

ISPIRIAN INSIDER

VOL. 18 No. 6 JUNE 2005

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An Ounce of Prevention...

Ispirian helps businesses keep their computer systems healthy by taking preventive measures.

An ounce of prevention is worth a pound of cure. It turns out old Ben Franklin's healthcare advice is just as true for the well-being of business computer systems.

Viruses, power surges and a broad range of garden-variety computer glitches can be sickening to systems and data assets, but businesses can frequently head off trouble before it starts by practicing a few basic preventive measures.

While some solution providers push expensive disaster recovery plans onto their customers, Ispirian Incorporated believes there are some less expensive yet comprehensive ways to avoid data loss and network instability. In fact, one of the best ways to keep computer systems healthy doesn't cost a penny.

"All companies should regularly and repeatedly educate employees about the dangers of viruses spread by e-mail attachments — even those from trusted senders," said Tom Smith, president of Ispirian. "Many worms and viruses hijack addresses from infected machines in order to propagate, leaving the next victim to believe the message comes from someone he or she knows."

Employees should be continually reminded to never open attachments that have multiple extensions, such as "LoveLetter.txt.vbs" or "Picture.jpg.exe."

The .vbs extension means it is a Visual Basic script file, and .exe means it is an executable file. Virus writers also have begun disguising their payload as Windows screen saver (.scr) files or Win-

"It is always a good idea to make two copies of backup data and keep one copy offsite. A fire or flood at the office could make the offsite copy the only copy."

dows program information (.pif) files. Users receiving e-mail attachments with .vbs, .exe, .scr or .pif extensions should play it safe and just delete them.

Windows Update

Another easy way to protect data is using Windows Update on a regular basis to get the most recent operating system security updates and patches. Windows XP software makes it easy as it automatically downloads and installs patches.

Even for older versions of the operating system, updating security is a relatively simple process. An icon at the top of the start menu serves as a link to the Windows Update Web site. At the Product Updates page, Windows Update scans the user's system to see what updates have been installed and then generates a list of suggested components. Users can then browse the list, decide what components are needed and download them.

Anti-virus Software

Virus protection software is another simple but important element of a strong defense against outside threats. Although anti-virus software is cheap and easily available, it is estimated that nearly half of all PCs aren't running virus protection. Businesses should ensure that every PC, laptop and server in the office is licensed for anti-virus software, and that the software is properly installed and configured.

Too many businesses make the unfortunate mistake of installing anti-virus software and then forgetting about it. Even the best virus protection software is worthless if it is not used or updated. New viruses appear all the time. Most of the major anti-virus vendors now provide monthly — even weekly — updates to their products.

Backup

Backing up data is another easy and inexpensive process that should be undertaken regularly. The simplest approach is to copy files from the hard drive to a floppy disk, but that is only effective for small files. A removable storage device, such as a Zip drive, can store lots of data quickly and easily. The best choice might be to purchase a recordable or recordable/rewritable CD drive.

"It is always a good idea to make two copies of backup data and keep one copy offsite," said Smith. "A fire or flood at the office could make the offsite copy the only copy."

Office computer systems and their associated functions — e-mail, Internet access, databases and office applications — are the lifelines of the modern business environment. While some situations will require the services of trained and certified security experts, Ispirian recommends these simple preventive measures that can often be just what the doctor ordered.

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The Botnet Threat

Rogue networks of hijacked computers up the ante for online crime.

When Steve Freedman turned on his computer and connected to the Internet, he expected to see the CNN Web page. Instead he got a porn page. He changed his home page back to CNN, but the porn page came back every time he rebooted his computer.

His computer had been hijacked by a browser helper object (BHO) — a nasty little piece of spyware surreptitiously installed on computers from infected Web sites. Although BHOs were developed by Microsoft to extend the capabilities of Internet Explorer, hackers have learned to use them to change a user's home page, install password stealers, copy keystrokes and more.

"There was nothing I could do, and I ended up reformatting my hard drive," said Freedman, a Webmaster and self-described "computer geek" from Portland, Ore. "Fortunately, I had a recent backup of my data and photos and e-mails, so I didn't lose too much. It could have been much worse."

In fact, browser hijacking has become one of the most sinister threats yet in the cyber world. Hackers have assembled vast networks of hijacked computers into "zombie armies" or "botnets" in order to commit a variety of online crimes on a massive scale. What's more, hijackers often rent out their rogue networks to other criminal groups for as little as \$100 an hour to be used as platforms for spamming, widespread identity theft scams and assorted acts of corporate sabotage.

Growing Threat

At least a million machines worldwide are under the control of hackers, security experts in Germany concluded after a recent three-month study. Other studies indicate as many as 30,000 new computers are being "recruited" into botnets every day.

Network security experts say botnets pose a significant threat to online commercial activities. Botnets can have immense collective processing power — certainly many times greater than most corporate systems. In addition, their distributed nature makes them difficult to find and shut down.

"Many global corporations and countries have experienced partial cut-off from the Internet as a direct result of a botnet's induced denial-of-service (DoS) attacks, and this is just the tip of the emerging iceberg," said DK Matai, executive chairman of mi2g, a London-based developer of secure online banking, brokering and trading architectures. "Collab-

oration between organized criminals, extremists and malevolents is rising much faster than what the international legal system was designed to cope with. Anonymity and global mobility are the much-exploited boons of cyberspace."

German security analysts at Aachen University have developed perhaps the

"Collaboration between organized criminals is rising much faster than what the international legal system was designed to cope with."

most reliable study yet on botnets with their recent "Honeynet Project." They set up three computers as "honeypots" — machines deliberately left open to attack, thus attracting hackers and their bots so the researchers could capture data on their actions. The researchers were able to identify more than 100 botnets during a three-month project. Those botnets ranged in size from only a few hundred compromised PCs to several of up to 50,000 systems.

Online Extortion

Botnets represent a major shift in online crime. Where earlier generations of hackers and virus writers were more interested in creating mischief, botnets are created and used primarily to make money.

Botnets have enabled computer criminals to put a high-tech spin on an age-old extortion scheme — the protection racket. In the old days, mobsters would strong-arm individuals or businesses for "protection money" to prevent trench-coated mob goons from coming around and smashing up the joint and busting a few heads. Today, "Web mobs" are using botnets and the threat of DoS attacks to extort money from businesses that rely heavily on the Internet, such as online-payment processors, gambling Web sites and financial-services sites.

The Wall Street Journal recently quoted law enforcement officials as saying that many such attacks are being masterminded out of Russia and Eastern Europe, where there is a large pool of technical talent and a dearth of jobs. The arrest of members of a Russian cyber-crime gang in July 2004 by Britain's National Hi-Tech Crime Unit and its counterparts in the Russian Federation represents an example of this trend. The gang

is believed to have extorted hundreds of thousands of dollars from online bookmakers after crippling their servers with a DoS attack to demonstrate the dangers of failing to pay protection money.

Riding Herd

There are many other money-making possibilities for the so-called "bot herders" who put together these rogue networks. Security experts say many U.S. spammers book time on Russian-owned botnets to send out their junk e-mail, and it is estimated that up to 80 percent of all spam now originates from botnets. Bot herders also rent out their networks for use in massive phishing scams, in which Internet users are redirected to "spoofed" Web sites and tricked into divulging personal information. Bots are so lucrative that they have spawned online turf wars with Web mobs releasing viruses designed to overwrite malware in an attempt to win control of rival gangs' botnets.

Bot herders tend to target Microsoft's Internet Explorer because it is the dominant Web browser on the market, and the Honeynet Project results indicate the bulk of botnets take advantage of a few Windows vulnerabilities. Security experts say Microsoft's Windows XP Service Pack 2 has helped to reduce the number of botnets by removing a number of vulnerabilities in the XP operating system. Another possible defense is switching to an open-source browser such as Mozilla's Firefox.

Protecting an organization from the growing threat of botnets can be difficult and requires multiple layers of defenses, including firewalls, intrusion-detection systems and e-mail filtering applications. However, user education will always be the cornerstone of any security plan. Ongoing training that continually stresses safe computing practices, particularly the dangers of visiting unknown Web sites and opening unexpected e-mail attachments, is essential for keeping the bots at bay.

Pharming Scams Rely on DNS Cache Poisoning

Security experts say a new form of online fraud known as pharming could lead to a rapid rise in identity theft because even the savviest Internet users will find it almost impossible to spot the scam.

Unlike phishing, in which unwary users are lured to phony but authentic-looking Web sites and asked to enter sensitive information, pharming automatically redirects users to spoofed sites without their knowledge. Cyber criminals accomplish this through an old trick called "Domain Name Server (DNS) cache poisoning," which involves hacking into the servers hosting domain names and then altering them.

Pharming scams strike at the very foundation of the Internet. All Web sites have a unique IP address, represented by a string of numbers. But humans tend to find such long numeric sequences difficult to remember. The DNS system allows us to enter a text URL (www.MyBank.com, for instance) into a Web browser, which then sends a request to the proper DNS server to translate the URL into the proper

numerical IP address.

In a pharming attack, the DNS cache has been hacked, or "poisoned." When the server receives the request for a corresponding numerical IP address, it sends back the address of a spoofed site — a replica that is difficult to distinguish from the authentic site. The user would have no reason to suspect anything is amiss, and any sensitive information entered on the spoofed site is easily stolen.

Security experts say pharmer often set up their fake Web sites for only a few days or even a few hours, then move on before they can be found out.

Researchers at the SANS Internet Storm Center recently tracked three DNS cache poisoning attacks. Two took users to sites that tried to install spyware and adware, while the other went to a site selling medications. Pharming was one of the top five Internet scams in March 2005, according to a recent report from the National Cyber-Forensics & Training Alliance, a nonprofit arm of the Direct Marketing Association.

High-Tech Wages Fall Flat

Business may be looking brighter for high-tech companies, but wages for high-tech professionals decreased 0.8 percent overall in the first three months of 2005 compared to the first quarter of 2004, according to the latest Yoh Index of Technology Wages, the quarterly compensation index used by Fortune 100 companies to determine salary scales.

While technology wages rose 3.1 percent in January, wage gains were lost in February and March. San Francisco, Portland and Philadelphia enjoyed the highest wage increases in the first quarter of 2005, while wages in Houston, Washington and Atlanta declined.

"Wages are not growing as rapidly as might be expected given the significant constraints on high-technology labor pools. Companies continue to hold the line on wages," says Jim Lanzalotto, vice president, Strategy and Marketing for Yoh. "However, I think we will see wages start to climb at a somewhat faster pace as it becomes harder to find high-impact talent, and companies have to compete more aggressively to fill these positions."

One-Third of Software Pirated

According to a study released in May by the Business Software Alliance (BSA), 35 percent of the software in use on PCs worldwide in 2004 was pirated, a 1 percent decrease from 36 percent in 2003. However, losses due to piracy increased from \$29 billion to \$33 billion — due, in part, to the fact that the PC software market grew more than 6 percent and the U.S. dollar fell against many of the world's currencies.

"Worldwide, one out of every three copies of software in use today has been obtained illegally," said BSA President and CEO Robert Holleyman. "These losses have a profound economic impact in countries around the world. Every copy of software used without proper licensing costs tax revenue, jobs and growth opportunities for burgeoning software markets."

IT Complexity Can Be Good

IT is getting more challenging to manage, but this complexity can also provide benefits to companies, according to Gartner, Inc. Complexities in IT create many problems, but when companies understand how to manage complexity, it can create a more efficient and simpler environment for workers as well as customers.

"One of the reasons complexity produces so much anxiety is that it's cyclical; societal and technological changes are constantly acting upon one another and evolving over time," said Colleen Young, vice president and distinguished analyst at Gartner. "However, complexity also provides benefits. It can enhance functionality, increase personal control and, paradoxically, improve reliability, quality and reaction time."

As an example, Young cited operating systems, which have clearly gotten more complex but have also gained improved availability and functionality.

E-Mails Still Hard to Find

Organizations are still struggling to comply with regulations governing e-mail retention and management. According to a March 2005 survey by C2C Systems and Osterman Research, during the past three years 75 percent of IT departments have been required to search through backup tapes and local message stores to retrieve one or more e-mails requested by the legal department or human resources. Respondents stated that 62.3 percent of users store e-mail locally.

"E-mail is unstructured data — messages have many formats and the information is not pre-indexed for fast, centralized searches across all users and data stores. Copy significant to a Freedom of Information Act or legal discovery request can be in the subject line or e-mail body, even hidden in attachments or in embedded e-mails," said Dave Hunt, CEO of C2C.

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Storage Utility Vehicle

Market growth moves organizations closer to 'storage utility' dream.

Do you know where your critical business information is right now? Can you access it quickly and easily? Can anybody else access it?

These are questions that business decision makers need to ask themselves when considering their organization's storage strategy. In doing so, many are looking into storage resource management (SRM) software. SRM is evolving from a mere tool that monitors and reports on storage as an isolated entity to a set of tools and practices that help companies better serve their customers. SRM has grown to include management of the system, storage network fabric, applications and storage devices, as well as data backup and recovery. Some refer to it as "top-to-bottom integration."

SRM provides a consolidated view of these resources. It monitors and measures their status and actively manages them to prevent interruption of service and accommodate future growth.

Storage utility — the holy grail of storage — is seamless access to data, regardless of the time or location. It is where applications are universally accessible, sharable, ubiquitous and available around-the-clock. To understand where SRM fits into an organization's storage solution, think of the storage utility as the dial tone and SRM as the telephone service that ensures and enables the dial tone.

Explosive Growth

Although SRM has not taken the world by storm — yet — the market is definitely heating up. Driven by strong sales in SRM, worldwide storage management software revenue increased 12.3 percent in 2004, according to Gartner. The storage management software market totaled \$5.6 billion in new license revenue, up from \$5 billion in 2003.

The SRM segment grew 30.8 percent to reach \$612 million in 2004. This segment includes products that monitor and manage capacity and performance across multiple storage and server platforms.

"Storage resource management was the second smallest segment in 2004, but it is expected to continue to record fast growth as enterprises look to better manage storage capacity utilization and begin to automate some of the management functions," said Carolyn DiCenzo, research vice president at Gartner. "For some companies, the need to manage IT as a utility with service-level agreements between IT and the business units is also driving new requirements and increased

interest in SRM."

The worldwide storage management software market is poised for double-digit growth in 2005, with worldwide new license revenue projected to reach \$6.3 billion, a 12 percent increase from 2004. Compliance requirements will drive archiving and data protection growth. Gartner analysts say vendors will try to leverage the focus on compliance by claiming that their products are compliance solutions.

"The need to better incorporate electronic records into a total records management solution will offer real opportunity for storage vendors, but customers will need to look beyond the hype to determine exactly how a specific storage product will fit into their process," DiCenzo said. "Storage vendors will play a significant part in providing some of the tools needed to do Information Lifecycle

"Storage vendors will play a significant part in providing some of the tools needed to do Information Lifecycle Management but understanding the content will be a key component that will take more than just storage tools."

Management but understanding the content will be a key component that will take more than just storage tools."

Future Outlook

Another force driving SRM adoption is the increased need for global access to business-critical information. As companies become more global, the IT infrastructure and its management controls become even more complex. This complexity is forcing organizations to rethink their storage strategies and begin recognizing the importance of SRM as a key element of efficient information delivery.

Storage volumes will continue to grow at phenomenal rates and so will the need to manage that storage and its resources. Eventually, organizations must face up to the reality that true storage resource management must be all-encompassing, comprehensive, extremely intelligent and highly automated to enable the storage utility dream.

Boost Your Brainpower

New dual-core chips more than double system performance.

They say that two heads are better than one, and chip designers are proving it. The latest trend in microprocessor design involves a "multi-core" architecture — placing two or more chips on one piece of silicon. Multi-core techniques are joining with multithreading to dramatically improve system performance.

Historically, chip makers increased performance by increasing the "clock speed" of processors. However, a number of variables impact the performance of any computer system, and processor speed has become least important. Most of today's processors are so fast they end up waiting for components to catch up.

Chip designers have used a number of "tricks" to overcome this limitation, such as analyzing incoming instructions to see if rearranging their order will improve efficiency. A command that must wait on data from somewhere else might be executed first so that other commands can be processed in the interim. Chip designers say they've reached the practical limits of such instruction juggling, and are turning to multi-core and multithreading to boost efficiency.

Two for One

In essence, multi-core chips provide the same computing power as a multi-processor server, with increased efficiency because the cores share memory cache and other components. Operating systems prioritize and manage tasks from multiple applications simultaneously to maximize performance.

In asymmetric multiprocessors, the cores differ from one another. Cores can be added that perform specific functions, offloading work from the central processor and reducing the amount of time spent waiting on slower memory chips. Areas of the chip traditionally devoted to tricks to deal with slow memory can be set aside for tasks, such as security, previously performed by other hardware components.

These new approaches to processor design mean organizations can get the same performance from fewer servers, saving on everything from power consumption to floor space. At the same time, advanced software that allocates resources as required helps ensure that servers are used to capacity, further reducing the cost of computing in the enterprise.

A Stitch in Time

Multithreading, which Intel calls Hyper-Threading, allows a single processor to manage data as if it were two

processors. Processors enabled with multithreading technology can manage incoming data from different applications and switch from one set of data instructions to another, every few nanoseconds, without losing track of the status of each set.

Multi-core and multithreading technologies have been part of the high-end server world for some time, but are now making rapid headway into the low-end server and desktop markets.

Comparing multithreading to multi-processing is like comparing a part to the whole. A thread is a single, sequential set of commands. A process is a group of one or more threads. An application is a group of one or more processes.

Today's desktop PCs appear capable of running multiple applications at once but in reality are merely switching back and forth between the programs very quickly. Multithreading breaks this operation down into smaller steps, which accelerates the switching.

To Market, To Market

Multi-core and multithreading technologies have been part of the high-end server world for some time, but are now making rapid headway into the low-end server and desktop markets. In April, several computer manufacturers started selling desktop PCs and workstations based upon Intel's first dual-core processor-based platform, which includes the Pentium Processor Extreme Edition 840 running at 3.2GHz. When combined with Intel's Hyper-Threading Technology, the chip can process four software threads simultaneously by more efficiently using resources that otherwise may sit idle.

AMD also introduced a broad portfolio of dual-core solutions in April, from server and workstations for enterprise users to desktop and desktop-replacement notebooks for consumers and business users. The company's Dual-Core Opteron 800 Series processor for four- to eight-way servers and 200 Series processors for two-way servers and workstations deliver up to 90 percent performance improvement over single-core processors. For desktop PC users, AMD announced

the new AMD Athlon 64 X2 Dual-Core processor brand.

Some of the vendors offerings systems that utilize AMD's chips include HP, IBM and Sun. Intel's chips are available in systems from Dell.

The Soft Side

Experts expect dual-core chips to dominate both server and desktop CPUs by 2007. However, organizations should take a measured approach to migrating to these platforms. Applications should be tested in the dual-core environment to see if they deliver desired performance gains, and replaced or upgraded as needed. Organizations also need to consider how each software manufacturer defines licenses for dual-core chips.

Software vendors have long based licensing fees upon the number of processors in the machine — software licenses for multi-processor servers cost more than those for their single-processor counterparts. However, a dual-core chip is essentially two processors on a single piece of silicon. Does that count as one processor,

or two?

Software vendors are divided on this issue. IBM and Oracle, for example, have defined dual-core processors as two chips, requiring two licenses. Microsoft and Red Hat Linux do not require two licenses for dual-core chips.

Dual-core processors are only the beginning. Sun Microsystems is accelerating the development schedule of its "Niagara" processor, which has eight cores each capable of handling four threads. The company says it will release the chip no later than early 2006.

Virtualization adds another wrinkle to the multitasking landscape. In a virtual environment, the resources of multiple servers are allocated on demand in response to workloads. A single processor might support multiple virtual machines at any given time.

Meanwhile, dual-core chips and multithreading technologies are changing the way we look at system performance. The latest chip designs have entered the mainstream, ushering in a new era that promises to bring much higher server and desktop performance.

Microsoft Releases 64-Bit Windows Editions

Microsoft recently announced the general availability of Windows Server 2003 and XP Professional x64 Editions. The new editions provide a single platform that can run new 64-bit applications as well as existing 32-bit applications at peak performance. With these new server and desktop operating systems, Microsoft and a broad array of partners are bringing cost-effective 64-bit computing from the fringes into the mainstream.

"This is a time of profound change in our industry. The move from 32-bit to 64-bit computing offers a dramatic improvement in performance and reliability, enabling people to use their PCs in exciting new ways at work and at home," said Microsoft Chairman and Chief Software Architect Bill Gates. "The introduction of Windows x64 editions, combined with a wide range of 64-bit applications and hardware, will help launch 64-bit computing into the mainstream."

In many organizations, common server workloads are straining the limits of 32-bit architecture. Microsoft says early adopters of Windows Server

2003 x64 Editions have seen stronger, faster results for database and data-intensive server applications. The x64 version of Windows Server 2003 Terminal Services, for example, can accommodate up to 170 percent more users per server than its 32-bit predecessor.

"The release of Windows Server 2003 x64 Editions will be the gun that starts the race to 64-bit computing," said Nathan Brookwood, principal analyst at Insight 64. "Once there is a generally available 64-bit version of Windows, we'll start to see all the utilities and infrastructure applications moving to 64 bits."

"By the end of 2006, I anticipate that Windows Server 2003 x64 Editions will be the default operating system for most new Windows Server shipments."

According to Microsoft, customers using Windows XP Professional x64 Edition are experiencing similar performance enhancements on the desktop in areas such as digital content creation, engineering, scientific computing and game development.

FCC Calls for VoIP 911

The Federal Communications Commission took steps in May to protect consumers by requiring that certain providers of voice over IP (VoIP) phone service supply enhanced 911 (E911) emergency calling capabilities.

The FCC order requires interconnected VoIP providers to deliver all 911 calls to the customer's local emergency operator as a standard, rather than optional, feature of the service. Interconnected VoIP providers must also provide emergency operators with the callback number and location information of their customers where the emergency operator is capable of receiving it.

Earlier this year, several users of the Vonage VoIP service in Texas and Florida dialed 911 but were unable to reach emergency operators. Since then, Vonage has arranged to use Verizon's E911 network to connect users to the appropriate emergency dispatch center.

Credit Card Sites Poor

The first comprehensive competitive benchmark study on the service levels of nine leading U.S. credit card Web sites revealed poorer than expected performance. The nine sites included in the study by Keynote Systems were American Express, Bank of America, BankOne, Capital One, Chase, Citibank, Discover, MBNA and Provident Financial. Bank of America, Capital One and MBNA were the best overall performers.

Keynote's Service Level Rankings study assesses performance — including download speed and response time — over a variety of connections. Credit card site performance was exceptionally poor over dialup connections, with an average of 35 seconds for each page of a transaction to download. This indicates that the companies may have designed their sites with high-speed users in mind, although about 43 percent of U.S. households are still using dialup.

Internet Attacks on the Rise

DEFENSE, a provider of cyber security intelligence for Global 2000 companies, recently warned of an escalating trend in Internet-based malicious code attacks. Of the record 27,260 attacks in 2004, the company reported that more than 15,000 were specifically designed to covertly steal information or take over computers for criminal purposes, including identity theft and fraud. iDEFENSE also found that along with intensified frequency, attacks are much more likely to breach traditional information security defenses such as firewalls, anti-virus software and intrusion detection tools.

The steady rise in attacks, combined with organized illegal motives such as stealing and re-selling credit card and bank account numbers, "skimming" small sums from bank accounts, and blackmailing financial and Internet-based businesses, is expected to continue in 2005.

"The real challenge in dealing with these threats is that you have to know what to look for before it hits — and after, many companies don't even know that their defenses have been compromised," said John Watters, iDEFENSE's president and CEO. "Securing the enterprise today requires an aggressive strategy based on actionable intelligence that protects against even the most advanced attacks."

Cell Video Only If It's Free

Wireless carriers in the U.S. have launched mobile video applications demonstrating both the progress and the potential of the technology. However, while 44 percent of online consumers surveyed by JupiterResearch are interested in viewing video on their cell phones for free, only 19 percent indicate they would be willing to pay for that service.

Lack of network coverage, high prices for both handsets and service, and limited access to real-time content will also dampen consumer interest in the near term.

"Although consumer interest in mobile video is strong, the cell phone will remain a voice-centric device in the near term," said Julie Ask, research director at JupiterResearch. "Only 4 percent of consumers cited the ability to watch video as a priority feature for them when purchasing their next handset."

iSCSI for DR

IP SANs finding a niche in disaster recovery plans.

In the two-plus years since it was ratified as an Internet Engineering Task Force storage standard, the iSCSI protocol has made steady inroads with organizations seeking to deploy storage networks without the cost and complexity of a Fibre Channel SAN implementation. Recently, iSCSI SANs seem to be finding another sweet spot — as a long-distance disaster recovery (DR) solution.

The iSCSI protocol allows an organization to link storage systems over its existing Internet protocol (IP) network. Unlike Fibre Channel fabric, which limits the physical distance between storage systems to just 50 miles, there are no distance limitations with an IP infrastructure.

Alleyne, vice president of system architecture at Ryan Beck & Co.

Alleyne said he evaluated Fibre Channel solutions with similar enterprise capabilities, but ruled them out as much too complex and expensive. Many IT managers share Alleyne's concerns, and a number of iSCSI SAN vendors are pitching DR and replication as part of their value proposition compared with Fibre Channel.

Familiarity Breeds Savings

Some of an iSCSI SAN's value is derived from the advantages of working with two widely adopted protocols for storage and networking — SCSI and

"iSCSI-based business continuation solutions are more affordable and allow IT managers to mirror and back up to distant branch offices without distance limitations over wide area networks."

That means iSCSI can enable remote backup and restore operations, allow data centers to be linked to each other, and mirror data across long distances.

"Because of high costs and distance limitations, many companies' current SAN architecture prevents implementation of a solid disaster recovery plan," said Ram Jayam, vice president and general manager of Adaptec's Storage Networking Group. He added that "iSCSI-based business continuation solutions are more affordable and allow IT managers to mirror and back up to distant branch offices without distance limitations over wide area networks."

Reduced Complexity

Ryan Beck & Co., a full-service investment banking and brokerage firm based in the New York metropolitan area, recently replaced its legacy Fibre Channel system with an iSCSI SAN solution to provide enterprise-wide DR and remote replication. The company, which serves clients from 37 offices in 14 states, made DR a priority following September 11 and wanted something more scalable and reliable than its existing SAN.

"At first, we were hesitant to use iSCSI to replace our Fibre Channel solution; however, iSCSI's rapid market adoption and the success of other companies using the technology gave us the confidence to move forward," said Lewin

TCP/IP. iSCSI employs Ethernet as the transport for data from servers to storage devices or SANs. The protocol takes standard SCSI commands into TCP and sends them over standard Ethernet. Because these protocols are so widely used and well understood, the average IT staff doesn't have to learn how to set up and manage new technologies.

The IT department for Eagle County, Colo., recently implemented an iSCSI SAN in order to replicate data to a DR facility seven miles from its primary site. The county says the acquisition cost of the SAN was 45 percent less than alternative approaches, and the ability to manage the SAN infrastructure with existing staff has also resulted in considerable savings.

Downtime can be caused by many factors, including human error, hardware failures or unforeseeable disaster. It can cost organizations millions of dollars in lost revenue, data restoration efforts and compromised customer goodwill. High-end Fibre Channel SAN solutions offer high availability and remote replication capabilities, but are too costly and complex for most companies. In addition, the distance limitations of Fibre Channel forces users to invest in expensive Fibre-to-IP bridging equipment for long-distance backup and recovery.

That's why many organizations are looking at IP SANs based on the iSCSI protocol for full-featured DR solutions. IP SANs go the distance at a far lower cost and with much greater ease.

More Horsepower

Application accelerators speed up software.

Poorly performing applications negatively impact productivity, customer service and the bottom line. As a result, IT managers are under increasing pressure to ensure that business-critical applications meet high performance demands.

At the same time, boosting application performance has become much more difficult than in the past. A growing number of organizations are extending business processes to include customers and partners, and the number of potential end-users can suddenly multiply exponentially, straining resources.

Many organizations are also Web-enabling applications to give end-users access to software from any Internet connection. The geographical dispersion of users negatively impacts application performance because the amount of bandwidth available to those users can vary significantly.

In the past, IT managers had more control over the resources involved in application delivery. Most end-users were located within headquarters or remote offices, and IT managers could upgrade network or server capacity should performance suffer.

Now they've lost that control, and must find new ways to optimize available bandwidth and deal with the latency caused by geographically dispersed users. The latest application acceleration solutions can help meet these distinct challenges.

Accelerating Market

The cry for better performance is evidenced by a spike in demand for products that speed the secure delivery of critical applications to end-users.

According to Gartner, worldwide application acceleration vendor revenue reached \$967 million in 2004. Growth is expected to increase significantly in 2005.

Gartner divides the application acceleration market into two primary segments: application delivery controllers (ADCs) and WAN optimization controllers (WOCs). ADC revenue totaled \$556 million in 2004, while WOC revenue reached \$411 million.

"The market is naturally segmenting and consolidating along two lines: application- and server-focused ADCs and net-

work-focused WOCs," said Joe Skorupa, principal analyst for Gartner's Communications Research group. "An important distinction is that ADCs address problems that affect end-user performance regardless of the network transport and the location of the user. WOCs specifically address WAN-induced afflictions, generally for branch office connectivity."

ADCs reside in the data center, generally in front of Web servers. They accelerate end-user performance of Web-based and related applications by providing a suite of services at the network and application layers.

WOCs are typically deployed both in the data center and remote locations and improve the performance of applications that are accessed across a WAN. WOCs address application performance problems caused by bandwidth constraints and by latency and protocol limitations.

Hit the Gas

However, products that focus on accelerating simple Web applications or enhancing the speed of selected users in a controlled WAN environment ignore the realities of today's complex enterprise. Applications, even those with Web front ends, use a variety of behind-the-scenes protocols, and are accessed from a wide range of locations.

"Traditional network devices have been 'application aware' at best. To ensure the optimal performance, security and predictability of new application deployments, enterprises must invest in next-generation solutions that enable a far more 'application fluent' network architecture," said Mark Fabbi, vice president of enterprise communications for Gartner. "Application delivery solutions that understand how to intelligently apply policies to specific application types will be more quickly adopted by enterprises and will be in the best position to gain market share in this important and rapidly growing market."

Latency in enterprise applications can result from many different sources. Comprehensive, feature-rich applications, which often involve the interaction of multiple behind-the-scenes modules, can place considerable strain on traditional networks.

In most cases, these performance problems are not the result of flaws in the application design. The fault lies within an underlying network infrastructure that was never meant to deliver modern enterprise applications. Overloaded middleware and database systems may also contribute

substantially to slow application performance.

"Enterprises spent the last decade or so building out their infrastructure with basic components to interconnect networks," said B.V. Jagadeesh, president and CEO of NetScaler. "Today, these same businesses are making purchase decisions on the next wave of core infrastructure solutions based on the behaviors of the applications traveling across those networks. Technology designed from the ground up to deliver on the vision of these forward-thinking global enterprises will be best positioned to be the next dominant leader in networking."

Full Speed Ahead

As a result, Gartner predicts that the line between various application acceleration technologies will blur. For example, sequence caching and compression techniques use a single mechanism to reduce WAN bandwidth requirements while reducing latency. Additionally, the incorporation of protocol-specific optimizations will become more important and more common.

"The trend toward powerful platforms that deliver four or more functions — such as load balancing, transmission control protocol, connection management, Secure Sockets Layer offload, compression and caching — will accelerate as customers strive to simplify their infrastructures," Skorupa said.

Application acceleration has long been important to organizations. However, the bandwidth optimization and load balancing tools that improved the performance of client/server applications and consumer Web sites no longer support today's extended enterprise. Organizations moving to a Web-enabled environment need more than traditional low-end application front ends and point products.

"Enterprises are deploying Web-enabled applications at extraordinary rates and subsequently have an increasing need for networks that provide outstanding performance, intelligence and flexibility," said META Group Program Director Peter Firstbrook. "A product that enables customers to cost-effectively centralize all application optimization functions, offload processing from applications and servers, and eliminate many 'point' application delivery solutions will help them save money and management headaches. These combined attributes are all necessary to increase customers' ROI of their applications and network."

Organization Sets Benchmark for Application Performance

According to the "State of the CIO" 2004 survey by CIO magazine, current IT management priorities are:

- increase business efficiency through IT-enabled process improvement,
- align IT and business goals and
- improve customer satisfaction.

The Apdex Alliance is helping to address these goals. Founded in 2004, the 15-member organization has defined an index called Apdex that measures end-user satisfaction with the performance of enterprise applications, and reflects the effectiveness of IT investments in contributing to business objectives. Apdex is a single number that helps CIOs understand whether their applications are delivering on promises or just operating.

"For most organizations, understanding end-user performance and its impact on the business is still very difficult," said Jay Mellman, vice president of marketing for FineGround, a member of the Alliance. "Apdex gives organizations a clear understanding into how their enterprise applications are performing compared with user satis-

faction. They can then take that number and align IT with their business objectives."

The newly released Apdex converts many measurements into one number on a uniform scale of 0 to 1, where 0 means no end-users are satisfied and 1 means all end-users are satisfied. This metric can be applied to any source of end-user performance measurements such as timing data. Apdex fills the gap between timing data and insight by specifying a uniform way to measure and report on the user experience.

"We are swimming in numbers, but still don't know where we stand in terms of our IT assets contributing to our business objectives. By quantifying the user's experience with an application, Apdex shows whether an enterprise's IT systems are simply 'up and running' or actively contributing to user productivity," said Peter Sevcik, Apdex Alliance founder and president of Net-Forecast, an Alliance member. "This index introduces a new way to think about performance."

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VoIP Adoption Skyrockets

New applications key to maximum ROI.

There's little question that voice over IP (VoIP) is the communication technology of the future. Organizations continue to adopt the technology at an astounding rate, while sales of traditional PBXs slide. According to Dell'Oro Group, revenues from IP-PBXs grew to \$2.1 billion in 2004, a 72 percent increase for the year.

"The strong results for 2004 indicate that IP-PBX technology has moved into the mainstream as enterprises now often select IP-PBXs rather than traditional PBXs," said Steve Raab, director of IP Telephony research at Dell'Oro Group. "Enterprises are embracing the voice over IP features of IP-PBXs both to support branch offices, eliminating the need for separate PBXs at these remote locations, and to support their mobile workforce

why organizations are not deploying VoIP.

In North America, 29 percent of large, 16 percent of midsize and 4 percent of small organizations will have adopted VoIP by the end of 2005. Ease of use, manageability, flexibility and reduced operational costs are the top drivers cited for adopting the technology. Deploying VoIP concurrently with other new technology rollouts is the most popular deployment strategy.

Hybrid PBXs are the most popular way to provide voice service at sites, used by 30 percent of organizations now and growing to 38 percent in 2007. Use of traditional PBX and key systems at headquarters sites is on a sharp decline, from 29 percent today to 8 percent in 2007.

Still, one of the top reasons cited for

"The strong results for 2004 indicate that IP-PBX technology has moved into the mainstream as enterprises now often select IP-PBXs rather than traditional PBXs."

with features such as soft phones that enable sending and receiving telephone calls through laptop computers."

Small, midsize and large organizations participating in a recent Infonetics Research study increased their average spending 46 percent in 2004, and the surveyed firms said they plan to spend an additional 9 percent in 2005. Resistance to the new technology is fading, indicated by respondents who rated all barriers to deploying VoIP lower this year than last year in a similar Infonetics study.

"There's no denying voice over IP is the future, but given all the hype generated over the last year, it's important to keep things in perspective," said Matthias Machowinski, directing analyst at Infonetics Research and author of the study. "Although large organizations are adopting voice over IP at a decent rate, adoption among small and midsize organizations is pretty low. But the good news is that awareness of available voice over IP products and services has increased among decision-makers."

Infonetics conducted in-depth interviews with 240 small, midsize and large organizations that use VoIP products and/or services now or will by 2006. The firm also conducted interviews to determine VoIP adoption rates and reasons

not deploying VoIP is the perception that existing voice technologies work just fine. The initial cost of VoIP deployment is another deterrent.

Experts say the view of VoIP as a cost-saving technology persists despite the fact that many fail to see immediate bottom-line advantages. In addition to the initial capital expenditure associated with VoIP systems, the vast majority of adopters must upgrade their networks in order to support voice calls. Interoperability issues and quality of service challenges can also increase deployment costs.

Another myth is that voice is just another kind of data. In reality, deploying a new communications system is a highly complex project that requires significant planning and expertise.

The real benefit of VoIP technology lies in business-enabling applications that increase productivity and improve customer service. Possibilities include IP-based conferencing, interactive voice response and virtual call centers — applications that are difficult and costly in a traditional PBX environment.

The Infonetics survey bears out the value of IP-enabled voice applications. Only 12 percent of respondents are using VoIP solely to replicate basic voice features.

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Staying on Track

Training key to project management success.

Having the right personnel and skills are critical to the success of any project, especially IT projects. Yet the difference between a successful project and a failure can often be attributed to how the project was managed. Many IT projects will be directed by a person valued more for his technical knowledge than his planning and people skills — a skills gap that dooms the project to failure.

The Project Management Institute estimates that businesses spend \$2.3 trillion annually on projects, most of which are not properly aligned with corporate strategy. This shortfall — combined with the fact that nearly 90 percent of companies lack the strategy to manage their project portfolios — reveals how critical it is for organizations to ensure projects achieve their desired outcomes.

The answer of course is adequate training in IT project management — business and project skills with an emphasis on the unique time, budget and personality challenges of technology environments. For IT managers, business skills are as important as technical certifications.

The first step toward a successful project is the project initiation — defining what the project will accomplish and its budget in terms of both time and money. The project manager must determine if existing technology resources are adequate and if outsourcing, hiring new personnel or extensive retraining are required.

The Project Management Institute estimates that businesses spend \$2.3 trillion annually on projects, most of which are not properly aligned with corporate strategy.

The initiation phase should result in a written framework that formally outlines the project scope and schedule. Project management training can help administrators determine a project's "critical path" — the minimum length of time in which the project can be completed and the priority of activities required to complete it.

The next step is to create a work breakdown structure (WBS), which documents the incremental steps required to complete major tasks. It's here that IT professionals can become bogged down try-

ing to outline every detail. Project management training can help an IT manager create a WBS that clearly outlines tasks but leaves the details to project teams.

A working project plan should also include several mini-plans that address specific areas that impact a project's success. A resource management plan outlines the allocation of funds, people and

hard assets to the project. A risk management plan documents potential problems areas — with contingency plans for dealing with them. A quality management plan ensures that tasks are not only completed but work as required. An operational transfer plan establishes a smooth transition to the production environment.

If the initiation and planning stages have been done correctly, the project execution stage primarily involves updating schedules and budgets and monitoring the critical path to keep the project on

track. Unforeseen challenges are dealt with according to contingency plans.

In addition to keeping in touch with project teams, the project manager may need to interact with vendors, upper management, non-technical employees and others. These interactions may require a delicate touch or heavy hand, and proper training can help IT project managers decide which to use. Project managers also need to learn how to avoid project "creep" when the actual work strays from stated purpose and project definition.

An often-overlooked part of project management is the closing documentation and sign-off. Projects usually trickle off, so it's important that project managers establish an endpoint and provide a paper trail that includes challenges met and lessons learned.

IT professionals are no strangers to training. In order to succeed, they need to be qualified to build and maintain the latest technologies. For IT professionals with an administrative role, project management is a business skill that's just as important — and it can be gained through the right training.

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Get Smart

XML marks the spot for new breed of intelligent document platforms.

Since the earliest days of the computer age, experts have predicted the imminent arrival of the "paperless office." That goal has proved to be difficult to achieve. Although many have invested heavily in enterprise applications to improve their methods for sharing information, paper documents have remained central to the process.

Working with paper documents is largely a manual process, which opens the door for mistakes and misinterpretation. In addition, tracking, storing and moving paper takes a significant financial toll on businesses. Even documents converted to an electronic format tend to be static and difficult to revise.

The increasing desire to convey more information with less paper is strengthening the market for a new breed of electronic documents that can streamline information exchange between people and business systems. Intelligent documents — alternately referred to as "smart" or "active" documents — feature embedded business logic that allows them to move data to and from back-end databases

while updating themselves as business rules dictate.

"Active documents may be a disruptive technology. They will change how the enterprise works by saving time and by linking together the now-scattered elements of knowledge work," said Joshua Duhl, research director of IDC's Content

IT service changes and purchasing. These dynamic documents are frequently Web-based, featuring built-in data validation, business rules, conditional routing and presentation, and process automation capabilities.

Vendors ranging from document and e-forms systems providers such as Adobe,

client information in about 10 minutes. The Web-based system instantly generates enrollment forms, populating each form field with the required client information. This ease of use helps make Farmers Home Mutual products more attractive to independent brokers, who can now sell and process more insurance services in less time.

In addition, Farmers Home Mutual is planning to use the intelligent document platform to generate policy booklets for new clients in Adobe Portable Document Format (PDF). The booklets contain the terms and conditions of an insured's policy, and can be printed and sent to clients, as well as e-mailed to brokers for their files.

"Integrating the Adobe Intelligent Document Platform into our online system enhances agent services and substantially reduces our everyday operating costs. With Adobe solutions, we can enable agents to offer our products to their clients as quickly and as efficiently as possible."

Technologies Group. "They have the potential to become a new, de facto interface that will give users a single point of interaction that is specific to each task."

Intelligent documents show promise for improving e-business transactions, but they can also be used to improve internal processes such as employee recruitment,

PureEdge, Cerenade and Microsoft to more process management-oriented companies such as FileNet, Integrify, Nsite and Verity are among the current market leaders in intelligent documents.

Better, Faster, Cheaper

Farmers Home Mutual, a provider of personal insurance products, recently adopted Adobe's Intelligent Document Platform to automatically generate all the paperwork required for insurance agents to enroll clients for new policies and services. The solution enables Farmers Home Mutual to efficiently process client information, as well as issue new policies and policy manuals once clients are approved and have accepted the policy terms.

Prior to deploying the platform, the company estimated that it cost \$22 to manually process each of the 27,000 applications it receives each year. With intelligent documents, the company says it has reduced the time to process policy applications from 10 days to one day, and cut data entry costs by approximately \$500,000 annually.

"Integrating the Adobe Intelligent Document Platform into our online system enhances agent services and substantially reduces our everyday operating costs," said Frank Raasch, enterprise technology manager at Farmers Home Mutual. "With Adobe solutions, we can enable agents to offer our products to their clients as quickly and efficiently as possible. For instance, the easily accessible online forms contain built-in validation features that handle basic calculations and verify that the right type of information is entered by agents."

The automated processes also minimize the amount of manual data entry required for agents to complete insurance applications, enabling agents to enter all

XML the Key

The eXtensible Markup Language (XML) is a primary enabler in the creation of smart documents. XML allows information entered into an intelligent document to be automatically integrated into back-end databases — thus eliminating the old process of having people download forms from a Web site, fill them out and then mail or fax them back. XML integration also gives intelligent documents the ability to automatically skip unnecessary fields, prepopulate data already available in databases and automatically duplicate new information entered by the user wherever it's needed. In addition, customizable XML tags can link customer responses to corresponding help information or links to informational videos or online enrollment forms.

In many cases, intelligent documents are designed in HTML but feature business rules and data validations embedded via Visual Basic or Java script. Several intelligent document platforms offer a single authoring tool that can publish documents in a standard format — usually PDF — that give users a familiar look and feel while also applying business rules, such as validations and help fields.

Intelligent document systems also typically include template libraries or form repositories to help organizations develop and maintain standardized forms with shared semantics, navigation approaches, corporate identity and branding.

Organizations continually struggle to find the best ways to gather, organize and distribute information to employees, partners and customers. Thus far, paper documents have been hard to beat. However, with continued refinements in intelligent document platforms, the vision of a paperless office might finally be close to being realized.

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Interest in IPv6 Low

A recent survey of federal government and private sector IT decision makers by Juniper Networks reveals a lack of interest in migrating to IPv6, the next-generation Internet Protocol.

While more than 80 percent of respondents require improved Internet quality of service, security and network management — all key benefits of IPv6 — few are planning for IPv6 migration. Further, the study reports that the federal government trails the private sector in IPv6 awareness, transition planning and knowledge of regulatory requirements and transition deadlines.

“The Department of Defense is focused on accelerating IPv6 transition as a critical infrastructure building block in enabling ‘Net-centric defense transformation,” said Dr. Charles Lynch, technical director, Department of Defense IPv6 Transition Office, Defense Information Systems Agency. “This study is a wakeup call for the federal government.”

New Tool Reads Cursive

A2iA recently unveiled the first-ever automated data capture and keyword spotting software for freeform cursive handwriting. A2iA’s DocumentReader makes it possible to quickly scan through content contained within unstructured handwritten documents and loosely structured fields within forms.

Using A2iA’s Intelligent Word Recognition (IWR) technology, combined with the company’s document analysis technologies, DocumentReader enables a computer to mimic a human speed-reader. It locates, segments and processes cursive handwritten information previously excluded from traditional forms processing and records management applications.

“It features capabilities designed for both real-time business process management and workflow applications — such as spotting keywords to route incoming mail — as well as knowledge management applications, where large batches of documents containing cursive handwriting become searchable for the first time,” said Jean-Louis Fages, A2iA’s president and CEO.

Standards Make IT Accessible

In testimony before the U.S. Senate in May, IBM called for support of consistent worldwide accessibility standards so that everyone, especially people with disabilities and the aging population, can have easy access to information technology and the Web. Frances West, director of IBM’s World Wide Accessibility Center, told members of the U.S. Senate Subcommittee on European Affairs to embrace the need for consistent or “harmonized” standards in information technology.

Accessible technology enables people with differing levels of capability to use information systems. For example, it allows people who are blind to use a screen reader, people who are deaf to use captioning devices and older users to enlarge the text size.

“Accessibility is enhanced by open standards that permit the free exchange of information,” West said.

Group Aids Compliance Efforts

The Compliance Consortium has released the first draft of its framework for managing governance, risk and compliance requirements within the enterprise.

Applicable to both public and private organizations, the framework is designed to help senior management and boards of directors set objectives for managing a wide range of compliance-related activities and institute the programs needed to attain those objectives.

“For many companies, Sarbanes-Oxley is just one of hundreds of mandates from the SEC, FDA and other regulatory bodies that they must manage,” said Ted Frank, chairman of the Compliance Consortium advisory committee and president of Axentis. “Our goal with the creation of this framework is to help organizations define, execute and ultimately profit from low-risk and efficient governance, risk and compliance management, regardless of the specific regulation or statute.”

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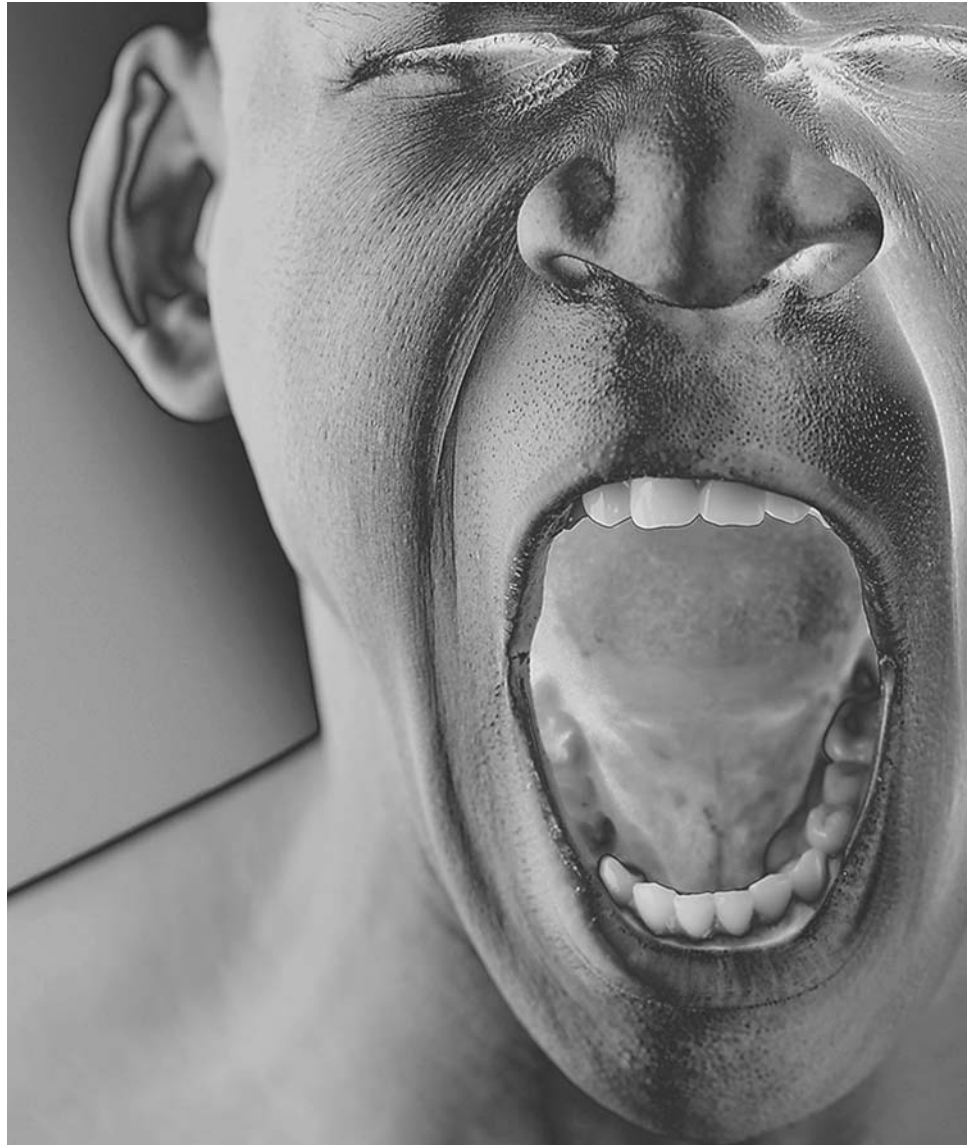
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