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The Need for Speed

Ispirian helps local engineering company improve applications performance and daily productivity.

When Thomas Berkeley, owner of Chesterfield, Mo.-based Thomas Berkeley Consulting Engineer, Inc., needed to replace two computers and revamp his computer network – or lack thereof – it was no surprise that he was looking for a high-performance package that would give him the speed he was used to.

The nationally ranked skier and high-performance car fanatic was interested in state-of-the-art technology and performance for his two new custom computers and LAN.

And what better place to find good customer service than from long-time friend and neighbor Tom Smith. Smith is the president of locally owned and operated Ispirian, Inc. and shares Berkeley's interest in high-performance equipment.

"We're neighbors and we just got to talking one day about what each of us does for a living and what our hobbies and interests are," said Berkeley. "We run some pretty memory- and processor-intensive programs and needed an easy way to share files in the office and to access the Internet – something we hadn't been able to do previously. Ispirian was able to help us

solve those problems quickly and cost-efficiently."

Thomas Berkeley Consulting Engineer designs mechanical electrical systems for commercial buildings, focusing primarily on the public school market. As such, the new computer network had to support complex, memory-intensive programs such as AutoCAD.

While the Dell computers that Berkeley was using prior to the new install were okay, he wanted two computers custom-built to high-end specifications that would improve productivity and not break his budget.

Ispirian set Berkeley's business up with two Ispirian-branded P160 computers. The two components central to the P160 computers' best-of-breed performance are the AMD Athlon 64x2 Dual Core Processor and Windows XP Professional x64 Edition.

The AMD Athlon 64x2 Dual Core Processor runs on AMD 64, a revolutionary technology that allows the processor to run 32-bit applications at full speed while enabling the coming wave of powerful, 64-bit software applications. AMD 64 technology shatters barriers to new and advanced software that requires 64-bit technology and blazing processor performance. Power-hungry enthusiasts such as Berkeley can explore the full potential of AMD 64 technology while enjoying outstanding performance on all of his in-house applications.

In addition, the AMD Athlon 64x2 Dual Core Processor is the only Windows-compatible 64-bit PC processor and the world's most technically advanced PC processor. Windows XP Professional x64 Edition is a rich platform that enables the next generation of high-performance computing. 64-bit native applications can deliver more data per clock cycle, making them run

faster and more efficiently. Furthermore, Windows XP Professional x64 Edition supports up to 128GB of RAM and 16 terabytes of virtual memory, enabling applications to run faster when working with large data sets. Applications can preload substantially more data into virtual memory, allowing rapid access by the 64-bit processor.

"The computers are extremely fast and robust," said Berkeley. "They not only meet and surpass our needs in terms of computing power, they perform even our most demanding jobs far more quickly than we could ever imagine possible."

Once Berkeley's computers were set up and ready to go, Ispirian networked them together on a small LAN to ease file sharing among users.

"In the past, we had to e-mail documents back and forth," said Berkeley. "It was hard to keep document versions straight and just ate up a lot of valuable time."

Another improvement to the technology at Thomas Berkeley Consulting Engineer is the shared broadband Internet connection.

"We are able to do a lot of research and find equipment for projects on the Internet very quickly," said Berkeley. "Prior to the high-speed Internet connection we had to make lots and lots of phone calls. It just makes day-to-day business a lot less stressful and much more productive. We're very pleased with our decision to purchase from a local supplier who was not only able to deliver a solution faster and at less cost than purchasing similar systems from a national vendor, but one that was tailored to our precise needs."

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WAFS Goes the Distance

Wide area file services blaze a new trail for remote office connectivity.

“Wanted: Young, skinny, wiry fellows. Not over 18. Must be expert riders. Willing to risk death daily. Orphans preferred.”

This was the ad that appeared in newspapers 150 years ago to recruit riders for the Pony Express, a breakthrough in long-distance communication for the time. With this relay system of horses and riders, mail could be delivered between St. Joseph, Mo., and Sacramento, Calif., in about two weeks.

Today, of course, global communication networks move information at near light speed. Nevertheless, organizations with remote branches and distributed computing environments still face significant challenges in accessing information over distance.

From a network administrator's viewpoint, providing data access to branch

locations creates concerns about cost, security, maintenance and management. Users in multiple locations all require access to the same corporate data, and they all need to see the most current information instantly — even as it continually changes. In addition, all this data must be backed up regularly. That is no easy feat. Organizations typically have taken two different approaches, and both of them have substantial drawbacks.

Poor Options

Some organizations choose to consolidate all data in servers at a single location, allowing branch offices access over the WAN. This ensures a single-source for all data updates and simplifies the backup process, but it creates latency issues that make accessing files over the WAN unacceptably slow.

Another approach is to equip

branch locations with their own file servers in order to provide local access that averts the latency issue. Unfortunately, this can lead to the creation of multiple versions of any files that are modified, and it eliminates the ability to centrally manage backups. What's more, storage costs can go through the roof because of the large storage volumes each branch requires.

“In distributed organizations, nearly one-third of the IT budget is invested in servicing branch offices, so delivering cost-effective solutions that increase productivity and performance at remote locations is critical to meeting operational goals,” said Radhesh Balakrishnan, group product manager of the Windows Server Division at Microsoft.

To the Rescue

An emerging technology known as wide area file services (WAFS) could be the answer. WAFS is designed to consolidate storage, file servers, print servers and backup devices from branch offices into the data center, while still giving all connected locations fast and easy access to files and applications.

Although vendors such as Cisco, Brocade, Tacit Networks, Riverbed and Signiant take somewhat different approaches, WAFS platforms are typically dedicated devices attached to the central storage network and linked over the WAN to edge appliances at each branch office. The edge devices act as gateways, optimizing and accelerating communications to provide LAN-like speeds over wide-area links. The central server, however, maintains responsibility for all permissions, access controls, data integrity, file management and data protection for the remote locations.

WAFS technology began to appear over the past two to three years as organizations sought to simplify their IT infrastructures in response to regulations such as Sarbanes-Oxley that require high levels of data integrity. Various industry studies have shown that as much as 75 percent of an organization's data is stored outside its data center, residing at the edges on file servers, desktops or laptops. By moving servers back into the data center, all data could be more quickly and reliably presented in response to an audit.

Adoption of WAFS technology is broadening, according to analysts at the Taneja Group. The market, measured in tens of millions of dollars today, doubled in 2005 and will grow 150 percent to 200 percent in 2006.

“Large organizations often have more than a hundred branch offices, and

there are more than a million remote/branch offices in the United States,” said Brian Garrett, industry analyst at the Enterprise Strategy Group. “These organizations can save billions of dollars by centralizing data management, which reduces the need for IT staffing and server proliferation in remote offices and simplifies tasks such as backup and compliance adherence, providing immediate cost savings.”

Cutting the Chat

The benefits of storage and server consolidation have been well documented, but those benefits are not typically appreciated at branch offices or remote locations. The problem has been that sending file-based data over a WAN is an inherently inefficient operation.

Standard file-access protocols such as Common Internet File System (CIFS) for Microsoft Windows environments and Network File System (NFS) for UNIX were designed to work on LANs, and they perform poorly across a WAN. These protocols are often described as being “chatty” because of the amount of communication that must take place between the client and server to complete any action.

The basic act of saving a file, for example, may generate hundreds of CIFS messages between client and server. Files must be divided into packets for transmission, and the application and storage system need to exchange messages to acknowledge and verify that packets are being transmitted and the file is being saved. Many organizations have tried to correct this by adding more bandwidth, only to discover that a bigger pipe doesn't do anything to speed up the synchronous exchange of these messages.

WAFS addresses this issue in a couple of ways. First, once a file has been cached at the branch location's edge device only the parts of the file that have been changed must be transmitted over the WAN, which reduces the number of CIFS messages required. In addition, optimization and acceleration techniques allow any necessary CIFS messages to be set at higher priority, resulting in higher throughput.

Although the world has made astonishing advances in long-distance communication since the days of the Pony Express, there remain some areas of relative wilderness. For those organizations that require the ability to push information to the far outposts of their branch offices, WAFS platforms can add substantial network horsepower.

Hurricanes Focus Attention on Backup/Recovery

In the wake of hurricanes Rita and Katrina, IT professionals are re-examining their backup and recovery processes to determine how they fit into an overall disaster recovery scenario, according to an online survey conducted from mid-September through early October 2005 by the Data Management Institute and Toigo Partners International in conjunction with Topio, a leading provider of enterprise software for data replication and recovery.

The survey reveals a clear shift in emphasis toward recovery performance. More than half of the respondents said their top priority was to either implement or improve on the time needed to recover key applications and data in the event of a disaster, with almost two-thirds (64 percent) saying they have clearly defined recovery policies and objectives for that information.

“The survey shows that companies have come to appreciate the vital importance of being able to access the full range of their data; the ability to recover mission-critical data is a good start, but only a start,” said Chris Hyrne, Topio's vice president of marketing. “The good news is that the vast

majority have grown to understand the importance of disaster planning and recovery to help them get back all their information as quickly as possible, and have implemented plans in that direction. Increasingly, they also realize the business value of moving data from the production site to offsite protection in a compact time frame as a key component in being able to implement a full recovery when the need arises.”

Other key findings included:

- Disk-to-disk backup is rivaling tape backup as the preferred method of local data backup and restore; 83 percent of all respondents said they would back up data to disk by the end of next year, while 92 percent said they are still using tape.

- Remote (asynchronous) replication will be deployed more than any other solution over the next 12 months, with 59 percent reporting they are either using it or will implement it by the end of 2006 for offsite data protection and disaster recovery.

- While the boardroom is increasingly influencing disaster recovery plans (22 percent), IT staffs are still more likely to be the primary driver behind implementation (30 percent) of a corporate disaster recovery plan.

DNS Servers Vulnerable

Many of the Domain Name System (DNS) servers that underpin the workings of the Internet are wrongly configured or running out-of-date software, leaving them vulnerable to malicious attacks, according to a recent study by Internet performance company The Measurement Factory.

Domain-name resolution conducted by these servers is required to perform any Internet-related request. They map names (e.g., yahoo.com) to IP addresses (e.g., 66.94.234.13), directing Internet inquiries to the appropriate location. Should an enterprise or organization's DNS systems fail, all Internet functions, such as e-mail and Web-site access, will not be available.

"Given what enterprises are risking — the availability of all of their network services — these results are frightening, especially since there are easy ways to address these issues," said Cricket Liu, vice president of architecture at Infoblox, which commissioned the study.

Tighter Bank Security Urged

Banking regulators have urged U.S. financial institutions to bolster their Internet security by the end of next year. The Federal Financial Institutions Examination Council sent a letter in October to U.S. banks indicating they should stop allowing access to online banking accounts with just one form of technology authentication — a PIN or password.

Using several layers of security — or "multi-factor authentication" — would help thwart phishing scams and other threats, according to the council, an umbrella group for regulators at the Federal Deposit Insurance Corp., the Federal Reserve, the Office of the Comptroller of the Currency, the Office of Thrift Supervision and the National Credit Union Administration.

The council did not recommend any particular additional security technology in its new guidelines. But its members consider "single-factor authentication ... to be inadequate for high-risk transactions involving access to customer information or the movement of information to other parties," the council said.

SOX Compliance Creates Value

Companies that comply with Sarbanes-Oxley mandates are also gaining greater insight into their financial reporting, creating an overall positive impact on business performance, according to a recent survey from www.RevenueRecognition.com in association with IDC.

The survey of 220 business leaders focused on the perceptions of the costs and effectiveness of complying with Sarbanes-Oxley sections 302 and 404. The results show that while costs are front loaded, there is proportional value once companies get through the full compliance process.

"As compliance processes evolve, many companies will look to technology to achieve both compliance and business benefits," said Kathleen Wilhide, director of Compliance and Business Performance Management research at IDC. "By automating revenue recognition processes, organizations can more readily achieve revenue compliance as well as improved revenue reporting. This not only reduces risk, but lays the foundation for better business performance by providing more timely and accurate information to executives."

Cutting the Cord

Between 23 percent and 37 percent of U.S. wireless subscribers will use a wireless phone as their primary telephone by 2009, according to a survey conducted recently by high-tech market research firm In-Stat. About 9.4 percent of U.S. wireless subscribers already use a wireless phone as their primary phone, the firm reported.

"Those who are considering wireless substitution for landline are primarily motivated by lifestyle issues, as long as they don't have to give up much in terms of quality, reliability or services," said David Chamberlain, In-Stat analyst. "Wireless carriers can stimulate substitution by continuing to attract customers to advanced wireless features and educating them about availability of number portability."

In-Stat said heavy wireless users are among those most likely to discard wired phones. Barriers to landline replacement include in-building coverage and fear of inconveniences like changing a number — problems that can be solved through network build-out and consumer education, the study said.

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For performance and power in a 1U form factor, look no further than the Transport GT24 (B2891). With support for Dual AMD Opteron™ 200 series processors and up to 16GB of DDR400 memory, plus dual Gigabit Ethernet LAN ports, expansion ports for PCI Express and PCI-X* cards, and (4) hot-swap SATA or SCSI drive bays, this system has everything you need to upgrade your server infrastructure. With auto fan speed support and a swift tool-less enclosure design, the Transport GT24 (B2891) clearly provides nothing less than a trouble-free out-of-box experience.

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- Single/Dual-Core technology support
- (4) hot-swap SATA or SCSI drive bays
- Dual Slots: PCI-X and/or PCI Express expansion options
- Full-length 25.4" (645mm) Chassis Depth
- Up to 16GB of DDR400 memory with ECC support
- Dual Gigabit Ethernet LAN ports
- Tool-less enclosure design



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Outsourcing Cures Help Desk Headaches

IT support is critical to your organization. A help desk isn't.

Last Friday, the system required Dave to change his password. Dave was rushed, trying to finish up a few things so he could get out of town for a short vacation. Now it's Wednesday. Dave is back in the office and can't for the life of him remember the new password. He calls IT support, but the technician is busy fixing a server problem impacting the entire accounting department. Dave sits around half the morning, waiting for help so he can log in and do his job.

It's not known how many situations like these play out in offices large and small each workday. It is known that almost one of every three calls placed to the help desk is related to forgotten passwords. Password resets cost organizations a tremendous amount of money, both in IT support time and lost productivity as workers wait for help.

But password resets aren't the only help desk challenges. From assistance with a seldom-used application to recovery from a full-blown system crash, end-users require IT support from time to time. And when they need it, they want it fast.

Unfortunately, budget cutbacks have left many IT support teams scrambling to cover day-to-day tasks, much less individual end-user crises. Few organizations have the luxury of a fully staffed help desk devoted to end-user needs. In small shops a lone tech may handle everything from the network to the desktop. More serious issues may be kept waiting while a technician helps end-users — or vice-versa.

Help for the Help Desk

That's why help desk outsourcing makes sense for many organizations. By outsourcing at least some end-user support requests to a third-party provider, organizations can improve response time while dramatically reducing IT costs.

It's simply a matter of economies of scale. Managed help desk service providers aggregate the support needs of a number of organizations. Instead of paying the salaries of enough dedicated support staff to handle spikes in activity, outsourcing customers pay

only for what they use and generally get guaranteed response time.

Help desk outsourcing is ideal for organizations that don't have in-house IT support. Outsourcing enables these organizations to get the support they need immediately with no capital outlays or hiring costs.

Most managed help desk providers offer a number of options to meet specific needs. Organizations can opt to outsource first-tier support calls — the simplest end-user requests, such as password resets — or more complex third-tier calls. Services can be provided 8x5 or around the clock. Some managed help desk providers can integrate their help desk software with the customer's internal systems. And simply working with the outsourcing provider to define service levels and processes can streamline help desk functions.

Why Bother?

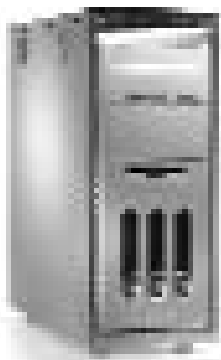
According to a Forrester Research survey of more than 2,000 corporate end-users in U.S. companies across a variety of industries and mix of job functions, the corporate help desk fell in at the bottom of the list in terms of end-user satisfaction with IT. Not only are end-users dissatisfied with help 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.

Given the high cost and general dissatisfaction associated with the in-house help desk, organizations should ask themselves one simple question: Why bother? A managed help desk provider can provide access to highly qualified technicians to supplement or replace existing IT resources and improve response time. Outsourcing the help desk has helped many organizations improve quality while reducing IT overhead.

The P160... Made from recycled fighter jets.*

There are plenty of ways to experience mind-numbing performance. You could strap on a jet and blaze across the sky. Or you could just grab a custom-built, AMD64 Dual Core-powered P160 from Ispirian. Carved from supremely strong anodized aluminum — the same stuff fighter pilots swear by — this whisper-quiet case boasts 10 drive bays. A swiveling control panel. And a low-speed 120mm fan. So get a P160. And experience the kind of performance usually reserved for our folks in blue.



*OK, that's not really true. But it sure sounds cool.

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Building in Flexibility

Service-oriented architecture promises to revolutionize IT functionality.

In today's fast-paced business environment, companies face the challenge of implementing a flexible IT infrastructure that supports ongoing change and business processes innovation. Such flexibility is the promise of a Web services-based approach, and this architectural shift is a key marketplace trend in the computer industry today.

A service-oriented architecture (SOA) is a way of viewing business processes as a set of linked services, and an approach that uses open standards to make a company's business operations more efficient, effective and collaborative. With business processes supported by an SOA foundation, a company can make its previously siloed data and software applications better interoperate across business units, as well as with third parties. This approach leverages existing resources to help improve productivity, quickly react to changing market conditions and seize opportunities.

According to Gartner Research Vice President David W. Cearley, SOA is one of five key trends that represent "inevitable and irrevocable shifts in the information technology landscape. In the face of such shifts IT decision-makers must ask — 'When do I have to face up to this, or end up left behind?' and 'How do I actually get some business value out of this?'"

Unlimited Functionality

An SOA is an approach to application development that breaks down business applications into "services" — specific pieces of functionality — that can be combined and re-used. It enables application functionality to be delivered to any end-user interface or be used to build other services. This modular approach allows businesses to build applications that can provide more flexibility.

In other words, business processes and data are no longer "trapped" within monolithic applications that cannot communicate with other applications and interfaces. Some obvious applications of an SOA include customer and employee self-service portals, Web enablement of legacy systems, supply-chain management and executive dashboards.

However, an SOA can enable a wide range of applications, including trading exchanges, e-commerce, business-process management, reservation and loyalty systems, e-government and service delivery. It offers strategic benefits for organizations in industries such as energy, financial services, government, healthcare, insurance, travel, pharmaceuticals, manufacturing, publishing, retail,

shipping and telecommunications.

"With consolidation and mega-mergers impacting so many market sectors, customers are telling us they want to adopt technologies that can help them integrate systems to maximize business value as well as enable them to implement innovative business strategies that can

improve their competitive positions," said Alfred Chuang, chairman and chief executive officer, BEA Systems. "We see SOA as an enabler — an IT approach that can help companies unify their infrastructures, work smarter and faster, and turn creative ideas into strategic advantages."

Spurred by Web Services Standards

The SOA concept is linked to Web services technologies, such as extensible markup language (XML) and Simple Object Access Protocol (SOAP), as these open Internet standards provide a near-ubiquitous framework for application integration. According to Gartner, advances in Web services technology and standards are the driving forces that will take SOA to mainstream adoption.

"Until now, service-oriented architectures have only been implemented by a few leading-edge enterprises due to high costs and the level of technical skill required," said Massimo Pezzini, VP and distinguished analyst at Gartner. "However, Web services are now making it both affordable and possible from a skills point of view."

However, an SOA isn't a technology per se but rather a set of principles and practices that makes the enterprise more agile and less locked into certain ways of doing business. It is a key component of the real-time enterprise, creating the foundation to respond faster to changing business requirements and to react to events in real-time.

Poised to Dominate the Industry

By 2006, more than 60 percent of the \$527 billion market for IT professional services will be based on Web services standards and technology, according to Gartner, and by 2008, 80 percent of software development projects will be based on SOA. In the face of SOA adoption, developers will shift their focus to business

processes and away from software functionality. In turn, software will become a facilitator of rapid business change, rather than an inhibitor.

The value creation in software will shift to subscription services and away from packaged software, and to composite applications (combinations of best-of-

By 2006, more than 60 percent of the \$527 billion market for IT professional services will be based on Web services standards and technology.

breed functionality) and away from monolith suites. The distinction between software integrators and vendors will blur as packaged applications are broken apart and delivered as service-oriented business applications.

However, many software vendors — including Microsoft — are embracing SOA. ERP software vendor SAP has created an SOA "blueprint" it calls Enterprise Service Architecture that is being sup-

ported by a number of other software vendors. SAP says this will lead to the availability of products and services that carry the "Enterprise Services-Ready" brand and thus make the entire technology stack "business process-aware."

"This new level of application awareness will provide customers with enhanced simplicity and integration to dramatically reduce the costs and complexity associated with IT management," said Shai Agassi, president of the Product and Technology Group and member of the executive board, SAP.

According to analysts, an SOA is the first salvo in a data center revolution that will ultimately lead to the event-driven architecture (EDA).

While services are connected in predictable sequences, an EDA allows for events to trigger less predictable, parallel actions. So far, only the most sophisticated developers are creating EDAs, but an SOA will provide organizations with the basis for an evolution to an EDA over the next several years.

Banking on SOA

A recent global research study by Bearingpoint indicates that bankers are not only changing their business models to succeed in the next decade, but also their processes, utilizing technologies like service-oriented architecture (SOA) for greater efficiency and profits. The study, "Are You Transforming or Just Transacting? The Model For the 21st Century Retail Bank," outlines how retail banks have uncovered three key factors that are converging to form a new type of equation for success and a new vision for banks for the next decade.

Banks are now more and more being seen as data brokers, requiring the need to leverage data in creative ways across the enterprise. Thus, banks can realize value from investing in comprehensive end-to-end technology and processes. At the same time, banks must solve the customer experience/compliance conundrum — how to handle customers' data in a world where there are escalating security and compliance requirements and risks.

"The very real opportunity exists for retail banks to improve on their return on process as they converge business process management and service-oriented architecture to create

low-cost, repeatable ways to manage their business," said Christopher Forment, executive vice president, Global Financial Services, BearingPoint. "Add to this the 'data broker mentality' and the creativity and technical adeptness to solve the customer experience/compliance conundrum and you have the emergence of a new kind of retail bank and banker: data smart, intuitive and highly cost streamlined."

The largest banks during the 21st century will control far more assets and deposits than those during the 20th century, which will require greater use of technology to maintain efficiency.

Process efficiency will become an important competitive factor as acquisitions are completed, which can allow for a higher volume of transactions on the same platform.

The changes to customer expectations brought about by the Internet will occupy a great deal of a bank's strategic thinking, requiring banks to know their customers and maintain closer relationships. Factors such as consolidation and technology maturity will make it easier for non-traditional players to establish financial services operations, potentially eroding market share.

Dude, Where's My Laptop?

The office is the most common place laptops are stolen, accounting for 29 percent of all laptop disappearances worldwide, according to a recent survey by Dallas-based security and encryption software firm Credant Technologies.

Remarkably, many of those who reported stolen office laptops said the machines were physically locked into place, secured with a lock and cable or even super-glued to their desks. Ninety percent of those reporting a stolen machine said the laptop contained sensitive and confidential corporate data that was not intended for public view.

"Everyone knows to guard their devices when they're traveling, but the results we found about the office were quite shocking," said Bob Heard, Credant CEO. "What we discovered were corporate environments that are careless and even reckless with laptops, many of which contain crucial company and personal data. And the ease with which these laptops are being stolen in the workplace is stunning."

A Head for Mobile Programming

MTV Networks and Motorola in October launched "Head and Body," an entertainment series created especially for mobile phones. Creators said the series of eight short "mobi-sodes" marks the first time an entertainment series especially created for the handset has been launched on a global scale.

The series features the comedic adventures of a character whose head is detached from his body. Shot in Tijuana and Los Angeles, the live action series follows the characters — i.e. his detached head and his body — and how they work together to attempt to meet women, keep fit and knock over as little as possible.

The series will be distributed via MTV's Comedy Central channel, which is available in the U.S. on Sprint Nextel and on Verizon Wireless' VCAST services. It also will be distributed internationally through MTV Network's distribution channels and via Motorola's Web site, www.hellomoto.com.

Attack of the Splogs

Responding to growing complaints about spam web logs, or "splogs," Google in October implemented new security measures to make it more difficult for users of its blogging service to create and maintain fake blogs.

Splogs are blogs set up for spamming purposes. By themselves they would probably go unnoticed since they have nothing to offer most readers, but through aggressive use of keywords they trick indexing services into sending out spam messages as links to the blogs.

Industry experts say the number of active splogs began to mushroom shortly after Google went live with Blogger, a popular blog-creation tool. In one weekend, Blogger was targeted in an apparently coordinated effort to create more than 13,000 splogs, the search giant said. Google responded by installing anti-automation defenses, which will prevent automated scripts from creating large numbers of posts.

'Blackberry Thumb' on the Rise

Tech-savvy consumers are increasingly using BlackBerries, Treos, Sidekicks and other devices with miniature keyboards designed for thumb-tapping to stay connected while on the go. Using a mobile handheld device can be very convenient, but it can also be very painful.

Some doctors say they are seeing an upswing in "BlackBerry thumb," a catch-all phrase describing a repetitive stress injury of the thumb as a result of overusing small gadget keypads. In fact, the Chicago-based American Society of Hand Therapists (ASHT) recently issued an alert to users of the increasingly popular handheld gadgets to be aware of overuse injuries.

"Handheld electronics may require prolonged grips, repetitive motion on small buttons and awkward wrist movements. This combination can lead to hand, wrist and arm ailments such as carpal tunnel syndrome and tendinitis," ASHT President Donna Breger Stanton said in a statement.

What Price Mobility?

Mobile computing increases productivity – and security threats.

A laptop containing the names and credit card numbers of 80,000 U.S. Department of Justice workers is stolen from Omega World Travel. A thief walks into a University of California, Berkeley office and swipes a laptop that contains the personal information of 100,000 alumni, graduate students and past applicants. Two laptop computers with confidential medical information and social security numbers on 185,000 people are taken from behind locked doors at the administrative offices of the San Jose Medical group.

According to Privacy Rights Clearinghouse, laptop theft alone resulted in security breaches exposing the personal data of more than 500,000 individuals between March and September 2005. This doesn't include an undisclosed number of Visa Buxx prepaid debit card account holders who were notified in September that their sensitive information may have been compromised by the theft of a laptop.

"Clearly, these recent breaches are only the beginning of what will be considered a culturally defining event in our rapidly developing mobile age," said Credant Technologies President and CEO Bob Heard. "As the number of nationwide data breaches increases and government mandates on data security become more specific and urgent, protecting sensitive corporate information should be the top priority of each company from New York to Los Angeles and everywhere in between. It's no longer a matter of whether they should be protected, but rather, how well."

Mobile but Insecure?

This year for the first time ever, notebook sales have surpassed desktop computer sales, indicating how important mobility has become. IDC expects the worldwide mobile workforce to increase from more than 650 million workers in 2004 to more than 850 million in 2009, representing more than one-quarter of the global workforce. More than 70 percent of U.S. workers will be mobile by 2009, making the U.S. the most mobile-enabled workforce in the world.

Unfortunately, the computing tools that enable mobility are not adequately protected against data theft, virus attacks

and other security risks. Devices owned by individual users generally fall outside the aegis of the IT department. Company-owned devices often lack of effective security policy enforcement.

As a result, many organizations have addressed mobile security at the network level only, deploying virtual private networks (VPNs) to authenticate mobile users and encrypt data in transmission. Experts warn that this represents only a small segment of the mobile security picture.

"Mobile computers and PDAs are the weakest links in the enterprise security chain," said Ken Denman, CEO of iPass. "Corporations need to keep these devices continuously protected."

What's Your Policy?

Easier said than done. Many organizations find it extraordinarily difficult to ensure that mobile devices have the latest security patches and virus updates, and that end-users follow security mandates. The real question for the IT departments is this: "Are employees using security tools correctly — or at all?"

"The average worker on a laptop is more worried about productivity than IT security," said Jim Slaby, senior analyst at Yankee Group. "Most employees don't recognize the Pandora's box of security threats they are opening when they connect to the Internet without running or regularly updating their VPN clients, personal firewalls and antivirus software."

"Trusting users to 'do the right thing' to secure their laptops is tantamount to inviting identity thieves and other miscreants into your network. Any enterprise that wants to minimize spyware, viruses, worms and other attacks facilitated by employees' unwitting neglect or deliberate obstruction of security should lock down their laptops with endpoint security policy enforcement."

The productivity gains associated with mobility are too significant to ignore. At the same time, however, organizations must not ignore the security risks associated with mobile computing devices. Antivirus software, personal firewalls, patch management, data encryption and two-factor authentication can mitigate threats — only if organizations efficiently monitor and enforce mobile security policies.

Eye on Identification

Biometrics technology is gaining momentum in the areas of security, fraud prevention and more.

In Dan Brown's novel "Angels and Demons," an assassin murders a scientist then cuts out the dead man's eye to defeat the retina scan device securing his lab.

Such a macabre crime might not be that farfetched should biometric security devices become commonplace. (But don't worry — experts say a dead person's retina would deteriorate too quickly to be useful.) The technology, which involves reading personal features such as eyes and fingerprints to prove identity, is finding growing acceptance in various industries due to lower prices, easier usage and stronger security.

Government and law enforcement agencies have long promoted the technology, with increased interest since 9/11. Earlier this year, Congress mandated that states redesign their driver's licenses to comply with federally approved identification card standards by 2008. The cards will be required in order to travel on airplanes, open bank accounts, collect Social Security payments, receive nearly all government services — even visit national parks.

Opponents say the measure is tantamount to requiring a national ID card, and gives the Department of Homeland Security too much leeway to require biometric information such as retina scans and fingerprints on driver's licenses. Fingerprint and iris recognition are in use in the US/Canada NEXUS Air program and the U.S. Air Transportation Association's Registered Traveler program, among others, spurring privacy debates.

Positive ID

Some states are already moving toward biometric technology, however. The Massachusetts Registry of Motor Vehicles recently announced plans for a face recognition system that will compare an applicant's photo against photos of registered drivers in Massachusetts to see whether the applicant might be trying to get a duplicate license under a false name. Officials say the system will help combat identity theft as well as terrorism.

The Children's Identification and Location Database (CHILD) Project now being introduced in communities across the country is utilizing iris recognition technology to positively identify missing children and adults. The CHILD Project is a secure nationwide network and registry that enables law enforcement and social

service agencies to compare the unique features contained in the iris of an abductee or runaway against a national database of children and adults enrolled under the program, patterned after voluntary community-based fingerprint and photo ID card programs.

Iris recognition technology has also been successfully deployed by the United Nations Refugee Agency (UNHCR) to identify more than one million returning refugees in the three-year-old Afghan repatriation program. Refugees are entitled to a one-time aid package that includes a small travel grant and a separate cash grant. Iris recognition is vital to helping the UN refugee agency distribute human aid and avoid potential fraud through repeated claims for assistance.

Private Eyes

Biometric systems are becoming increasingly more practical for use in the private sector. Access control/time and attendance applications have been among the first to gain traction among large private organizations. Time clocks enhanced with finger scanning reduce "buddy punching" — the practice of clocking in or out for fellow employees who are arriving late or leaving early.

Regulations such as HIPAA are further driving demand for more robust network access control. Many organizations find it difficult to force employees to use strong passwords and keep them private, as required under HIPAA. Biometrics systems can eliminate the need for passwords altogether.

About 350 banks in North America, including Zions First National Bank in Salt Lake City and South Carolina Federal Credit Union, are using hand geometry systems from Diebold to clear customers into vaults so they can open their safe-deposit boxes. Customers place their hands on a screen that reads the width of the palm, length of the fingers and other details.

Biometrics is reaching the consumer marketplace thanks to a startup called Pay-By-Touch. Shoppers sign up for the Pay-By-Touch program by registering an image of their index finger and any credit card or checking account. They can then pay for purchases with a wave of their finger anywhere Pay-By-Touch is available.

How far can biometrics go? Fort Collins, Colo.-based Optibrand has developed a system to track cattle by reading

each animal's retina-vascular pattern, which is as unique as a fingerprint. The technology is linked to the Global Positioning System (GPS) to provide highly accurate location and movement data, which is encrypted and stored in a central database. Beef processors are interested in the system for its ability to quickly trace animals infected with bovine spongiform encephalopathy.

Market Watch

Biometrics devices aren't particularly new — retina scanners and hand readers have been on the market since the early 1980s. Several factors have kept biometrics devices from gaining much of a foothold in the marketplace, however.

Until recently, the devices were too expensive to employ in the great numbers required for an enterprise environment, too bulky for easy installation on desktops and notebook PCs and too slow to be effective in mass use. Finally, there have

been interoperability issues because biometrics relied on proprietary methods to store and exchange data, locking users into one specific technology.

As the emphasis on network and systems security has grown, vendors have begun addressing these issues with better, faster and cheaper products. There are also emerging industry standards for biometrics, including BioAPI, CBEFF and X9.84.

Biometrics systems are still more expensive than alternative security solutions, however, and privacy concerns regarding misuse of biometrics data and illegal tracking of consumer activities also need to be addressed. Still, the biometrics market is expected to reach more than \$3.5 billion by 2009, up dramatically from just over \$300 million in 2003. No longer the stuff of spy movies and suspense novels, biometrics is clearly destined to become an integral part of our everyday lives.

Protecting Identity with Biometrics

Increasingly sophisticated techniques are being used to capture and steal personal or financial data. Methods such as phishing, pharming and various other malware scams have spurred a lucrative market that has emerged from the increase in buying, selling and trading identities as commodities.

According to the Federal Trade Commission, 9.3 million people in the U.S. were victims of identity theft in 2004.

The first quarter of 2005 saw a rash of incidents where personal consumer data was stolen or improperly handled.

This fast-growing global security threat increasingly costs businesses lost revenue, time and productivity. A recent survey indicates that the dollar impact of this form of crime was \$52.6 billion in 2004.

IBM recently introduced new tools to help businesses prevent fraud and identity theft by helping them manage the process of identifying an individual and subsequently authenticating a user's access to sensitive information. Identity proofing allows credential-issu-

ing organizations to link to third-party data sources such as address databases and watch lists, and use biometrics to retrieve, verify and validate a claimed identity through an analysis of documents such as passports, drivers' licenses, social security cards, birth certificates and biometrics.

"Many businesses are consumed today trying to deal with security threats coming at them from every direction. It is impacting their ability to focus on their core business imperatives," said Cal Slempe, vice president, security and privacy services, IBM Global Services. "Many are facing risks associated with unauthorized employees or users gaining access to sensitive corporate data or personal information due to inadequate information management and security controls. The protection of a firm's reputation and brand is directly linked to the secure management of data, the applications that use that data, its people and assets. Companies should embrace a holistic approach to evaluating and ensuring their business is secure."

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Color Your World

New class of affordable products expected to boost in-house color printing.

The world is a carousel of color, according to the theme song from the old Walt Disney television show. But when it comes to the world of in-house business printing, cost-conscious organizations typically take a decidedly black-and-white view of things.

There's no question that color adds impact, but color imaging and printing solutions have met resistance in office settings due to the perception that there aren't enough tangible benefits to justify the cost. Studies show that only about 5 percent of the pages printed in U.S. offices are color pages.

With the recent development of reasonably priced color laser printers and color laser multifunction peripherals (MFPs), however, organizations of all sizes can now afford a splash of color for

The market for affordable color imaging products has exploded in the past year. Canon introduced the first personal and small-business color laser MFP in November 2004. Since then, vendors such as Hewlett-Packard, Oki Data, Epson, Xerox, Lexmark and Dell have followed suit.

Low-end color laser printers are now available for less than \$300, and color laser MFPs start at around \$700. At those prices, business and home users can get print-shop quality color machines for about what ink-jet printers cost just a few years ago. That's increasingly important to businesses such as real-estate offices, retailers and others that print an estimated 21 billion color pages each year for flyers, brochures and other materials.

"If you look at small and medium-sized businesses, what they want is to

"Vendors need a broad family of color products to replace the large installed base of monochrome printers, copiers and MFPs. The monochrome-to-color transition will be a significant event, as large vendors fight to keep their installed base, while other vendors look to grow their business with color offerings."

Aria

The delightfully diminutive PC.



There are plenty of computers based on cube-shaped cases available today. So what's so nifty about Aria? First of all, it's upgradeable. While other cube case computer systems force you to live with pre-installed, proprietary motherboards, Aria accepts standard MicroATX motherboards. So when it's time to upgrade your system, you can choose from a vast range of available motherboards. Secondly, its built-in 300 Watt power supply delivers far more power than the barely-adequate units installed in other cube cases. And finally, Aria is the quietest PC case in the entire world. So if you're tired of your boring, bulky computer, upgrade to Aria.

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presentations and in-house printed flyers.

Gartner analysts say worldwide printer, copier and MFP shipments are projected to surpass 124.7 million units in 2005, a 7.8 percent increase from 2004 shipments. Gartner predicts the color laser printer and color laser MFP markets will be high-growth areas in the near future as more organizations seek to replace their current hardware — typically monochrome laser printers.

"Vendors need a broad family of color products to replace the large installed base of monochrome printers, copiers and MFPs," said Peter Grant, research vice president in Gartner's Digital Document and Imaging group. "The monochrome-to-color transition will be a significant event, as large vendors fight to keep their installed base, while other vendors look to grow their business with color offerings."

Changing Requirements

While color used to be considered a "nice to have" rather than a "need to have" feature, Grant noted that new business requirements have caused a significant shift in perception.

"Photographs, color charts, graphics imaging and the Internet are driving the need to print in color," he said. "Many documents lose their impact and message if they are not printed in color."

look like a big company, but they don't have a big-company budget," said Vyomesh Joshi, who heads HP's imaging and printing group.

Other Benefits

Color laser MFPs (which print, copy, scan and fax) can also play a central role in document management strategies. Faxes can now be received by MFP machines and distributed via a fax server directly to the recipient or to the trash, without printouts. MFPs can scan documents directly to e-mail or a file folder within a user's directory. Staff can be assigned access rights to the devices to improve security and monitor device usage. Existing log-in rights and passwords from Windows or Lotus Notes directories can now be extended to MFPs, enabling easy network log-in and user administration for any device.

The combination of these benefits will result in a 220 percent growth in shipments of color laser MFPs over the next four years, according to Lyra Research, which tracks trends in the imaging market.

"Once people start to figure out that they can do so much more with an MFP, the market is going to start growing very rapidly," said Larry Jamieson, director of Lyra's Hard Copy Industry Advisory Service.

For the Record

VoIP recording solutions offer access to key business information.

Telephone communications with customers, suppliers and other third parties can involve enormous amounts of valuable information that can be used to dramatically improve customer service and overall business performance — if it is made available to the right people in the organization. Unfortunately, that is a big “if.”

The information gathered from these phone calls often is captured and shared only within the contact center. Key staff members — particularly branch office employees and teleworkers — seldom gain access, thus losing the opportunity to act on the insights gleaned from these contacts.

Voice over IP (VoIP) solutions have the potential to change that. The powerful call recording capabilities of VoIP enable the development of organization-wide contact management systems that embrace every department dealing with customers and other key outside contacts.

“The ability to infuse contact centers with a new depth of customer knowledge that makes each interaction as meaningful and productive as possible is a powerful tool for driving competitive advantage,” said Malcolm Collins, president, Enterprise Networks, Nortel.

As more organizations deploy VoIP, call recording is becoming more prevalent. VoIP recording shipments are projected to grow 39 percent through 2008, according to research from Tern Systems.

Call recording solutions on legacy analog or digital PBXs require the installation of complex proprietary telephony cards to tap the telephone lines and process the digital signals. The high cost of these proprietary telephony cards, in

addition to their installation and maintenance costs, made call recording cost-prohibitive for most businesses.

Recording calls on an IP or IP-enabled PBX is significantly less expensive, however. In a VoIP deployment, voice traffic is packetized and travels across the corporate data network. VoIP recording systems monitor the corporate data network looking for voice packets traveling to and from the IP PBX. This “packet sniffing” technology allows the VoIP recording system to identify and

extract only the voice packets for recording.

Software-based VoIP solutions that utilize packet sniffing are typically 50 percent less expensive than legacy PBX recording solutions. They are easily installed and maintained, don’t interfere with the IP PBX and are highly scalable —

to listen to recorded calls through the phone or through computer speakers. Recorded calls can be viewed by day, week, month, or custom date range. Managers can assign monitoring, recording and playback rights on a per-user basis and can also track calls from multiple remote locations through one interface.

In addition to helping organizations improve their contact center efficiency, VoIP recording solutions also contribute to regulatory compliance. This is particularly important in the financial sector, for example, to quickly confirm that trades and transactions were executed properly. Recording also helps companies limit liability by documenting verbal requests and authorizations, verifying contractual discussions and arbitrating disputes.

Originally seen as a technology that could cut costs through the elimination of long-distance toll charges, VoIP has matured into a business-enabling technology. It facilitates a host of applications that can improve the productivity, agility and customer service of any organization. VoIP call recording solutions fall into that category by ensuring the right people throughout an organization can review and act upon pools of captured customer intelligence.

“The ability to infuse contact centers with a new depth of customer knowledge that makes each interaction as meaningful and productive as possible is a powerful tool for driving competitive advantage.”

unlike legacy PBX-based recording systems that are limited by the number of telephony cards that can be installed in the server.

Software-based call recording applications can be either programmed to record and monitor calls or user-activated on an ad-hoc basis. Calls can be flagged with additional information so users can search them using criteria such as date, time, user name, inbound number, caller ID or the call’s flagged name.

Multiple playback options allow users

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RFID Showing Versatility

Many industries finding applications for identification technology.

Radio-frequency identification (RFID) has been touted as a technology that will transform the retail industry by streamlining the supply chain through real-time product identification and tracking. However, RFID can no longer be narrowly defined as technology for the retail industry. It is being utilized in a wide range of applications, including electronic payments, healthcare, livestock tracking, postal delivery and more.

The development of alternative uses for the technology is one reason why Frost & Sullivan is predicting explosive growth in spending on RFID. According to the research firm's recent report, RFID spending will mushroom from \$400.2 million in 2004 to \$4.169 billion by 2011 — a tenfold increase in just seven years.

Aerospace giant Boeing, for instance, has announced plans to introduce RFID "smart labels" on maintenance-significant parts of the 787 Dreamliner, the company's new family of high-capacity, low-emissions passenger planes. Boeing anticipates that thousands of the tiny tags will store and communicate the maintenance history on everything from life

preservers and oxygen bottles to flight-control computers and data recorders.

Taking Flight

The company collaborated with the Federal Aviation Administration to certify the use of the new technology aboard

"Information stored on the RFID tag will enhance parts traceability and reduce cycle time to solve in-service problems by improving the accuracy of information exchanged between customers and suppliers."

planes. Boeing has successfully completed two in-service evaluations of passive RFID tags, and showed the devices do not adversely affect the simultaneous operation of any aircraft systems or interfere with continued safety of flight. Boeing has mandated that its suppliers begin using RFID tags in time for the first 787 deliveries in 2008.

"Boeing customers are eager to take advantage of automated identification technology, especially the capabilities and benefits of RFID," said Mike Bair,

787 vice president and general manager. "Introducing this advancement on our newest airplane makes good sense."

RFID is an automated identification technology that uses radio-frequency waves to transfer data between a reader and items that have RFID devices affixed. The tags contain a microchip and antenna

and operate at internationally recognized standard frequencies. RFID tags are similar to bar codes in that they store data, but they offer significant advantages such as enhanced data collection and the ability to read without a direct view of the label.

"Information stored on the RFID tag will enhance parts traceability and reduce cycle time to solve in-service problems by improving the accuracy of information exchanged between customers and suppliers," said Lou Mancini, vice president and general manager of Boeing Commercial Aviation Services.

Non-Contact Cards

RFID technology also is set to transform the electronic payment industry through the development of contactless credit cards with imbedded RFID tags. Instead swiping the card or handing it to a cashier, consumers can pay for a variety of products and services simply by holding their cards within two inches of a payment terminal.

Over the next few months, significant growth is expected in the adoption and use of contactless payments in the U.S. According to the May 2005 Nilson Report, there will be 5 million to 7 million Visa and MasterCard contactless chip cards in the market by year-end, and 15 million to 20 million by the end of 2006.

American Express, MasterCard and Visa USA have all launched contactless payment initiatives and many of the nation's top national and regional retailers, such as McDonald's, 7-Eleven and CVS, have deployed point-of-sale terminals to accept the new cards.

Contactless payment cards "are an ideal solution for quick payment environments where speed is essential, such as quick-service restaurants, gas stations, drug stores, supermarkets and movie theaters," said Randy Vanderhoof, executive director of the Smart Card Alliance. "And there's built-in security. The smart chip is

designed to protect the internal information and any transactions made."

Healthcare and More

RFID technology is also gaining momentum in medical fields, where hospitals and clinics are not only using it to track supplies but also to track patients and add another level of security at medical facilities.

In a few hospital maternity wards, newborns are fitted with RFID wristbands with imbedded code numbers corresponding to the child's name and room number. If a child is taken outside of the ward before the wristband is deactivated, the wristband sends a signal to the security office highlighting the location of the infant. From there, the security staff can respond immediately and head straight to where the alarm was sounded.

RFID systems have also been implemented in long-term care facilities with patients suffering from dementia and Alzheimer's disease, who may be unaware of their actions and thus need constant observation. Whenever patients step outside a set boundary the receiver picks up the signal and sets off an alarm, eliminating the need for security guards in every room at every hour.

Industry analysts say RFID also is set to become a key technology for ensuring the safety of the food supply. According to a recent report by Research and Markets, tens of millions of RFID tags have already been applied to livestock and food in attempts to stem outbreaks of foot and mouth disease, mad cow disease, avian flu and even bio-terrorist threats. The research firm predicts that by 2015 some 900 billion food items could well be RFID-tagged.

Until 12 months ago, most RFID vendors were targeting supply chain applications in the retail industry, hoping to capitalize on the potential high volume of RFID tags and readers in these applications. Since then, many vendors have broadened their focus and begun targeting opportunities in other market segments.

"Currently, application-specific solutions are not generally available, but over the next 12 to 24 months, as the experience of the current RFID pilots and implementations are translated into integrated solutions, we expect this situation to change," said Paul Stam de Jonge, group director for RFID solutions at LogicaCMG, an international IT solutions firm based in London and Amsterdam. "While there are still improvements to be made ... the market has clearly found an environment that is ready for a wide range of business scenarios."

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Study: VoWLAN to Triple by 2007

According to a new study by Infonetics Research, the number of organizations deploying voice over wireless LANs (VoWLAN) will triple over the next two years, from 10 percent to 31 percent, driven by the growing availability of wireless VoIP handsets and voice-enabling wireless infrastructure.

"Whilst increasing employee mobility and productivity are currently the top reasons for deploying WLANs, voice over WLAN is a growing driver and is potentially disruptive," said London-based Infonetics Research analyst Richard Webb. "The traditional model of time- and distance-based pricing for voice calls is being eroded by VoIP and, as VoIP goes wireless, it presents an opportunity for enterprise users and a challenge for operators."

The study was based on in-depth interviews with 240 small, midsize and large organizations using WLANs by 2006, including analysis of five vertical markets, as well as surveys of 450 organizations for WLAN adoption rates.

Donated PCs 'Useless,' Report Says

Most of the computer equipment recycled in the U.S. and Europe and sent to developing countries for use in homes, schools and businesses is actually useless and ends up in landfills, causing huge environmental damage, says a Seattle-based environmental group.

In a report titled "The Digital Dump: Exporting Reuse and Abuse to Africa," the Basel Action Network (BAN) charged that U.S. recycling firms donated useless equipment to developing nations as a way to dodge the expense of having to dispose of it properly. The report focused on Lagos, Nigeria, but speculated similar situations flourished throughout much of the developing world, where a "tsunami of toxic techno-trash is making its way from rich to poorer countries."

According to the National Safety Council, more than 63 million computers in the U.S. will become obsolete in 2005. An average computer monitor can contain as much as eight pounds of lead, along with plastics laden with flame retardants and cadmium, all of which can be harmful to the environment and to humans.

Storage Spending Cuts Predicted

U.S. organizations plan to increase IT spending by 5.5 percent in 2006, but the focus is shifting away from storage and security and toward application development and integration, according to preliminary results from a Gartner survey. Mobile devices will become a major purchasing priority and an increasing emphasis will also be placed on development tools and middleware, the firm said.

The largest budget increases are planned in small and midsize businesses. Organizations with 20 to 99 employees plan to increase their IT budgets by 7 percent in 2006. Larger organizations, firms with 500 to 999 employees, plan IT budget increases of 2.4 percent, Gartner estimates.

"Despite the spending increase, the message to IT managers is clear: You must continue to improve the efficiency of established IT investment areas if you want to fund substantial growth in IT or add IT professionals to the workforce," said Barbara Gomolski, research vice president at Gartner.

VoIP Security Targeted

An industry group has released what is billed as the first comprehensive description of security and threats to Voice over IP (VoIP) systems. "The Threat Taxonomy for VoIP" was developed by the Voice over IP Security Alliance (VOIPSA) and is designed to provide the industry with a clearer view of VoIP security risks.

Major aspects outlined in the report include recognition of the human element in threats as distinct from their technical means; specific sets of issues for consideration by legislative bodies and law enforcement agencies; and a detailed structure for technical vulnerabilities.

"This provides a foundation for all future discussions on VoIP security. Until now, the public has been uncertain about the various threats, how the risks related to each other and the technical tradeoffs," said Jonathan Zar, secretary and outreach chairman at VOIPSA, who is also a senior director at SonicWall.



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