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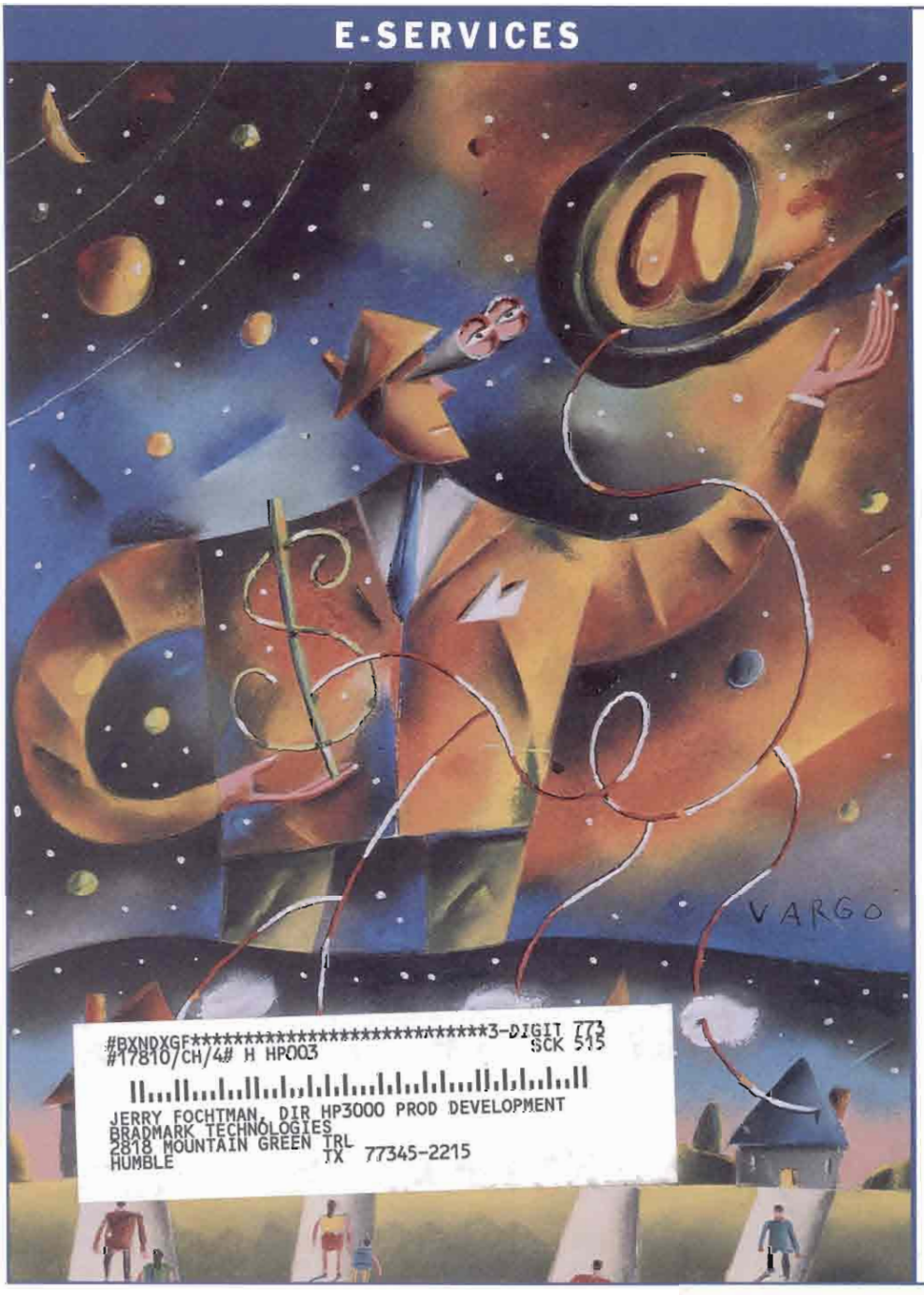

e-speak talks the talk Page 8

ASP Options Page 14
How Do You Know When the Time Is Right?

The E-Generation Page 18
The Gap Gets Smaller

HP's Nick Earl on the E-Service Revolution Page 4

Where Angels Don't Fear to Tread Page 24
Agilent Helps L.A. County's IT Highways Stay Open

SPECIAL REPORT
EnterpriseStorageGuide
HP's Consolidation Advantage: The HP XP256
Page 28

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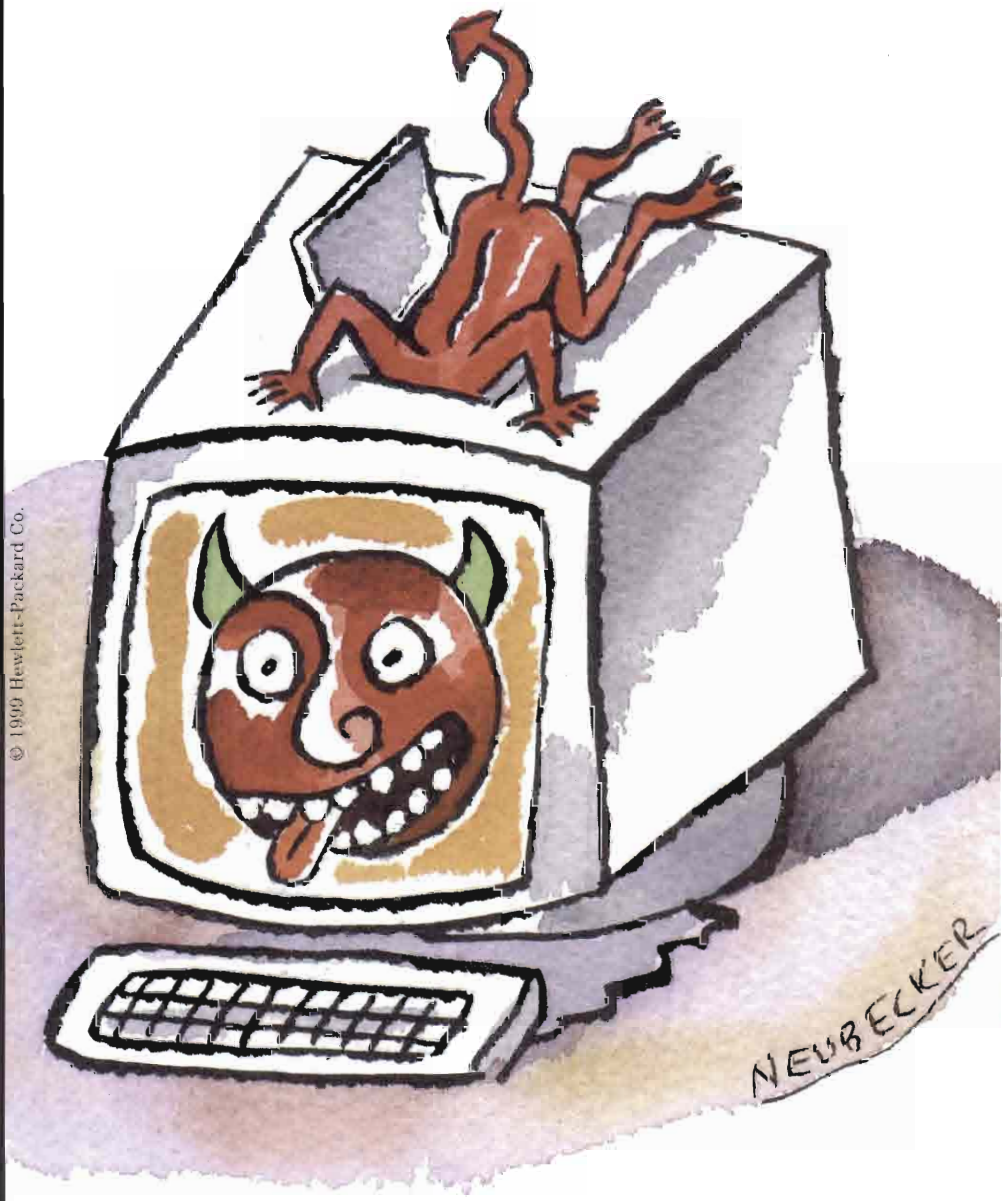

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Vol. 14, No. 3

Cover Illustration by Kurt Vargö

E-SERVICES

8 **e-speak talks the talk: Doing for Services What the Web Has Done for Data**
Underlying HP's e-services strategy is a vision of a transformed Internet. At the core of this vision is e-speak, which acts as a dynamic interface, allowing services to come together without human intervention.
By Jean Nattkemper

14 **ASP Options: What Exactly Does This Recent Phenomenon Bring to the IT Table?**
If you haven't considered making an Application Service Provider part of your IT solution, it might be time for a closer look.
By Sam Amore

18 **Getting Your Business Ready for the E-Generation**
B2B e-commerce is breaking down the walls between partners. It doesn't matter if you're a pure-play B2B company or a pure-play B2C company. Your walls are crumbling at this very moment – and that's good.
By Bill Wagner

NETWORK MANAGEMENT

24 **Where Angels Don't Fear to Tread:**
L.A. County's Information Superhighway Operates Smoothly with Agilent NetMetrix
To monitor and troubleshoot its mission-critical 24x7 network, the IT Service of Los Angeles County employs Agilent Technologies' NetMetrix network performance monitoring solution.
By Cymber Quinn

COLUMNS

4 **Guest Editorial: HP's E-Services Revolution**
HP's Nick Earle, Chief Marketing Officer, Enterprise Computing.

26 **The HP-UX Admin Man: Confessions and Clarifications**
Fred has a hard time remembering anything technical after his vacation, so to ease back into the swing of things, he answers some e-mail inquiries.
By Fred Mallett

32 SPECIAL FOCUS **The HP e3000: HP Adds a "little e" to Its HP 3000 Line**
E's not all that's new with the 3000. Check out the debut of Bill Pike's bimonthly column of industry news regarding the HP *e*3000 series.
By Bill Pike

SPECIAL SUPPLEMENT

EnterpriseStorageGuide

The HP XP256
The mainframe storage vendors took advantage of the storage consolidation momentum by providing new subsystems that enable the attachment by both open and mainframe servers. However, the traditional open systems storage suppliers mostly chose to ignore the consolidation opportunity and the data warehouse requirements. One exception is HP. **By Dick Bannister**

Page 28

DEPARTMENTS

36 **Marketplace**
39 **New Products**
40 **Advertiser Index**

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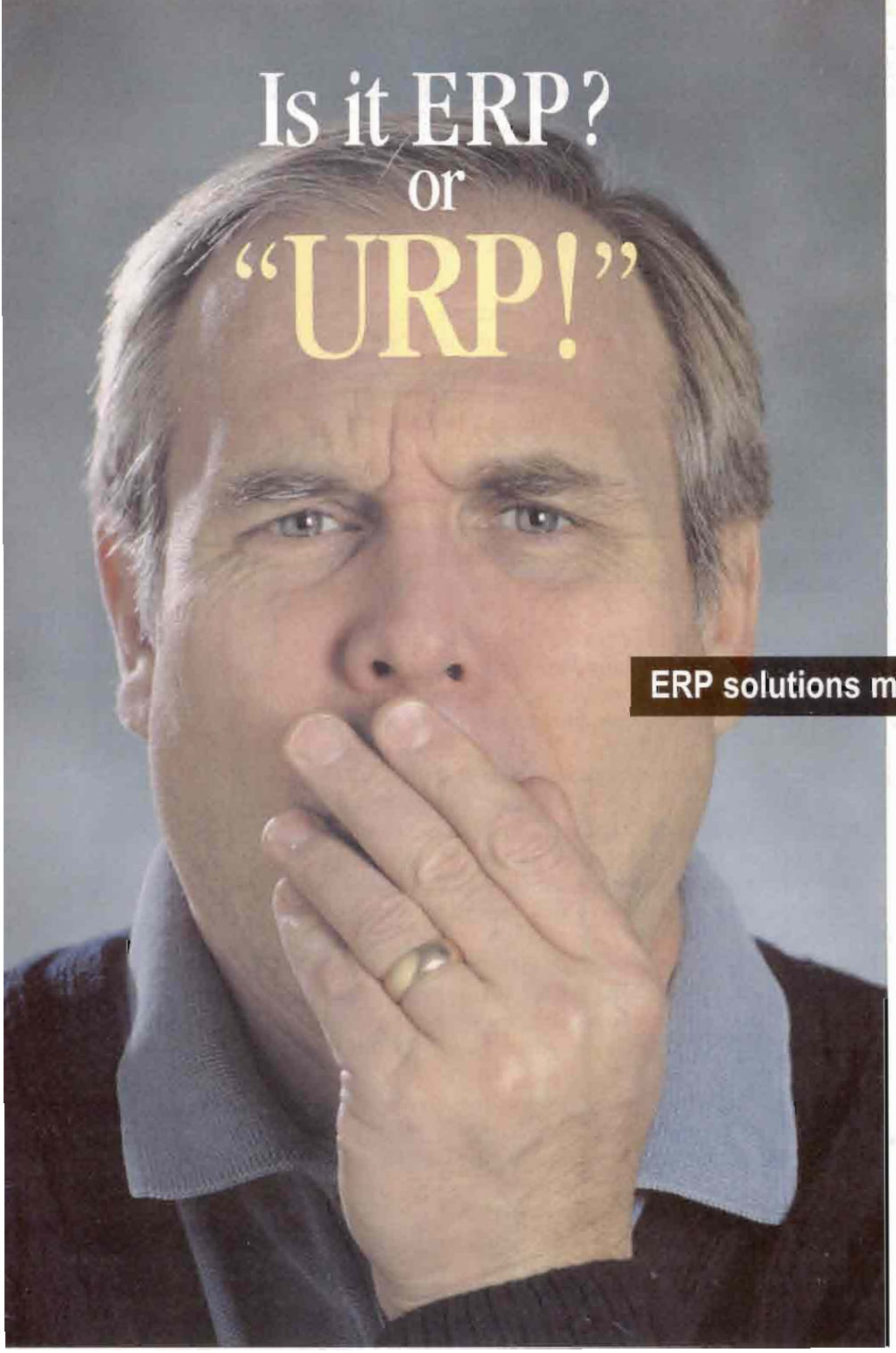

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HP's E-Services Revolution

About a year ago, we at HP started to clarify our vision of where the Internet was heading. We talked with our customers – and also with other companies – to get the full spectrum of opinion. We reviewed what HP labs had to offer. And we talked to industry and Internet consultants both inside and outside HP.

We looked at what worked on the Net and what the Net's shortcomings are. We looked at the new business models and how they'd evolve. We looked at what was preventing companies from getting the full value out of their IT investments. But most of all, our goal was to examine the next step in the logical evolution of the Net.

A central thread emerged: a world of interconnected services on the Net that we call e-services. E-business (wiring business processes) and e-commerce (selling goods and services over the Internet) paved the way. Now we believe the time is ripe for e-services for three reasons: the exchange of money is possible, information can be shared, and key business processes are available on the Net.

The next logical step is to catalyze this whole infrastructure so that it can support billions of new devices and trillions of new transactions – all communicating with one another automatically behind the scenes. This new infrastructure will become an essential part of the fabric of business and society. And it will continually grow through the mass proliferation of e-services.

So what exactly is an e-service? We define an e-service as any asset that is made available via the Net to drive new revenue streams and/or to create new efficiencies. E-services can be applications, computing resources, services, processes or information. E-services can conduct a transaction, complete a task or solve a problem. They can be used by people, applications, businesses, and even "things on the Net" – your car, your mobile phone, your pager, etc. Unlike today's large, proprietary e-business and e-commerce systems, e-services will be highly modular and each will function as a building block for other e-services.

We see three important multibillion-dollar market opportunities made possible by the rise of e-services. The first trend is the rise of apps-on-tap. Software companies are beginning to offer their software on a pay-as-you-go basis on the Net. Rather than build out large, complex systems, you now can rent e-services that do the same job for you via the Net. This includes everything from e-mail to procurement to ERP applications.

The second trend that e-services is driving is the rise of next-generation portals, such as horizontal portals that serve specific functions like accounting or procurement, vertical portals that serve specific industries, and enterprise portals that aggregate services in new ways to gain customer loyalty or better support employees or partners.

The third trend we see is the emergence of a "dynamically brokered" e-services marketplace. To make this dynamic marketplace possible, we developed a technology called e-speak, which we see as the universal language of e-services on the Net. e-speak makes it possible for services to advertise their capabilities and interact with other e-services to complete a transaction or task on your behalf. Services can be automatically brokered, bid, and transacted on the Net, from any device.

Last December, we made our e-speak source code freely available to software developers and the public via the Internet. The response has been overwhelming. More than 1,000 software developers are working with HP to develop applications on the e-speak platform. Because of demand, we have scheduled ten e-speak developer conferences around the world in the next four months. We're also helping our customers and partners create e-speak-enabled services so they can begin building this open services marketplace and participate in these new revenue streams.

Today, HP is turning the entire focus of our invention on the Internet. Our view is to create a world where you don't have to work the Net; rather, the Internet works for you. We believe this will be achieved when services of all types are available via appliances of all types, running on an always-on infrastructure.

I hope you'll enjoy browsing through this issue of *HP Professional* and getting a glimpse of the exciting future of the Net.

Nick Earle, Vice President and Chief Marketing Officer
Enterprise and Commercial Business, HP

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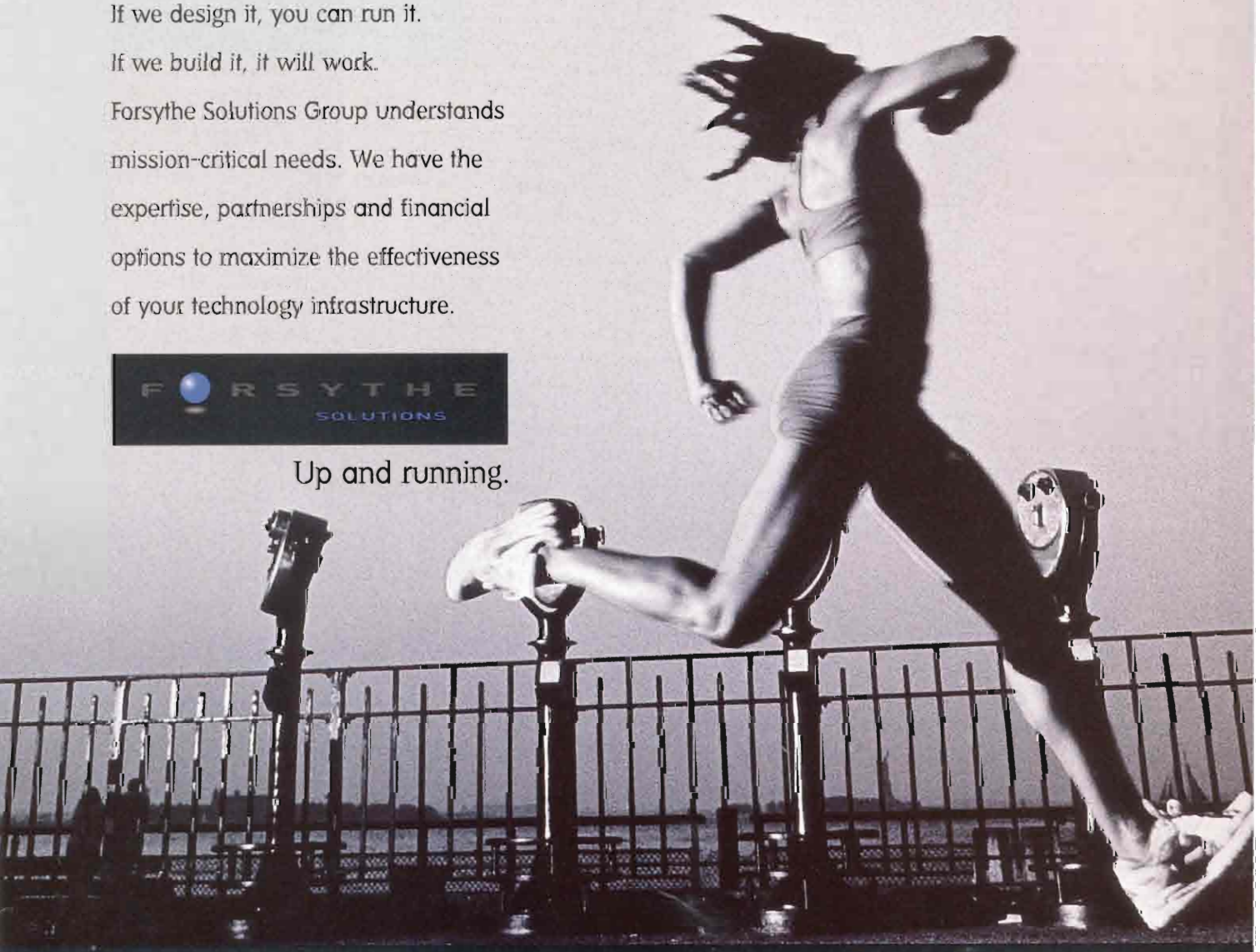

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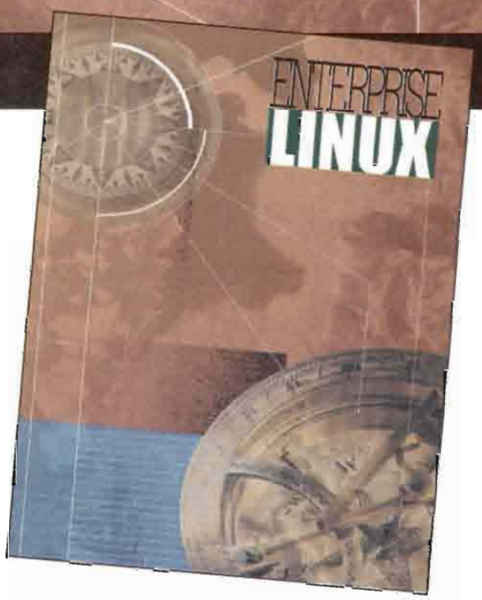

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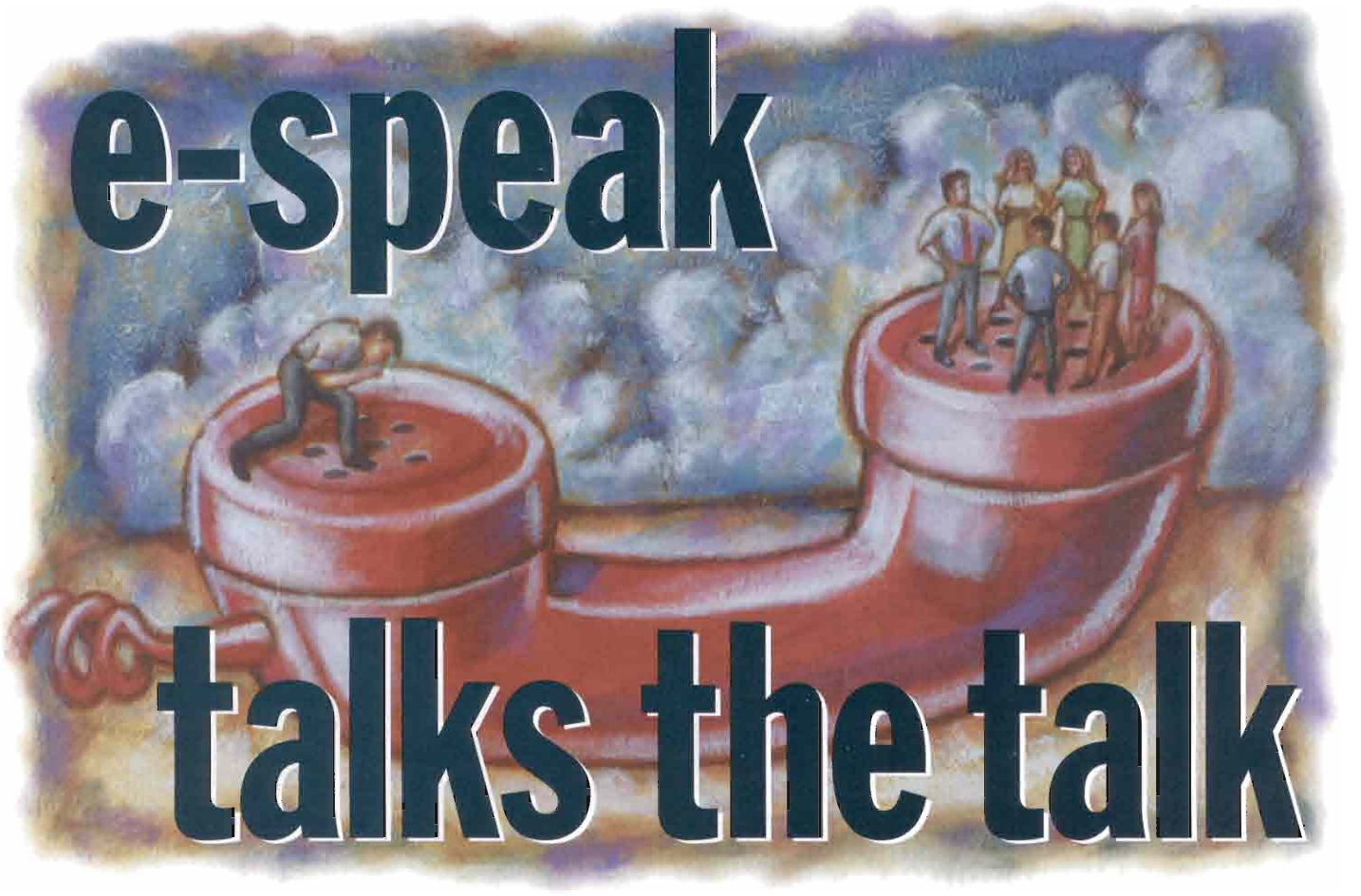

e-speak talks the talk

Doing for Services What the Web Has Done for Data

Jean Nattkemper

Underlying HP's e-services strategy is a vision of a transformed Internet – one that is no longer a collection of massive Web sites accessed with a PC. Rather, the Internet has evolved into a network of interconnected services.

E-services combine "on the fly" to solve a problem, meet a need or complete a task. Computing has also been transformed. It is no longer simply a process of giving instructions to your computer, but has become a means of enlisting services as you need them. In other words, you tell your computer what you want done and let a dynamic federation of services figure out how to do it.

At the core of this vision, and HP's e-services strategy, is e-speak, the company's Java-based technology. e-speak is an open software platform designed specifically for the development and intelligent interaction of e-services. e-speak acts as a dynamic application interface, allowing services to come together on the fly to achieve the end a user desires, without human intervention.

e-speak operates independently of programming language and operating system platform, and enables spontaneous and secure transactions across firewalls. It also scales to millions of devices. HP believes that the technology does for e-services what the Web has done for data. Web sites share a common language – HTML – for creating and describing content, but until recently, there has been no lingua franca for services. e-speak, HP claims, makes it just as simple, or simpler and safer, to create, deploy, manage, personalize and access services as it is to publish and access data on the Web.

There's nothing quite like e-speak. Not Sun Microsystems' Jini, which enables device-to-device communication within workgroups, where scalability and security are not much of an issue. Not Microsoft's BizTalk, with its low-level messaging server. And not Chai, HP's own technology for device-to-device communication. Each of these technologies serves a purpose, but one complementary to that served by e-speak.

CREATING NO-COST "KILLER" APPS

When Rajiv Gupta and his colleagues in HP Labs developed e-speak, they had a clear goal in mind. The engineers wanted to help developers "create no-cost killer applications to create services rapidly," says Gupta, now General

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Manager of HP's e-speak Operation. The goal was ambitious. It's fairly easy to provide a service directly to a user, but it's an entirely different matter to provide a service that can be used by another service, or to link services. Web standards, like HTTP, HTML and XML, are complementary, but operate at the protocol or language level which is a level below service interactions.

If Gupta and his co-workers were to develop a successful solution, it had to meet a number of criteria. First, the solution had to operate in a heterogeneous environment, one embracing a diverse collection of platforms and standards, from computers and PDAs, to cell phones and soda machines. Second, the service architecture had to encompass the entire range of functions and interactions required by e-services, along with a level of service metadata that would allow for the brokering of Internet transactions, composition of complex services, and autonomous application-to-application interactions. Finally, it had to resolve issues of naming, security and scalability arising from the shift from the workgroup level to the Internet, where service providers offer constantly changing services.

The modular e-speak architecture meets all of these needs. First, it supports a heterogeneous environment because it sits on top of standard protocols, like UDP, WAP and IR, and it allows services to define their own interaction semantics. Second, the services architecture allows e-speak to act as a service mediator, facilitating the brokering of services and managing the interaction among them. Finally, e-speak was architected with naming and security models specifically created for the Internet and peer-to-peer operation that allows it to scale to extreme sizes (see Figure 1 on page 12).

When developers program to the e-speak services specification, they don't have to worry about the complexity of the Internet. A developer can write an application and invoke the services needed in terms of e-speak abstractions. When the developer is ready to open it up to the Internet, he doesn't have to modify the application to allow others to use the service.

HP's Open Source Strategy for e-speak

HP's e-speak platform is available on a site hosted by Collab.Net (www.e-speak.net). Offerings include a universal services interface (a set of APIs) and a runtime deployment engine (e-speak engine). The e-speak engine software was released under a combination of the GNU General Public License (GPL) and the GNU Lesser General Public License (LGPL) on December 8, 1999.

Collab.Net's site also provides several well-known packages of open source software: bug tracking using the BugZilla software from the Mozilla Project; mailing lists, archived and searchable; source code browsing tools; and an administrative interface for "admins" from the e-speak community.

Those interested in seeing e-speak put into practice can download offline demonstrations of programs using e-speak. One such program, for network document printing, uses e-speak to locate the nearest printer and automatically convert documents in Word, PDF, and other formats to printable form, eliminating the need to install drivers on every computer. A virtual file system, allows for transparent storage and retrieval of files from multiple network servers. The program provides update notifications when a file has been added by someone else and allows users to arrange and name files independently of other users. From Windows, users can employ the visual browser to automatically launch the appropriate program to edit or view each type of file.

An HP-managed site, www.hp.com/e-speak, provides access to the e-speak Developer's Program and registration information for it. At this site, you can also find information on HP's Developer's Conferences, intensive e-services conferences for Internet developers.

SPEAKING THE LANGUAGE

e-speak is made up of four main components: a universal services interface (APIs that provide a standard way of transacting with services across multiple application areas), a runtime deployment engine (the e-speak engine), pre-made components (building blocks for creating new services), and a services development kit.

The e-speak technology stack rides on any transport, while the e-speak engine provides the basic functionality. On top are the programming models, document exchange, and direct messaging. The e-speak framework is the basis for the exchange of application-specific data. The e-speak service bus is critical, defining a set of interfaces that allows independently written services to be composed into higher level e-services. The e-speak bus architecture also defines a set of infrastructure services, such as authentication, authorization and others.

e-speak differs from traditional middleware. With middleware, the client goes to a directory service and obtains contact information for the service provider, which it then uses to invoke operations on the service. This is how Jini works. But, there's a problem here. If the owner of the service wants access control, billing, management, and so on, the service provider must deliver it. What happens, then, if the service provider is a printer? With e-speak, the client obtains a name binding and the request is mediated by one or more e-speak engines. The engines provide the access control and generate the management and billing events, and there's no need to place the code into every service provider.

THE OPPORTUNITIES FOR E-SPEAK

HP is not selling e-speak, so it will not make money directly from the technology. That leads to the obvious question: Why did HP, which has traditionally kept its innovations close to the vest, open source e-speak? There's a simple answer. HP will exploit the opportunities opened up by e-speak by, for example, selling computers and services to companies that use e-speak in their own e-services initiatives. But, the opportunities extend far beyond this.

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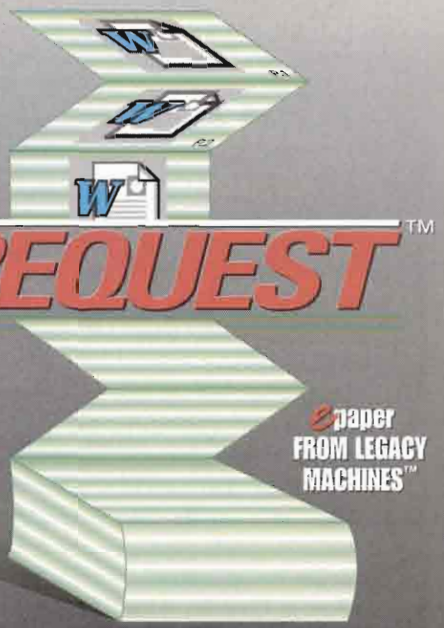

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Gupta compares HP's position with e-speak to that of a mythical company that has developed asphalt. If the company gives away the formula for making asphalt, roads begin to sprout up everywhere. New business opportunities are created, because there must be companies to maintain the roads, lay new ones, and so on. Moreover, cars begin to travel the roads, and that creates a need for gas stations and motels. The inventor of asphalt can exploit all these new business opportunities – which is precisely what HP hopes to do with e-speak.

Of course, HP is not planning to go it alone. Partnerships are core to the company's strategy for e-speak, just as they are to HP's e-services strategy as a whole. Moreover, some of HP's e-speak partners are heavy-hitters in the industry.

One is Oracle, which is collaborating with HP to integrate the Oracle 8i database with e-speak. "The database is part of the e-speak infrastructure," Gupta says. The e-speak repository uses a database to store service and user information. Users do not access the database directly but access its functionality through e-speak interfaces. One reason HP went with Oracle, Gupta says, is that e-speak can operate with any database built to the Java Database Connectivity (JDBC) standard. "Another is that Oracle is evangelizing e-speak to developers," Gupta points out. With the partnership, HP and Oracle are hoping to attract a broad base of developers, including the 500,000 already connected to Oracle.

HP also has attracted Ericsson and Telia as partners in a project to run Wireless Access Protocol (WAP)-based mobile Internet e-services on the e-speak platform. Telia is deploying the platform in its mobile network, and Ericsson is contributing its WAP solutions, application development, and WAP-enabled terminals. The first of a series of e-speak-enabled wireless e-services offered by the three companies will be an automated scheduling service and a corporate directory service for a select group of medium-sized engineering firms that maintain fleets of field engineers. Using WAP phones and GSM-based positioning, the field engineers will be able to receive and update customer job information while on the road, as well as access corporate phone and database directories. Corporate databases will still remain behind firewalls.

e-speak received a big boost through another partnership. ERP giant SAP has promised to include e-speak in mySAP.com offerings. HP is also planning to leverage e-speak in its HP Rapid/WEB product that provides integration for linking SAP/R3 with the Internet.

In another collaborative project, HP is working with Helsinki Telephone to develop a multimedia brokering solution for corporate training services. The solution will use of e-speak to facilitate discovery of new training courses, match customer needs with training courses, monitor course utilization, and provide a billing and payment infrastructure.

e-speak is also being integrated in a number of HP technologies. It will play a key role in a variety of specialized Internet portals HP is developing in such areas as procurement and supply chain management. HP will first develop the portals, then add e-speak to all the trading communities and incorporate it into each portal. HP is also integrating OpenView, its enterprise-management solution, with e-speak to provide an out-of-the-box manageability platform and make OpenView the manageability backbone for customer implementations of e-speak.

Last September, HP announced the integration of e-speak with Chai, its technology for device-to-device communication. This combination of Chai and e-speak allows intelligent appliances to give users instant access to personalized e-services.

Clearly, HP is banking on e-speak to drive its e-services strategy. And while e-speak has commercial value, Gupta hopes its implications for HP reach far beyond that. "With e-speak," he says, "HP – a company that invents – is back in the saddle, back in a leadership role. That gives us mind share."◆

– Jean Nattkemper is the Editor at Large for HP Professional, and has been reporting on HP for the past several years, writing extensively on HP's Internet-enabling technologies. She can be reached at jnattkemper@101com.com.

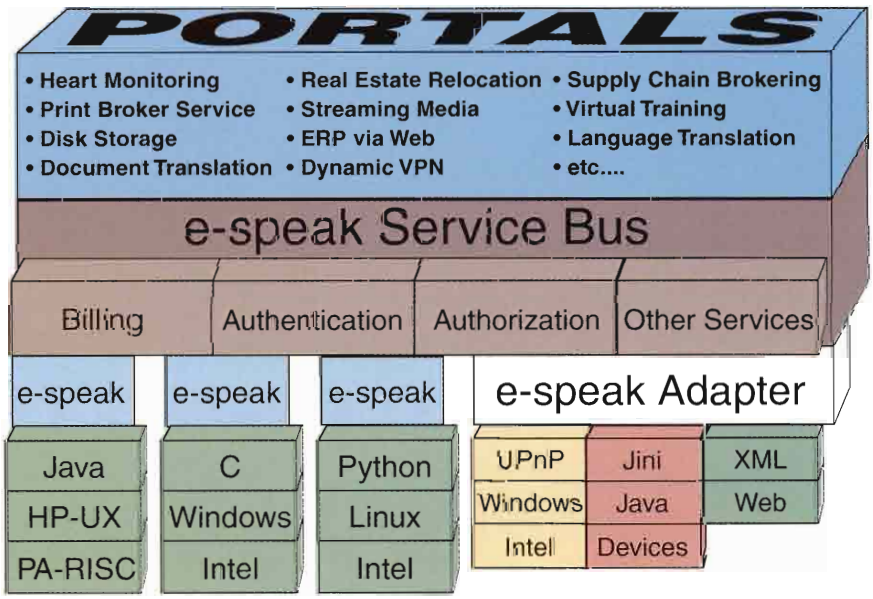

Figure 1: e-speak's Flexible Architecture

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ASP Options

What Does This Recent Phenomenon Bring to the IT Table?

If you haven't considered making an Application Service Provider part of your IT solution, it might be time for a closer look.

By Sam Amore

When the term "Application Service Provider" (ASP) was coined a few years ago, it initially referred to providers that specialized in renting applications over the Web to companies that couldn't or didn't want to buy software and pay for its care and feeding.

However, the ASP genus has evolved into many different species over the past two years, and some of them are much higher than others on the evolutionary scale. The software ASPs focus on today ranges from simple e-mail and groupware offerings to IP telephony, ERP systems and industry-specific vertical applications. At the top of the ASP evolutionary ladder are enterprise-oriented ASPs that even provide back-end business processing services, such as payroll and claims processing.

If you're confused, you're not alone. There are many misconceptions about ASPs. The most common fallacies have to do with delivery. Many think that using an ASP means the Web will be their only vehicle for service. Since security and reliability remain paramount in the eyes of an IT professional, many IT executives are not yet ready to trust their IT activities to the Internet.

Many ASPs offer various connectivity options. Not all ASPs are exclusively Internet-based, and some do a lot more than simply deliver applications. It is also important to note that not all enterprise ASPs are so new that they present the risks often associated with some dotcom companies. Some have track records that extend back two or three years – an eternity in Internet time.

WHAT ROLE SHOULD THE INTERNET PLAY?

Since the Web remains in the forefront of most ASP talk, let's explore where it really fits into the ASP scenario. Mission-critical applications can be delivered securely over today's public Internet, but end-to-end performance can't always be guaranteed. If you're not sure you are ready for the Internet, an enterprise ASP should be able to deliver its services over the private WAN connections – such as leased lines and frame relay networks – that many organizations already have in place.

However, there is a place for the Internet as an extension to private corporate networks, and the best enterprise ASPs will exploit it accordingly. The Internet is a cost-effective way to deliver reports and provision various types of self-service applications for managers, employees and customers.

One example of this is Web-based self service. Because of cost and complexity factors, many companies limit the use of ERP applications to a handful of managers. However, many more managers who are outside this select group may require employee information maintained by the ERP system, such as salary history. Web-based self-service capabilities from an ASP can put this type of information in the hands of every person in your company who has a legitimate need for it.

Similarly, enterprise ASPs can provide self-service applications that your employees can use to view pay-history information, enroll in benefits, change 401(k) options, or request vacation time. This same type of service can be

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offered across extranets, with the ASP functioning as an access point and gateway. Customers can access billing information, examine invoice histories or check the status of various requests or complaints.

The Internet is also useful and economical for coordinating business-to-business information flow between vendors and customers. For example, a benefits vendor might require eligibility feed that provides weekly updates on which employees are available for various benefits. An enterprise ASP can use XML to deliver this information over the Web at a fraction of the cost of traditional EDI solutions.

MORE THAN APPLICATION DELIVERY

The most advanced enterprise ASPs go beyond application delivery to provide a higher level of application integration with business processes and relationships. This breed of ASP functions as an outsource provider, handling back-end processing for clients. The ASP not only supports the applications, but also the surrounding business processes.

For example, an experienced ASP partner may have already developed links into a number of popular applications, such as PeopleSoft, SAP, Oracle and J. D. Edwards. The advanced ASP may also be able to integrate such applications directly with third-party providers of HR services, such as payroll-processing and benefits vendors.

ASPs that have these kinds of capabilities can function as a hub that connects a customer to various vendors in the HR space. Take the case of a food-company spin-off that needed to implement ERP and manufacturing applications very quickly and didn't have the necessary infrastructure in place. An ASP provided this infrastructure and also integrated payroll, benefits and claims processing from different third-party vendors into the food manufacturer's ERP system. Without the help of the ASP, the company would have had to piece together a multiple-vendor solution.

Consider the example of a fast-growing company that needed to implement a new HR system in order to consolidate its HR activities. The enterprise ASP that was selected understood the business processes surrounding human resources, and took things a step further by recommending a recruiting application that interfaced with the chosen HR management system. As a result, the client was able to condense the average time it takes to bring a new employee on board dramatically, from six months to four weeks.

ARE YOU A CANDIDATE FOR ASP SERVICES?

How do you know if an ASP would work with your business? ASPs have made more inroads into some industries than others. Manufacturing, government, banking and healthcare are several places where ASPs have been successful. But a company in any industry can benefit from partnering with an ASP, given the right circumstances.

Here are some scenarios that lend themselves particularly well to an ASP-based solution, no matter what industry you are in:

- You are facing a big re-engineering project or an installation in a new facility.
- You need a new application that your existing infrastructure won't support, or that would require significant staff upsizing and retraining.
- Your company is growing so rapidly that scalability of applications is a big issue.
- You are in a region with a particularly tight labor market, with high IT-staff turnover and replacement costs.

The pace of technological change continues to accelerate, and systems are now becoming obsolete in two years instead of five or ten. Outsourcing to ASPs can reduce your cost and risk of implementing new solutions. It saves you software license fees, absorbing installation costs, and hiring an application administrator and support staff.

CHOOSING AN ENTERPRISE ASP

If you've decided that an ASP interests you, where do you begin? Clearly, there are many different kinds of ASPs, even among individual species, and the category continues to evolve faster than industry gurus can define it. There are no hard and fast rules for selecting one; only some practical guidelines:

Clearly, there are many different kinds of ASPs, even among individual species, and the category continues to evolve faster than industry gurus can define it.

- One solution doesn't fit all, so beware of ASPs that don't offer a range of prices and service levels. A large percentage of the value you get is consumed by a small percentage of your users, so you may get almost as much out of your ASP by giving 12-hour access to 50 key people as you would if you were paying for round-the-clock support for 5,000 people.
- There is often safety in size, but it may come at the cost of personalized service. Big ASPs can achieve better economies of scale, but they may be less focused. And if they offer a wide range of services, they may be constantly trying to sell you things you don't want. By the same token, though, going with a small ASP is no guarantee of highly personalized service.
- It is important to understand that immediate savings from partnering with an ASP are not always going to be realized in hard dollars – especially if you are replacing a fully depreciated system and refocusing IT staff on new tasks rather than downsizing. The payoff is

Continued on Page 40

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Preparing for the E-Generation

HP and BEA Help Build the New One-to-One Economy with E-Services

Bill Wagner

The Web has spawned many new words – amazoned, browser, clickstream, e-generation, spam – and added new meanings to many more – cannibalize, page, portal, site, surf. But the vocabulary renovation has only begun.

Take "supply chain," for instance. As a pithy phrase and apt visual metaphor, it has served the business community well for three decades or more. The phrase brings to mind a picture of discrete companies linked one to another, usually via EDI wires, with purchase orders and product parts moving between the companies in a linear progression until a completed product finally pops out the end. Discrete companies engaged in linear interchange, however, no longer work in the Internet age.

THE WALLS COME TUMBLING DOWN

Consider the auto industry: In the same week in November 1999, both Ford and General Motors announced that they are forming online automotive trading exchanges. Through a site it will call AutoXchange, Ford plans to conduct business – $80 billion in transactions yearly – with most of its 30,000 production suppliers. Similarly, GM, through its site, which it will call TradeXchange, intends to manage all of its parts procurement.

Ford and GM exemplify one of the principal trends driven by the Internet, a massive movement toward collaboration that is reshaping business as we know it. In place of EDI, we'll have extensible markup language (XML). In place of discrete companies, we'll have intimate collaboration among multiple partners. In place of linear interchange, we'll have multidimensionally integrated businesses. In place of time-consuming hand-offs, we'll have lightning-fast simultaneity.

These two auto makers will soon merge with their suppliers; in effect, all of them will become a single, large, distributed meta-company. Once integrated online with their suppliers, where will Ford and GM end and their suppliers begin, and vice versa? Their software will be linked, their systems will overlap, and the lifeblood of information and transactions will flow among them as though they constituted a single body.

Business-to-business (B2B) e-commerce is breaking down the walls between partners, transforming businesses into companies of companies. It doesn't matter if you're a pure-play B2B company – supplying rubber to tire manufacturers, for instance – or a pure-play business-to-consumer (B2C) company – selling books Amazon-style. Your walls are crumbling (or they ought to be) at this very moment – and that's good.

In other words, B2B e-commerce is the new business mandate because, even if you're strictly B2C, B2B is at the core of what you do. Once that book is ordered, you had better be able to deliver it promptly to the right doorstep, and that requires that your systems be tightly coupled with your service and distribution partners' systems. Many Web companies, of necessity, are in effect merging with their fulfillment partners to ensure their success. The ones that haven't – a certain toy company that stumbled badly this past holiday season comes to mind – have had to learn a painful lesson.

In this brave new world, phrases like "supply chain," "distribution chain," "service chain," and so on, just don't cut it anymore. We need new words. Then again, we already have several that capture the ongoing transformation pretty well, and they all begin with "e."

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THE POWER OF E

One new word is "e-business" – not the most comfort-inducing word for many companies. Change is often painful and scary, wholesale industry transformations even more so by orders of magnitude. And transforming the sense of company identity with which we've all grown so comfortable in order to merge with our partners adds new dimensions of uncertainty. So why are the Fords and GMs of the world becoming e-businesses?

The easy answer is prosperity. Ford and its Internet-connected suppliers will be able to share more information quicker, which will reduce inventories, cut manufacturing cycles and save money – the estimate is that exchange participants will cut 10 percent to 20 percent from their cost of doing business. Likewise, GM believes that online efficiencies will slash the cost of each purchase order from $100 to $10.

More urgent than the call of prosperity, however, is the shriek of the survival instinct.

The Web has enabled the "e-generation" to seize control. This new e-word refers to the 200 million people worldwide that today are connected to the Net, more than the total population of adults in the United States. Joined by seven new Internet users every second, those 200 million are expected to multiply, in half a decade, to one billion Internet users – one-seventh of the world's population. This new e-generation is the most powerful force in business today.

Because the e-generation insists on controlling when, where, with whom, and how they do business, the balance of power is shifting from the company to the customer. Windle Priem, CEO of executive search firm Korn/Ferry, as quoted recently in *Fortune*, speaks of the "charmed existence" business has enjoyed for 30 years. "We could take as long as we wanted, charge as much as we wanted. The Internet will end that, like it or not. Customers will have control – and companies are better off voluntarily surrendering the keys to the city now, before customers have fled."

The Web has enabled the "e-generation" to seize control... This new generation is the most powerful force in business today.

J. Ferron takes it a step further. The head of the automotive practice at PriceWaterhouseCoopers was quoted in a recent *InformationWeek*: "The auto industry has had a very long history of saying to consumers: 'You buy what we build.' But consumers are saying 'No, you build what we want to buy.'"

Ford and GM are transforming their mass-manufacturing industry into a business driven by consumers. They understand that, to survive in this new reality, no company can go it alone. So, they are preparing to dynamite the divisions between their partners and suppliers to make way for integrated systems that enable cross-company collaboration.

ONE-TO-ONE E-SERVICES

In the new one-to-one economy of the Internet, e-commerce will be about delivering products and services on the fly to serve one need for one individual. Hence "e-services" will be provided by businesses that come together, for a single purpose, and then dissolve. These combinations may last years, months, weeks, and eventually, even just hours. To enable the creation of these spontaneous business communities on the Web, businesses will need to build so-called "adaptable applications" instantaneously (i.e., applications that are used once and only once).

"The Internet-based economy is about to shift gears again," wrote industry analyst Patricia Seybold in a 1999 report entitled "Preparing for the E-Services Revolution." "E-services are Internet-based applications that communicate with one another, fulfilling requests and/or triggering other e-services that, in turn, carry out their parts of some complex workflow or transaction ... An application running in any device – on or off the Net – can request an e-service. Once the request is received, the appropriate e-services will kick into action."

E-services, for example, are turning Web storefronts into automated business centers, replacing the underlying monolithic applications with more flexible, modular e-services that can be combined nimbly. And this is transforming the Web into an open-services marketplace.

Consider the Internet Travel Network, for example, which combines the portal concept with e-services. Not only can you book your airline, hotel, rental car and restaurant reservations at one site but also, because all these e-services communicate with each other, the interrelated commitments are automatically adjusted (e.g., a delayed flight).

HP AND BEA TEAM UP

Several companies are leading the e-services charge. Among them are HP and BEA Systems Inc., which forged an ongoing strategic alliance in April 1999.

HP is the leading proponent of a new e-services architecture. The company has entered into numerous

industry alliances to develop a global standard for e-services technologies. Such technologies will enable large organizations to integrate their enterprise applications, so they can communicate with one another, as well as extend back-end environments to the Internet to deliver fully integrated e-commerce solutions.

What makes e-services possible is a new, open software platform for creating, composing, mediating, managing and accessing Internet-based services. The platform, called e-speak (See "e-speak" on page 8), enables e-services to be accessed easily and intuitively using a wide array of devices and platforms, including personal digital assistants (PDAs), PCs, information appliances, supercomputers and, soon, cell phones and set-top boxes. Through e-speak, e-services can interact with each other to advertise capabilities, discover and ally with each other to offer new capabilities, even negotiate to broker, bill, manage and monitor each other – all in a dynamic, ad hoc, yet secure manner.

How? e-speak allows a resource (computing device, application or data content) to be virtualized and redeployed as an Internet-based e-service. To "virtualize" a resource, e-speak breaks the linkage that constrains applications and data to specific hardware or operating system environments. The e-speak core software consists of two elements: universal e-services APIs and a runtime e-services engine. e-speak runtime software is installed on each computing device or information appliance that connects to the virtual services environment. The runtime software then provides basic infrastructure capabilities, like messaging, mediation, security, naming and monitoring for the e-speak e-services hosted on, or accessed by, these devices. Through the consistent e-speak services interface (APIs), developers can design and create any e-service using a set of elegant, simple e-services programming interfaces.

The HP/BEA alliance will provide customers with a complete software infrastructure for developing and integrating robust e-commerce applications that support e-services. HP is bringing the e-services infrastructure to market with dedicated BEA sales, marketing and support programs. HP is also building a worldwide enterprise application integration (EAI) solution practice using BEA products and services. BEA products included as part of the agreement between the two companies are BEA eLink, for EAI, and component-based e-commerce solutions built on BEA WebLogic Server and BEA Tuxedo. These products are key components of BEA's end-to-end E-Commerce Transaction Platform. For HP's e-services initiative, the BEA eLink and component products are being developed on HP's platforms and integrated with HP's business-process engineering technologies.

INTEGRATING YOUR BUSINESS INSIDE AND OUT

BEA eLink allows diverse packaged and proprietary applications to interact seamlessly across multiple operating systems, standards and programming languages, through a single integrated interface. Several dozen customers around the world are using BEA eLink to integrate applications for realtime, straight-through processing within their enterprises, as well as across their supply- and value-chains.

Through e-speak, e-services can interact with each other to advertise capabilities... all in a dynamic, ad hoc, yet secure manner.

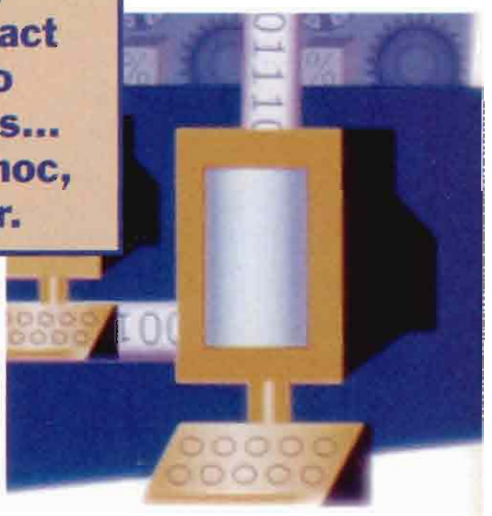
For example, Portugal Telecom, Portugal's only full telecommunications service provider, has selected BEA eLink Adapter as its core technology for integrating customer and financial applications that support its nationwide wireline business. Portugal Telecom's Customer Billing system employs BEA eLink to enable 4,000 users of client PCs at the company's business offices, retail stores, and call centers to access and update information in more than four million customer accounts. Through BEA eLink, the company's back-office financial systems can also exchange information with the Customer Billing system.

Portugal Telecom's Customer Order Entry and Customer Problem Management systems, which use Oracle database software on UNIX servers, allow customer service representatives using PCs to open new accounts and enter detailed information on telephone service problems registered by customers.

"With BEA's eLink, we were able to integrate our key customer billing, order entry, and problem management applications, improve customer service, and more productively use our thousands of distributed PCs nationwide," says Luis Silveira, manager of information systems and technology at Portugal Telecom. "It has enabled us to rapidly implement a robust, high-performance transaction solution that would have entailed a costly and time-consuming development effort if we had undertaken it ourselves."

THE COMPONENTS OF SPEED

It is simply not possible to provide e-services if you are



programming every application from scratch. Developing with reusable components is necessary. These pre-built, ready-made building blocks of software functionality can be snapped together quickly to create unique, adaptable e-commerce applications.

For example, Vattenfall, one of the largest energy companies in Europe, is using BEA components, along with the BEA WebLogic Family of e-commerce transaction servers, to build an integrated network for providing "smart building" subscription services throughout Sweden.

The services let customers remotely monitor their refrigerators, ovens, electricity consumption and power mains status, and control their burglar alarms and heating and air conditioning units from afar. Vattenfall estimates that, before the end of 2000, 150,000 Swedish households will be using the new services, which are being offered by Sensel AB, a wholly owned Vattenfall subsidiary launched last summer. Sensel hopes to add 200,000 new customers a year.

The foundation for Sensel's services is a network integrated with the Sensel Box, or home gateway, which provides customers with secure access to the service through their choice of a telephone or Web portal.

Sensel's development team is working closely with BEA's Denver-based Component Development Operations (CDO) to build some of the components for the system.

Once the formidable job of building a Nordic-sized electrical-wire-to-Web communications network and fashioning the great variety of applications that run the services is done, the ongoing service rollout is scheduled to reach a breakneck pace.

"We'll be able to add new services much more quickly after the base apps are done, on a monthly basis, maybe even weekly," says Bjorn Haggquist, CEO of Sensel AB. These accelerated delivery schedules highlight the power of component development: The more applications you build, the larger your library of reusable components and, hence, the faster your development time.

E-COMMERCE SERVERS KEEP YOUR BUSINESS RUNNING

Speed – we're repeatedly told – is the need in e-commerce. But without reliability, speed kills. To ensure the availability and reliability of e-services that the e-generation demands, businesses must use robust e-commerce servers to guarantee that their e-business works 24 hours a day, no matter how many customers are trying to use the site.

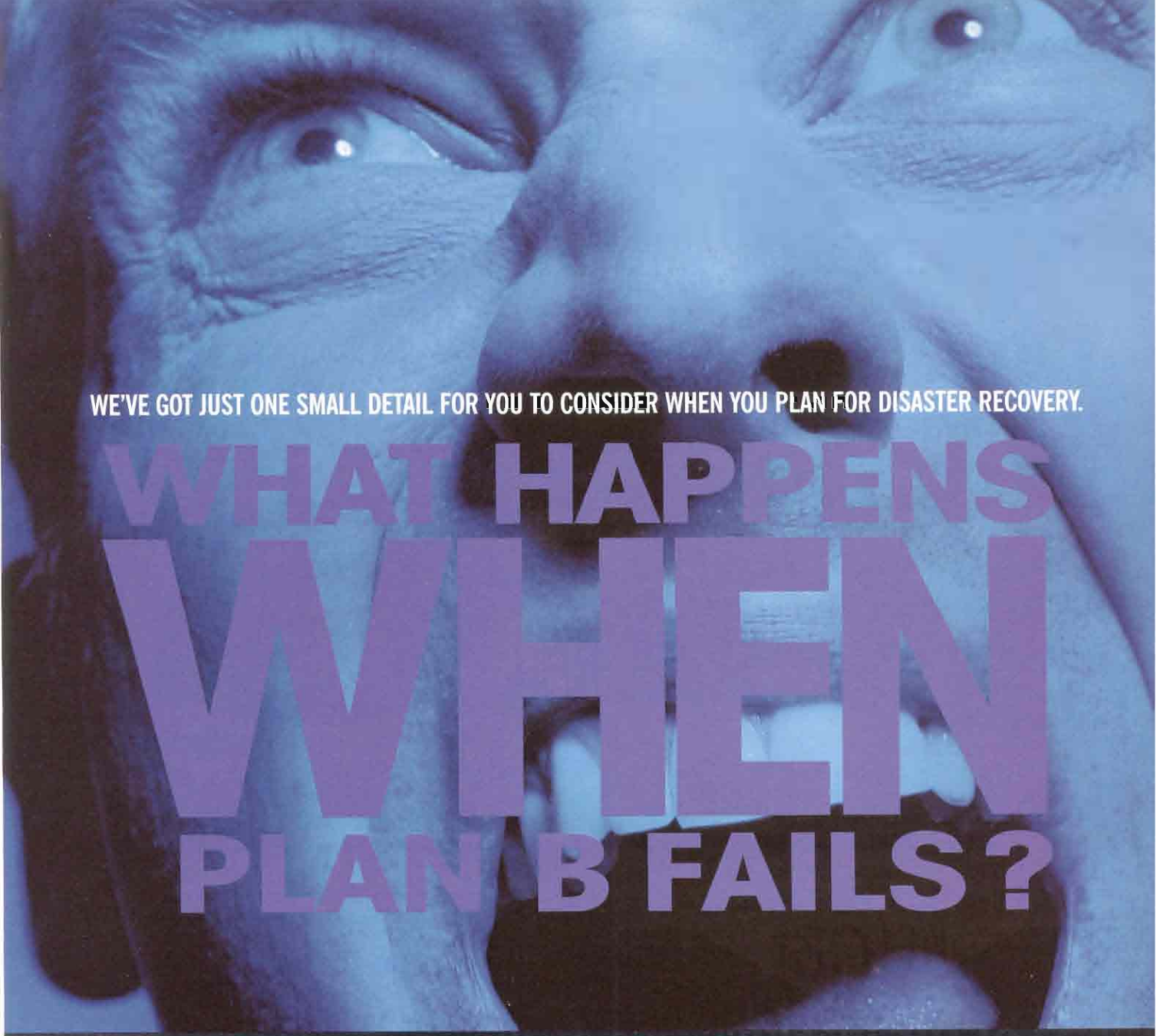
As the first company in Sweden to offer smart-building services on a vast scale, Vattenfall, for example, needed to choose the most reliable and scalable application servers on the market.

"We looked at available products and consulted with other companies in the Nordic countries to get their recommendations," says Haggquist. "We found that BEA's application and transaction servers offered both the right price/performance and the proven ability to reliably scale to support millions of customers." BEA's e-commerce servers currently include the BEA Tuxedo transaction server for building and managing high-performing e-commerce applications; BEA WebLogic Server for developing and deploying Java-based e-commerce solutions; and BEA WebLogic Enterprise, which combines the extremely high-volume transaction processing capabilities of BEA Tuxedo, the Java support found in BEA WebLogic Server, and both Common Object Request Broker Architecture (CORBA) C++ and CORBA Java support to enable large-scale CORBA and heterogeneous solutions.

THE FUTURE'S COMING FAST

By enabling businesses to quickly and completely integrate their enterprise applications and extend the enterprise straight to the e-generation, companies, such as HP and BEA, are taking sledgehammers to the walls of old-style businesses. As the dust settles and the sunlight of a new day streams in, what we'll soon find is a one-to-one economy driven by e-services – a world in which every consumer has his or her own tailored supply chain built instantaneously to meet each and every request. ◆

– Bill Wagner is Vice President of Worldwide Field Support at BEA Systems. He can be reached at wwagner@beasys.com.



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With 9.6 million residents in 88 cities, The County of Los Angeles needs its networking systems running flawlessly. The county employs 90,000 people, representing nearly every trade profession – police officers, firefighters, clerks, drivers, attorneys, psychiatrists, scientists, scuba divers, welfare case workers, helicopter pilots, and so on. These people work in a complex set of agencies that ensure the well-being and safety of the county's residents, and nearly two-thirds of these employees depend on computer access and the County's intranet to do their jobs.

An extensive and powerful enterprise intranet, based on Internet technologies, serves L.A. County's myriad operations. More than 50,000 computer users access the system to perform various daily activities, including looking up a patient's medical record or providing up-to-date tax information. In addition, on any given day, L.A. County conducts business electronically with some 50 entities outside the county. Any network complications could jeopardize the real-time transfer of critical information.

To monitor and troubleshoot its mission-critical 24x7 network, the Information Technology Service of the Los Angeles County Internal Services Department (ITS) employs Agilent Technologies' NetMetrix network performance monitoring solution (formerly HP OpenView NetMetrix), among other diagnostic tools. Armed with NetMetrix since 1994, L.A. County's Network Control Center (NCC) sustains continuous operations through greater network visibility and in-depth analysis. Moreover, the NCC has increased the level and quality of services it provides to its thousands of customers.

"NetMetrix provides us with real-time, up-to-the-moment status on our network," comments Chuck Hollins, NCC Supervisor. "This technology, combined with other software tools, gives us the advantage of moving data expediently through our intranet."

FROM MAINFRAME TO INTRANET

In 1994, L.A. County began moving away from an exclusively host-based mainframe environment to a peer-to-peer network in which individual PCs are connected together via WANs and LANs. "L.A. County management foresaw that this type of computer arrangement was the way of the future," recalls Hollins. "Yet, we also knew that this network would bring new challenges. Thus, the Network Control Center was born to respond to these new needs, with a mission of keeping the lanes of our information superhighway free of traffic jams."

As ITS Network Engineers developed this network, the NCC realized that it did not have the right analysis tools to execute in-depth testing. This meant that they weren't able to identify and untangle network problems, such as an overactive Novell Server, as quickly as they wanted. A variety of incidents, from excessive broadcasts to Token Ring beacons, can impede the flow of network traffic and increase a network's response time. Should several of these events happen across L.A. County, users would not be able to access the infor-

Photograph by Tom Paiva/FPG

mation they needed, nor could they communicate with each other, thus creating a huge IT headache.

NETWORK PERFORMANCE MONITORING

"NetMetrix was our tool of choice from early on. We continue to use it because it allows us to deeply analyze our network to the benefit of our many users," comments Hollins. "We've also found that NetMetrix is easier to use compared with portable protocol analyzers."

The NCC runs NetMetrix/UX Internetwork monitoring and analysis software on its HP-UX operating system. The NCC has also installed more than 20 HP NetMetrix LAN/WAN Probes to conduct remote analysis and troubleshooting on its intranet. The combination of NetMetrix/UX software and HP LAN/WAN Probes enables the NCC's 12 network specialists to diagnose and repair network problems efficiently. NetMetrix gives L.A. County the ability to do what Hollins calls a "network blood scan."

"With NetMetrix we can see a lot of things that can cause problems in the network," he explains. "We can analyze packet capture and resource utilization, and we can see what devices are hogging the network."

For example, a person may be trying to transfer a file to another person in a different part of the county but are unsuccessful. "In the old days, we might call the recipient to work through the problem," Hollins says. "But, if they weren't computer literate, we couldn't identify, much less fix, the problem over the phone." Now with NetMetrix, the NCC can place a filter on the two computers' IP addresses and, with data from NetMetrix probes, use NetMetrix to examine the data crossing through the entire chain. "We can filter on packet capture and see that the file request is going out, but that there's no response." Alternately, NetMetrix allows the NCC staff to filter the ports to see if an "unreachable" command is coming back. "Using either of those pieces of information, we can then determine what the problem is and fix it."

NetMetrix also helps L.A. County monitor network traffic. "We had big problems with flow response, and diagnosing those kinds of problems is where NetMetrix really excels." The application showed the top ten network resource users. "We saw immediately that one user was hogging 85 percent of the network availability," Hollins says. "And the next largest user needed less than 2 percent." The network was redesigned to isolate that user onto his own segment, correcting the problem and freeing up resources for the rest of the County's intranet. ◆

– Cymber Quinn is President of Technical Communications Corp. in Boulder, Colo. She can be reached at cymber@inktc.com.

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Confessions and Clarifications

I've discovered that I must have had a good vacation. I can't seem to remember anything technical – I think one less beer per day would have prevented this temporary amnesia. Next year, maybe I'll have two more beers per day and see if all of reality will go away. Until then, I'll ease back into the saddle and answer some of my e-mail inquiries.

I received some questions about the series of columns discussing the **find** command (*HP Professional*, October 1999 to December 1999). I often spout excitedly about the topics I am writing about, so it is no wonder someone tried to use **find** for something it was not intended. The question was: *How do I make **find** stop at one level of the directory structure?*

Well, if you only want to develop a list of, or act on names at, a single level, **find** is not the tool for you. If you extract the first five words in the definition of **find** from the main page, it says something like: "find recursively descends the directory..." If you want to act only on names from one level, shell wildcards can be used effectively to develop a list:

```
filename=widget
  echo ${filename}.*
```

In the example above, the commands in a korn shell script would return all names that started with 'widget' in the current directory. You would then have to loop on that 'list' of names and test to see which ones met the other qualification needed. If there are many other qualifications, **find** really is a good tool for this (that or else a Perl program). To use **find** without dropping into subdirectories, you could use the **–path option**, supplying a path that would match any time you crossed into a subdirectory (meaning it contains two slashes), then negating those paths:

```
find. ! –path './*/*' -
name 'widget.*'
-type f -perm –1 -print
```

The command above will list (**–print**) those items in the current directory (**. ! –path './*/*'**), whose names start with 'widget.' - name 'widget.*', are files (–type f), and have execute rights on them (**-perm –1**). This is one way to limit recursion in find.

Fred Mallett
frederm@famece.com

A much simpler question came in about the **–print** option: *Can you think of any examples where omitting the **–print** does not automatically print the desired results?*

HP-UX always does a default **–print** at the end of the expression if it is omitted. This is not true for many other versions of **find**.

A much more difficult question came in about performance: *I am hoping that you will briefly discuss performance with the **find** command. For example, isn't it true that files are "filtered" left-to-right, such that there could be a performance difference between these two commands:*

```
find / -type d -name tasks -print
find / -name tasks -type d -print
```

I had heard that the first command will search the entire system, extracting all of the directories, then extract from -that- list, the those named 'tasks.' In the second, only the files named 'tasks' are checked to see if they are directories.

The arguments to the **find** command form a Boolean expression. As such, it is indeed read from left to right, *however*, **find** does *not* build a list that matches the first item in the argument list, then run that list through the second element.

What actually happens is that each object in the directory structure that **find** is searching in is applied across the entire Boolean expression. Once it is finished, the next object goes through the entire expression, and the next one, etc.

If we rewrite the first of the examples from the e-mail to include the default 'and' operator between each Boolean argument, it looks like this:

```
find / -type d -a -name tasks
-a -print
```

Now it is easier to see that there are three tests being performed (or you might want to think of it as two tests and an action to be performed). In order for the last test to be performed (the **-print**), the first two tests must return true. If any tests return false, then the entire Boolean expression fails, the current object is 'discarded' and the next object in the directory structure is run through the set of tests (the Boolean expression).

In this example, the first object that **find** tests from the / directory is analyzed to see if it is of type directory; if not, then the second object from the / directory is examined. If the second object is of type directory, **find** then checks to see if it is named 'tasks;' if not, then this object is rejected, and the third object starts through the expression. If the third object is named 'tasks,' then the next test is performed.

This 'test' of the expression is more like an action, in that it prints the pathname of the current object. In contrast, the **–print** option is indeed a test – one that always returns true – thus it can never fail, and can be used anywhere in an expression. Consequently, there are times when adding a few **–print** options helps in troubleshooting a **find** command line.

Since the argument list of **find** is a Boolean expression, the speed does indeed vary by the order the command lines are written in. Using the examples from above:

```
find / -type d -name tasks -print
find / -name tasks -type d –print
```

If we assume that there are far more directories than objects named 'tasks,' it would be faster to use the second example. Any object not named 'tasks' would fail the **–name** test, thus the **–type** test need not be performed, saving a 'stat' operation on any object that could not pass the whole expression anyway. In general, it is faster to perform name tests before any tests that require a stat operation.

Not only did I clear my e-mail inbox a little, but the old tech side of the brain is starting to warm up. In fact, I even remember something I meant to put in the **vi** series:

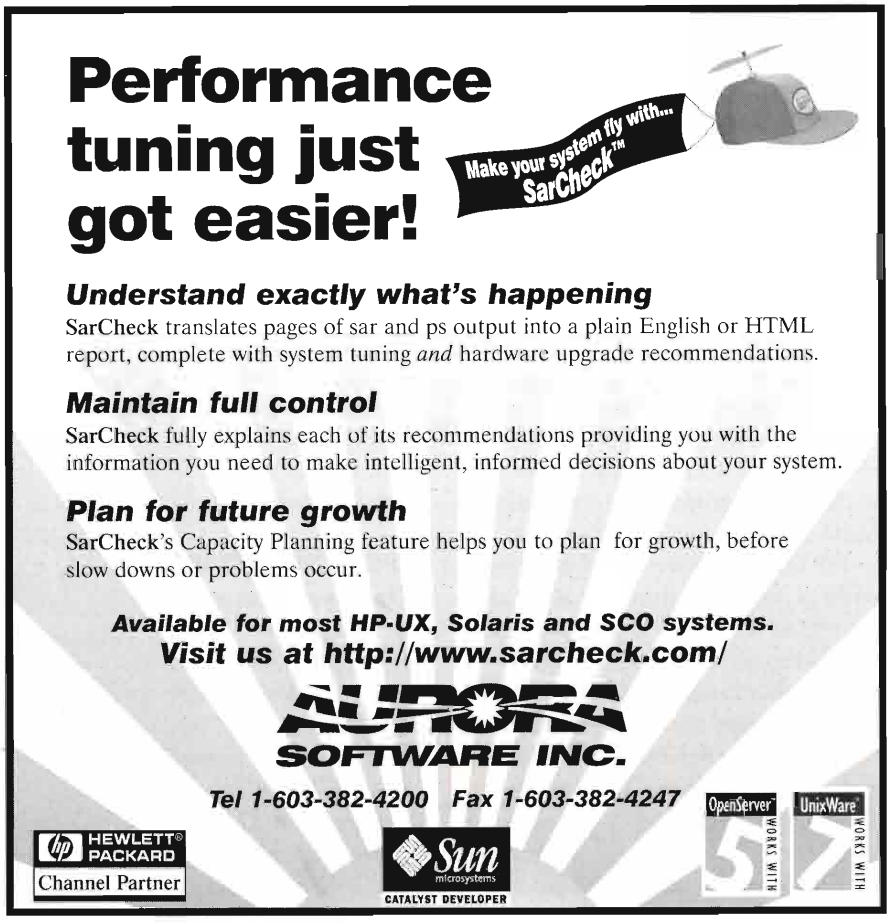
What always amazes me is that so many people will save the source and exit **vi**, just to test the program. If you are writing in something like shell scripting or Perl, it is much easier to just issue the following from within **vi**:

```
:w !%
```

The **:w** performs a write to save current changes, and the **!** means invoke the following as a command. **%** is a shortcut for the current filename. Thus **!%** means execute the file we are currently editing. The output of the program appears on the screen, and you just hit return to continue editing. The drawback is that standard input is not waited on, so you must put any required input test data in a file, and redirect input on the **ex** line. For example, if we put some input data into a file named 'input,' the following would tell the currently edited program to take standard input from that file:

```
:w !% <input
```

Note that there is a space between the w and the **!** in all of these examples. If there is no space, **vi** (well, **ex**, actually) thinks that we are telling it to forcible write to the file (**:w!**), instead of invoking a command. ◆



The HP XP256

By Dick Bannister

The mainframe storage vendors were all quick to take advantage of the storage consolidation momentum current in the IT industry. They provided new subsystems, or enhancements to existing subsystems, enabling attachment by both open and mainframe servers. A variety of subsystem resident software added value in the areas of copying, moving and backing up of data. These subsystems are referred to as Multi-Platform Storage Subsystems. These products also found value to IT organizations planning Data Warehouses. Data Warehousing typically gets the majority of data from MVS systems, but invariably runs on a non-MVS platform. Moving data from MVS to an open server quickly and efficiently, without using LANs, WANs or bulk tape, is a real advantage of multi-platform products.

Despite these benefits, the traditional open systems storage suppliers mostly chose to ignore the consolidation opportunity and the data warehouse requirements. One exception is HP. HP had a marketing agreement with EMC enabling them to sell the EMC 3000 product on HP servers.

HP became aware of the need for a multi-platform product and were also concerned that EMC systems and their SANs strategy could lock in customers to a single storage vendor. HP needed a product that matched or exceeded the attachment flexibility, performance and scalability of the EMC products. They also needed MVS skills to go along with this multi-platform product. In May 1999, HP announced a Joint Technology (JTA) and OEM agreement with Hitachi Ltd. and Hitachi Data Systems (HDS).

Under the terms of the JTA, the research and development organizations of HP and Hitachi Ltd., in conjunction with HDS, will cooperate on the design, development and enhancement of enterprise-storage products. The initial result of this agreement is the Multi-Platform HP SureStore E Disk Array XP256, which with the exception of the disk devices, has a basic architecture similar to that of the HDS 7700E.

Under the terms of the three-year OEM agreement, HP will market Hitachi's high-end array technology products.

HP will also OEM several storage management software features, similar to those of the 7700E offerings, and integrate them into its new SureStore E Storage Node Manager, as well as OpenView OmniBack II to support SAP and Oracle applications. HDS, for its part is now an authorized value-added reseller for the XP256.

HP SURESTORE E DISK ARRAY XP256

Open systems support includes the HP-MPE IX, HP-UX, IBM AIX, Linux, Sequent Dynix, SGI, Sun Solaris and multi-vendor Windows NT platforms and support for MVS. Host attachment is provided by Fibre Channel, SCSI-2, Ultra SCSI, OEMI and ESCON with a maximum of 32 concurrent I/O operations. Scalable capacity ranges from 60GB to 9TB using a combination of 2.5 inch 12,030 RPM 15GB disk devices or 3.5 inch 6,300 RPM 36GB disk devices. Both RAID-1 and RAID-5 are supported with the ability to intermix RAID levels. As with mainframe subsystems, there is remote "phone home" capabilities and the fault-tolerant, redundant architecture has no single point-of-failure, which includes a 16GB mirrored cache.

The system comes with full software and solution integration with XP/ServiceGuard and MetroCluster and with support for ContinentalClusters available at a later date. HP maintains a 99.999 percent uptime guarantee with HP's Mission Critical Server Suites. The XP256 is described as "SAN ready" with support for the HP SureStore E Switch F16, Hub S10 and Hub L10.

As with the HDS 7700E, an XP256 subsystem consists of one Control Frame and from one to four Array Frames. The Control Frame (see Table 1 on page 29) contains the Channel Host Interface Processors (CHIPs), Array Control Processors (ACPs), non-volatile cache, and Control Store Logic. The XP256 has up to 16GB of cache, up to four pairs of CHIPs, and up to four pairs of ACPs supporting one or more arrays of 15GB, and/or 36GB SCSI disk devices. Up to eight dynamic spare disk devices can be included, with one per disk device type

installed as a standard feature.

The Array Frames contain the disk devices. The XP256 can contain up to 256 15GB and/or 36GB disk devices. The device specifications (see Table 2 on page 30) are different from those offered by HDS in the 7700E.

Capacity will vary depending upon the types of disk devices installed, number of logical volume images, RAID levels, disk emulation modes and LUN sizes, and number of ACP pairs. Connectivity will vary upon the number and type(s) of CHIPs. Performance will vary depending upon the amount of cache, types of disk devices, number of CHIPs and ACPs. As with all multiplatform products, determining the potential configuration options is complex. HDS has a configuration program that will validate configurations based upon a variety of "intermix rules" and we assume a variation of this program is available for the XP256.

CHIPS

CHIPs provide the host interface on the XP256 subsystem. They process commands from the host and manage accesses to the cache. Each CHIP is a single card (printed circuit board) containing four Intel i960 66MHz microprocessors. The CHIP cards are always installed in pairs for redundancy, with a maximum of four pairs per subsystem. The CHIPs in the XP256 contain four active Intel i960 66MHz microprocessors per CHIP board enabling up to four concurrent transfers per CHIP.

ACPS

ACPs are the equivalent of a disk director, and are only available in pairs. Each ACP is a single card (printed circuit board) containing two microprocessors. The ACP also controls data movement between the ACP buffer and the SCSI disk devices. The microprocessors in the ACP initiate the data movement to/from the disk devices, and then Direct Memory Access (DMAs) in the SCSI path interface controllers continue the transfers, freeing the ACP microprocessor to perform other operations.

The XP256 supports one, two,

Table 1: XP256 Control Frame Specifications

Client-Host Interface Processor (CHIP)	
Number of CHIP pairs	1, 2, 3 or 4
Simultaneous data transfer per CHIP pair	4 or 8
Host interfaces per CHIP pair	4 or 8
Host Interfaces per Subsystem	
Maximum	32
Parallel (OEMI)	0, 8 or 16
Extended Serial Adapters (ESCON)	0 to 32
SCSI-2 FWD or Ultra SCSI	0 to 32
Fibre Direct	0 to 16
Fibre via Bridge FC 4/2	0 to 32
Transfer Rates (MB/sec)	
Parallel (OEMI)	3.0, 4.5, 6.0, 9.0
Extended Serial Adapters	10 or 17
SCSI-2 FWD	20
Ultra SCSI	40
Fibre Channel	100
Nonvolatile Cache	1GB to 16GB

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three or four pairs of ACPs. Each ACP has two active Intel i960 66MHz microprocessors per board, four 20MB per second SCSI interfaces per board and two SCSI paths sharing a microprocessor and parity circuits.

ACPs are also responsible for parity generation. They perform the function of rebuilding data from existing data and parity in the event of an HDD failure in the RAID-5 architecture. In the RAID-1 implementation, the ACPs control copying data from the good HDD to a dynamic spare in the event of an HDD failure. The ACPs also perform the function of copying the data to a replaced HDD in an Array Group from the spare or performing a Construction Copy process to a replaced HDD in RAID-5 if for some reason a spare was not used before a failed HDD was replaced.

Table 2: Disk Device Specifications

	15GB	36GB
Head technology	MR	MR
Form factor (inches)	2.5	3.5
Actuator	Recoilless rotary	Recoilless rotary
Servo system	Digital	Digital
Interface	Dual-ported SCSI-2	Dual-ported SCSI-2
Rotation speed (RPM)	12,030	6,300
Data transfer rate (MB/sec)	20	20
Average Read/rite seek time (ms)	5.5/6.5	11.5/12.5

BUSSES

In the logical diagram (see Figure 1) it may seem like the CHIPs and ACPs can transfer data directly via the bus. However this is not the case. All data must be transferred into and out of the cache, to and/or from the host or SCSI disk devices by use of the multiple data buses.

Each CHIP and each ACP is attached to the two 252MB per second data buses and the two 120MB per second command buses. The two data buses function together as one 504MB per second data bus. Each CHIP or CHIP pair, and/or each ACP or ACP pair may be accessing both data buses simultaneously to achieve an instantaneous data rate of 504MB per second. The data buses are First Come First Serve (FCFS) priority arbitration and are non-preemptive and non-interleaved. When data is placed on the bus each packet is addressed and time stamped so that the appropriate CHIP pair, ACP pair, or cache will receive all the data between time stamps. Hitachi Data Systems states that the philosophy of the multiple bus design is that by utilizing the 504MB per second instantaneous data rate capability, the CHIPs and ACPs are able to transfer data to and from cache faster than the host interface paths or back-end SCSI paths can fill the buffers allocated to those paths.

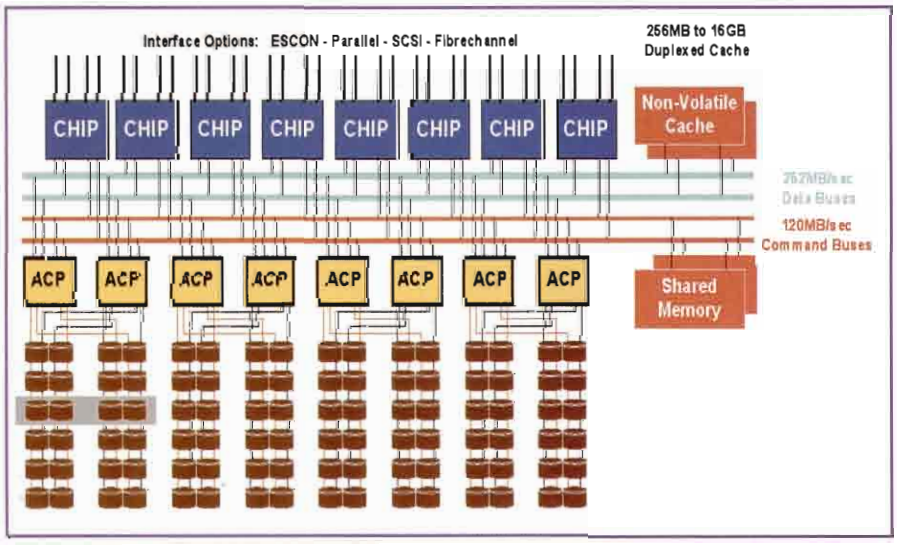


Figure 1: Logical Diagram

The XP256 has two 120MB per second command buses thereby eliminating bus contention between I/O commands and large data transfers that can occur on shared busses. Each CHIP and ACP has a high speed command buffer to use as a scratch pad.

There is also a Hot Line bus which is used during diagnostic and error recovery procedures for the microprocessors. The purpose of having this separate bus is to eliminate any possibility of command or data bus failure due to microprocessor failures.

SOFTWARE FEATURES

The software-based features of the XP256 are as follows. Where applicable, the equivalent HDS 7700E and EMC Symmetrix offerings are provided in parenthesis (/).

- HP SureStore E Business Copy XP (ShadowImage/TimeFinder): Creates copies of volumes on the same XP256 subsystem.
- HP SureStore E Continuous Access XP (HRC/SRDF): Creates mirrored copies of volumes on another XP256 (local or remote).
- HP SureStore E Data Exchange XP (HMDE/InfoMover): Provides high-speed transfer of data between HP-UX and mainframes using channel resources.
- HP SureStore E Secure Manager XP (not available/Volume Logix): Secures data between servers when multiple servers access the same subsystem via a SAN.
- HP SureStore E LUN Configuration Manager XP (LUN Manager/Symmetrix Manager): Enables LUN configuration.

- *HP SureStore E RAID Manager XP (not available/Symmetrix Manager):* Provides server-based software to manage Business Copy XP and Continuous Access XP.
- *HP SureStore E Remote Control XP (not available/Symmetrix Manager):* Provides remote Web-based configuration and system optimization.
- *HP SureStore E Cache LUN XP (FlashAccess/PermaCache):* Locks user-definable data into cache.
- *HP SureStore E Performance Manager XP (GraphTrack/Symmetrix Manager):* A graphical, Web-based tool to monitor performance, provide notification of degradation, and adjust storage-tuning parameters.
- *HP SureStore E Resource Manager XP (HMRS/ESP):* Allows sharing of XP256 resources between mainframe and open systems platforms.
- *HP SureStore E Continuous Track Manager XP (Hi-Track/Phone Home):* Monitors systems status, reports errors and failures via phone home capabilities.

Cementing its commitment to the XP256, in December 1999, HP announced a complete integrated solution for NT consolidation, its "Stress-Free NT Storage Consolidation." The NT consolidation package provides for the connection of hundreds of NT hosts (Compaq, Dell, HP, IBM), centralized management, and security.

The NT consolidation solution features several new HP software products and new features for the XP256:

- *HP SureStore E SAN Manager LM (LUN Management):* Provides host-level security and the management of logical devices.
- *HP SureStore E Secure Manager XP:* Protects from the possibility of a rogue-sever accessing storage.
- *HP SureStore E Auto Path XP:* Provides automatic path failover and load balancing for NT servers.

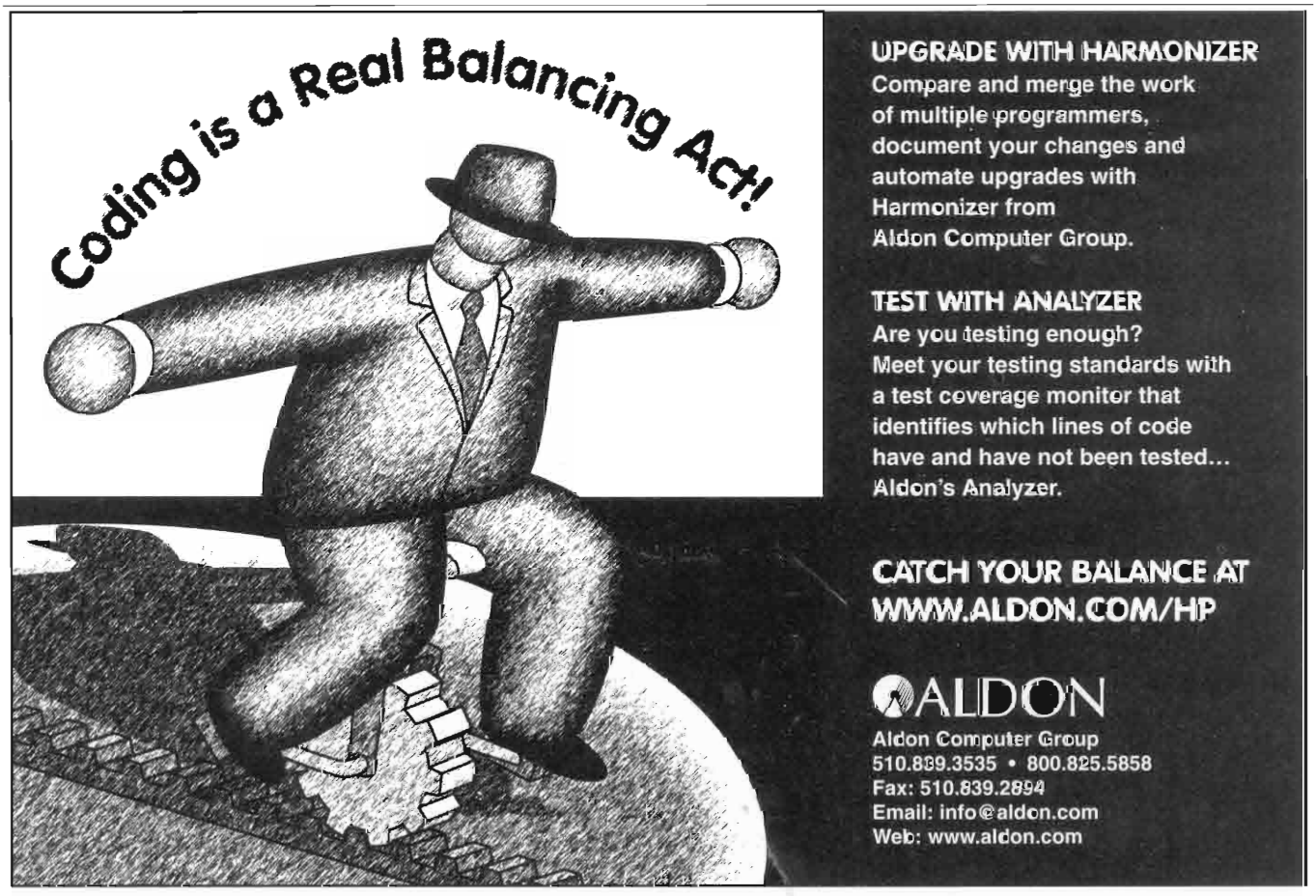
SUMMARY

The XP256 is just one piece of HP's storage strategy. Although HP stated that they would continue to resell EMC's Symmetrix products, the message is clear that the XP256 is their preferred offering.

As with any OEM agreement where two vendors are marketing basically the same product, the potential exists for "channel conflict." Evaluator Group believes that this issue has been addressed between HDS (a certified XP256 reseller) and HP.

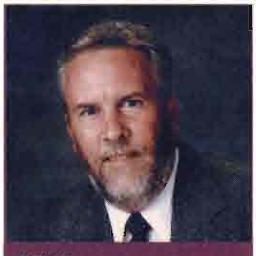
The IT customer community will receive benefits in the area of increased feature/function and lower prices as the enterprise storage market becomes more competitive. ◆

– Dick Bannister is a Senior Partner at the Evaluator Group Inc., an industry analyst organization focused upon storage products. He can be reached at (303) 221-7867, or via e-mail at dick@evaluatorgroup.com.



HP Adds a "little e" to Its HP 3000

By way of introduction, I am Bill Pike. I have been writing on IT for well over 15 years and enjoy covering stories that share how technology provides solutions for business challenges. I look forward this year to joining the *HP Professional* technical editorial team and delivering a bimonthly column of industry news regarding the HP 3000 series.



Bill Pike pikecom@earthlink.net

I believe that one of the best ways we can learn about technology is from articles that are built around someone's actual experience. If you and your company are doing innovative things with your HP 3000, or you recently confronted and resolved a set of troubling business issues using the HP 3000, I'd like to share your experience with *HP Pro* readers. Please e-mail me so we can get acquainted – and put your story in print! With regard to this column, I welcome your comments and article ideas. If you see something you really like (or not) in my column, please drop me a line at pikecom@earthlink.net.

It was a call out of the blue that stirred my curiosity one late January morning. Just prior to the official announcement, I was invited to sit in on a press conference where I listened to HP contacts Christine Martino, Worldwide Marketing Manager, Commercial Systems Division; Winston Prather, General Manager of HP's Commercial Systems Division; and Alvina Nishimoto, R&D Program Manager; share an early version of the newly refreshed HP 3000. I soon found out that the information was "e-news" worthy. Speaking of "e," do you know of anyone who is in business and not aware of how the Internet is affecting nearly every form of commerce?

The ubiquitous Internet and the business opportunities it promises have a compelling effect on nearly every modern computing platform in dozens of different ways, and the HP 3000 machines are no exception. To start with, I learned from my HP contacts that the venerable product line has gone through a rather rigorous technical overhaul. It comes at a great time with e-business applications and dotcom enterprises becoming increasingly dominant in the marketplace and on Wall Street.

The HP 3000 is currently the workhorse in a variety of business environments, including manufacturing, banking and healthcare, as well as the highly competitive e-retail segment. "Today's announcement," Martino began, "marks an important transition of the HP 3000 into a true Internet platform. The transition allows the platform to meet the rapid trend and resulting demand for conducting e-business. The new HP e3000 delivers mission-critical computing for the Internet-enabled enterprise."

Martino handed me a sheet of paper which contained the headline, "What's New Today?" Under the title, the paper listed five key points that summed up the HP e3000 news. The points read:

- Up to 44 percent better price/performance
- Enhanced MPE/iX operating system with bundled Web-enabling technologies
- New partners
- New data center management and storage products
- New printers

Web-enabling technologies caught my eye right away and so I asked for some additional specifics. Alvina Nishimoto responded, "HP has assembled a large number of application development, middleware and enterprise management tools. For example, Speedware Autobahn (a software product) allows customers to Web enable their applications. In middleware, Level 8 Systems recently extended its Geneva message Queuing Services," Nishimoto said.

According to Nishimoto, Level 8 Systems' Geneva Message Queuing middleware software allows application developers to easily convert HP e3000 business applications to Web-based applications to support an e-services model. HP and Level 8 have jointly announced a plan to co-market Geneva Message Queuing to HP e3000 customers.

"We see the Level 8 product as a strong offering for HP e3000 customers looking to deliver e-services," said Winston Prather. "Geneva Message Queuing provides a simple, reliable way to connect existing HP e3000 applications to the Web."

Level 8 is one of a growing number of HP business partners that is included on a detailed list of HP e3000 application/solution providers. The list can be found on the HP Web site at www.hp.com/go/3000partners.

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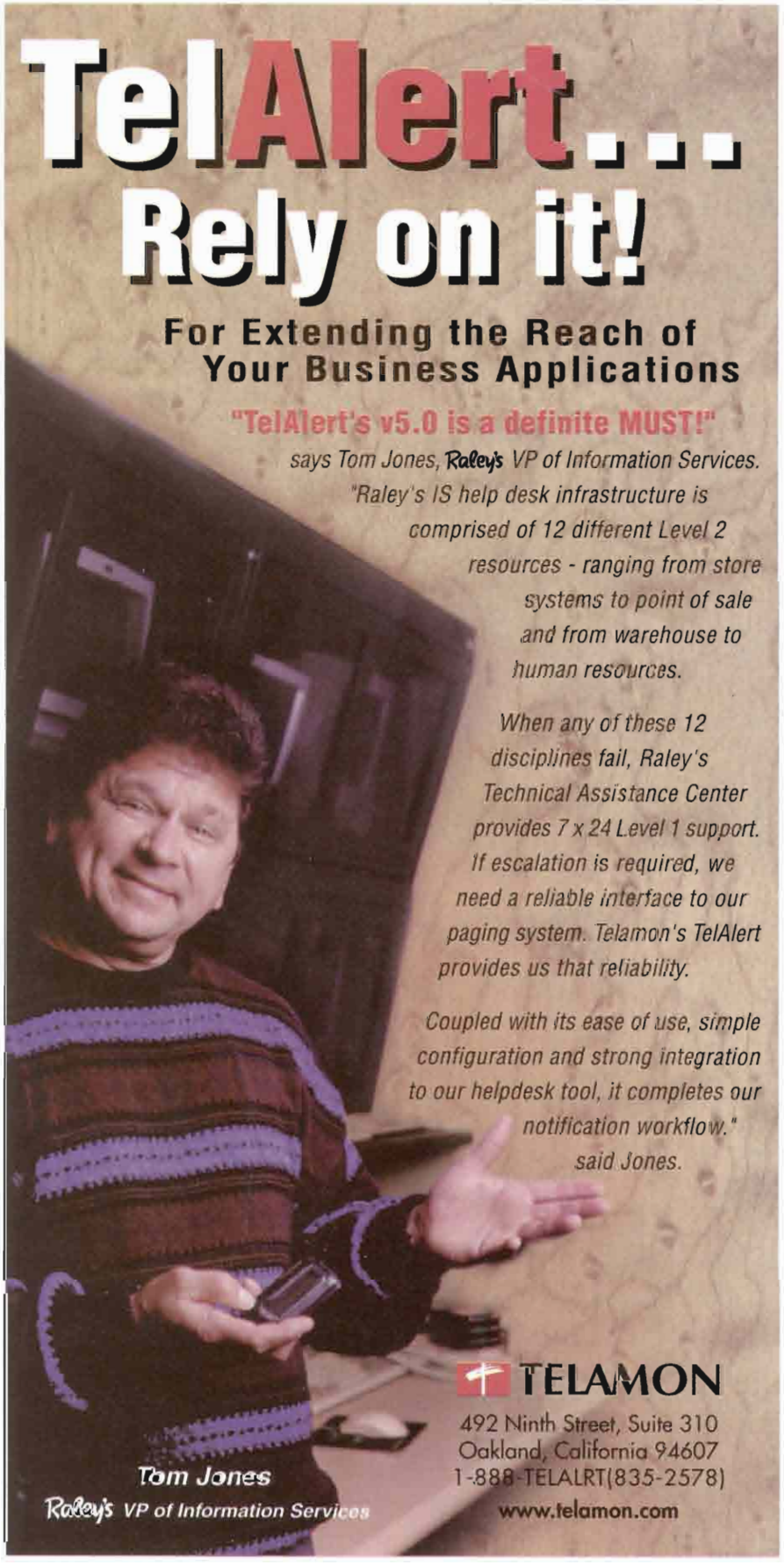

Consultants can provide a number of services to help customers prepare the HP e3000 to be Web-enabled. The consulting firms were partnered because of their extensive HP 3000 knowledge as well as their ability to rapidly develop and grow a number of vital, bullet-proof Web capabilities.

I had heard from a number of industry sources that the MPE/iX operating system has been a very stable and reliable performer. The announcement mentions Release 6.5. This release supports technologies essential for e-commerce and e-business. Security naturally becomes a very important part of the equation. I learned that the Secure Edition of the MPE/iX Web Server, based on Apache Web Server software, is not included in the 6.5 release. It is available for purchase. However, I confirmed that the standard edition of Apache Web server is included in this release.

Java 2 (Release 1.2.2) is also included in the 6.5 release and features the Java Database Connectivity Driver. The latest Java release includes:

- A number of security enhancements, including new APIs and tools, provide a more fine-grained access control with greater flexibility in implementing security through policies and permissions
- The Collections Framework provides capabilities of modeling many different data representations, such as Sets, Lists, Hashes and Maps
- The Extensions Framework supports dynamic extension of Java capabilities by installing Jar files
- Enhancements to the JavaBeans component architecture
- Enhancements to Remote Method Invocation and Serialization
- Better interoperability with CORBA through Java IDL and RMI over IIOP
- Numerous performance enhancements ◆

Editor's Note: For more on the HP e3000 announcement check out Editor at Large, Jean Nattkemper's Special Report at www.hppro.com.

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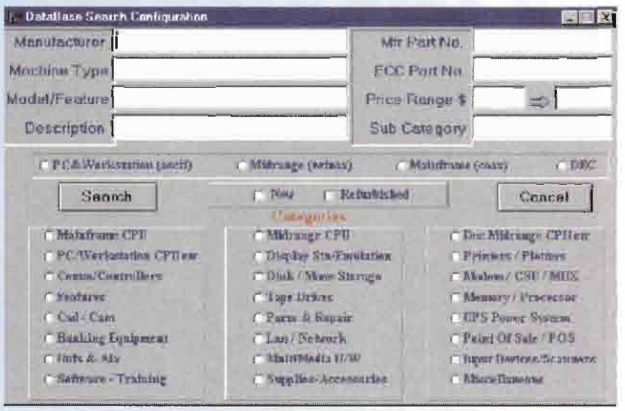

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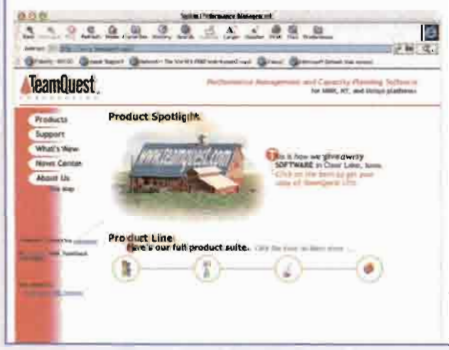

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Hummingbird Communication's EIP

The Hummingbird EIP (Enterprise Information Portal) provides a single point of access to all business-critical information and resources including structured and unstructured enterprise data. Beyond access, the Hummingbird EIP works by connecting users to content in context, enabling them to quickly process, filter and act upon information from any enterprise source. The EIP features include: unified search (transparent to the end user, EIP can execute unified searches that access all structured and unstructured data sources both internally and externally, and return a unified result); and e-Clip Plug-In Architecture (EIP is based on an plug-in architecture, using a technology known as e-Clip).

For more information, visit www.hummingbird.com.

Allied Gigabit Ethernet Adapter

Allied Telesyn's network interface card, the AT-2970, sports a 64-bit transmission path and a dual-cycle mode for complete compatibility with 32-bit systems. The AT-2970 series Gigabit Ethernet adapter delivers on the promise of Gigabit throughput, Gigabit performance and Gigabit reliability for all high-end applications. Developed around a highly advanced ASIC, the AT-2970 adapter is optimized to support both 64bit/66MHz PCI and 32bit/33MHz PCI bus-based systems.

For more information, visit www.alliedtelesyn.com.

WatchGuard's Internet Security

WatchGuard Technologies extends the benefits of its LiveSecurity System to small offices and telecommuters with the introduction of the Firebox SOHO and Firebox Telecommuter. With the introduction of these two security appliances, WatchGuard's LiveSecurity System now offers five Firebox models designed to protect offices as large as 5,000 users down to small branch offices and workers connected to the corporate network from home.

For more information, visit www.watchguard.com.

Informative Graphics' inViso

Informative Graphics' inViso is a native CAD drawing and image visualization application/ActiveX component for Windows and NT. A free "view only" runtime version of the software is being made available for commercial use. inViso is positioned for: Intranet Deployment, CD-ROM Publishing, and Application Embedding by Solution Partners.

For more information, visit www.infograph.com/inviso.html.

Sun Solaris 8 Operating Environment

Sun Microsystems' Solaris 8 Operating Environment is available for both the SPARC and Intel platforms. In addition to the operating system software, the Solaris Operating Environment includes a co-package of software from Sun, iPlanet E-Commerce Solutions, Oracle and others. The Solaris 8 Operating Environment's new capabilities include Network Cache Accelerator for serving Web pages; IPv6 support for a near-infinite number of IP addresses; Java HotSpot technology; a 70 percent improvement in database performance; Integrated iPlanet Directory Server; and clustering, supporting up to four 64-processor systems, moving to eight later this year.

For more information, visit www.sun.com.

MyProjectWorkplace.com

Deltek Systems introduces the first component of its e-business initiative, MyProjectWorkplace.com (MyPWP.com). MyPWP.com provides an "out-of-the-box" solution for delivering secure, interactive project Web site experiences to their clients, partners and subcontractors. With MyPWP.com, project businesses can enable their customers to have full time, Web access to review and analyze project status, profiles, calendars, events, milestones, project documents, billings and financial performance.

For more information, call (800) 456-2009, or visit their Web site at www.deltek.com.

Enterprise Computing BI

Enterprises Computing Services (ECS) is now providing business intelligence with the release of ECSDTool, a querying tool designed to extract the business intelligence out of data. ECSDTool allows users to analyze data, discover trends and create multidimensional scenarios. ECSDTool features an interface to guide the user through the process of viewing, sorting and analyzing data; drag-and-drop functionality to allow users to see multidimensional views of their data; and the "Pin" tool to allow users to filter out data and "drill down" to see only the data they need. ECSDTool can also produce reports and performing data analysis without depending on technical resources.

For more information, call (877) 327-8060, or visit their Web site at www.ecsdtool.com.

Fibre Channel-SCSI Storage Routers

Crossroads Systems offers their 4x50 line of Fibre Channel-SCSI storage routers. This third generation of storage routers includes support for Third Party Copy, FCP-2 (second generation Fibre Channel protocol), FC_Tape and low voltage differential (LVD) SCSI connectivity. In addition, the Crossroads 4x50 offers advanced link-level error recovery as defined in FCP-2; providing a method for smoothing the flow of information to tape should an error occur. Crossroads 4x50 storage routers have an Ethernet port and supports the Fibre Alliance Management Information Base (MIB) 2.1. All three models, the Crossroads 4150, 4250 and 4450, feature are offered in rackmount/desktop models.

For more information, call (800) 643-7148, or visit their Web site at www.crossroads.com.

Ericom PowerTerm Pro

Ericom Software introduces PowerTerm Pro for HP. PowerTerm Pro supports terminal emulations for HP 700/92 and HP 700/96, supporting NS/VT and Telnet, and provides comprehensive connectivity protocol support over TCP/IP. PowerTerm Pro for HP also provides full access to HP 3000 systems from any multiuser Windows 95/98/NT/2000 desktop applications. It allows for seamless integration into all Office products and the WordPerfect Suite. PowerTerm Pro for HP is designed to enable access to accounting, inventory, management, transaction processing and other legacy applications located on HP host systems.

For more information, call (201) 525-5511, or visit their Web site at www.ericom.com.

Continued from Page 16

longer term, deriving in part from reassigning IT staff resources to more strategic activities that build value by improving the very core of your business processes. Outsourcing to an ASP can also help reduce "soft IT" costs you incur when business managers spend time providing unofficial application support.

- Outsourcing to an ASP does not imply any incompetence on the part of your in-house staff – quite the contrary. In today's very tight IT labor market, your staff is too valuable to be tied up with relatively monotonous and repetitive work that can be handed off to an ASP.
- You aren't losing control when you outsource. By designating a liaison person that holds regular meetings with the ASP representatives, you determine the level of your company's involvement. Think of the ASP as an extension of your staff, and hire the ASP according to the same standards you'd use to hire your own employees.

The biggest long-term benefit that ASPs can bring your company is flexibility. You don't get locked into certain technologies that limit your options in the future, and you can embrace the virtual-enterprise paradigm that is the key to success in the Internet economy.

Armed with the right information, selection of an ASP will be much easier. With IT employees at a premium, and technology changing at lightning speed, it may be time for you to explore this option for your company's IT needs. ◆

– Sam Amore is a Vice President for reSOURCE PARTNER, an application service provider that delivers PeopleSoft applications and business solutions to the middle market.

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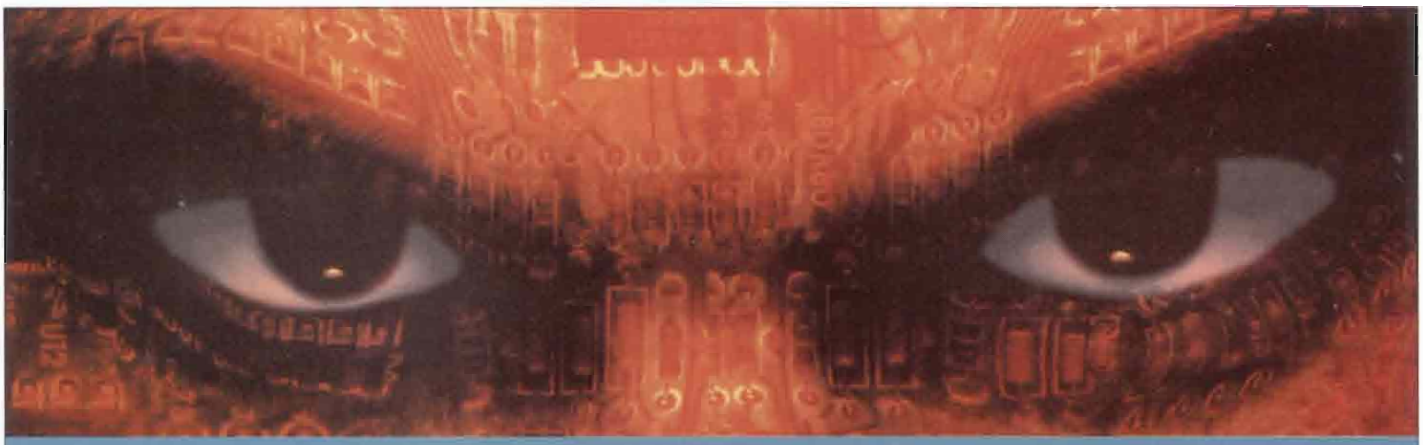
INTERACTIVE ADVERTISER'S INDEX

	PAGE #
Aldon Computer Group	31
Aurora Software	27
Black River Computers	27
Bradmark Technologies	C4
CFS	29
East Coast Computer	35
Forsythe Technology	5
Hewlett-Packard	C2
Hewlett-Packard Cisco	17
Hewlett-Packard Corporate	6,7
HiComp America	C3
Hillary Software	11
Hitachi America Ltd.	25
MB Foster & Associates	9
Mitchell Humphrey & Co.	3
NHCSI	22
Nobix	33
Open View Forum	19
Sungard Recovery	23
Sysix Technologies, LLC	15
TeamQuest	13
Technical & Scientific Application	2
Telamon	34

Marketplace

Allon Systems	37
Black River Computers	37
EZ Systems	37
Genisys Corp	36
Hyde Company	38
Ideal Systems Solutions, Inc.	36
InfoTech Search Group, LTD.	36
Lynne Company	36
Monterey Bay Communications	37
Saaya Inc.	38
Sun Digital	36
Ted Dasher Inc.	37
Twin Cities Digital	36



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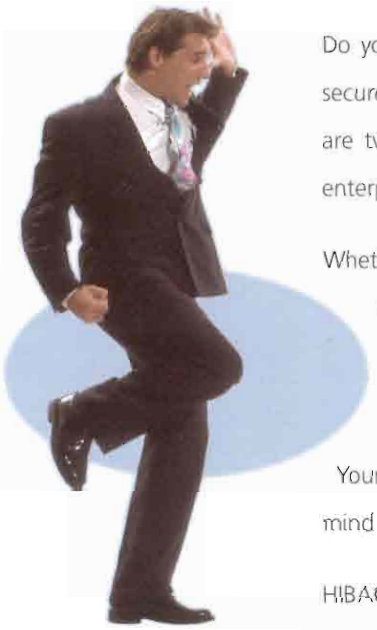

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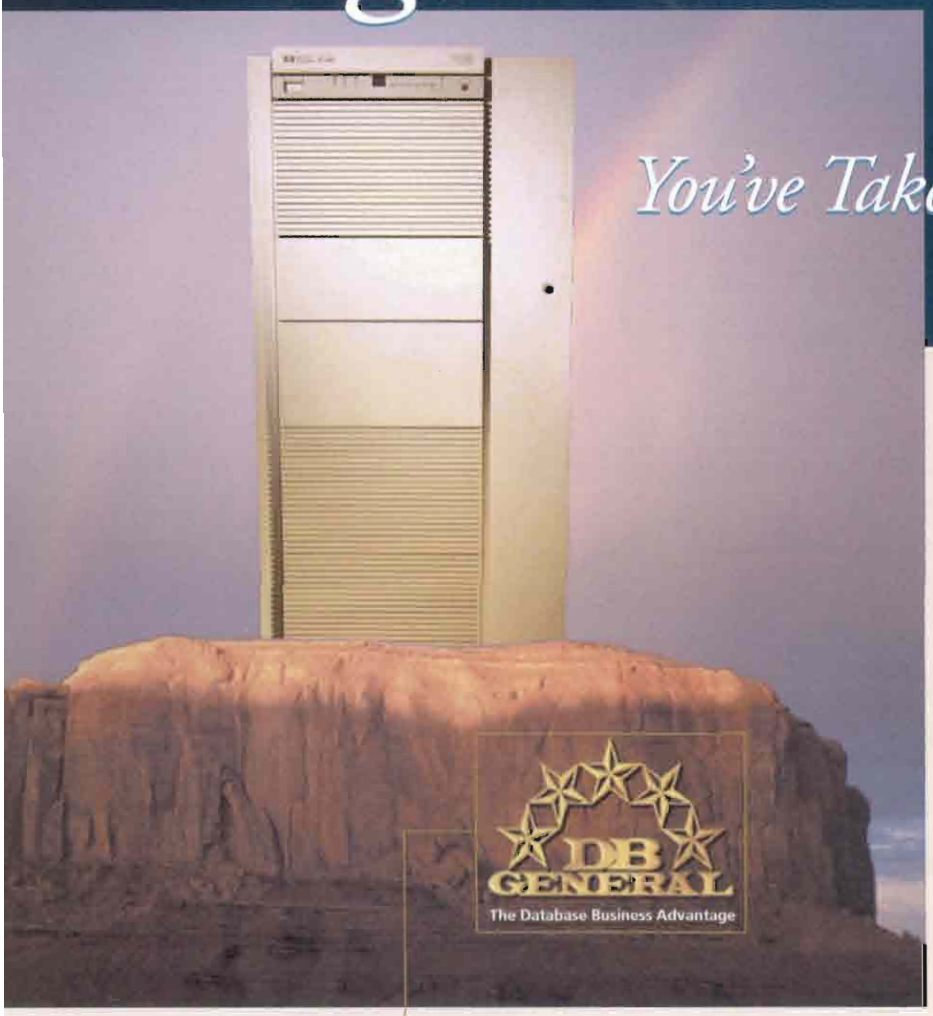

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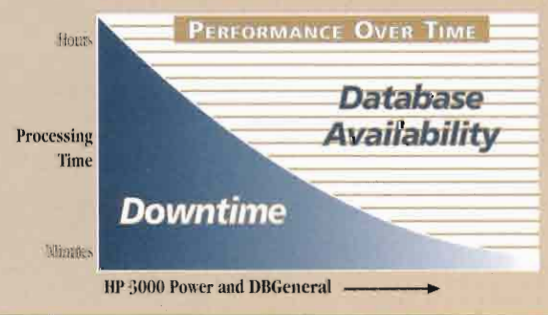

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