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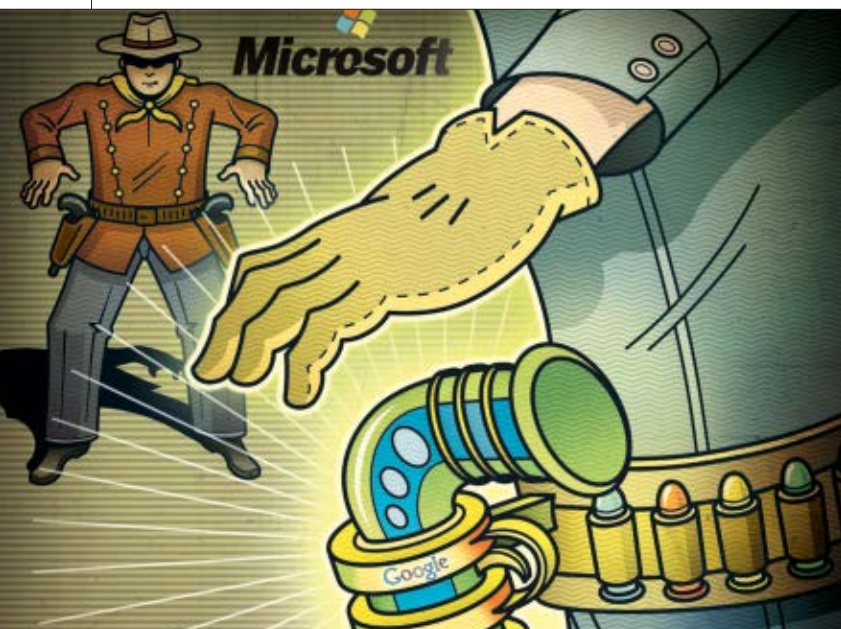


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▶ Secrets to Software Licensing Management Savings

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▶ Yahoo's Open-Source Play

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▶ Tool: Benefits of Server Virtualization

An interactive calculator lets you estimate the savings by using virtualization to consolidate servers.

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Baseline (ISSN 1541 3004) is published monthly by Ziff Davis Enterprise, 28 E. 28th St., New York, NY 10016. Periodicals postage paid at New York, NY, 10016-7930 and additional mailing offices.

POSTMASTER: For change of address and other subscription inquiries, please write to *Baseline*, P.O. Box 3476, Northbrook, IL 60062-3476, or call (866) 315-3266. Printed in the U.S.A. Publications Mail Agreement No. 40009221. Return Undeliverable Canadian Addresses to P.O. Box 503, RPO West Beaver Creek, Richmond Hill, ON L4B 4R6. Canadian GST Registration No. 865286033. ©2007 Ziff Davis Enterprise.

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DO SOCIAL NETWORKS BELONG IN BUSINESS?

THE POPULARITY OF MYSPACE AND FACEBOOK HAS PROMPTED ORGANIZATIONS TO JOIN THE TRIBE.

WHEN THE FIRST PUBLIC RELATIONS PITCH for an enterprise social network rolled into my inbox a few years ago, I initially dismissed the concept. After all, if you're social, like to network and have a respectable list of contacts in your address book, why bother with software or jump through hoops to sign up and log in to a network? Besides, what's wrong with good old-fashioned e-mail or portals to communicate with employees, partners and customers?

Today, an assortment of businesses are examining whether social networks should be part of an online strategy, much in the same way that blogs, instant messaging and other applications are tools to improve communication and collaboration. And some initiatives hold promise that social networks may not be a fad.

Interest in social networks has been attributed, in part, to News Corp. CEO Rupert Murdoch's decision last year to purchase MySpace for \$580 million, followed by Facebook's move to blow open its network to a wider audience.

"MySpace and Facebook, with all the investment capital and publicity, have helped to legitimize social networks and left businesses wondering how they can use social networking technologies to their advantage," says Rich Lyons, a Chicago-based consultant working with several clients on enterprise social network initiatives. He's identified four different approaches that businesses have taken to deploy social networks.

▶ **Leveraging a brand.** Playboy Enterprises, publisher of *Playboy* magazine, last month launched Playboy U, a social networking site open only to college students. It features non-nude photos, videos and events, and generates revenue from advertising. "We like to think of Playboy U as a 'campus adviser' and expert on how to make the most of the college experience," the company said in a statement.

▶ **Soliciting user-generated content** that can be shared with a wider audience. Fine Living TV, a cable television network owned by The E.W. Scripps Co., has invited viewers to post online videos showing their favorite hometown places. The Web site promises participants that selected videos may appear on the show, "We Live Here."

▶ **Encouraging innovation.** AAR Corp., an aviation equipment and services company based in Wood Dale, Ill., established a discussion forum to encourage collaboration. For instance, AAR executives asked workers to share ideas in the forum on how the company can best address global climate changes.



How are businesses using social networks? To leverage brands, solicit user-generated content, encourage innovation and promote commerce.

"Through use of this tool, we have started to get input from anywhere in the organization regardless of organizational reporting structures," says Ben Sandzer-Bell, AAR vice president of strategic development.

▶ **Promoting commerce.** Comcast, a cable and Internet services provider, is testing out a social network called Fancast. It's billed as a destination devoted to TV, movies and celebrities; visitors can buy movie tickets through Fandango.

What should technology and business executives know before they launch a social network? First, the use of social network applications—like any technology initiative—requires business and technology leaders to address non-technology issues.

Jeff Killeen, CEO of GlobalSpec, an online community for engineering, manufacturing and other technical markets, advises that content on a social network

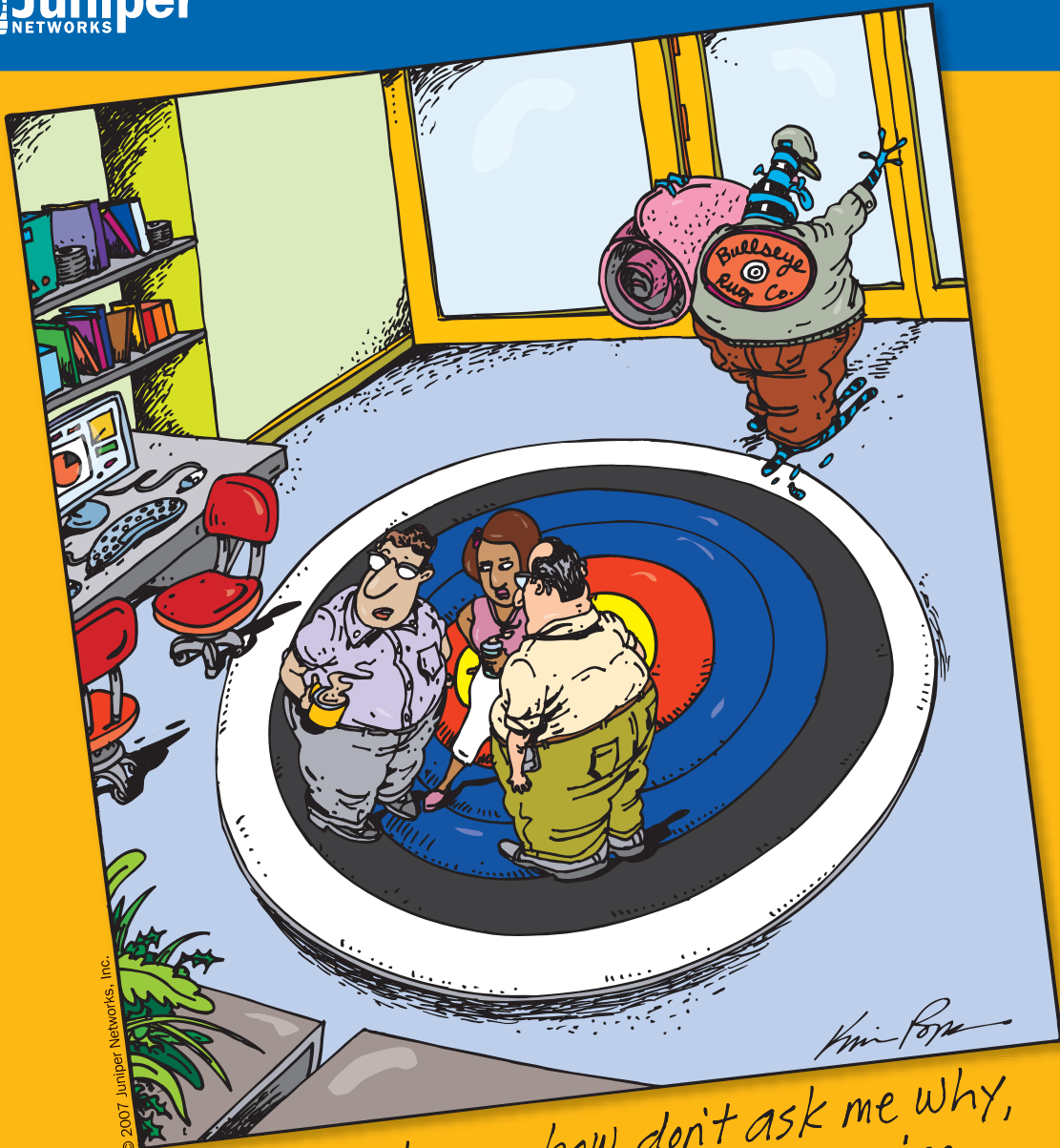
be "vibrant, fresh and constantly changing," or else participants will lose interest. To make that happen, GlobalSpec initially assigned an engineer to answer questions.

Retaining a moderator was also key, in GlobalSpec's case to remove spam and police postings. A challenge: establishing guidelines on what's permissible criticism. "If it's personal, we'll edit it out," Killeen says. "If it's factual or a professionally stated opinion, even if it means it's a negative comment about one of our advertisers or advertiser's products, we'll keep it."

Businesses must establish an information strategy, including policies that are enforced, advises Rachel E. Happe, research manager, digital business economy at IDC. "Understand your comfort level on what gets exposed and what doesn't," Happe says. "And make it very clear to all of your employees and partners. Then police the policy. Then nobody is surprised." ◀

Anna Maria Virzi

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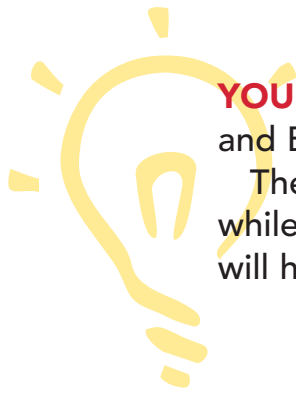
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but I've got a funny feeling we're
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YOU NEED TO DISCONNECT and leave the laptops and BlackBerrys at home during a vacation.

The key is to develop staff that can take care of things while you are away. If you don't do that, you never will have any time off, and your life, and work, will suffer.

Tom Calhoun
Charlotte, N.C.

A Real Vacation?

The online slide show, "Staying Connected on Vacation" (www.baselinemag.com) sent me over the edge. The first slide should read: Get a life!

The next slide should be: Trust your people.

It is completely ridiculous that in our culture people cannot take a vacation without the expectation of keeping up with the office.

One of the best ways to build a quality organization is to show your people you trust them, and a great way to do that is to go on vacation and leave one of them in charge. This is great to help develop future leaders and good team chemistry.

Tom Hoth
Technical Manager
ACS Government Solutions
Atlanta, Ga.

Designs on Security

I enjoyed reading the comments made by Eugene Spafford ("Security: A Business Enabler, Not Disabler," July). He made some points that have been part of the security mind-set for some time, i.e., that unless you include security considerations in the design phase, you are hurting your long-term success.

He also points out that the real problem to be solved is one of process as opposed to one

of technology. If the focus is on process, long-term benefits can be realized; however, if the focus is on whatever happens to be the latest technology, the benefits can only be short term.

The security field can be immensely complicated. That interview, as published, kept a very narrow focus. I thought it was very good for people who don't live and breathe the security industry every day.

Vik Solem
Stoughton, Mass.

New Name, Old Idea

Web 1.0, 2.0, 3.0. It boils down to just another use of current technology ("Winery Blogs To Turn Browsers Into Buyers," June).

To me, at one time it was newspaper, radio and TV—and those still work. It's just a matter of deciding what and where your audience is, and which form of media best reaches them and/or most successfully communicates what your product is and why they should want it.

Michael Hayes
Systems Engineer
KTRS
Frankfort, Ky.

Businesses' Dirty Secret

Dirty data, including documents, are principally created by misalignment between the data and related business processes, wanton data replication, lack of synchronicity between duplicate sources, disparate applications

and data silos, and moreover, the lack of appreciation of the costs of dirty data, the lack of data standards, and the lack of business processes to keep data clean and up to date ("Starting Point," April).

Mediating dirty data is a business function, not an I.T. function. There are several key steps that are required to remediate dirty data.

1. The enterprise needs to understand its own data needs and sources. It must build business cases that identify the costs and savings associated with remediation.
2. Data owners need to be identified. Each piece of data requires an owner who is ultimately responsible for data validity.
3. An enterprisewide, seamless context and infrastructure (data architecture) needs to be created to manage the data. Data

rules must transcend any individual data silo or application.

4. Data must be aligned to business processes.
5. Computer automation needs to be data-centric rather than application-centric.
6. New data must only be created by following data standards maintained in the catalog of valid data within a meta data library.
7. Data time lines need to be merged and aligned. A common time line needs to be created that integrates all data sources into a real-time, coherent view of the business enterprise.

There are more steps that need to be addressed to succeed in the remediation of dirty data. This outline oversimplifies the issues and opportunities of dirty data remediation.

Walt Sawka
CEO
CoherentEnterprise
Valley Stream, N.Y.

Blog Banter

On *Baseline's* Security Blog, Deb Gage examined how hackers attempted to hijack the root servers that run the Internet's naming system. Here's an excerpt of what one reader had to say.

It is a war out there with these attacks, phishing, spam etc. I, for one, advocate a more aggressive response to these types of attacks, which may very well be coming from "rogue" government policies like China openly saying things like planning for "cyber-warfare" and trying to "shut the Net down," as this attack attempted to do. Disable the addresses where they are coming from as quickly as detected. —CRAIG HERBERG



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GOOGLE'S NEW KILLER APPS

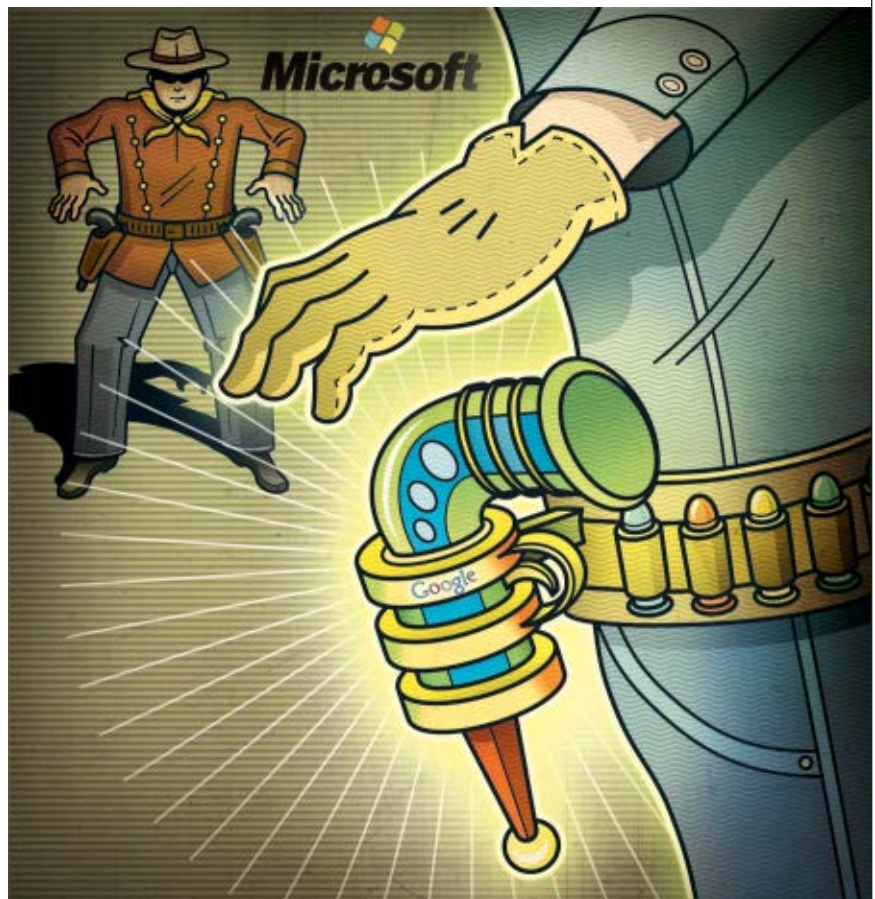
THE SEARCH GIANT'S RELEASE OF FREE SPREADSHEETS AND WORD PROCESSORS HAS BEEN A HIT WITH SMALL BUSINESSES. BUT WILL IT PLAY IN LARGER ENTERPRISES? OVER MICROSOFT'S DEAD BODY. BY ROBERT HERTZBERG

FIRST IT WAS GMAIL—A FREE WEB-based service that changed how conversations were organized, made them easy to search, and, with its speed and 1 gigabyte storage allotment, blew away the competition. Then came the lightweight spreadsheet and word processing programs. Earlier this year, Google chief executive Eric Schmidt said the company was working on an application that would offer many PowerPoint-like features—and a lot of PowerPoint's look and feel.

If it seemed obvious that Google was intent on developing a set of products that could substitute for traditional Microsoft productivity applications, it seemed less obvious how Google thought it could succeed in this. History has been cruel to companies that have challenged Microsoft in its core business (see Netscape circa 1996-1998), and Google didn't even have the benefit of starting off as a conventional software company.

But did that really matter? As Google has introduced its hosted applications—none of them flashy, but all of them performing as promised and in ways that simplify collaboration—and as it has announced acquisitions that have strengthened its technical foundation (such as the pending purchase of Postini, an e-mail security company, for \$625 million), it has become harder to write off Google as nothing more than a search service.

On the contrary, what seems certain to some analysts, seven months after the company released its for-pay edition of Google Apps, is that it is going to be successful in this initiative. The only questions are



how successful, with whom, and how Microsoft—never one to shrink from a challenge—will respond.

EARLY INROADS

To date, Google Apps has had a minimal impact on Microsoft's core software business. It would be easy to have a different impression of this, with all the buzz that Google generates. But Microsoft's revenue grew 15% to \$51.1 billion in its latest fiscal year, with a

lot of the growth coming from Office and the company's new Vista operating system. It still has between 95% and 98% of the desktop market, according to Forrester Research.

To the extent that Google has any presence at all in productivity software, it is in segments of the market that are not particularly revenue-rich. Tens of millions of individual consumers have signed up for Gmail, which now comes with almost 3 gigabytes of storage.

And more than 100,000 organizations have signed up for Google enterprise apps, mostly universities, non-profit organizations and small businesses. It's impossible to know how many of the businesses are actually paying Google its stated fee of \$50 per user per year, as opposed to using the standard version, which is free. (Users of the standard version get less storage space and a lower level of service, and don't have the option of shutting off advertising.) Google doesn't break out that number, but it's clearly a drop in the bucket. The company still gets more than 98% of its revenue from search-related ads.

The thing that has Microsoft concerned, of course, is not Google's existing market share but the company's potential, especially among small and midsize companies that occasionally win at Microsoft's licensing fees.

breadth of applications as at a large company," says Harris, a CIO at various divisions of PepsiCo from 1988 to 1998 and CIO of Gap from 1999 to 2004. "I don't have to go as deep, but I have to go pretty broad."

While it's mostly small companies for now, some big companies are also evaluating Google Apps, partly as a way to distribute e-mail to pockets of workers who don't have it—field workers and those on the factory floor, for instance.

Some other big companies are using Google Apps as a weapon against Microsoft. "They're saying they could use this sort of like the jawbone of an ass to loosen Microsoft's negotiating posture," says Gartner vice president Tom Austin. The threat may not be serious in the case of the many enterprises that have written applications

long, he not only has the best menu in town but is successful enough to buy up the surrounding real estate and prevent any other restaurants from opening.

At Microsoft, that sort of fearsome work ethic and long-term focus has helped turn products like Excel, Word and PowerPoint into dominant standards. Some critics say Microsoft's real advantage lies elsewhere—in its high-pressure business tactics, made possible by a cash hoard that once totaled \$56 billion. But that perspective doesn't give Microsoft's technology its due. Excel and Word are both feature-rich applications that have become as valuable to power users as they are to casual ones. Excel, for instance, has security controls that could let a division head, in a conference call, open up different parts of a spreadsheet to the chief financial officer and to two regional sales managers.

"MICROSOFT OFFICE IS A REALLY, REALLY GOOD SET OF SOFTWARE. THAT'S ONE OF THE THINGS THAT DOESN'T GET BROUGHT UP IN THIS."

For example, Shaklee, a privately held nutrition company in Pleasanton, Calif., has been testing Google apps for the last few months and hopes to be in a position three years from now to replace its internally administered Microsoft software with applications hosted by Google. In theory at least, chief information officer Ken Harris could end up paying \$50 a head for his roughly 750 employees—less than \$40,000 a year. By contrast, a volume licensing contract with Microsoft for the standard version of Office (no Access database, no FrontPage Web creation tool) would probably run Shaklee about \$350,000 annually. "The economics might be very favorable," Harris says.

A hosted solution from Google might also let Harris turn his attention to more strategic things than updating directories and responding to requests from employees for more storage. "Being at a midsize company, I have responsibility to cover the same

on top of Microsoft's .NET framework, or that use Excel, for instance, to connect to SAP. Such enterprises, in giving up Microsoft's Office suite, would incur breakage costs. But other companies—the ones using Microsoft technology out of the box—might not. "Some of them might even walk away," Austin says.

SOFTWARE QUALITY

Microsoft may not be the world's most innovative software company—it was behind Lotus in spreadsheets, WordPerfect in word processing, Apple in user interfaces and Netscape in browsers.

But what it lacks in originality, Microsoft makes up in sheer determination. The company is like the successful restaurateur who is periodically outshone by trendy new rivals, but who still shows up at 6 a.m. to make sure everything about the restaurant is shipshape, and who gradually appropriates the most popular offerings of competitors. Before

"One of the things that doesn't get brought up in this," says Forrester analyst Rob Koplowitz, "is that Microsoft Office is a really good set of software."

Indeed, even Google doesn't dispute the quality of Microsoft's products. "Microsoft has great software," says Matthew Glotzbach, director of product development for Google Enterprise. "By no means would I disparage their technology." The Google Docs & Spreadsheets application acknowledges the pre-eminence of Word and Excel by mimicking their look and feel. Google's version of presentation software, expected soon, will likely do the same, by mimicking PowerPoint.

Still, Google is not so much trying to match Microsoft feature for feature as it is placing a bet on a new way that people are using software, to collaborate online. "I call this an asymmetric warfare strategy on Google's part," says Gartner's Austin. It is an approach that says the future will be less about indi-

vidual productivity and more about the sort of joint project work that has made Wikipedia into such a sensational success. Last fall, Google bought a wiki editor called JotSpot, and it won't be long before Google adds its wiki editor to the tools it offers users.

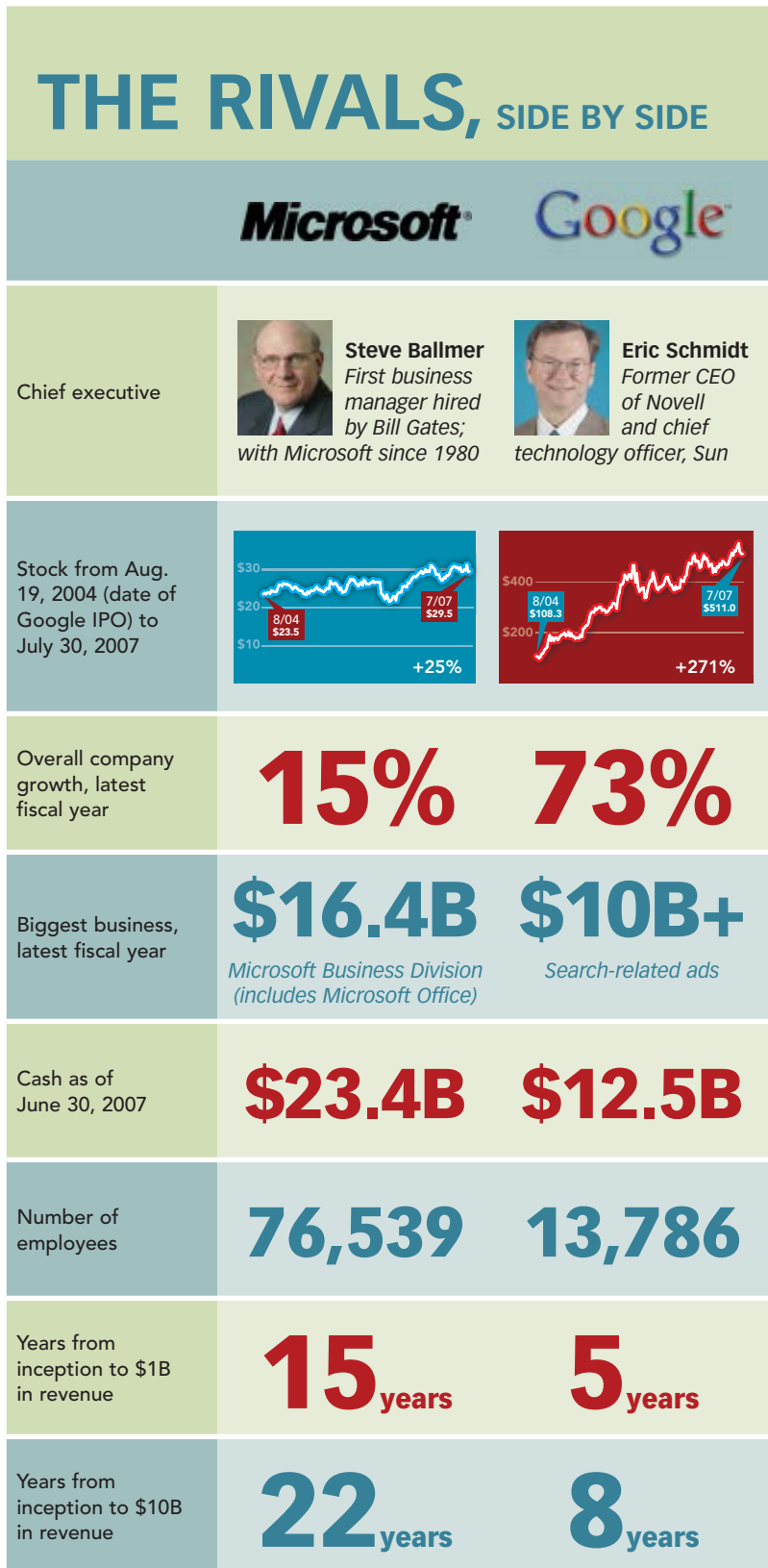
Indeed, when it comes to online collaboration, many analysts say that Google's approach is superior, allowing for real-time updating of shared documents, a big improvement over the tedious process of passing around Microsoft documents as attachments, and cheaper than investing in some newer Microsoft products that simplify collaboration, like SharePoint.

Google's facility with collaboration doesn't change the fact that a complicated Excel document—say, one that uses a pivot table—may lose some fidelity when viewed as a Google spreadsheet. But that is a chance Google seems willing to take for now—that most users aren't using its productivity applications for anything too fancy. "We're solving the problem for what most people are going to use," Glotzbach explains. "If you're going to do hard-core pivot tables, then Google Spreadsheets probably isn't for you at this time."

A NEW PARADIGM

If Google Apps has an advantage over Microsoft Office beyond how it enables collaboration, it lies in how its software-as-a-service paradigm lifts administrative burdens for I.T. departments. In theory at least, companies that use Google Apps don't need any technical workers to update the client software, fine-tune the e-mail servers or manage the disk space. That's all done by Google, in what people metaphorically call "the cloud," actually a series of gargantuan server farms operated by the company.

Google's strategy of distributing its software as an online service means CIOs also don't need to manage software upgrades. When Google improves some aspect of its spreadsheet or word processing software, it can make the enhancement available to users immediately, without their having to take any action; they may not even be aware that



anything has changed. “One thing about serving software from the cloud is you can innovate very quickly, much more so than in a standard innovation cycle,” says Forrester analyst Koplowitz.

Of course, from a corporation’s point of view, there’s a downside to the idea of using applications that run on another company’s servers, and that is the possibility that data may be compromised as it moves between internal and external computers. Fortunately for Google, it doesn’t have to take on the burden of proving that software-as-a-service and security are compatible concepts. Proof of that has already been furnished by Salesforce.com, a maker of customer relationship management software whose founder, Marc Benioff, takes every chance he can to goad Microsoft. Salesforce.com’s success in moving up the customer food chain—from tiny

domain names, a Web site and e-mail to small businesses, was a first step. And earlier this summer, Microsoft CEO Steve Ballmer told financial analysts that he expects to augment almost all Microsoft applications with Web services components within the next decade. “They’re both large investments,” Koplowitz says of Google’s move to the enterprise and Microsoft’s move to the Internet. “It’s going to be a question of who has the stomach to keep this fight up longer.”

THE FUTURE

That the answer to Koplowitz’s question isn’t clear is a tribute to what Google has accomplished. As of this writing, Google has a cash hoard of \$12.5 billion and a stock-market value of \$159 billion, in both cases more than half the level of Microsoft. Nonetheless,

that Microsoft isn’t. “This is where time is working for them,” says Lars Ploughman of Headshift, a London-based consulting firm. “They’re in the process of charming an entire generation of people using computers in a broadband world.”

Still, it is a lot to believe that the world’s biggest enterprises will simply throw Microsoft out the door in favor of Google. “The fact that a product like Excel is really tied into the business processes of a company is extremely important,” says Richard McAniff, a corporate vice president at Microsoft. “One I.T. person once told me everything comes through Excel in one form or another.”

Indeed, Microsoft has become part of the infrastructure at many companies, the fossil fuel on which all things run. So, while some people may think it’s time for alternative forms of energy, the how and when of getting there are questions.

To the extent that there is a transition in which Google gains ground, many observers believe it will be gradual. Adrian Sannier, the top technology officer at Arizona State University, where more than 65,000 students and faculty now use Google Apps, says he can envision a world in which companies use Microsoft products to author documents, and Google to collaborate on them. “You could imagine an enterprise where the number of Microsoft licenses you had to buy was much smaller,” he points out. “Maybe the accounting department gets full-blown Excel but no one else does.”

Even Microsoft executives accept this possibility. “I think there’s a tremendous opportunity for lots of people to also participate in this space,” says Office-overseer McAniff. “It’s not winner-take-all.” That’s a surprisingly conciliatory tone for a Microsoft executive. And if he’s right, Google Apps may end up being the biggest impediment Microsoft has ever faced. ◀

ONE INTANGIBLE ADVANTAGE FOR GOOGLE IS ITS ABILITY TO HIRE THE WORLD’S BEST ENGINEERS.

accounts initially to accounts like Avis and Bear Stearns today—is something that Google is hoping to replicate.

Google’s comfort online—the Internet is, after all, its native habitat—isn’t an unqualified advantage. The fact that its applications can only be accessed online is a drawback in a world in which business people still occasionally find themselves in planes or in other places that have no Internet access. To that end, Google is working on offline-enabling its applications through a framework any software developer can tap into, called Google Gears. Google has already used Gears to bring offline capability to its RSS reader; the company plans to do the same with its weightier applications.

At the same time that Google is moving toward making its applications available offline, Microsoft is taking steps to embrace more of a Web delivery model. Microsoft Office Live, a 10-month-old initiative that provides

the thing that likely makes Microsoft management the most nervous is the momentum Google has. Last year, its eighth since being founded, Google passed the \$10 billion sales mark—a feat that Microsoft needed 22 years to accomplish. If you took Google as it exists today and made it a unit of Microsoft, it would be Microsoft’s third-biggest standalone business, with an excellent chance of surpassing Microsoft’s operating-system revenue in the next quarter or two.

Google also has some intangible assets, notably its lofty philosophy (e.g., “the need for information crosses all borders” and “do no evil”) and its reputation for technical brilliance. That reputation has transformed Google into what IBM was in the 1970s and Microsoft was in the 1980s—a magnet for talented engineers.

Also, Google—as the first place students go for information—is becoming woven into the fabric of life in a way



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WHY PAY-FOR-USE COMPUTING PAYS OFF

THIS COMPUTING MODEL LETS CIOs SHIFT I.T. RISKS TO VENDORS—AND TRIM OPERATING COSTS IN THE PROCESS.

BY PAUL A. STRASSMANN

WE ARE AT THE START OF AN ERA OF SO-called pay-for-use computing, which stands to shift information-technology risks from customers to vendors.

Under the old computing model, a company would purchase a computer with excess capacity, gradually build up the computer's utilization until performance was degraded, and then upgrade equipment when necessary.

In contrast, the pay-for-use model relies entirely on the availability of services delivered by a computer vendor. Infrastructure services, such as bug fixes, computer security safeguards, software upgrades, disk memory additions and hardware enhancements, become the responsibility of the vendor, not the customer.

Depending on the complexity of its applications, a company could, in the foreseeable future, shift perhaps as much as a third of I.T. operating costs to the provider of computing services.

The leading vendor of pay-for-use is Hewlett-Packard. It delivers applications and desktops from a centrally managed infrastructure. The company also offers a Virtual Desktop Infrastructure, which provides customers with the hardware, management software, virtualization software and services they need to implement a secure alternative to traditional desktop computing.

Sun Microsystems offers computing power at \$1 per CPU or processing hour. There are no other fees and only a simple click-through license. The processing is protected by defenses at every level of the company's Sun Grid. A new application programming interface allows developers to create and submit jobs to Sun Grid. That allows Java applications to log in, create resources, submit jobs for execution and download run results.

Microsoft has announced pay-as-you-go personal computing offerings, powered by FlexGo technology, that enable customers in emerging markets to buy software online. Customers can get a low-cost, Windows-enabled PC using prepaid cards or by obtaining a monthly subscription. This is primarily a vehicle for marketing Microsoft Office and Vista software in developing countries; it is due to be rolled out sometime in 2008.

An interesting entry in the pay-for-use competition comes from Amazon.com. The Amazon Elastic Compute Cloud is a Web service that provides flexible computing power. It changes the economics of computing by requiring payment for only the capacity used. This includes 10 cents per computing hour consumed, 10 cents per gigabyte of data



Depending on the complexity of its applications, a company could move as much as one-third of I.T. costs to the provider of computing services.

transfer in and 18 cents per gigabyte for data transfer out. There is no minimum fee.

Other vendors have entered the pay-for-use market. Cisco offers a document manager, an online calendar, Web meetings, a Web database, expense reports and other features for \$180 per year per seat. Google sells Gmail, a calendar, document and spreadsheet collaboration, and other features for about \$50 per year per seat.

How can these vendors make these numbers work? By using virtualization to improve hardware utilization. Virtualization makes it possible to process applications on computers

that can simultaneously handle tens, and ultimately hundreds, of job streams.

Large numbers work in favor of these vendors. The processing power of a single multiprocessor can keep computing utilization to better than 70% while intermingling a large number of separate job

streams. Such multiprocessors are also able to distribute the workload across several geographically separate data centers. Individual servers, processing locally one application job stream at a time, can at best achieve 15% utilization as measured over a 24/7 time period.

Large organizations such as financial services firms can potentially realize the same advantages as these vendors (see "Benefits of Server Virtualization," p. 60, for a calculation of potential gains). In reality, however, such improvements are rarely achieved because of the organizational and technical obstacles impeding corporatewide server consolidations.

A CIO who decides to pursue a pay-for-use computing strategy will have to choose whether to continue installing computing capabilities for self-sufficiency as before, contract for pay-for-use with the vendor's equipment on-site, or buy pay-for-use as a service. Most likely, CIOs will pursue a combination of the three major options, taking advantage of what is economically and operationally most feasible. In this way, organizations will have removed many of the technology risks in capacity and configuration management. ◀

PAUL A. STRASSMANN (PAUL@STRASSMANN.COM) IS A FORMER TECHNOLOGY EXECUTIVE AT GENERAL FOODS, KRAFT, XEROX, THE DEPARTMENT OF DEFENSE AND NASA.



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COMING TO TERMS WITH COMPLIANCE

TAKING THE GRUNT WORK OUT OF THE PROCESS WILL CUT COSTS AND BOOST PRODUCTIVITY.

BY MICHAEL VIZARD

WHILE COMPLIANCE REGULATIONS HAVE in general been a boon to managers who needed business executives to focus more on the strategic role information technology plays in their organizations, the actual physical process of bringing an organization into compliance is sheer drudgery.

Unfortunately, there is no way to avoid the tasks associated with compliance because at its core, this is an activity that requires things to be measured. And things that need to be measured generate reports. As a result, compliance-related activities are consuming an increasing percentage of the I.T. budget in the form of labor costs, as I.T. personnel and business managers spend more time compiling reports.

The challenge facing I.T. managers today is how to automate the process of coming into compliance in a way that lowers the total cost of the activity by making it less labor-intensive. That was the challenge that Hai Ngo, chief information security officer for New York University Medical Center, recently took up.

Ngo needed a relatively unobtrusive way to collect compliance information that would not require I.T. people to add code to their systems or fill out reams of forms every month. In effect, what Ngo set out to do was find a decentralized model that would make it easy to collect data from 300 distributed systems while using a tool that had a relatively low footprint in terms of consuming I.T. resources.

After an extensive product search, Ngo chose Risk Manager from Modulo as the answer to his problem, which has significant levels of complexity; the medical center needs to be in compliance with regulations including Sarbanes-Oxley, the Health Insurance Portability and Accountability Act (HIPAA), the Control Objectives for Information and Related Technologies (COBIT) guidelines and the Federal Information Security Management Act (FISMA).

What he liked about the Modulo system is that it comes with a database in which Modulo has codified all the knowledge about regulation requirements that its consultants have developed over the last several years. Although Modulo is not a household word in the U.S., it's one of the largest consulting companies in South America. It has thus developed a substantial base of expertise around compliance that it recently turned into a product and service that customers could buy, versus having to rely on consultants who bill by the hour to collect compliance data.

Ngo says he has simplified the compliance process for



NYU Medical Center by giving each I.T. unit an executable that it can run locally to collect all the necessary compliance data from its systems. This means the local unit doesn't have to load any additional code on its systems. The executable then feeds that report back to the Modulo database, which compares the information with the best practices for compliance rules that Modulo regularly updates. For business executives, Ngo uses a set of forms on the Web that allows executives to fill in the needed information, which is then sent to the Modulo database.

The end result of this approach is that Ngo says he can keep the medical center in compliance with a host of regulations without having to hire a mass of additional personnel just to manage countless spreadsheets full of compliance data. And perhaps better yet, he now has a centralized repository for all the data; this makes it

easier for auditors to determine whether the medical center is in compliance, which means fewer billable hours for the auditors and lower costs for the business.

There are a lot of good tools out there for storing compliance information, but the more vexing problem thus far has been finding a relatively painless way of collecting the data. The simple fact is that all this compliance work is a drain on productivity, because the people performing the task both inside and outside of I.T. could easily be dedicated to something that drives profit and revenue for the organization. But compliance has also led to a much better I.T. governance environment that over the long haul serves the business better, so calling for less-stringent compliance rules is generally a counter-productive exercise.

Instead, we need to find ways of making it easier for organizations to come into compliance with any number of regulations without gutting those regulations, which would make the whole thing a pointless activity that would add costs without providing any real additional value. ◀

There are a lot of good tools for storing compliance information, but the more vexing problem has been finding a relatively painless way of collecting the data.

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MARTIN GREESON
COURTESY OF U.S. ARMY

**BY DEBORAH GAGE
AND KIM S. NASH**

ILLUSTRATION BY CHRISTOPHER B. SHORT

ON SEPT. 15, GEN. DAVID PETRAEUS, who commands the troops in Iraq, and Ryan Crocker, the American ambassador to that country, will return to Washington, D.C., to report on how the war is going and whether the extra combat troops President Bush ordered last January have made any difference. The president says he is awaiting their report. For months, he has resisted pressure from Congress to set a date for calling the troops home.

But, as public support for the war fades, Congress is sure to pressure Bush to end, or at least cap, the role of American combat troops in Iraq. When the U.S. invaded Baghdad in March 2003, military planners expected the fighting to be over in less than five months, according to de-classified documents turned ▶

The U.S. won't exit Iraq immediately—it can't. Moving 160,000 troops and equipment is a logistics process that, done right, will take two years.



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- ★ Supervise transport or disposal of at least 9 million tons of equipment and supplies.
- ★ Account for 54,000 missing cargo containers (as of May 31) in Iraq and Afghanistan.
- ★ Increase logistical options by expanding the time given to cargo movement planning from 10-20 days to 50-60 days.

over to the National Security Archive. But 4 1/2 years later, with more than 3,700 American troops killed and 27,000 wounded, the American public is losing patience. Many—among them Rep. John Murtha (D-Pa.)—have called for the immediate return of U.S. forces.

The president has promised to veto any bill that mandates a quick pullout of U.S. troops. But even if Congress somehow manages to override him and get an immediate withdrawal, few people realize just how long “immediate” will take.

An order to pull out some portion of 160,000 American troops, plus the 9 million tons of equipment and supplies the U.S. has shipped to Iraq—everything from bandages to bullets to Bradley fighting vehicles—is not only a huge logistics challenge, it’s also a monumental information management task. The military will need to determine when troops and equipment move, which routes they will take, and what supplies should stay or go.

And should a pullout be ordered, how well the military’s information management systems work will be a significant factor in determining how quickly that mission is accomplished.

A quick pell-mell pullout with no setbacks could take six months, according to retired Army Maj. Gen. William Nash, who is now a senior fellow at the Council on Foreign Relations, a nonpartisan think tank.

On the other hand, a withdrawal of this magnitude—which, in addition to the logistical challenge, could risk attacks by Al Qaeda or Iraqi sectarian forces trying to make a withdrawal look like a rout—could take two years, says Maj. Gen. Michael Diamond, deputy director of the logistics directorate at U.S. Central Command, the unified combat command in charge of Iraq.

“[That’s] to do it right, to pool equipment and people out of the war theater, and transition to a legitimate, steady state of security, whatever decision is made,” he says. “It’s not going to happen overnight.”

Indeed, in the first Gulf War in 1991, Operation Desert

Storm, preparations and combat lasted six months. But it took roughly 18 months to get troops, equipment and supplies out, Diamond says. That force was larger (there were about a half-million U.S. troops in Desert Storm, more than three times the number in Iraq now), but didn’t have to travel as far because they never had to go beyond Kuwait. And, he adds, in any withdrawal, “The enemy always has a vote.”

If Bush orders complete withdrawal, all troops and equipment would go. The exception would be small, consumable items like bandages and antibiotics that are time-consuming to pack and could be used by the Iraqis “in a positive way,” says Nash, the retired Army major general. Even portable X-ray machines, although small compared to a 1-ton Humvee or an 8,250-pound howitzer, would come back so their internal technology couldn’t be scavenged.

The military has been working on exit plans for several months. The withdrawal is being managed by U.S. Central Command—one of the Defense Department’s 10 multiservice regional units—which is in charge of an area that includes Iraq, Afghanistan and Kuwait. Central Command will work most closely with the U.S. Transportation Command, which orchestrates the movement of troops, heavy equipment and supplies in and out of Iraq; the Defense Logistics Agency, a combat support agency in charge of procuring and recycling; and the individual services.

Withdrawal plans are being shaped and set through the military’s Joint Operation Planning and Execution System (JOPES), which connects defense agencies through a secure classified network called SIPRNet. JOPES is a set of processes for planning and executing military operations that goes back to World War II. Planners would consider, for example, the location and condition of troops, possible exit routes, availability of equipment and supplies, and a wealth of other data. JOPES is supported by a series of databases and applications,

some classified, that are fed by 170 outside systems. One system, the Transportation Command's Global Transportation Network, tracks movement of troops and equipment.

For the last year, Central Command has kept an online matrix, which combines data from the Global Transportation Network and RFID tags, to track equipment in Iraq and whether it would need to be demilitarized—crushed, burned, torch-cut or otherwise stripped of parts that could be used against the U.S.—when the Americans leave. Diamond says the matrix should help control “the high adventure of reverse logistics.”

To estimate withdrawal times, Central Command has also made “rough, back-of-the-envelope estimates” on gross numbers of people and tonnages of equipment that can go through a particular airport or seaport, Diamond says. These are big numbers—as of May 31, the Transportation Command says it has overseen 4 million passenger trips and moved 9.1 million tons of cargo and 4.5 billion gallons of fuel in or out of Iraq.

The Defense Logistics Agency, which procures and supplies consumable items like food and fuel and destroys damaged or sensitive equipment to keep it away from enemies, has military and civilian personnel in Iraq now. They are conferring with the four service branches about their projected equipment flow during a drawdown, according to Mary Legeret, an operations officer with the Defense Reutilization and Marketing Service (DRMS), a unit of the Defense Logistics Agency that handles reverse logistics for the military.

During a war, plans are re-evaluated at least daily. When the exit starts, Diamond says, “Once we’ve maxed out [a node’s] capacity, it causes us to give feedback to the joint chiefs and say we overshot the mark here. On the next go-round, we may need to adjust fire.”

Generally, it takes three weeks to process a brigade combat team—about 5,000 troops and its gear—for home, says Lt. Col. Marvin Benoit of the Transportation Command's Surface Deployment and Distribution Command, which helps the services coordinate the movement of troops and their heavy equipment. This includes getting everyone and everything through Customs in Kuwait; processing the turn-in paperwork; and running the equipment through the wash racks in Camp Arifjan, the Army base in Kuwait, because the Department of Agriculture doesn't want Iraqi dirt or wildlife coming into the States. Equipment that fails Customs or Department of Agriculture tests gets left behind for the theater support command to marshal through the rest of the process at the port.

At that rate, moving all 160,000 troops would take nearly two years.

If a faster exit is needed, the military may go to a crisis plan, which Nash refers to as “cut-and-run in the most pejorative sense of the term.” For example, equipment or supplies that can't be hauled home quickly might be demilitarized and buried, says Paul Peters, director of DRMS, but that is “an action of last resort.” Diamond says the military won't bury equipment, though he declines to discuss any specific contingency plans.

The most likely scenario, however, is a gradual reduction of U.S. forces, while keeping some troops in-country to train Iraqi security forces and rebuild water, electrical and other infrastructure systems. In that case, the U.S. military must sort through all of its equipment and supplies, using both human judgment and supply-tracking software (such as the Standard Army Retail Supply System) custom-built by each branch of ▶

PLAYER ROSTER INSIDERS

GEN. DAVID PETRAEUS Commanding General of Multi-National Force—Iraq

Appointed in February by President Bush, Petraeus and Ryan Crocker, U. S. Ambassador to Iraq, will return to Washington, D.C., on Sept. 15 to report to Congress on the state of the war.

DONALD RUMSFELD Former Secretary of Defense

Before he stepped down in November 2006, Rumsfeld pushed to get the Department of Defense to approach its business—including its information-technology assets—the way a corporation would. He declared war on the Pentagon's bureaucracy the day before the Sept. 11 attacks.

MAJ. GEN. CHARLES FLETCHER Director of Operations and Plans, U.S. Transportation Command

Fletcher says the Transportation Command, in charge of moving troops, equipment and supplies, “will execute whatever hand we're dealt [in terms of an exit plan] to do the job we have to do.”

MAJ. GEN. MICHAEL DIAMOND Deputy Director, U.S. Central Command J-4 Logistics Directorate

Diamond's command oversees U.S. troops in 26 countries, including Iraq and Afghanistan. He believes a U.S. withdrawal from Iraq, done right, could take two years.

COL. JEFFREY MINTZLAFF Chief of the Transportation Command's J-3 contin- gency division

The military is making progress but has work to do to make its supply chain more efficient, Mintzloff says. He heads the contingency division, which plans and directs all air and surface movements for the Central, Southern and European commands.

MARY LEGERET Iraq Operations Officer, Defense Reutilization and Marketing Service (DRMS)

A civilian on her fourth tour of Iraq, Legeret, who works with the unit that recycles and disposes of military equipment, is investigating how much equipment will hit the DRMS facilities in Iraq, Kuwait and Afghanistan once the exit starts.

LT. COL. MARVIN BENOIT Surface Deployment and Distribution Command, U.S. Transportation Command

Benoit helps the services plan how cargo ships get packed to and from Iraq, using a custom-built application called ICODES and the brawn of sailors and stevedores.

LT. COL. PATRICK BURDEN Army Automatic Identification Technology unit

Burden and his unit are working on RFID projects for the Army to more closely track equipment and supplies in transit through the war zone.



A HEAVY LOAD

WHAT WOULD IT TAKE TO WITHDRAW 160,000 U.S. TROOPS AND 9 MILLION TONS OF EQUIPMENT OUT OF IRAQ?

SORTING

Each piece of equipment must be categorized as serviceable, unserviceable or recoverable and then further sorted as scrap, hazardous material or requiring demilitarization.

THE CHALLENGE: Getting to each and every piece of equipment and crate of supplies while conducting daily war activities. The Transportation Command has offered to supply additional personnel if needed.



PACKING

The items must be packed into standard shipping containers, with radio frequency identification tags attached to the outside.

HOW IT'S DONE: The tags, from Savi Technology, acquired last year by Lockheed Martin, are programmed with codes to identify the items inside, their owner, stock number, final destination and other identifiers.

The same tags used on supplies traveling to Iraq can be reused for material on the return trip, but they have to be rewritten in-theater with new destination codes.

THE CHALLENGE: RFID tags fall off or get ripped off in transit, radio frequencies are sometimes unavailable and batteries in active, programmable tags run out. All of which renders the cargo intermittently invisible to military computer systems.

Kerbala



LOADING

Stevedores guide cargo aboard a roll-on/roll-off vessel, which can carry 2,000 Abrams tanks.

HOW IT'S DONE: The stevedores consult a printout or a handheld device showing diagrams of where each tank should go. A custom-built computer-aided design application programmed with the vessel's layout displays the dimensions and weight of each piece, and if the ship will carry different kinds of ammunition that can't sit next to each other for safety reasons.

THE CHALLENGE: Planning for such a load could take six to eight months, including getting an available ship to port, creating the stow plan and scheduling people to do the work.

the service. They will have to figure the cost-benefit of what to take back and how to move it.

An exit is as delicate an operation as an invasion, notes Maj. Gen. Charles Fletcher, who directs operations and plans for the U.S. Transportation Command. "The Secretary of Defense talks to the services and to us, and he flies in to talk to Petraeus," he says. "The operational impact of the decisions made by the secretary must be fully understood and evaluated by both sides."

REVERSING THE SUPPLY CHAIN

The "retrograde" process of bringing military equipment back home starts with sorting. Each piece of equipment must be categorized as serviceable, unserviceable or recoverable (meaning damaged but repairable), and then further sorted as scrap, hazardous material or requiring demilitarization. The items must be packed into standard containers, with radio frequency identification tags attached to the outside. The tags, from Savi Technology, acquired last year by Lockheed Martin, are programmed with codes to identify the items inside, their owner, stock number, final destination and other identifiers.

As of last November, Central Command operated 223 RFID tag-reader sites and 283 tag-writer sites in and around Iraq, according to a presentation to the Navy by Lt. Col. Patrick Burden, joint product manager in the Army's Automatic Identification Technology unit. Burden says that the same tags used on supplies traveling to Iraq can be reused for material on the return trip. But to do it, the tags have to be rewritten in-theater with new destination codes.

The Army has been performing that task, he says, using portable RFID kits. Each one is a small, hard-shell suitcase con-

taining a Windows laptop, an Iridium satellite modem, a handheld scanner and a military shipping-label printer. The kits run off a vehicle power source or AC power and collect RFID shipment data. With the kit, a supply sergeant in a combat zone can log on to the Army Transportation Coordinator's Automated Information for Movements System II—which controls in-theater movement—and forward RFID shipment data to the satellite network via a radio frequency in-transit visibility system server.

Military leaders track some truckloads of cargo, especially explosives and other "high interest" items, with a Web-based mapping application called IRRIS, for Intelligent Road/Rail Information Server, which was specially built for the Defense Department by software vendor GeoDecisions.

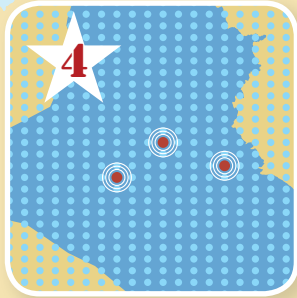
The system monitors the location of trucks and train cars that carry transmitters that send signals continuously to orbiting satellites. The data can be blended with, for example, real-time weather, route and terrain maps, and information about the availability of secure holding facilities should trucks with heavy loads of combat equipment have to pull over. IRRIS creates real-time maps of cargo in transit and the problems it may encounter. Should cargo deviate from planned routes, the software can send alerts to the desktops and laptops of in-theater military personnel on the Defense Department's secured SIPRNet.

IRRIS didn't start as a logistics application; it was created in response to a lack of information about physical infrastructure, such as the size of berths at seaports, during the first Gulf War, according to Brendan Wesdock, director of military solutions at GeoDecisions. He has worked with the Defense Department for eight years on the system.

IRRIS grew when military field personnel started to ask

● Fallujah

● Baghdad



TRACKING

Military leaders carefully track truckloads of “high interest” cargo, such as explosives.

HOW IT’S DONE: With a Web-based mapping application called IRRIS specially built for the Defense Department by software vendor GeoDecisions.

IRRIS, for Intelligent Road/Rail Information Server, monitors the location of trucks and

train cars from the Defense Department and its contractors that carry transmitters that send signals continuously to orbiting satellites. IRRIS creates real-time maps of cargo in transit and any problems encountered such as foul weather. Should cargo deviate from planned routes, the software can send alerts to the desktops and laptops of in-theater military personnel on the Defense Department’s secured network.

THE CHALLENGE: Early on, there were no high-bandwidth connections for sending data from IRRIS over the military’s secured SIPRNet network. Since then, land lines have been installed at bases, allowing faster communications.



AND BRINGING HOME THE SOLDIERS

HOW IT’S DONE: Though there are 160,000 troops deployed now, the

Transportation Command has overseen 4 million passenger round trips—which include deployments, redeployments and troops otherwise moving in and out of the war zone. Commercial airlines will fly many of the troops home and the Transportation Command maintains those schedules, with input on the number of people to be moved provided by the service branches. The systems for coordinating troop redeployment are classified; some are part of JOPEs. The Transportation Command would provide daily movement statistics, as well as analysis of problems en route and workloads at the ports, to the joint commands and supporting entities. Wounded troops are tracked in a Transportation Command application called Transcom Regulating and Command and Control Evacuation System, or TRAC2ES.

THE CHALLENGE: Military branches and the Transportation Command must create “time-phased force and deployment data” plans, which means, in part, they consider contingencies when scheduling the exit of their troops: Who will provide physical protection to troops moving to air and sea ports? How many noncombat troops will stay behind to maintain infrastructure for the last troops in? Most troops will arrive in the U.S. ahead of their equipment, which will take weeks or months to return by ship.

● Basra

for graphical depictions of supply routes, to, for example, more quickly understand bottlenecks, Wesdock says. The Defense Logistics Agency’s primary logistics software, called Integrated Data Environment, whose data feeds JOPEs, is one system that provides that kind of data, but not visually. “You can look at spreadsheets with numbers about problems en route all day long, but if you look at a map, you see the problem right away,” he says.

Though the Defense Department insists that in-transit visibility is better now than it was at the start of the war, problems remain. RFID tags fall off or get ripped off in transit, radio frequencies are sometimes unavailable, and batteries in active programmable tags run out. All of which renders the cargo intermittently invisible to military computer systems. The Transportation Command says it is working on next-generation tags that are programmed to detect tampering and will be replaced en route when they go missing.

IRRIS, too, had issues early in the war, when the military’s secured SIPRNet access in Iraq was provided mainly over satellite, which can be slower than, say, cable for software heavy on graphics. Since then, land lines have been installed at bases, allowing high-bandwidth connections.

But tracking tags that use satellites, rather than radio frequency signals, to communicate data can provide the military with better data on equipment transit, Wesdock maintains, because the signals can be monitored as often as every 30 seconds. “RFID only tells you where it was, not where it is,” he says.

Keeping all this detailed data current during a withdrawal from Iraq is critical to a smooth exit, according to Legeret. While she doesn’t expect RFID tag information to be complete for every item going back, it has to be for anything getting demil-

itized, she says. For pedestrian supplies such as furniture, retrograde details don’t have to go deep. “I don’t need to know it’s a chair with arms, just that there are 50 chairs,” she says.

But no one wants to report to his commander that he has lost track of sensitive equipment. “We need to maintain visibility on that. We will always have complete information on that,” she says.

The Transportation Command, meanwhile, studies supply and equipment traffic in Iraq, Afghanistan and Kuwait every day, Fletcher says. Through the command’s Global Transportation Network, he looks at all transportation “lanes,” whether land, ocean or air, and how efficiently vehicles are moving.

Upon exit, Fletcher will intensify the scrutiny. For example, he met with Army officials in July to stress that although troops sometimes aren’t as careful with data in a rush to get out as they are going in, they’ll have to be to ensure that platoons, battalions and brigades keep track of their equipment and remain ready to redeploy if they have to. “I said, ‘Precision of this execution is going to be a factor of accuracy of documentation. If you want to translate retrograde into readiness, you’ve got to invest [in good data] at the front end.’”

SHIPPING OUT

Once equipment is cataloged and tagged, it needs to get to a port to be shipped back to some other overseas installation or directly to the States.

It’s about 750 miles from northernmost Iraq down to Kuwait, which offers the biggest seaports where much of the equipment to fight Operation Iraqi Freedom passes through. Convoys are vulnerable as they rumble down that long road through the desert. The trip can take more than three days. ▶

IBM





_INFRASTRUCTURE LOG

_DAY 84: Feeling really disconnected. We're not getting the most out of our existing assets. Service and application integration is a nightmare. Our connections are restrictive. We've got to stop working on these islands.

_Please rescue me from this lack of connectivity.

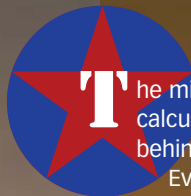
_DAY 87: I've taken back control with IBM WebSphere solutions. Now we can service-enable and connect our existing assets for mission-critical goals. We can reuse existing applications and save money by eliminating redundant systems. Now we're ready for any SOA integration project.

_Plus, no more jellyfish stings.

WebSphere[®]

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WHAT STAYS AND WHAT GOES



The military cares about return on investment, too. But calculating which items to take home and which to leave behind involves more than just cost.

Even before they see official exit orders, military planners are weighing what to take. They must consider the time, manpower and risk of transporting each vehicle, piece of artillery and critical spare parts, as well as whether the item contains any technology the U.S. wouldn't want in enemy hands.

While U.S. troops might leave behind any number of supplies, from bags of concrete to used tents, some items would never be left in Iraq.

A tank, for example, would never remain, even it were beyond repair. To leave a disabled tank invites enemies to dissect it for clues about U.S. communications systems and weaponry, or about how effective their own bombs and firepower have been, according to Maj. Gen. Charles Fletcher, who directs operations and plans for the U.S. Transportation Command. "We would not want that vehicle carcass in the hands of someone in the business of attacking our vehicles," he says.

The question then becomes whether to haul the hulk to the U.S. or another American military base to be cannibalized for spare parts or, like 200,000 other items last year, be demilitarized, with the remains sold as scrap. This year, Middle Eastern companies have bought at least \$11 million worth of iron, steel, copper, glass, plastic, rubber and other materials extracted from old U.S. military equipment. So far this year, more than 20 million pounds of scrap have been removed from Iraq, up from 3 million pounds in all of 2006.

Rules of thumb for when to scrap damaged equipment, according to the Defense Logistics Agency, include breaking down the item for its precious metals when it costs less than \$15,000 to buy a new one, and turning it into scrap when the cost to replace is less than \$25,000.

Each branch of the service decides about its own equipment and sends its disposition decisions to the Transportation Command. The command then costs out a mode or combination of modes of transport, considering the item's size, weight and classification, as well as where it is and where it needs to go. The command sends the options back to the service branch, which picks one so the command can begin to plan movement.

"We have rate structures not unlike FedEx," Fletcher explains. "If we know an awful lot is going to move, we muster resources and create volume efficiencies." — K.S.N.

When the troops are ordered home and the tanks start rolling, stevedores and soldiers will gather at a designated pier—sometimes the size of six football fields—to guide cargo aboard one of the military’s 19 medium-speed roll-on/roll-off vessels, nicknamed “RoRos.” At about one football field wide and nine long, RoRos are among the biggest ships in the U.S. fleet. Each one can carry 2,000 Abrams tanks.

The stevedores will consult a printout or a handheld device showing diagrams of exactly where each tank should go—which deck and which spot on the deck, each tank facing out for quicker unloading. Logisticians have created this plan over several weeks using ICODES, a computer-aided-design application from contractor CDM Technologies that is programmed with the RoRo layout and data about the cargo. The dimensions and weight of each piece, as well as the priority for later unloading, are provided by the military unit that owns the equipment. If the ship will carry different kinds of ammunition that can’t sit next to each other for safety reasons, the software factors that in, too.

On command, a soldier will drive the tank onto the ship at about 15 m.p.h. As stevedores or soldiers chain it to the deck, the driver will hop a shuttle bus back to the pier staging area to grab another tank.

Loading one tank on a RoRo takes four to eight minutes, and this RoRo can be loaded fully in 2 1/2 to four days.

But the planning for a load like this takes six to eight months, Benoit says. That’s to get an available ship to port, create the stow plan, get the equipment to the pier and schedule people to do the work.

“We would just send ships and keep loading them and sending them back,” he says. The work will go on around the clock.

How equipment travels will also have an impact on the withdrawal timetable. Suppose 125 containers of extra tracks for the M-1 Abrams tank now sit damaged at a base near Mosul, 200 miles north of Baghdad. Those tracks could be transported across the desert, probably in a convoy, perhaps to Kuwait’s Shuwaikh seaport about 650 miles away. There the containers could be stowed on a U.S. ship, such as a RoRo, and sailed to a nearby base, or the whole 12,000 miles back to the States. Or, the tank tracks could be trucked to Baghdad and flown out. They could also be demilitarized, with the resulting scrap sold to locals.

Sending home those tank treads would take two to three days by air but cost \$17.5 million. Sailing those same boxes on ships would be 98% cheaper—\$364,000—but transit takes up to one month.

It will be up to the Transportation Command to present the options. Each military branch decides what to do, balancing its needs with political and battlefield realities and how much taxpayer money to spend, Fletcher says. Like a corporation considering whether to green-light a project, the command, he says, is “working that business case analysis.”

Every day, in a windowless room inside a low, white-trimmed brick building at Scott Air Force Base, surrounded by cornfields and suburban housing tracts near Shiloh, Ill., the Transportation Command takes the pulse of a war on the other side of the world.

Soldiers here, dressed in boots and camouflage or olive green, supervise computers. They divide their attention between the monitors scanned by men and women sitting at clusters of desks, the televisions on the walls broadcasting news from CNN and MSNBC, and a large screen.

Many of the military’s major I.T. systems, including the command’s Global Transportation Network, used by the military and companies working with the Defense Department, feed into this room.

“If a bridge is knocked out in Iraq, and [there’s] food on those vehicles going to dining, we chart the status of every dining facility in Iraq ... so we can develop [alternate routes] so the user never sees the problem,” Fletcher says.

A VIEW FROM THE GROUND

But to really understand the magnitude of the task, you have to spend time with Mary Legeret.

In July, Legeret packed fatigues, received personal body armor and left Fort Bliss, Texas, for a fourth stint in Iraq. She’s a civilian who’s worked for 26 years for the DRMS, the Defense Logistics Agency unit that handles reverse logistics for the military.

This tour, Legeret’s mission specifies that she get a grasp on how much equipment will hit the DRMS facilities in Iraq, Kuwait and Afghanistan once exit starts. From Baghdad’s Green Zone, she will fly 110 miles north to Camp Anaconda, known as “Mortaritaville” for the frequent mortar fire there. She will walk around storage facilities to inventory the yards, counting trucks and tanks, broken items and backup parts.

She’ll also meet with others from DRMS working on the retrograde process as well as with leaders from the Army, Navy, Air Force and Marines through Petraeus’ Multi-National Force-Iraq, to talk over their preliminary plans for disposing of unusable equipment.

“I have to look down the road and think, ‘What do we need to put in place now so we’re ready when it happens?’” she says. “I’m looking for ground truth on capacity.”

The time-consuming physical collection of “ground truth” is necessary, in part, because electronic truth isn’t readily available. DRMS’ software for tracking equipment going through retrograde, a custom-built system named Daisy, doesn’t automatically share data with the inventory systems of the Army and other branches of the service, says Peters, the DRMS director, although it can be queried from other applications in the Defense Logistics Agency.

In any case, a revamp of DRMS key software is in the works, according to Peters, with plans to use SAP applications later on. But Daisy won’t start to change until 2010 or 2011, Peters says. Electronic interfaces between Daisy’s data and inventory systems at the service branches, he adds, “is one feature we’re hoping to attain.”

For now, when the Army wants to send a tank to Legeret’s group to be demilitarized, for example, soldiers print data about the vehicle—stock number, condition code, demilitarization requirements—from the Standard Army Retail Supply System on to paper form called a 1348, she explains. The 1348 ▶

“I HAVE TO LOOK DOWN THE ROAD AND THINK, ‘WHAT DO WE NEED TO PUT IN PLACE NOW SO WE’RE READY WHEN IT HAPPENS?’”





_INFRASTRUCTURE LOG

_DAY 69: All we need is one specific piece of info. Gil almost had it, but his hand cramped. How are we supposed to find trusted business info when these massive volumes of disparate, conflicting information keep pouring in?

_Gil just grabbed a stuffed panda.

_DAY 71: The answer: IBM solutions for leveraging information. Now we can cleanse info and standardize source data fields for consistency and accuracy. I can create a single, comprehensive and accurate record of info across our source systems. Finally, I can provide a unified, trusted view of our information so everyone can make better decisions.

_Our view of our data is now scalable. Just in time—I think we ran out of quarters.

Information Management

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is handed to a DRMS worker, who sits at a PC to enter the information into Daisy.

Meanwhile, battlefield commanders must begin to allocate some existing troops to reverse-logistics tasks, notes the Transportation Command's Fletcher, including cleaning and entering data into JOPES tracking applications about the gear going back. Others will be assigned to protect convoys trucking stuff out.

"The soldier out on patrol today is the soldier who will have to repair the vehicle to move," Fletcher explains, "or, if not, we have to put additional [personnel] there to do that."

STREAMLINING THE DOD

In addition to its other challenges, the military is working in the midst of a years-long mandate to streamline and modernize the Defense Department's stovepiped computer systems, some of which are custom-coded and decades old—yet still important to getting troops and supplies home. Some of this work began in 2003 because of problems getting equipment and supplies into Iraq after the war started. Repair parts and other material piled up because they were inefficiently packed and had to be manually sorted once they arrived. Troops kept reordering because the computers couldn't tell them where the stuff was. The Government Accountability Office, which conducts investigations for Congress, found a \$1.2 billion discrepancy between material shipped to the Army and material received by the troops.

Even today, the GAO says, Defense has 2,980 separate business systems. And some of the business systems the Defense Department uses to support the troops have been labeled "high-risk" by the GAO for several years. As of April 30, they say, more than 54,000 cargo containers in Iraq and Afghanistan were missing. At a Senate Homeland Security subcommittee meeting on July 10, Gen. Norton Schwartz, in charge of the Transportation Command, told senators that the command has two port management systems—one from the Army and one from the Air Force—left over from the days when the services developed their own. They are being merged, Norton said, "so that if Marines arrive or Army arrives or Air Force arrives, we'll be operating essentially the same piece of software."

Different parts of the Defense Department are working on separate plans for modernizing their business systems. The Marines and the Army, for example, are installing software packages from arch-rivals to make their supply chains more efficient. The Marines chose Oracle's E-Business Suite; the Army, SAP's mySAP suite. Groups across the Defense Department are consolidating servers and databases and creating service-oriented architectures so different systems can communicate more efficiently. All individual projects are supposed to fit into a departmentwide Business Enterprise Architecture, a blueprint that specifies data

standards, business rules and operating requirements. The GAO says that architecture is now filtering down to the services. Project completion dates stretch out to 2015 and beyond.

While all this work happens, intermediate projects that are important to success in Iraq—building interfaces, for example, between the Defense Logistics Agency's Integrated Data Environment and the Transportation Command's Global Transportation Network, so the military can see supplies as they travel from the warehouse in the U.S. to the battlefield and back—continue, although some of the most important integration has yet to be done. Mae De Vincentis, chief information officer for the Defense Logistics Agency, says this particular project is "in its infancy."

The faster the U.S. tries to move out of Iraq, the more intense the challenge and the more stress put on the Defense Department's planners and systems. In August 2003, Diamond

says, he was processing a brigade of the Third Infantry Division out of Camp Arifjan. Orders were to reunite troops with their families as quickly as possible because they'd been away for nine months and were nearing the end of their 12-month tour of duty. (Tours have since been extended to 15 months.) But the troops' hasty departures meant that it took months to sort and process the equipment they left behind. Each piece of ammunition had to be examined by hand, Diamond says, to make sure it was functional before it could be packed and reassigned.

Indeed, nobody expects the exit from Iraq to be easy.

But Col. Jeffrey Mintzloff, chief of the Transportation Command's J-3 contingency division, which handles movements for the Central, European and Southern commands, is optimistic, even though he has said the Defense Department hasn't gone far enough.

He has proposed that the command merge with the Defense Logistics Agency and get authority over the services. "If DoD really wants to transform its distribution processes, it will take more than collaboration," he wrote in a paper for the Naval War College in 2005.

Standing in his office outside the command's operations center two years later, reminded of the paper, he smiles. Lines of authority are still being worked out, he says, but the Transportation Command is being brought into decisions earlier and can make better business cases when telling the services how something should move. Where troops in the field, worried that supplies would never arrive, used to order four of something—"one for themselves, one [just in case], and two for Mom and Dad, we're now down to two."

But those numbers won't matter once the president calls the troops home. Fletcher, who oversees Mintzloff's division and several others, says he has "a strong personal desire in Iraq ... it's the hope of all America to provide freedom for the people there." But, he adds, "We'll execute whatever

hand we're dealt to do the job we have to do." —*With additional reporting by Doug Bartholomew* ◀



THE FASTER THE U.S. TRIES TO MOVE OUT OF IRAQ, THE MORE INTENSE THE CHALLENGE AND THE MORE STRESS IT PUTS ON PLANNERS AND SYSTEMS.



Please send questions and comments on this article to editors@baselinemag.com.



_INFRASTRUCTURE LOG

_DAY 82: There are so many risks out there. Traffic spikes, natural disasters, mergers. How do we prepare? One in three companies don't recover from unplanned downtime.¹ Would we?

_Gil wrapped everything with bubble wrap. Just to be safe.

_DAY 83: I'm preparing with IBM Business Resilience Solutions. IBM Business Continuity Services help us assess our risks and design a proactive plan to deal with them. IBM Tivoli gives us the visibility to diagnose and fix infrastructure problems. And the robust availability features of the IBM System p™ give us maximum uptime.

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Security Q&A

How To Meet the Complexity Challenge

Carlos Solari is the vice president of security solutions at Alcatel-Lucent/Bell Labs, and the former chief information officer for the Executive Office at the White House. He has more than 25 years' experience in government and private industry, and has amassed a wide breadth of experience in computer security, law enforcement, public safety and defense. He spoke recently with *Baseline's* John McCormick. This is an edited version of their conversation.



Carlos Solari

Obviously you've been around for quite some time, and seen the world from some interesting vistas. From your perspective, what do you see as the biggest challenge out there right now for computer security professionals?

Well, I'm not sure that there is one thing, but let me say that there may be some things that certainly rise up. At the top of my list is the fact that the separate infrastructures for telephony, for data and for video are coming together. In the industry, we call that convergence. It's coming together around the Internet Protocol as the underlying means with which to communicate.

The services are going to blend. The TV will behave like a phone and an access point to the Internet. And the same with the phone; it will behave like an access point to the Internet for Web browsing and also, potentially, to stream in video.

We'll be moving everything so that it can be packet-based. And that means a tremendous benefit—new services like location-based services.

We also are very mindful of the security issues and the threats that can manifest themselves with this blending of these infrastructures.

We're already seeing a lot of convergence.

Yeah. It's happening around the world. And we're starting to see how those threats that have existed in the data side of the world with IP have started to manifest themselves in voice and video.

With convergence, everything becomes vulnerable.

Everything becomes vulnerable, but more important, not only do they become vulnerable by the sheer openness of IP but also by the complexity of making these things work together. Today we have a hybrid kind of connectivity with IP and legacy systems that is going to be there for many years.

Secondly, as we know in the IP data side of the house, the reach of the threat is global and the folks who conduct cyber-attacks can reach from around the world.

As soon as you go IP, and as soon as you start to allow these services to come into play, [there is] the potential for these threats to not only take advantage of that complexity, but also to reach across these infrastructures.

As we've seen with some of these organized cyber-crime groups based in Eastern Europe.

Exactly. The point is that we're going to see more of that happen where we haven't seen it before—in telephony, for example.

There's even a whole new vocabulary for this, isn't there?

We are starting to see the new acronyms or the new words that are being coined that describe it. There's the term Spit, for instance, for spam over Internet telephony.

What else are you concerned about from a security standpoint?

There is also the fact that in the past, there was a separation between the enterprise network carriers and the service provider carriers. But in the future a lot of that will be blended, as service providers, for example, get into the business of managed security services. Businesses are going to connect to businesses through networks that are provided by a service provider that allows these services to be enabled and to take place.

We're connecting people in different businesses who share applications to conduct transactions together. That requires a level of trust between the two enterprises. That means we need to have a method by which we can attest to that state of security of the partners. This is where the standards and the certifications are important.

Security Q&A

You've talked in the past about trust-based computing, where access to a network is granted only after there has been a validation process and an exchange of credentials.

It comes back to that.

Here we're speaking to the trust that needs to be established at the entity level—companies that need to share information with each other, citizens dealing with the government, and government agencies dealing with each other, as well as consumers dealing with business.

So, as entities exchange information, they can exchange it in a way that their separate networks stay protected. The data that is being shared is used in a manner that is agreed upon, and is in conformance with how it is expected to be used—and not compromised or abused.

From a practical standpoint, what should CIOs and CSOs be doing now?

This is no new revelation, but certainly, thinking that you can just protect your network at the perimeter—those days are long gone. We know that data has to be available to the workforce where that workforce actually does its work, which is increasingly mobile and ubiquitous.

The job has become tougher. You really need to think more about what framework or what approach to take to ensure that you're dealing with the issues in a consistent and a prioritized way. You can't deal with everything at the same time—nobody has those kinds of resources.

One piece of advice is to organize around a good security framework. That can be a challenge because, as I mentioned earlier, infrastructures are changing.

The second thing I would say is to recognize that the world of the past—where you had a physical security guy, a personnel security guy and a fiber or I.T. security guy—is going away. These worlds are blending quickly, or they need to. And increasingly we need to figure out how to deal with [them] from an overall risk perspective. And the technologies that are blending these things together require that you understand all the elements of physical, logical security.

With everything changing so quickly, how do CIOs and CSOs keep up? How do you keep up with the technologies, the threats, the various risk management approaches?

That's a really good question because a lot of my background was primarily in the enterprise world, and I thought I understood the issues of security on that side of the house pretty well. Then I get exposed to this telecom industry in a very detailed way, and I find out that I've been missing a whole lot.

So, you have got to stay plugged in. You need to tap into resources where you get information online. You need to read

the trade journals, the periodicals, those kinds of things.

But you also have to go beyond that if you are going to be in the world that I work in. You've got to tap into the companies and academia—the researchers—who are working on the tougher problems. And to be able to gain insight into that world, you really need to make contact on a personal level to get to know the leaders in those areas to know how they're approaching what they see as tough problems, and to be able to start recognizing where technology is going in the security field.

“Technologies don't work in a vacuum; they work with people. A simple example is intrusion detection. It generates a lot of information that humans, in the end, have to try to sift through.”

When you talk about technology, I'm reminded of something you said in a past interview—that while you have to make sure that you have security technology in place, you can't be too dependent on technology.

Technologies don't work in a vacuum; they work with people. A simple example is intrusion detection. It generates a lot of information that humans, in the

end, have to try to sift through to determine what is relevant, what they ought to be concerned with. We can't think of technologies as silver bullets.

Do you think we will ever get to the point where we really have information resources locked down?

Well, I think to some extent there's a certain amount of embedded awareness that is coming forward from everybody. Microsoft has taken a serious approach now to how they deal with the issues of security. We're starting to see security embedded more into everything from the operating system to the applications. So, to some extent we're going to see some relief there.

But I think that the complexity that we're going to go through with hybrid connectivity—between legacy and new IP infrastructure—is going to keep us, at least for the foreseeable future, in a lot of turmoil. The change will keep us busy in terms of security.

I think that the new innovations [that are] coming forward are going to really challenge the definition of privacy. The new interconnections—between business-to-business and all of the different associations that can be made—are going to continue to challenge the question of how you protect content.

There aren't always simple, easy answers because there are so many different scenarios that can be applied, depending on the association. Some of these associations are quite temporal.

And so, I think we've got enough to keep us busy. The maturity of how we think about security in terms of processes and how we deal with it from a technology perspective is going to continue to challenge us. ◀

Security Case

Software Net Ensnares Medical Claims Cheats

HIGHMARK WAS LOSING MILLIONS OF DOLLARS A YEAR IN FRAUDULENT CLAIMS. THE HEALTH INSURANCE FIRM TURNED TO SOFTWARE TO DETECT FRAUD PATTERNS.

BY DOUG BARTHOLOMEW



The Problem: A large health-care insurer needed a means to automate the detection of phony claims by unscrupulous providers in order to reduce fraud losses.

The Details: At Highmark, Pennsylvania's largest health-care insurer with 4.6 million members and 48,000 health-care providers, director of special investigations Tom Brennan says accessing and analyzing the company's claims data for fraud patterns was a slow and often cumbersome process. Staff first had to ask analysts in Highmark's healthcare informatics department to sift through raw claims data and organize it into reports. Investigators then would review the reports to identify unusual claims patterns. "We had several data sources, and sometimes it took days or even weeks to get a response to a [data mining] request," Brennan explains.

The Solution: Brennan teamed with the informatics department in 2002. "They had a lot of analytical skills, and we had knowledge of how these health-care fraud schemes work," he says. Highmark built a Web-based data mining and analysis application using business intelligence software from SAS Institute called Enterprise Miner, and installed the application on every personal computer in the special investigations unit. "Now we can do our analysis in minutes, rather than days," Brennan says.

Using a Web interface, investigators select the data they want to look at and then create their own reports based on the data they've extracted. Highmark's enterprise data warehouse of claims information, which gets 15,000 queries daily, runs on a Teradata 525x/5380 system. A typical query now takes an investigator about 20 seconds. "They can do a lot of investigative queries on the spot," says Brennan's counterpart in anti-crime, Shawn McNelis, vice president of Healthcare Informatics at Highmark.

Investigators use the system to quickly detect potential

fraud patterns, such as an inordinately high dollar amount of claims paid to one provider in a specific time period, or unusual dollar payments for a particular procedure code. For instance, if the typical dollar amount for a certain procedure code is \$100 and investigators spot a flurry of \$500 claims under that code, fraud is a likely reason for the anomaly. Other strong indicators of fraud include a high number of claims, certain procedures performed too closely in time, and an impossible number of procedures performed by one provider or practice in a given time period.

The Result: Brennan says that since 2002, the anti-fraudulent-claims campaign has resulted in recovering \$23 million from improperly paid claims. What's more, his staff, which now can handle investigative queries in seconds instead of eight hours, is now managing a 30% increase in investigative caseload, saving the company an additional \$1 million a year.

In one case, Brennan says a claims analysis prompted an investigation of chiropractor Douglas Henderson of New Kensington, Pa. Henderson, who pleaded guilty to criminal charges of insurance fraud in U.S. District Court in Pittsburgh in April 2006, is due to be sentenced this month. The federal indictment charged that Henderson and others engaged in a conspiracy to submit claims for services not provided, totaling \$7 million from 1995 to 2003. "This chiropractor worked with a broker and put together false documentation, and got a 42-member group of patients underwritten," Brennan says. "He would pay for their health care if they let him bill, and he split fees with the members of the group."

The system flagged Henderson's claims, Brennan says. "Some of the individuals in the group couldn't have been receiving all the health care that was being billed," he says, concluding: "That case was a result of our getting together with the informatics department and having them build an application so that we could do our own analytics." ◀



“What’s the best approach to information security compliance?”

“The business side says they have to have USB drives, iPhones...”

“How can you securely exchange sensitive information with partners?”

“Do security protocols handicap your remote workers?”

“How do you keep encryption simple for non-IT employees?”

“How do you protect data at rest?”

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FEATURED SPEAKERS:

- Aurobindo (Robin) Sundaram, Vice President of Information Security, ChoicePoint, Inc.
- Joe Bernick, Chief Information Security Officer, LaSalle Bank
- Trent Henry, Senior Analyst, Burton Group
- Jonathan Squire, Information Security Architect, Dow Jones & Co.
- Earl Porter, Director, Information Security, Transamerica Reinsurance

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OPEN-SOURCE ERP

Acquisitions helped family-run **PerTronix Performance Products** grow, but also led to disconnected order management and inventory systems. An open-source planning setup allowed the 100-employee company to shift its operations—and save money.

BY BRIAN P. WATSON



Revving Up the Enterprise

BY ACQUIRING A COMPETITOR IN 2000, AND ANOTHER IN 2005, PerTronix Performance Products amassed a wide-ranging portfolio of automotive exhaust and ignition products.

At the same time, though, the family-run business struggled with disconnected enterprise resource planning systems, with order management, billing and inventory systems spread across three separate facilities in Southern California.

That disparity stalled PerTronix's ability to meet customer demand, says project manager Steve Reh, who oversees information technology for the San Dimas, Calif.-based company. For example, when customers called in orders, a PerTronix employee in Rancho Dominguez, Calif., would key in the product and check inventory. (The company's third location is in Riverside, Calif.) But before the product—such as an exhaust header, ignition distributor or muffler—could be shipped, order slips had to be produced in San Dimas and faxed to the office where the order was taken. After that, the sale details had to be re-keyed into yet another office's accounting and billing system.

"We had no integration between the three locations," says Reh, who reports to the company's president and CEO, his father, Tom Reh. "Because the system wasn't across the organization, we had to key everything into the system twice."

That's just one of the problems PerTronix faced with the siloed setup. On top of that, in late 2004 Hewlett-Packard said it would no longer support its HP 3000 minicomputers, which PerTronix used to run its enterprise resource planning functions.

At that point, PerTronix was running three different ERP systems. The San Dimas headquarters had used GrowthPower, from Mapics (now owned by Infor), for almost 20 years, running on the HP 3000. The Rancho Dominguez office, formerly the location of Ermie Immerso Enterprises, which PerTronix bought in August 2000, ran a terminal-based production planning and inventory monitoring system. And in the Riverside facility, which PerTronix added when it acquired Doug's Headers in January 2005, the company used a customized Microsoft Access database.

So, Reh's first order of business in 2005 was to find a new system that would replace those systems and subsequently connect the three facilities. Initially, Reh says he thought the evaluations would lead to a decision within 30 days.

But the process took longer, exposing the 100-employee firm to some of the biggest vendors in the software world and ultimately landing them where they least expected: with an open-source ERP system.

SHIFTING GEARS

PerTronix had been paying Hewlett-Packard approximately \$8,000 a year for support on the HP 3000. In addition, the vendor charged PerTronix around \$1,000 for any changes that had to be made to the system. Plus, PerTronix had to pay about \$1,500 for every new user it brought into the system, plus 20% of that cost for ongoing maintenance, Reh says.

But with HP no longer supporting the system, Reh looked into third-party support options. And what he found was that support vendors would charge even more than Hewlett-Packard. (He declined to mention specific price quotes.)

Back to the drawing board. Reh and his team began evaluating replacement systems, checking out ERP offerings from Infor, Microsoft and SAP. But the up-front costs for implementation, training and consulting ranged from \$40,000 to \$60,000, tens of thousands more than PerTronix wanted to spend. And that was just the start: Reh says licenses and support contracts would push those costs up another \$14,000.

On a whim, Reh looked into an open-source system by Compiere, a privately held vendor based in Redwood Shores, Calif. The company makes open-source ERP and customer relationship management software for small to mid-size businesses. In March, Compiere said its software had been downloaded 1.2 million times.

Still, open-source ERP systems are not nearly as popular or widely used as open-source platforms like Red Hat's Enterprise Linux or Novell's SUSE Linux. But a number of products have emerged in recent years besides Compiere, including Opentaps and xTuple (formerly OpenMFG), which is aimed at manufacturing firms.

Bernard Golden, CEO of Navica, a San Carlos, Calif., consulting firm that focuses on open-source implementations, says small to medium-size businesses are more likely to take on an open-source ERP system than a larger company with the resources to afford tools from enterprise vendors like SAP. But he sees promise for open-source ERP.

"Open-source adoption has typically come from the bottom up and is moving up the stack," Golden says. "Applications is the latest and most challenging frontier. Nevertheless, these apps are coming forward and gaining acceptance."

Reh wasn't exactly inclined to go for open-source. "We're not an open-source type of company," he says. "We don't use Linux or OpenOffice. Really, we're just looking for tools that work."

That's not to say that the offerings he evaluated didn't work. But cost savings were a key selling point for the company.

Still, Reh admits he was hesitant about going with Compiere. He knew the product would have to be customized to align with PerTronix's operations, and the company's I.T. staff had little or no experience with open-source tools.

So, Reh began working closely with KnowledgeBlue, a Salt Lake City consulting firm and Compiere partner, to customize its Compiere offering—dubbed OpenBlue—to meet PerTronix's specific needs. In some cases, Compiere had more functionality than PerTronix needed; for example, the software includes a point-of-sale feature that PerTronix didn't want, since the company sells to distributors. In others, though, the out-of-the-box

features came up short: PerTronix wanted to batch invoices and update price lists automatically without keying new figures into the system, but OpenBlue lacked those capabilities.

KnowledgeBlue's team added the features, and several others. The cost? About \$20,000, Reh says, for licenses, training and implementation—half or even two-thirds less than some of the competitive products the company had considered.

PerTronix is now running OpenBlue across all of its properties, along with Crystal Reports software for reporting and an Oracle database. The system runs on a Dell Dual Xeon 3.0 GHz box along with Microsoft Windows Server 2003's Standard edition, which cost about \$3,800.

Ongoing support from KnowledgeBlue, including hardware and software, racks up to about \$12,000 a year—\$4,000 more than the base cost for HP support on the HP 3000. But that \$12,000 covers 20 users, Reh says. Support for the HP system covered only eight users. So, effectively, PerTronix was paying \$1,000 per user; with the new system, the company has knocked that ratio down to \$600 per user.

PerTronix also saw efficiency and procedural gains. Before installing OpenBlue, PerTronix had a team of workers come in to headquarters on New Year's Eve and New Year's Day to manually key in changes to 37 price lists. Those lists would then have to be updated at the other facilities.

That level of effort made it unreasonable for the firm to tweak its prices more than once a year. "It was such a hassle," Reh says.


KnowledgeBlue added a feature to OpenBlue that lets PerTronix enter prices on a single spreadsheet and, in one click, update the lists throughout the company.

Another efficiency gain came in batching invoices. Since the company deals with many repeat buyers, Reh and his team wanted to cobble invoices together instead of creating and sending them one by one. Building that capability helped PerTronix's accounting staffers on both the exhaust and ignition businesses save a total of an hour a day.

And ordering has become more streamlined. Instead of customers having to make multiple calls or send repeat faxes to separate facilities, they now call or fax orders to one location, where the order is logged into the system and captured across the different facilities. On top of that, workers at any of the three locations can check inventory instantly through the software, negating phone calls to other facilities.

Those improvements have changed the culture at PerTronix, Reh says. Workers were hampered by the disconnected environment and how it made it difficult, at times, to serve customers.

"If you want to get into buzzwords, it's 'continuous improvement' for us," Reh says. "People are looking at their jobs differently now." ◀



PERTRONIX BASE CASE

Headquarters: 440 E. Arrow Highway, San Dimas, CA 91773
Phone: (909)-599-5955

Business: Small, family-controlled company manufactures high-performance ignition and exhaust products primarily for the automotive aftermarket.

President and CEO: Tom Reh
Project Manager: Steve Reh

Financials in 2006: Revenue between \$10 million and \$15 million.

Challenge: Find a new system to centralize orders, inventory management and other enterprise resource planning functions across three disconnected offices.

BASELINE GOALS

- ▶ Cut the amount of calls needed to check inventory status and place an order, from three or four to one.
- ▶ Consolidate the order entry process from three locations to one.
- ▶ Create batch invoices for repeat customers instead of sending them individually.



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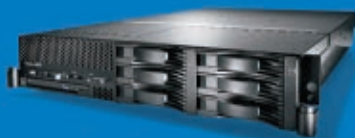


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WEB SERVICES

Miami-Dade County used XML-based Web services to make its call center more responsive to citizens—and mainframe data more easily accessible to government departments.

BY DAVID F. CARR

The Mainframe, Rejuvenated

THE PROBLEM: AS MIAMI-DADE COUNTY REACHED OUT TO its citizens through a Web portal and a 311 government information call center, it wanted to tap data and applications previously available only through its mainframe, mostly powered by CA's IDMS database management system. In fact, most new applications built or bought for county use needed access to mainframe data and functions—increasingly made available as Web services.

THE DETAILS: In 2005, the county began offering citizens the ability to dial 311 and get answers and request services. The effort dovetailed with the introduction of the *Miamidade.gov* Web portal in 2001. "Access to the back-end data systems was critical," says Judy Zito, director of the county's Government Information Center. "Some of the mainframe systems could potentially be rewritten in the future, but when we started this we knew that wasn't something that was budgeted for and wouldn't have happened quickly." So, when a citizen wants to pay property taxes or schedule a bulky waste pickup, performing those and other common services requires access to a mainframe application.

Carmen Suarez, a manager in the county's Enterprise Technology Services Department, seized on the high-profile 311 project as an opportunity to explore the concept of service-oriented architecture. Instead of integrating the mainframe and the Motorola Customer Service Request software package the county had purchased for the 311 project, Suarez proposed turning existing mainframe applications into XML Web services for use in a variety of applications. This means that mainframe functions can be accessed with requests for services transmitted in the Extensible Markup Language (XML) format.

For example, one key service searches for the owner of a property. Search requests are invoked with an address, or a folio number from the land records, as a parameter, and the results are returned in XML. When a citizen requests a bulky waste pickup—either on the Web or over the phone—another Web

service records that request in a mainframe scheduling application used by the county's waste disposal department.

THE SOLUTION: Miami-Dade uses a middleware product—Shadow RTE from DataDirect, a division of Progress Software—to make Web services available from the mainframe, along with developer tools to define the chunks of application code that will be exposed as services.

For its Web portal and Java application servers, the county relies on IBM's WebSphere products running on AIX, IBM's version of Unix. Another development team works with the Microsoft .NET framework, mostly to support the integration of packaged applications that run on Windows, according to Suarez. The Java and .NET development teams are also creating Web services; more than 100 programs are now in production.

"A good majority of them are mainframe-based, because that was the point—we had all these applications that needed mainframe data," Suarez says.

THE RESULTS: The 311 call center has earned the county some rare praise. Even the usually snarky local newsweekly, the *New Times*, recognized the 311 center for "no hold music, no voice mail, and helpful people." Part of the reason they can be so helpful is the underlying technical integration.

Suarez says a key to success is training mainframe developers on what makes a good Web service. What if, for example, you're offering to look up property owners by both address and folio number? "Is that one Web service or two?" she asks. Answer: It's one service that accepts two different types of parameters.

The property lookup service now also feeds the Web portal, an interactive voice response system, the police and fire emergency dispatch centers, and applications used by other departments. "I can't believe how much that gets used," Suarez says. "Sooner or later, everyone in county government needs to know who owns a particular piece of land." ◀

SERVER
VIRTUALIZATION

Nationwide was outgrowing its data center, but wanted to hold off on investing in a new one. So, the insurer went to server virtualization to make its existing facility more efficient.

BY DOUG BARTHOLOMEW

Virtualization Is On Nationwide's Side

NATIONWIDE, A COLUMBUS, OHIO-BASED DIVERSIFIED financial services and insurance firm with 20 data centers and a \$250 million budget for information-technology infrastructure, figured it would outrun the power capacity of its primary data center in Columbus by 2013. One alternative, of course, was to build a new facility with greater floor space and electrical capacity as well as increased computing and data storage.

Instead, Nationwide took a different tack. By reducing data-center floor space needs and reducing power usage, the insurance giant has been able to extend the life of its existing main data center by at least two years.

That's no small accomplishment for an I.T. organization that projects 5% growth in processing year-to-year for the foreseeable future. Each month the company processes about 400 million transactions for such things as calculating policy quotes; making policy additions, changes and deletions; and processing claims for auto, property, boat, recreational-vehicle, home, life and other policies.

"The cost to the organization of building another data center is [in the] hundreds of millions of dollars," says Scott Miggo, vice president of Technology Solutions at Nationwide Services Co., the company's shared services unit. By finding ways to extend the life of its main data center and postponing a

huge capital outlay, Miggo, who is responsible for all I.T. infrastructure including data storage, servers, desktops and mainframes, is helping the company save money today.

Nationwide was able to forestall construction of a new data center by investing in a \$30 million upgrade of its existing center in Columbus to a Tier 4 facility—the most redundant and highly available as defined by the Uptime Institute, a consortium of companies concerned about infrastructure availability. The rating applies to the physical infrastructure of the building, including the ability of its power, cooling and other equipment to withstand natural disasters. The data center was a Tier 3 before, and the upgrades were largely aimed at improving power and cooling redundancy, Miggo explains.

Miggo offers an example of the extent of the upgrade to the building. Prior to the recent modifications, for every square foot of raised floor (computer space) there was an equal amount of square footage dedicated to mechanical infrastructure for power, cooling and backup equipment. "We now have nearly 3-to-1 mechanical to raised floor," he says.

A key piece of the upgrade was a boost of the facility's power capacity. "Three years ago when we embarked on this project, we calculated that we would not have enough power by 2013," he says. "And we had already started to run out of space."

Miggo points out that the data-center upgrade, rather than aimed at saving money, was an effort to improve the company's "risk posture" and reduce the chance of system downtime by building in extra protection.

An important piece of Nationwide's solution to the space and power problem was a sweeping server virtualization program begun 2 1/2 years ago. The company uses software from VMware that enables numerous applications and operating systems to run simultaneously on one server. Thus, a single server can do the processing jobs of several.

"We've had a reduction of 80% of our floor space," Miggo reports, offering an example of how virtualization provides leverage in processing. "By virtualizing an older, larger server, we've been able to get 20 virtual servers on that one, eliminating 19 physical boxes. This reduces our hardware and operating system costs."

The reduction in floor space is partially offset by a growth in mainframe, storage, network and other systems.

Although space is no longer an issue, he says, ultimately Nationwide will need a new facility because the present building's infrastructure can no longer be expanded to supply enough power and cooling.

"We will actually have enough physical space to add more systems in for a long time," Miggo explains. "But we will not have the physical building infrastructure to supply enough power and cooling to the building." That's because the building cannot be upgraded further to handle the additional power and cooling without major investment, which has led Miggo and his team to look at building a secondary data center as a better option.

Apart from the virtualization approach, Miggo found that replacing old energy-intensive servers with new ones resulted in reduced energy costs, in addition to saving space.

"The new technologies are a lot more green than the old ones," he says. "We took 200 Sun servers that were 4 to 7 years old and replaced them 1 to 1 with new ones and found we saved on floor space, as well as power and maintenance costs. With the money we saved on space, maintenance and power, it paid for itself."

By replacing older Sun Microsystems machines with the newer, energy-efficient Niagara models, the company saves \$40,000 per year on these machines alone, Miggo says.

In another space-saving move, Miggo swapped out the existing storage tape silos with denser tape and faster tape robots. While data storage isn't typically the first thing on every CIO's mind when it comes to cutting space costs, Miggo figures that every little bit of hardware or software that can be modernized or improved upon helps. "You've got to look at it holistically," he explains. "We are looking at going to a

massive array of idle disks that shut down and are brought up only when you need the data on a particular disk."

The biggest impact by far came from the CIO's campaign to implement virtual servers. Since embarking on a massive virtualization effort, Nationwide has reduced the number of servers from 5,000 to 3,500. "We now have 1,500 virtual instances running on 100 servers," he says. One physical virtual server runs multiple virtual instances, each of which would have been a single physical server in the old environment.

The result is that the average server utilization has gone way up, from below 10% to 65%. "From an I.T. management standpoint, you do not want a bunch of small servers running

at 10% utilization," Miggo points out. "As a result, we are spending a lot more time on capacity planning."

Despite boosting server utilization to 65%, the amount of heat expended by the chips in each machine is "not really measurable," Miggo says. Nor does he expect server utilization to ever reach 100%, citing peaks and spikes in loads.

LOOKING AHEAD

On the virtualization front, he's not done. Miggo's goal is to virtualize about 10% to 15% of the total server environment every year.

Another area where he's considering applying virtual-

ization is on the desktop. "We are looking at proof of concept for virtualizing the desktops on our help desk," Miggo says.

But virtualization of a large number of desktop PCs may pose a special challenge, according to at least one analyst. "A successful implementation of virtualization on the server side, handled by the data center, is not a guarantee of success on the desktop side," says Theresa Lanowitz, analyst and founder of Voke, a research firm headquartered in Minden, Nev. She says management support, a capable implementation team and clear communication of the need for desktop virtualization are essential.

Nationwide's upgrade of the Columbus data center included upgrading the power backup systems. "Our power upgrade was already planned before the virtualization project," Miggo says. The power modernization included the purchase of new diesel generators.

Once again, long-term planning was essential, according to Miggo, since these large generators typically are spoken for well in advance, with some manufacturers working against 50 weeks of back orders. "You need almost a year to plan and put it in," he says.

All of Nationwide's commercial power feeds through its battery and uninterruptible power source system. If there is a power failure, the backup battery starts the generators in seconds. As Miggo explains: "It's tested every week, and we have backups to the backup generators."

Now that's planning ahead. ◀



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VP, Technology Solutions, Nationwide Services Co.: Scott Miggo
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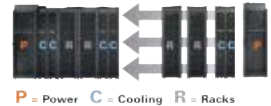
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Networking/VoIP: Calling for New Tools

COMPANIES ARE INCREASINGLY TURNING TO IP-BASED COMMUNICATIONS TO REPLACE TRADITIONAL CIRCUIT-SWITCHED NETWORKS. BUT HOW READY ARE THEY—OR IS THE TECHNOLOGY—FOR THE NEXT WAVE OF BUSINESS COMMUNICATIONS? BY DARRELL DUNN

TECHNOLOGY CAN WEAVE INTO THE enterprise tapestry by way of choice or by necessity, as businesses face the prospect of either joining the next generation or clinging to outdated tools. CIOs and other I.T. decision-makers are faced with that quandary now as they attempt to create a long-term communications strategy built around Internet Protocol (IP)-based telephony.

IP telephony is the routing of voice over the Internet or an IP-based network. IP-based communications networks are being used to replace or augment traditional time-division multiplexing (TDM)-based circuit-switched networks.

The move to IP-based networks is already well underway. A third of all telephony extension line shipments this year are expected to be IP-based, while two-thirds of the shipments will be based on TDM technology, according to research firm Gartner. By 2011, that ratio will reverse, with IP-based lines accounting for two-thirds of all shipments.

Most large enterprises have already begun limited use of voice-over-Internet Protocol (VoIP) and other IP-based telephony tools, Gartner says. As the growth curve of IP-based installations indicates, the future for telephony is IP. Even the most conservative CIO understands that future telecom investment will be IP-based, while the workhorse TDM-based networks of the past will be gradually weeded out over the next decade.

Unified communications has been a topic of roundtable discussions, but has been found mostly in back-room R&D efforts within enterprises and at technology vendors for much of the

past decade. Growth in IP-based systems during the past few years, however, is serving as the launching pad for the uniting of existing communications and data networks, including desktop telephone systems, voice mail, Internet, presence and contact information, and the integration of business applications.

Nonetheless, business leaders are leery of IP telephony. A number of vendors have struggled financially, including 3Com, Nortel, SunRocket and Vonage. Within enterprise deployments, IP telephony remains relatively nascent with a significant amount of ongoing experimentation to determine the best practices for deploying a unified communications strategy. This often requires the techno-

logical assets of multiple vendors, and has led to partnerships such as Nortel-Microsoft and 3Com-IBM.

WIDENING REACH

Still, businesses are looking beyond the present-day risks and are concentrating on the potential for IP-based networks. "It doesn't make sense to buy old technology," says Gary Horn, director of enterprise architecture and network security for Advocate Health Care. "We didn't want to be installing 1980s technology in the new millennium."

That was the decision the Chicago-based health-care organization was faced with in 2001 as it looked to upgrade an aging TDM network. With eight hospitals

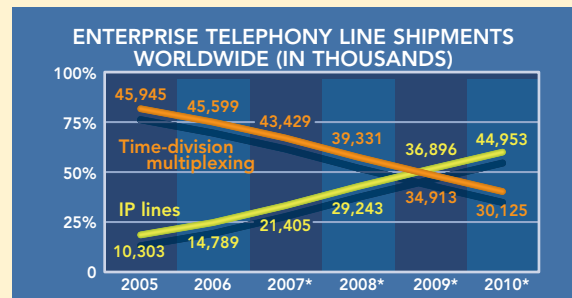
IP Telephony: Evolution in the Enterprise

WHAT IT IS: Internet Protocol-based communications systems are moving beyond voice-over-IP (VoIP) to create platforms to unify communications and data networks, and their applications, too.

KEY PLAYERS: *3Com*, Alcatel-Lucent, *Avaya*, Cisco, IBM, Microsoft, *Nortel*, Siemens

WHAT'S HAPPENING: Businesses are attempting to create new road maps to allow for the integration of IP-based tools with existing investments in traditional TDM-based communications networks—and consequently avoid "rip and replace" costs. Most large enterprises have begun using VoIP to develop a unified communications strategy that will allow businesses to achieve new levels of functionality with key applications that can take advantage of both voice and data integration.

MARKET SIZE: A third of all new deployments in 2007 will be IP-based, growing to 67% of the market by 2011



*Companies in italicized red type are featured in dossiers this month.

*Projected

SOURCE: GARTNER

IP TELEPHONY

and nearly 100 clinics, doctors' offices and outside-care sites in the Chicago area, Advocate executives viewed IP as a long-term foundation to a unified communications strategy, promising new levels of integration with the organization's data networks.

Beginning in 2002, Advocate worked with Alcatel-Lucent to roll out an IP-based network slowly, implementing a single campus at a time. Today, about 25% of the organization's network is IP-based, with a plan to move to about 75% within the next three years, Horn says.

He believes the IP platform is saving Advocate money in several ways, including freeing up floor space that otherwise would be dedicated to TDM equipment, a reduction in cabling and ease of redeployment in moving users to the new system. Since the company needed to replace the old communications infrastructure anyway, Horn believes there was no additional cost to moving to an IP-based system.

Until a couple of years ago, businesses looked at IP telephony to gain cost savings from VoIP by cutting long-distance tolls. Today, the growing investment across various types of enterprises is driven by enhanced productivity with unified communications platforms such as IP-based audio and video conferencing, unified messaging, and integration with customer- and employee-facing applications.

For Advocate, the first benefit from its move to IP was the ability to develop an enhanced nurse call system. With traditional nurse call systems, a patient pushes a bedside button for assistance, sending a signal to the nurses' station; that signal must be answered, and then the message is sent to the appropriate nurse. Nurses at Advocate are now given IP-based wireless phones that allow patient calls to automatically route to the appropriate caregiver, who can respond directly.

Companies are also looking to boost IP telephony for telecommuting and call centers, where businesses are increasingly competing for the best agents. With little reason for most call-center workers to be tied to a specific physical location, busi-

nesses like Advocate are using IP-based platforms to allow the call-center agents to work from home.

ROOM FOR GROWTH

Even with unified communications options growing, few businesses want to rip and replace existing equipment. Instead, businesses are looking for ways to meld existing infrastructure with pieces of an IP-based network, starting an evolutionary process where CIOs can determine how quickly changes occur.

Alan Weisenberger, vice president of technology services for the Evangelical Christian Credit Union, had no interest in undertaking a large-scale overhaul of an existing TDM-based network. But by 2003, he also knew upgrades were necessary. ECCU services about \$2.5 billion in assets, focused primarily on providing loans for Christian organizations, missions and schools.

Although Weisenberger felt IP-based networks lacked the maturity necessary for major deployment, he says he could see where the industry was headed and wanted to begin positioning the infrastructure to use IP-based tools.

ECCU worked with Siemens to create a hybrid platform that enabled both TDM and IP-based communications. The credit union has put its branch office on an IP-based system, and began increasing its use of IP within its headquarters in Brea, Calif., although he feels no hurry to accelerate a deployment schedule.

"Even to this day, we think the IP market is still maturing," Weisenberger says. "The TDM architecture has been around a long time, and the IP world has just got a ways to go to catch up. But we are gaining expertise and an understanding of issues associated with voice-over-IP without having to move our more critical functions into that area as yet."

The investment in IP-based platforms and unified communications tools is being justified by most enterprises not on the basis of cost savings, but the ability of the converged network to provide advances in streamlining communications, collaboration and integration. ◀

Project Pointers

Internet Protocol-based deployments will dominate new investment in communications and software. Here are some helpful hints on how to make it happen for your business.

▶ PLANNING

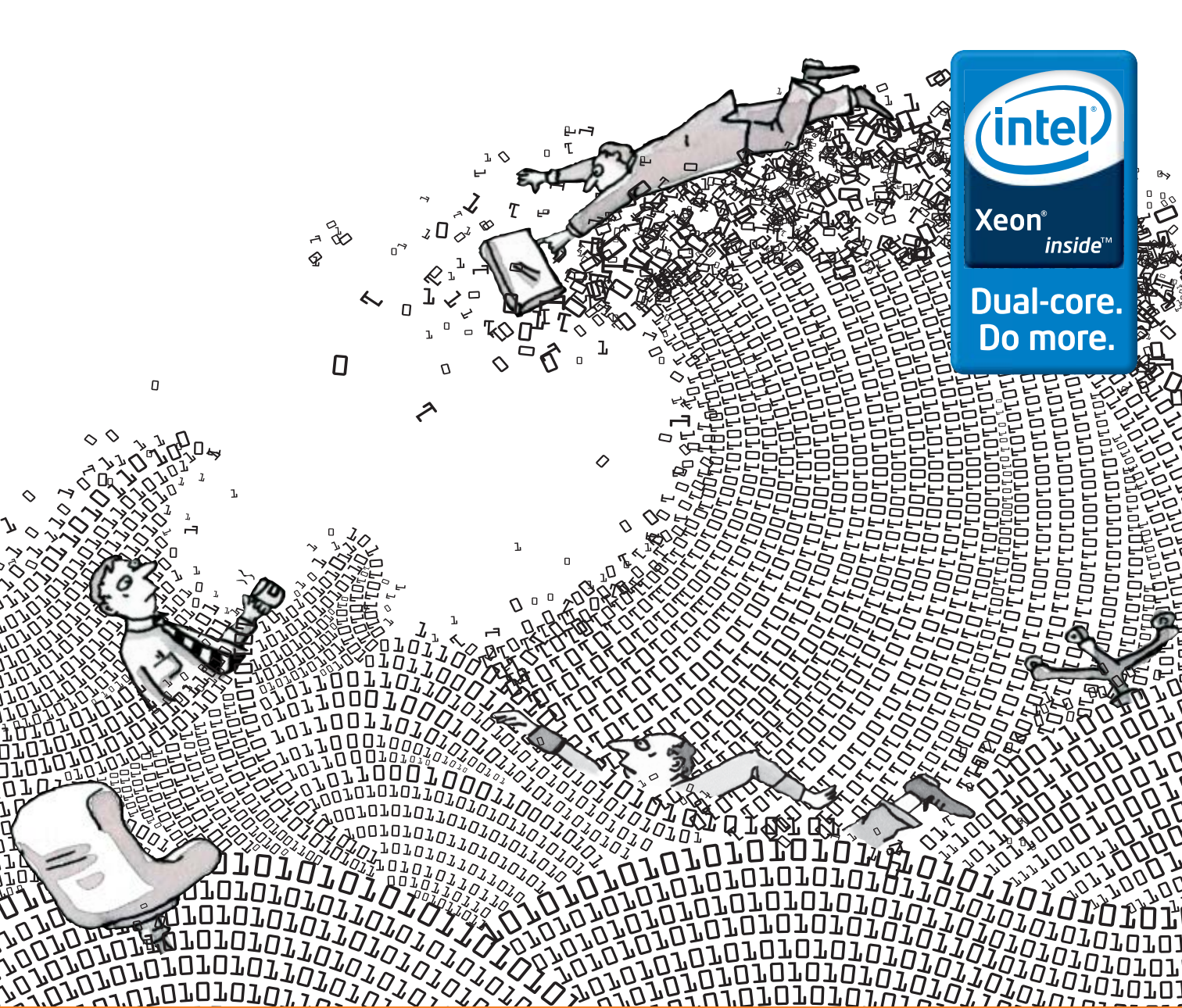
Look for more than just a replacement. IP telephony in the enterprise is inevitable, says Gartner analyst Jeffrey Snyder. But it's not just about installing a new phone system—companies need to build a vision for how they want their communications functions to fit into the larger business. Keep in mind, though, that IP telephony is a disruptive technology, and implementing it may require lots of consulting assistance and high up-front costs.

▶ DEPLOYING

Build up your expertise. Not everyone has a compelling reason for ripping out TDM lines and replacing them with IP. Take Alan Weisenberger, vice president of technology services for Evangelical Christian Credit Union. He says he sees the promise of IP telephony, but that he's waiting for the technology to mature. In the meantime, Weisenberger is trying small deployments to get his staff up to speed and determine how IP telephony can best be implemented in the credit union's infrastructure.

▶ EXTEND THE ENTERPRISE

Make telecommuting a reality. There is a growing list of workers and job types that can operate efficiently and productively in a home-based environment, according to Randy Cleghorne, director of I.T. and chief technology officer for the Visiting Nurse Service of New York. IP telephony is enabling businesses to promote telecommuting for a much larger number of workers, boosting job satisfaction, reducing operational and staff turnover and improving customer service. —D.D.



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3Com: Strength in Numbers

WITH ROOTS IN THE ENTERPRISE VOICE-over-Internet Protocol market for more than a decade, 3Com has worked with customers through the early hype and thousands of deployments. To position itself in the developing IP telephony and unified communications market, the company in October entered into a partnership with IBM to deliver an all-in-one solution for running business applications in an IP-based environment.

The System i Telephony platform combines 3Com's VCX IP Telephony Module with IBM's System i server architecture to allow businesses to deploy a single system to handle telephony and core business applications. The use of open standards—such as Session Initiation Protocol (SIP)—on the VCX platform has made it simpler to integrate applications running on System i, including Lotus Sametime and Domino, with plans for integration with third-party applications from Oracle, SAP and others.

The partnership comes as 3Com strives to achieve profitability. 3Com has reported losses of more than \$1.5 billion in the past six years, but it has steadily reduced the red ink over the past three years. 3Com reported a loss of \$88.6 million on revenue of \$1.3 billion in its fiscal year 2007, ended June 1, an improvement over the loss of \$100.68 million on revenue of \$795 million in fiscal 2006.

3Com built its IP technology through the acquisition of MBX Corp. in 1999. MBX provided the company's first IP PBX product line, which it continues to sell primarily to small- and medium-size businesses. Buying US Robotics in 1997 added a software-based VoIP platform that has been developed

into the VCX product line used by enterprise-level customers.

The timing of 3Com's partnership with IBM was serendipitous for the Fashion Institute of Design & Merchandising (FIDM), a Los Angeles-based college of fashion, graphics, interior design and entertainment. A longtime user of IBM's System i servers, CIO Roxanne Reynolds-Lair was thrilled to hear about

the 3Com partnership. "It was the confidence we had in IBM that was a real selling point," she says. "If they chose 3Com as a partner, then I knew it had a really strong chance of being successful."

With locations in Los Angeles, San Diego, San Francisco and Orange

County, Calif., FIDM's existing TDM communications network was costing the college thousands of dollars too much each month. The network also needed upgrading, and school directors wanted to move to VoIP. The school has reduced operational costs by centralizing management and eliminating separate TDM PBX installations at each campus, saving about \$250,000 annually, Reynolds-Lair says.

The school is developing "click-to-chat" capabilities to let students work online with admissions and financial aid counselors. Voice mail, e-mail and faxing have been integrated. As a user of IBM's WebSphere and Domino, Reynolds-Lair believes the platform will offer even greater levels of integration in the months ahead.

Arnie Unger, technology supervisor for the Tahoe Truckee School District, says the 3Com IP telephony platform is easy to operate for the school system's two-person I.T. staff. The district has 4,100 students, 471 employees and a dozen campuses located across 720 square miles in Northern California and Nevada. The district has also begun the integration of new functionality into the platform: One campus is capable of running its clocks, bells, lighting, heating, air conditioning and security systems via the IP network.

"The 3Com platform has provided a good backbone with enough flexibility to allow us to do most things remotely," Unger says. "Everything is going toward IP, and this school district has had a vision to utilize the best technology that meets our needs. A centralized administration of the network has been a great start, and we believe the platform, slowly but surely, will provide the basis for a lot of improvements." —Darrell Dumm

3COM'S ALLIANCE WITH IBM COULD HELP BOOST THE FIRM'S GROWTH.

3Com: At A Glance

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TICKER COMS (NASDAQ)

EMPLOYEES: 6,309

EDGAR MASRI President & CEO

MARC WILLEBEEK-LEMAIR CTO

PRODUCTS The VCX IP telephony module integrates with IBM's System i server architecture.

CUSTOMERS Citizens Bank, Dallas Cowboys, Host Marriott, L.A. Weight Loss Centers, U.S. Fish & Wildlife Service

FINANCIALS	2007FYTD*	2006FY	2005FY
Net revenue	\$1.27B	\$794.81M	\$651.24M
Net income (loss)	(\$88.59M)	(\$100.68M)	(\$195.69M)
R&D spending	\$215.63M	\$101.87M	\$94.58M

Fiscal year ends June 2.



*Operating income represents a company's profit minus operating expenses and depreciation of gross income. SOURCE: COMPANY REPORTS

Avaya: Going It Alone

AVAYA BELIEVES THE EMERGENCE OF IP telephony and unified communications is the perfect fit for its traditional strengths in contact-center and other customer-facing applications. An ongoing industrywide change in the operation of contact centers—driven by the demand for improved customer service—is motivating enterprises to use IP technology like Avaya’s to enhance the call experience for both the customer and call agent.

In an arena filled with firms struggling for profitability and stability, Basking Ridge, N.J.-based Avaya has consistently performed well. The company has recorded profits of \$1.3 billion on revenue of nearly \$14 billion in the past two years and three quarters. In June, private equity firms Silver Lake and TPG Capital agreed to acquire Avaya at about 30% higher than the existing stock value, a total of \$8.2 billion.

One Avaya customer, the Visiting Nurse Service of New York, says the vendor’s stability was a key selling point. “One thing that impressed us about Avaya was the stability of their finances, and that we could start this IP effort without having to wonder if they would suddenly disappear tomorrow,” says Randy Cleghorne, director of I.T. and chief technology officer.

Cleghorne plans a multi-year effort to integrate IP technology into the company’s TDM infrastructure, a strategy Avaya supports. “We looked at the finances of IP telephony and felt it was best if we could put our toe in the water rather than just jumping in to sink or swim,” she says.

Unlike some of its competitors, Avaya has not struck a specific partnership with any other technology companies, but

instead works with a number of alliance partners, including Google, IBM, Meru, Microsoft, Nokia and Juniper, according to Karyn Mashima, Avaya’s senior vice president for strategy and technology.

Avaya has seen demand grow for disaster recovery strategies, enhanced productivity of mobile workers and help building customer relations, particularly in contact-center environments.

Until recently, large businesses would operate their customer call center in a single facility that housed large numbers of agents, or in several large call centers, depending on the size and geographic reach of the company. The business might

also have centers dedicated to specific products or lines of business.

Businesses understand that customers are dissatisfied with typical phone-based services, and see unified communications in call centers as a method of differentiation, Mashima says. The ability to direct calls to appropriate personnel with the right skill sets to tackle a customer’s problem can create a lot of good will. Agents who have customer histories available also impress customers.

IP-based systems also ease the use of home-based contact agents, as well as telecommuting. Agent turnover in the U.S. is about 25%, Mashima says, and higher in other regions. The use of home-based agents also enables new workers to enter

the workforce, including mothers with small children, people with disabilities and retirees.

Andy Laychock, strategic communications director for Interval International, says the Avaya IP platform allowed Interval to begin meeting a directive from its parent company, InterActive Corp., to increase the use of home-based workers. IAC also operates businesses like Ticketmaster, LendingTree and Match.com. Interval, which manages time-share property exchanges, also will use the Avaya platform to create an IP-based disaster recovery site.

The Avaya platform includes a quality assurance feature that records conversations between agents and customers, does a voice analysis of the conversation that will alert managers if tension increases in the voices or certain keywords are heard and completes an automated survey.

“We can go out now and hire from a much wider base of people,” Laychock says. “It really doesn’t matter where the agent resides.” —Darrell Dunn

AVAYA’S STABILITY AND PRODUCT LINE ARE KEEPING CUSTOMERS HAPPY.

Avaya: At A Glance

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TICKER AV (NYSE)

EMPLOYEES: 18,525

LOUIS D’AMBROSIO President & CEO

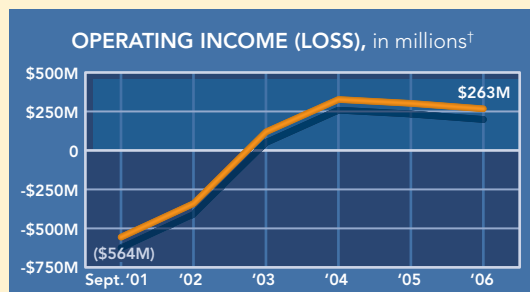
KARYN MASHIMA SVP, Strategy & Technology

PRODUCTS IP Telephony Solutions integrates applications and call-center capabilities with IP-based communications systems.

CUSTOMERS Boston Celtics, Commerce Bank, Continental Airlines, Harrah’s Entertainment, National City, San Francisco International Airport

FINANCIALS	2007FYTD*	2006FY	2005FY
Net Revenue	\$2.57B	\$5.15B	\$4.90M
Net Income	\$128.00M	\$201.00M	\$921.00M
R&D Spending	\$228.00M	428.00M	\$394.00M

* For first six months ended March 31, 2007. Fiscal year ends September 30. Avaya agreed in April to be bought out by Silver Lake Partners and TPG Capital.



[†] Operating income represents a company’s profit minus operating expenses and depreciation of gross income. SOURCE: COMPANY REPORTS

Nortel: Gearing Up

TORONTO-BASED NORTEL HAS BEEN fighting a seesaw battle with profitability for years. Current CEO Mike Zafirovski was brought in late in 2005, the fourth chief executive of the company in a five-year span. After suffering a net loss of more than \$2.6 billion in 2005, Nortel rebounded to profitability last year, only to have reported losses of \$140 million in the first half of this year.

Nortel believes a major contributor to future financial stability will be expanding its position in the IP telephony market. In early August, Zafirovski said Nortel is discussing acquisitions with companies that could help expand its reach.

Widespread adoption of IP-based platforms is critical to the firm's financial performance, and the company made a big splash in the IP area a year ago when it announced an alliance with software giant Microsoft.

The alliance is aimed at breaking down traditional device- and network-centric silos of communications such as e-mail, instant messaging and multimedia conferencing through the use of Nortel hardware and Microsoft business software. Within its first year, the companies have reported about a half-million licenses from roughly 100 businesses utilizing a Nortel-Microsoft integrated platform.

IP telephony is at the center of Nortel's enterprise market effort. Its enterprise solutions business unit has recorded growth in each of the past four quarters, dating back to when Nortel joined forces with Microsoft to create the alliance, which the companies believe will transform business communica-

tions, reduce cost and complexity, and improve productivity.

Steve Slattery, president of enterprise networks at Nortel, says that the company's revenue from enterprise customers accounts for about a quarter of all Nortel revenue, and the unit had 23%

NORTEL IS BETTING ON A PARTNERSHIP TO HELP IMPROVE ITS BOTTOM LINE.

year-over-year growth in the second quarter, ended June 30. More than 40% of second-quarter revenue came from its

carrier networks division, which experienced a 16% decrease in revenue, while global services, which contributed about 20% of revenue, declined 9%.

"Nortel's alliance with Microsoft has been a tremendous success for us and our customers," Slattery says. "In addition, our alliance with Microsoft is opening

doors to new customers for our entire enterprise portfolio, and is a key reason for the accelerated performance of our enterprise solutions business."

One of the early adopters was Windrush Frozen Foods, a U.K.-based wholesale food distributor. The company turned to Nortel and Microsoft late last year to create a platform that could allow it to operate with a lean staff and enable next-day delivery with its IP-enabled call-center operation, according to I.T. manager Robbie Roberts.

"If Nortel and Microsoft get this right, then the world is their oyster," Roberts says. "There is so much potential there. We can federate customers and share rich information between partners to work much closer together."

The move to the Nortel and Microsoft platform supports the primary mission of Indiana University to provide teaching and research through innovation and collaboration, says Dennis Cromwell, associate vice president for enterprise infrastructure for the school system, with eight campuses and more than 98,000 students and 18,000 employees.

Faculty members are able to rethink traditional office hours, with an ability to utilize instant messaging, e-mail and voice to allow students to interact with staff during times that are more convenient for both the student and teachers, including evenings and weekends.

"It makes sense to us that they would be able to bring together a unified communications framework," Cromwell says. "Changing technology landscapes are what we deal with every year, and that's why partners like Nortel and Microsoft make a lot of sense."

—Darrell Dunn

Nortel Networks: At A Glance

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TICKER NT (NYSE)

EMPLOYEES: 33,760

MIKE S. ZAFIROVSKI President & CEO

JOHN J. ROESE CTO

PRODUCTS Networking equipment, including Communications Server, which work with Microsoft business applications.

CUSTOMERS BASF, Great Canadian Gaming, Indiana University, NASA, T-Mobile, TNT, Westar Energy

FINANCIALS	2007FYTD*	2006FY	2005FY
Net revenue	\$4.42B	\$11.42B	\$10.51B
Net income (loss)	(\$140.00M)	\$28.00M	(\$2.61B)
R&D spending	\$832.00M	\$1.94B	\$1.87B

* For first six months ended June 30, 2007. Fiscal year ends Dec. 31.



† Operating income represents a company's profit minus operating expenses and depreciation of gross income. SOURCE: COMPANY REPORTS

Workbook

COMPARING COSTS

Benefits of Server Virtualization

BY PAUL A. STRASSMANN

How do you measure potential cost reductions resulting from consolidation of servers achieved through virtualization in the sharing of processing and disk memory management?

INSTRUCTIONS: Obtain the inventory of servers currently in place. These servers were originally installed as standalone support for individual applications. In most cases they will be configured for handling peak load capacity and will feature substantial surplus processing power and disk space.

- ▶ Obtain estimates of manpower needed to support the operation of existing servers, plus the estimated costs of electrical power for the computers as well as air conditioning.
- ▶ Estimate the amount of central staff needed to support the servers for capacity management, education, training and configuration management.
- ▶ Obtain comparable data for the proposed consolidated server facilities, including the supporting infrastructure. Increase the supported uptime from two shifts to three shifts and increase the quality of service.
- ▶ Follow calculations at left.

An interactive version of this tool may be downloaded from *Baseline's* Premium Tools site at: GO.BASELINEMAG.COM/SEP07.

Tool: Calculating Savings From Server Virtualization

BEFORE CONSOLIDATION		EXAMPLE	YOUR COMPANY
A	Number of servers	1,000	
B	Cost per server, installation and software (assumes Dell PowerEdge 6800)	\$10,800	
C	Networking costs per server, including communication ports (Dell PowerConnect 6248)	\$6,990	
D	Disk storage per server (assumes 10 GB Dell PowerVault)	\$9,500	
E	Cost per server (B + C + D)	\$27,290	
F	Annual cost per server (3-year depreciation) (E ÷ 3)	\$9,097	
G	Annual cost of electricity for servers and air conditioning	\$1,100	
H	Annual cost of floor space, security and rack space	\$1,800	
I	Total annual cost per server (F + G + H)	\$11,997	
J	Cost of operating personnel (1 operator per 20 servers @ \$55,000; 2 shifts) (1 × 2 × \$55,000 × A ÷ 20)	\$5,500,000	
K	Cost of systems engineering plus management (1 staff per 100 servers @ \$85,000) (\$85,000 × A ÷ 100)	\$850,000	
L	Total cost for 1,000-server installation (A × I + J + K)	\$18,346,667	
AFTER CONSOLIDATION			
M	Number of servers	20	
N	Cost per server (assumes SunFire E4900)	\$168,000	
O	Networking costs per server (Dell PowerConnect)	\$27,960	
P	Disk storage per server (StorageTek 6540 7000 GB)	\$200,000	
Q	Cost per server (N + O + P)	\$395,960	
R	Annual cost per server (6-year depreciation) (Q ÷ 6)	\$65,993	
S	Annual cost of electricity for servers and air conditioning	\$11,000	
T	Annual cost of floor space, security and rack space	\$10,800	
U	Total annual cost per server (R + S + T)	\$87,793	
V	Cost of operating personnel (2 operators/10 servers @ \$75,000; 3 shifts) (2 × 3 × \$75,000 × M ÷ 10)	\$900,000	
W	Cost of systems engineering plus management (1 staff @ \$100,000) (\$100,000 × M ÷ 20)	\$100,000	
X	Total cost for 20-server installation (M × U + V + W)	\$2,755,867	
REDUCTIONS THROUGH VIRTUALIZATION			
Y	Total savings in information technology ((A × F) - (M × R))	\$7,776,800	
Z	Total savings in infrastructure ((G + H) × A - (S + T) × M)	\$2,464,000	
AA	Total savings in personnel ((J + K) - (V + W))	\$5,350,000	
BB	Total savings due to virtualization, percentage change ((L - X) ÷ L)	- 85%	

Workbook

PRIMER

I.T. Asset Disposal

BY DAVID F. CARR

What Is It?

Getting rid of personal computers, servers, and other obsolete or unneeded devices in a secure and environmentally sound manner. Concerns about information-technology asset disposal are being driven partly by increased regulation—many states now bar computer equipment from simply being disposed of in a landfill because of concern about toxic components leaching into the environment. In addition, both regulation and worries about public embarrassment are driving companies to guard against the disclosure of customer data stored on PC or server hard drives.

Why Bother?

Dennis Owens, director of environmental services at the Memorial Hospital of Rhode Island, says the issue came to a head when the local landfills “quite suddenly” stopped accepting computer equipment. As he scrambled to find someone who would take obsolete equipment off his hands, he says, “We literally had people with pickups coming to us and saying they would take care of it for us.”

But at the same time, he was reading about computer waste winding up in Third World countries and contaminating the drinking water. The hospital’s information systems department also came to recognize that the techniques it was using to wipe hard drives might not guarantee that the data would be completely removed. So, the hospital now contracts with NextPhase, which takes responsibility for remarketing, recycling or disposing of equipment—and certifying that it is done in a safe and secure way.

“This is what a lot of our customers are asking for—protect my data and keep my company out of the headlines,” says Chris Adam, director of NextPhase.

What Are My Options?

For most companies, the most efficient way of addressing this issue is to outsource it to a firm offering a package of data sanitization, asset disposal, remarketing and recycling services. Asset disposal specialists include NextPhase, Intechra, TechTurn, Supreme Asset

▶ QUIZ: Rate This Vendor

I.T. asset disposal firms offer various levels of service. **Give yourself 1 point for each Yes answer, and 0 for each No, if the vendor you’re considering:**

	YES	NO
Will overwrite hard drives to Department of Defense standards.	<input type="checkbox"/>	<input type="checkbox"/>
Takes responsibility for the risk of equipment lost in transit.	<input type="checkbox"/>	<input type="checkbox"/>
Will indemnify my company against environmental liability and has the financial resources to back up that guarantee.	<input type="checkbox"/>	<input type="checkbox"/>
Provides detailed documentation and tracking of how equipment is disposed of.	<input type="checkbox"/>	<input type="checkbox"/>
Will remarket or recycle equipment, where appropriate, to defray the cost of disposal.	<input type="checkbox"/>	<input type="checkbox"/>

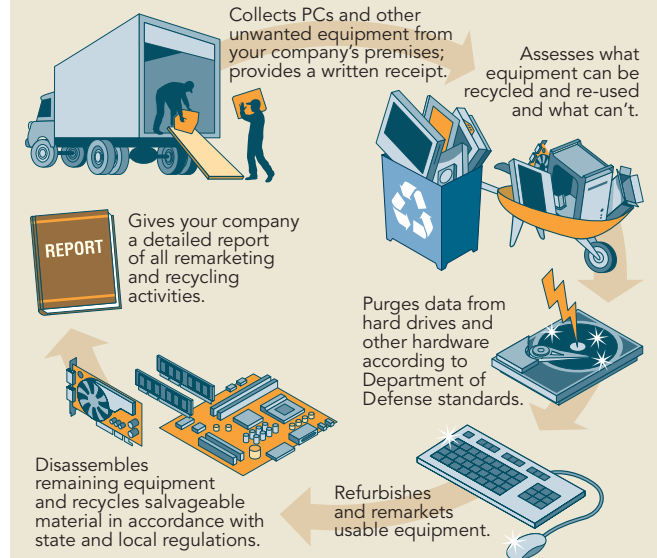
Score: 5 points Looks good, provided the firm checks out.

3-4 Might be good enough if the price is right.

0-2 Consider only if your risk is very low, or your tolerance for risk is very high.

Reference: Hardware Removal by the Book

An I.T. asset disposal vendor can remove your company’s old equipment properly and responsibly, using this sequence:



Management Recycling and Cascade Asset Management, as well as divisions of major vendors like IBM, Hewlett-Packard and Dell.

“Unless you’re a large organization and can afford to have a department specifically geared up to do this, I’ve been advising clients to outsource for years,” says Frances O’Brien, a Gartner analyst.

What you want to do internally is look to reduce the amount of computer waste your organization produces, O’Brien says. For example, you might want to have employees keep the same monitor even when replacing their PC. Older PCs can also sometimes be redeployed for less demanding applications, extending their total life.

What About Leasing?

Corporations that lease, rather than purchase, PCs and other computer equipment may not have to worry about the disposal aspect per se, but sanitization of computer hard drives usually is not automatically included in the leasing agreement.

To be really sure you are protecting against the disclosure of corporate data, O’Brien recommends hard drives be sanitized to Department of Defense standards. The alternative, which is sometimes cheaper, is to destroy the hard drive.

Are the Requirements the Same for Everyone?

Not necessarily. Start by taking stock of your organization’s tolerance for risk, the nature of the devices you will be disposing of and the type of data stored on them.

Firms in regulated industries, like finance and health care, will want the greatest assurance that data is properly sanitized. On the other hand, a manufacturer disposing of PCs used for shop-floor control may not have to worry about them containing consumer data.

If you want the greatest level of assurance, O’Brien recommends picking an established vendor with solid financial backing, and conducting your own audits to ensure that the firm is delivering the promised levels of service. ◀

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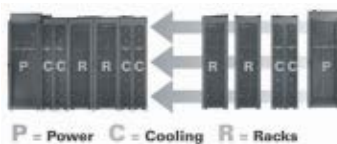
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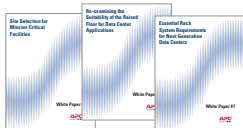
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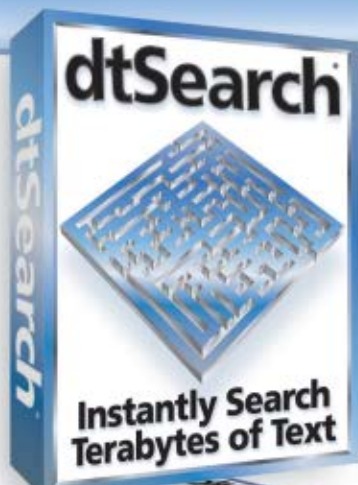
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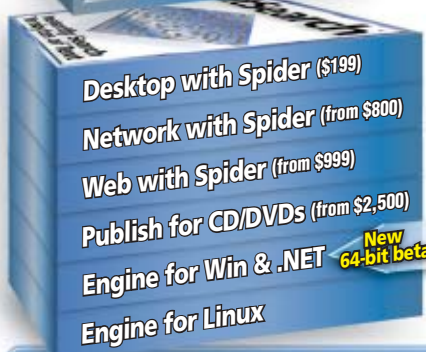
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- ◆ "Covers all data sources ... powerful Web-based engines" - eWEEK
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- ◆ "The most powerful document search tool on the market" - Wired Magazine

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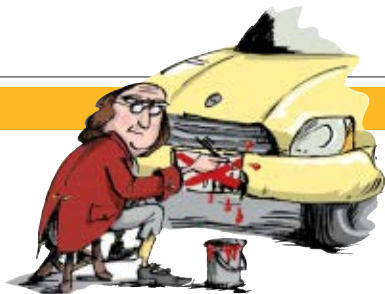
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LICENSE TO SCAN

The American Civil Liberties Union, that keeper of constitutional rights, is protesting a license-plate scanning system used by a police department in suburban Cincinnati. The scanner—two cameras mounted on a cruiser, to be exact—can capture 900 or so plates an hour. Since 2004, it's helped police recover almost 100 stolen vehicles and make 111 arrests, police in Springdale, Ohio, told WBNS-TV in Columbus. But the ACLU says the system infringes on innocent drivers by exposing their plate numbers, which the government might then use for other purposes. Damn the man! The cops, on the other hand, see no problem with the system. Benjamin Franklin once said, "Those who would give up essential liberty, to purchase a little temporary safety, deserve neither liberty nor safety." Wonder what he'd think of license-plate scanning.

Gettin' Down With YouTube

Just before the anniversary of Aleksey Vayner's widely publicized, universally panned—and apparently unsuccessful—attempt at using a video resume to land a job at UBS, paper resumes may be going by the wayside. According to a March 2007 survey by the career information provider Vault Inc., 89% of employers said they'd like to see more video resumes. But maybe the industry just needs a little more hype. Enter Diddy. The hip-hop mogul recently posted a video on YouTube asking for applicants to upload a "video interview" telling him why they'd be the best assistant. "It's a new age, a new time, a new era," Diddy says in his video. Will CIOs follow his lead when looking for new talent? That remains to be seen. One caveat: Following Diddy's video, a quick blurb appears telling applicants for gigs at his company, Bad Boy Entertainment, where to send their cover letters. The hard copies, that is.



SOMETHING HERE?

So Many Apps, So Little Time ...

Or so little staff. Or too many other priorities. Just over half (51.9%) of respondents to the ninth annual Technology Issues for Financial Executives survey, released in July, said their companies are limited in their ability to build or buy new applications. The report, conducted by the Financial Executives Research Foundation and Computer Sciences Corp., looks at the top technological issues impacting CFOs and their deputies. The top obstacle to application development or acquisition, from the number-crunchers' perspective, had nothing to do with technology. Forty-five percent of respondents said limited personnel resources prevented building or bringing in new tools. But at least they're keeping at it: Only 6.6% said that past failures prevented them from trying again.

CONSTRAINTS FOR DEVELOPING OR ACQUIRING NEW APPLICATIONS



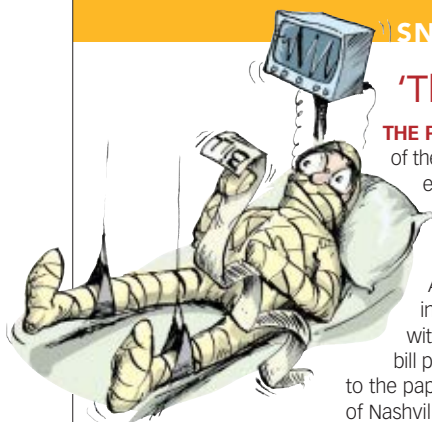
NOTE: RESULTS DO NOT ADD UP TO 100% BECAUSE OF ROUNDING. SOURCE: TECHNOLOGY ISSUES FOR FINANCIAL EXECUTIVES SURVEY, JULY 2007

TALES FROM THE TECH PROJECT FRONT

EDITED BY BRIAN P. WATSON

Out of Scope

SNAFUS IN THE NEWS



'This Is a Doozy'

THE PROBLEM: Just before the July 4 holiday, some patients of the Northern Cochise Community Hospital received rather explosive bills. One patient owed \$49 million, while others, like Peta-Anne Tenney, got billed for upward of \$100,000. "I said to Todd [her husband], 'Look at this—this is a doozy,'" she told the Range News of Willcox, Ariz., where the hospital is located. An unexplained glitch in the hospital's billing software was the problem: Patients with last names beginning with L through Z received their bill plus the added cost of the person before them, according to the paper. (The vendor, Healthcare Management Systems of Nashville, Tenn., did not respond to requests for comment.)

KEY LESSON: The hospital said the problem was corrected and that new bills would be sent out within 10 business days. And that's fine. But billing accuracy is crucial—not only for a company's bottom line, but for its customer relations. No consumer likes being told they owe more than they do—especially not millions more. What's more, as any smart I.T. manager knows, efficient safeguards need to be in place for any piece of software being used in a production environment.

People can be divided into two classes: those who go ahead and do something, and those who sit still and inquire, why wasn't it done the other way?

—Oliver Wendell Holmes

THE 77 DEADLY SINS OF PROJECT MANAGEMENT.

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