with only 6 percent who own portable jukebox MP3 players like the Apple iPod Mini.

However, a growing percentage say they already own new audio technologies or are planning to make a purchase in the next year. Nearly 6 percent of respondents reported owning a satellite radio receiver, and 12 percent indicated a high likelihood of purchasing one in the coming year. Four percent reported using a pay-per-download online music service.

Idaho Reservation Gets Wi-Fi

Wi-Fi technology is helping bridge the digital divide for the Coeur d'Alene Tribe in northern Idaho. In June, the tribe began installing Wi-Fi base stations to provide broadband Internet access throughout the reservation.

"Having access to broadband technology will change our lives as dramatically as having horses changed our ancestors' lives," said Valerie Fast Horse, information systems director for the Coeur d'Alene Tribe. "Broadband technology is a necessary condition to promote economic diversity and growth within our reservation."

The tribe has built a Community Technology Center with 40 computers that are available for free to tribal members who don't have computers of their own. In addition, the tribe will provide high-speed wireless access through the system to anyone living on or near the reservation at a price comparable to other ISPs.

E-Government Slow to Catch On

Despite all the fanfare with the launch of the Presidential eGovernment Initiatives in 2000, citizen adoption remains low, according to a report from Forrester Research.

"Our research indicates that citizens contact the government predominantly for personal rather than business reasons, seeking answers to specific questions, expressing opinions or completing transactions," noted Forrester Consulting Analyst Alan E. Webber. "Because of the personal nature of these interactions, they still rely on telephone and in-person contact and don't completely trust the Web. Even though most of these people use the Internet for other aspects of their daily lives, old habits die hard."

To add to the frustration, government agency heads have to deal with constrained budgets and a change-resistant culture. The government's bureaucratic and inefficient production model, extremely long project cycles, and long overdue deadlines are also large obstacles to adoption.

Strategic Patch Management

On-the-fly patch updates are a thing of the past as security threats multiply.

The ever-growing number of IT security threats has led to a corresponding increase in the number of patches and updates issued by vendors. These patches must be applied to systems regularly to protect against attack — particularly given the rise of so-called zero-day exploits that take advantage of a security vulnerability the same day that the vulnerability becomes generally known.

"With 'zero-day' exploits on the rise, patching systems throughout the enterprise is even more critical than ever to an organization's IT security defense," said Alex Bakman, founder and CEO of IT security firm Ecora.

However, managing all those patches can flatten IT departments as they struggle to find the time and resources needed to get the problem under control. The cost implications are also huge. Organizations participating in a recent Microsoft-sponsored study spent an average of nearly \$6 million per year — \$1,622 per system — patching Windows-based systems alone.

In the past, many network administrators essentially tracked patch status in their heads, fixing holes on the fly. But the complexity of networks and sheer number of patches have rendered this approach ineffective. Even organizations using automated patch-management products need a comprehensive patch-management plan to ensure adequate security.

Before establishing a plan, executives must determine the organization's risk tolerance regarding patches. To maximize security at the expense of productivity, an organization would shut down production systems every time a vendor issued a relevant software patch and not put the systems online again until the patch was downloaded, tested and deployed.

In practice, of course, such extreme measures are unheard of, and system administrators must minimize downtime while ensuring the systems are adequately patched. It can be a difficult balancing act but there are some basic tips that can make the administrator's job a little less hectic.

Develop a patch network. Security software products can help streamline the process of finding patches by offering links to vendor sites. Security portals such as sans.org and incidents.org also provide a front line for identifying patches and fixes.

Buy time by prioritizing. Before rush-

ing to install every patch that comes along, prioritize installations according to their impact on the organization. For instance, a vulnerability in an e-commerce application should take priority over one in a platform that's fairly well hidden from the Internet. If a high-priority vulnerability is identified, multilayered security software, which is located at the firewall as well as the lowest level of the network stack, can temporarily plug the hole until a permanent patch is installed.

If possible, pick a platform. Most companies have more than one operating system to manage, increasing the number of

"With 'zero-day' exploits on the rise, patching systems throughout the enterprise is even more critical than ever to an organization's IT security defense."

patches to be applied. Reducing the number of platforms eases the patch management burden and helps limit the possibility that applied patches will adversely affect other systems. Creating standardized desktops for end-users also goes a long way toward effective patch management.

Take inventory. Patch management is really about software management. However, few organizations have an accurate inventory of what is installed on each piece of IT equipment. Software inventory no longer requires a visit to each desktop. Automated systems can gather information about which versions of what software are running and which patches have been installed. An accurate inventory streamlines application management and helps administrators identify which patches must be installed.

The one strategy that definitely won't work is to avoid patching systems altogether. Falling behind is more than just a security risk; it can have a negative impact on system performance and unnecessarily increase management costs. Patching is going to continue to be a job requirement for system administrators, yet with the right tools and strategy, it doesn't have to be a full-time job.

A Perfect Couple

Marriage of VoIP and wireless networks could create a communications powerhouse.

History has presented us with a number of famous twosomes, pairings so perfectly composed that it is difficult to imagine one without the other. Romeo and Juliet. Bogie and Bacall. Butch and Sundance. Lennon and McCartney. Bert and Ernie. Cookies and milk.

In the world of voice communications, IP telephony and wireless networks seem destined to form a similarly compelling combination.

Both voice over IP (VoIP) and wireless LANs (WLANs) are established technologies with rapidly maturing markets. The Gartner technology research firm predicts that 97 percent of new phone systems installed in North America by 2007 will be VoIP-based or hybrid. Meanwhile, Research and Markets says the WLAN market is growing at 30 percent per year and will reach \$5 billion in sales by 2006. Both technologies allow organizations to explore new ways of reaching customers, improving efficiencies and driving the bottom line.

For many organizations, the natural next step is to marry the two technologies to create a communications platform known alternately as wireless VoIP, VoWLAN (voice over WLAN) or VoWi-Fi (voice over Wi-Fi). Until recently, the converged technology suffered from some significant weaknesses, but that has begun to change as a result of evolving standards, new equipment and new management tools.

Coming Soon

"Voice over wireless Internet devices have the potential to be a hugely disruptive technology," said Richard Webb, directing analyst for Infonetics. "One big factor is the low cost of calling, especially long distance, overseas and during peak hours. The traditional model of time- and distance-based pricing for voice calls will be eroded by VoIP, and as VoIP goes wireless, this will present a challenge not only to fixed line operators but to mobile operators as well.

"There are technical issues to be worked through before wireless Internet calling becomes viable commercially, such as quality of service (QoS), roaming across different wireless platforms and also the relatively short range of Wi-Fi signals. But with vendors currently working toward standards to address these challenges, it is likely we will be at the foot of the adoption bell curve by mid-2006."

The healthcare industry has been among the earliest adopters of wireless VoIP technology. Cellular frequency signals present problems for sensitive equipment in hospitals and other healthcare facilities, yet hospital staff — doctors in particular — often need to be contacted by voice. Wireless VoIP fits the bill.

Universities and the hospitality, retail and manufacturing sectors have also been early adopters because their user bases tend to be highly mobile individuals. When an organization adds VoIP to an existing wireless network, every employee can have a cordless phone in the office, carrying their extensions with them everywhere they go — much like a cordless phone in the home — without the need to buy cell phone contracts for everyone.

Some Challenges

In a wireless VoIP implementation, mobile handsets connect to the network over wireless access points (APs), routing the voice traffic to the telephony server or digital PBX. It's quite similar to the way handsets connect to the network over Ethernet cables in a wired LAN. However, implementing VoWLAN isn't simply a matter of adding another application to the wireless data network. Just as wired LANs must be upgraded for VoIP to account for QoS, reliability and security concerns, chances are that an existing WLAN will also need upgrading.

Part of the problem is that wireless is a contention media — users must share the available bandwidth, so wireless will always have overhead issues and more complex management requirements. While data traffic tends to be sporadic and bursty, voice QoS can't tolerate delays, so throughput capacity is a key consideration. The number of simultaneous calls a single wireless AP can support varies from five to 40, depending on the codecs and data rates used. The WLAN must be engineered with consideration for those factors.

Coverage is another key issue. Unlike data-only WLANs, a VoWLAN infrastructure must be designed for mobile use, with blanket coverage of places such as hallways, stairwells, bathrooms and elevators where people will often need to use their phones. This means more APs must be positioned throughout the facility with sufficient overlapping coverage to eliminate dead spots.

Security has been one of the key sticking points for wireless VoIP. The

flawed Wired Equivalent Privacy (WEP) standard originally defined in the Institute of Electrical and Electronics Engineers 802.11 wireless standard has long been considered a weakness. However, the IEEE's 802.11i WLAN security standard is a major improvement, incorporating the Advanced Encryption Standard (AES) encryption algorithm and the 802.1x authentication framework. It allows support for the Wi-Fi Protected Access (WPA) security standard and locks down radio frequency communications.

Natural Progression

While wireless VoIP implementations remain somewhat tricky, the potential is undeniable. That's why Rio Rancho, N.M., a city of 64,000 just north of Albuquerque, recently rolled out a carrier-class, metro-wide VoWLAN service that competes with the traditional incumbent carrier's local loop. The wireless VoIP network is believed to be the largest of its kind deployed in a U.S. metropolitan area.

According to Frost and Sullivan, wireless VoIP will increase its presence in the next year. As more and more enterprises install wireless networks, integrating voice is a natural progression. The rapid development of communications standards such as SIP and the emergence of dual-mode handsets should push wireless VoIP into both the enterprise and consumer markets, the research firm says.

"Wireless networking technologies represent not only the present but also the future of global communications," said Frost and Sullivan Research Manager Girish Solanki. "Wireless technologies are not only enhancing the functionality of existing infrastructure to unprecedented levels, but also impacting virtually every facet of human society."

VoIP and wireless LANs are still clearly in the courtship phase, with issues such as QoS, coverage and security still to be fully worked out. But given their combined potential for merging data, voice and mobility into one package, these two technologies certainly look as though they were made for each other.

Dual-mode Handsets to Boost VoWLAN

The continued development of dual-mode phones that can connect to either a conventional cellular service or a wireless network should drive the adoption of wireless VoIP, various industry experts say.

Dual-mode phones essentially act as cordless phones when near a wireless signal and as cellular phones everywhere else. Utilizing VoWLAN (voice over wireless LAN), they send digitized voice packets over the Internet via a wireless access point, but seamlessly switch over to a cell phone network whenever necessary. The net result is greater flexibility in mobile communications as well as potential cost savings gained by shifting onto the Internet call minutes that would otherwise count against a typical cell phone plan.

At least three U.S. telecommunications companies — SBC Communications, BellSouth and Sprint — say they plan to offer dual-mode services by the end of 2005. NTT DoCoMo in Japan is already offering dual-mode phones from NEC that can hand off calls between its cellular network and enter-

prise customers' WLANs. KT Telecom in Korea is offering a service with hand-off between cellular and wireless hotspots or residential Wi-Fi networks. British Telecom has run trials with Motorola dual-mode phones that use Bluetooth to connect to an enterprise WLAN, and is now reportedly in trials with a Wi-Fi version.

By 2009, there will be a market for 46.8 million VoWLAN phones, of which 64 percent (29.8 million) will be dual-mode devices, according to a new report by London-based technology advisor firm Disruptive Analysis. ABI Research takes an even more aggressive stance, projecting that more than 100 million dual-mode handsets will be sold by 2010.

"The advantages of dual-mode handsets and services, when they arrive, can be summed up in two words: seamless and economical," said ABI Research senior analyst Philip Solis. "Cellular coverage is far from ideal indoors [and] most people would greatly prefer to have one phone that works just as well in the depths of a large building as it does outdoors."

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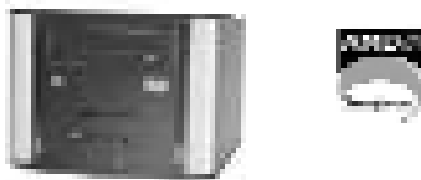
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Extending SANs

*iFCP offers the best of both
Fibre Channel and IP storage.*

Storage networks have caught on because they deliver on the promise of improved availability and management of data. But while the Fibre Channel architecture of many enterprise SAN implementations offers high performance within the data center, it was not designed to provide connectivity between multiple remote sites and lacks the range to allow many other potential benefits, such as geographically dispersed disaster recovery.

IP storage protocols can resolve those shortcomings, creating the ability to drive storage data between multiple locations separated by thousands of miles. That allows even multinational companies to share stored data, regardless of geography.

IP storage generally refers to a SAN solution that utilizes standard Ethernet connectivity in one of two ways — either building a SAN using Gigabit Ethernet infrastructure instead of Fibre Channel, or using an Ethernet link to interconnect Fibre Channel SAN environments.

traffic to, and receive storage traffic from, other nodes in the IP network.

“With iFCP, you get fast-write capabilities and compression, which can help maximize throughput over long distances,” said Peter Dougherty, McData’s vice president of switch platforms. “iFCP does true routing, while FCIP is just a tunneling protocol.”

Going the Distance

The San Diego Super Computer Center recently demonstrated the long-distance throughput of iFCP by using it in the construction of what was essentially a coast-to-coast SAN. Fibre Channel-to-iFCP gateways allowed a processor in Baltimore to use a SAN located in San Diego as its primary data storage facility. The setup achieved a data throughput of 721MBps over a 5,000-mile roundtrip — more than enough to satisfy most disaster recovery requirements for speed and distance.

In addition, iFCP includes network address translation that enables SAN routing for fault isolation between connected SANs. A fault on one SAN will propagate to the others over an FCIP tunnel, but not across an iFCP connection. IP storage

Building a Bridge

The iSCSI protocol has become such a popular method for creating Fibre Channel-free SANs that it has become almost synonymous with the term “IP storage.” Yet, organizations that already have a Fibre Channel SAN up and running can still enjoy the benefits of IP networking with either of two SAN bridging protocols — Fibre Channel over TCP/IP (FCIP) or Internet Fibre Channel Protocol (iFCP).

While both protocols interconnect and extend Fibre Channels SANs, iFCP addresses some problems that FCIP does not. For example, FCIP is a tunneling protocol that simply encapsulates Fibre Channel data and forwards it over a TCP/IP network as an extension of the existing Fibre Channel network. However, FCIP is only equipped to work within the Fibre Channel environment, while the storage industry trend is increasingly toward the Internet-based storage network. Because iFCP gateways can either replace or complement existing Fibre Channel fabrics, iFCP can be used to facilitate migration from a Fibre Channel SAN to an IP SAN or a hybrid network.

The key advantage for iFCP over FCIP is the ability to move data from specific devices between SANs. iFCP wraps Fibre Channel data in IP packets and maps IP addresses to individual Fibre Channel devices. Each Fibre Channel device has its own identity in the IP network so it can individually send storage

“With iFCP, you get fast-write capabilities and compression, which can help maximize throughput over long distances. iFCP does true routing, while FCIP is just a tunneling protocol.”

switches running iFCP also eliminate some of the interoperability and management issues associated with Fibre Channel fabric switches. An IT administrator can link a SAN fabric from one vendor to a SAN fabric from another vendor while still maintaining fault-tolerant conditions.

The benefits of connecting storage networks over existing IP plumbing are well established. IP is a mature technology, free of interoperability issues and well-understood by most IT shops. It enables organizations to leverage their existing resources to create storage pools that can be accessed over LAN, MAN or WAN environments, without the need to alter storage applications. With iFCP, organizations that already have invested heavily in Fibre Channel storage networks still can realize all the benefits of IP storage.

The Big Picture

Holistic approach to regulatory compliance mandates can create strategic advantage.

Sarbanes-Oxley. HIPAA. Gramm-Leach-Bliley. The USA Patriot Act. Basel II. The California Security Breach Information Act. The Securities and Exchange Commission Rule 17a-4. The list goes on and on.

These are just a few of the more than 120 corporate governance regulations with which organizations are struggling to comply. IT staffs, in particular, must attain a solid understanding of each set of requirements, and then learn how to adapt their tools, methodologies and knowledge base to meet the requirements and keep their organizations up to date.

Experts say the key to dealing with this onslaught of government mandates is adopting a holistic approach to compliance, rather than attempting to create individual solutions on an ad hoc basis. The Gartner Group has estimated that organizations attempting to implement individual solutions for each regulatory challenge will spend 10 times more on compliance projects than those that take a comprehensive approach. Separate solutions lead to duplication of effort, as well as the risk that one compliance "team" will deal less effectively with a specific compliance thread — such as security —

than another team, thereby creating gaps in the overall endeavor.

Framework for Compliance

The Compliance Consortium, an international group that promotes effective governance, risk and compliance management, recently merged with the Open Compliance and Ethics Group (OCEG) and published an operational approach for managing compliance. Applicable to both public and private companies, the framework is designed to help organizations take a strategic approach to improving overall business operations rather than a tactical approach that is narrowly focused on individual regulations.

"Unquestionably, the passage of the Sarbanes-Oxley Act has increased the focus for public companies on the areas of corporate governance, risk management and compliance," said Ted Frank, chairman of the Compliance Consortium advisory committee and president of Axentis. "It's important to remember that, for many companies, Sarbanes-Oxley is just one of hundreds of mandates from the SEC, FDA and other regulatory bodies

that they must manage. Our goal with the creation of this framework is to help all organizations define, execute and ultimately profit from low risk and efficient governance, risk and compliance management, regardless of the specific regulation or statute."

The framework is built around U.S. Sentencing Commission guidelines, which are used by federal courts to determine the severity of the sentence if it is determined that an organization has committed fraud or other criminal conduct. These guidelines range from clearly assigning responsibilities at all levels of the organization to establishing incentives and discipline to promote compliance. Additionally, the Consortium says, governance, risk and compliance must be viewed as a distinct area of focus — apart from other important business considerations such as market expansion, IT investments or management issues.

Challenges and Opportunities

Responses to the challenges of the myriad government mandates typically focus on the burdens: the cost of compli-

ance, the potential penalties for non-compliance and the additional load on over-worked IT departments. These are all legitimate concerns.

However, compliance also presents significant opportunities. Compliance requirements ask for accurate information, timely dissemination of facts, preservation of records, protection of confidentiality, and the certification of business-specific practices.

By integrating compliance fixes, IT optimization can also deliver competitive differentiation and profit advantages. In addition, the ability to demonstrate compliance can increase an organization's value to potential partners.

"A well-defined set of organizing principles for good governance, risk and compliance is an essential ingredient to a successful recipe for actualizing specific principles into the practices of everyday business," said Scott Mitchell, president and CEO of OCEG. "The Compliance Consortium has made a useful contribution in support of OCEG's mission — to help organizations align their governance, risk and compliance management activities to drive business performance and promote integrity."

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Virtual Reality

Virtualization helps organizations reduce IT costs and management headaches through consolidation.

More storage capacity. More processing power. More bandwidth. The constant demand for “more” has led many organizations to add servers, storage devices and network gear at an astounding rate. The result is an overly complex computing environment that strains IT resources and makes it difficult for IT managers to meet business demands. Talk about your Catch-22.

Complexity also increases costs — some of which boggle the mind. For example, simply supplying electrical power to all those devices can add up to thousands of dollars per year. Data center real estate and cooling costs also impact IT budgets.

Other costs associated with data center complexity are considerably higher. Beyond capital investments in redundant hardware, total cost of ownership quickly mounts due to the increased IT staffing needed to maintain the complex environment. Simply managing backups and dis-

tributing patches and upgrades can demand many staff hours. If network resources are geographically dispersed, on-site personnel may be required at each location.

Virtualization can help organizations rein in rampant data center growth by presenting devices on the network in a way that maximizes their value to end-users and applications rather than by device, configuration or location. It provides a logical rather than physical view of IT resources, enabling organizations to get more storage capacity, more processing power and more bandwidth out of less gear.

Server Virtualization

Oftentimes servers are deployed to run one application — even if that application is used by only a handful of users. Server virtualization allows organizations to consolidate their server farms by creat-

ing multiple virtual servers on a single piece of hardware. As far as the operating system and application is concerned, each virtual server is a distinct machine.

Server virtualization reduces hardware costs since a single physical server can be used for multiple virtual machines. It can also decrease administrative costs dramatically. Reduced server maintenance and application management burdens allow IT departments to do more with less staff — and better utilize staff skills throughout a unified environment.

Server virtualization accelerates application rollout and reduces the risk associated with application trials. While it generally takes five to 10 days to get a server purchased and set up, a virtual server can be set up in a few minutes. That makes it easy for organizations to test new software, and eliminates the cost of adding new hardware for an application that may not be used.

Storage Virtualization

Storage virtualization is, in some ways, opposite of server virtualization. Instead of dividing one physical device into multiple virtual machines, storage virtualization creates a unified view of storage capacity independent of the individual devices. Pooling storage can help administrators improve upon the typical 40 percent to 50 percent capacity utilization rates that typify most IT shops, permitting companies to defer investments in additional storage devices.

Virtualization reduces administrative costs. Administrators can allocate storage across multiple servers via a graphical interface, and policies can be put in place to automatically assign additional capacity if an application is running out of space. Storage devices can be removed, upgraded or changed without the need to tell the operating system that the storage topology is different. Since the cost of managing storage is up to five times the cost of procuring it, virtualization can make storage truly efficient.

Virtualization also aids disaster recovery. Before virtualization, data replication happened between like arrays or like hosts. With virtualization, IT shops can replicate asymmetrically — that is, without having to provide a matching host or disk at the disaster recovery site.

Network Virtualization

Virtualization is not new to the network topology. Virtual LANs allow geo-

graphically dispersed PCs to be logically grouped — by department or primary application, for example. Virtual private networks create secure “tunnels” for remote access to network resources over the Internet.

Now, a new class of switches is enabling organizations to use network virtualization for consolidation and improved flexibility. Virtualization switches combine multiple network and security functions in a single appliance or blade device. This reduces the number of devices on the network yet allows network administrators to deploy, configure and manage each function separately.

Most importantly, administrators can allocate bandwidth and other network resources dynamically based upon application or end-user requirements, eliminating the need to overprovision bandwidth to meet periodic spikes in demand. Network virtualization also reduces the complexity and risk associated with deploying new servers or applications since administrators can allocate network resources without altering the physical infrastructure.

Application Virtualization

Virtualization can be applied to more than hardware. Application virtualization — or “sandboxing” — isolates applications from the operating system configuration. Applications operate within a virtual “run-time” environment they carry with them. Thus, multiple applications or different versions of the same application can run on the same machine without conflict.

Virtualization is generating a lot of excitement in the IT industry, but it’s far from new. Its long history began in the mainframe environment and extends to servers, storage and virtual LANs. Now the concept is spreading rapidly throughout the IT infrastructure as organizations seek to simplify their environments and improve performance.

It’s not a panacea, however. Experts warn that virtualization is in its early stages, and lacks relevant standards. The fully virtualized environment is likely several years away.

Still, organizations can benefit from virtualization today. With careful planning, virtualization can halt device proliferation, ease management headaches and improve security and service levels. Given virtual pools of IT resources that can be allocated as needed, IT administrators can meet business requirements with fewer physical devices.

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U.S. Falling Behind in Nanotech

In its report to the Research Subcommittee of the House Science Committee in June, Lux Research said the U.S. still leads the world in nanotechnology by almost every standard, but cautions that several significant trends threaten that status.

Although the U.S. devotes the most government funding to nanotech research on an absolute basis, it has already fallen behind Asian competitors on a relative basis. In addition, other nations lead the U.S. in many promising nanotech applications. Nanotechnology enables manufacturers to fabricate structures inexpensively with molecular-level precision.

"U.S. policy makers must grow federal funding for nanotech research; eliminate regulatory uncertainty surrounding environmental, health and safety issues; and do a better job of retaining foreign Ph.D. students," said Matthew Nordan, vice president of research for Lux Research. "In addition, the U.S. must create financial incentives aligned with desirable applications and approach export controls sensibly."

Phishing Attacks Rise Again

Phishing attempts were once again on the rise in June according to Postini, a provider of e-mail security and management services. The number of phishing attempts, which had been decreasing over the previous two months, reached its second highest level since Postini started tracking phishing rates. Only March saw a higher number of phishing attempts in 2005.

"Phishing attempts will continue to plague enterprise users for the foreseeable future," said Andrew Lochart, senior director of marketing at Postini. "As long as phishing remains a threat to businesses and their employees, it is imperative that businesses implement strong spam and phishing defenses."

While phishing scams were on the rise in June, there was a decrease in the number of virus-infected e-mail messages. The number of directory harvest attacks (DHAs) against corporate networks also decreased 23 percent.

Identity Theft Mars Consumer Confidence

Twenty percent of people responding to a new survey by Privacy & American Business and Deloitte & Touche reported that they have personally been a victim of identity fraud or theft. The survey sample was selected to represent the total U.S. population according to the 2004 U.S. Census. If the data is projected, the results suggest that 44 million American adults have been a victim of identity fraud or theft — an increase of 11 million victims since 2003.

Half of survey respondents believed that businesses were not handling their personal information in a proper and confidential way, and 78 percent agreed that consumers have lost all control over how personal information is collected and used by companies. A majority (59 percent) did not agree that existing laws and organizational practices provide a reasonable level of protection for consumer privacy.

DOJ Targets Organized Piracy

The Justice Department has launched Operation Site Down, a far-reaching and aggressive international enforcement action against criminal organizations involved in the illegal online distribution of copyrighted material.

Beginning in June, the FBI and law enforcement from 10 other countries conducted more than 90 searches designed to disrupt and dismantle criminal organizations that illegally distribute and trade in copyrighted software, movies, music and games on the Internet. At least eight major online distribution sites were dismantled, and more than 120 leading members of the organized piracy underground were identified.

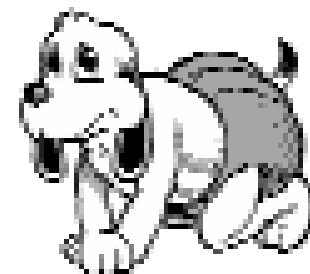
"By dismantling these networks, the Department is striking at the top of the copyright piracy supply chain — a distribution chain that provides the vast majority of the illegal digital content now available online," said Attorney General Alberto R. Gonzales.



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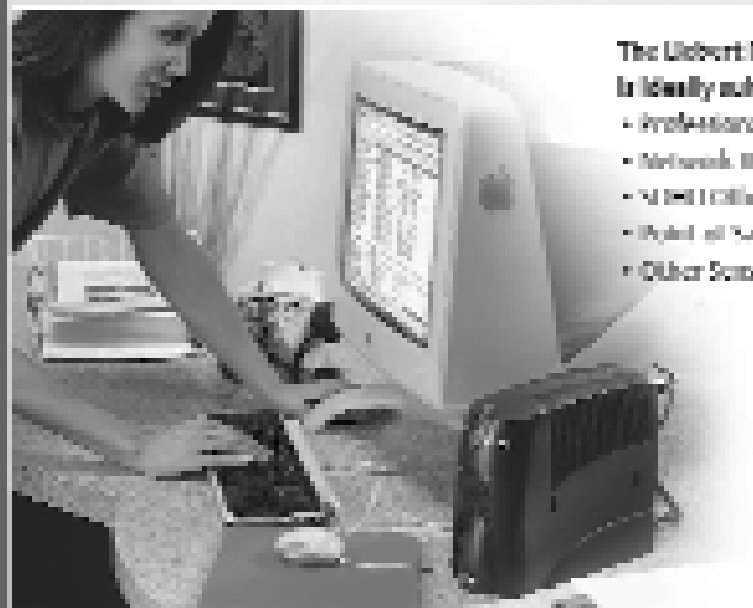
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