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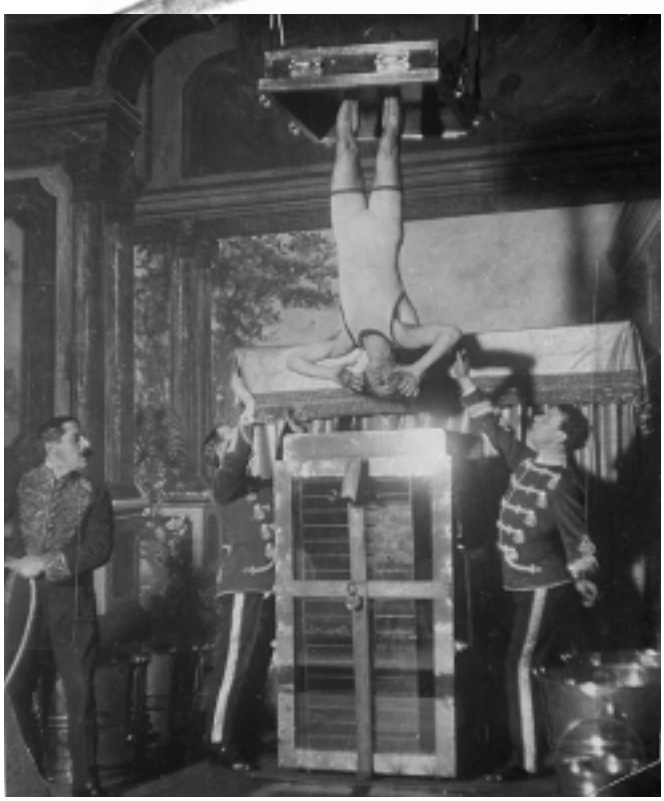

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The billion dollar deal surprises and shakes up the MultiValue community. IBM addresses the questions and concerns of MultiValue customers.

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Why Am I **Having Trouble** *Letting This* **Sink In?**

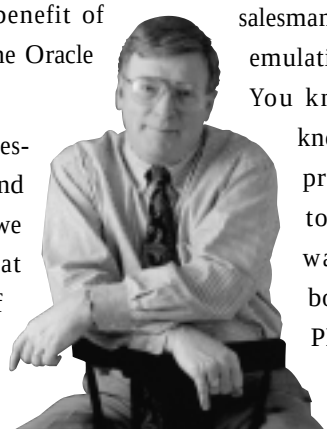
Look, I certainly don't want to burn any bridges, and I think the acquisition of Informix by IBM is exciting to say the least, but I just can't resist having just a few mischievous thoughts. I promise I won't do this again, but I just have to get it out of my system!

Can you imagine being a fly on the wall when your favorite IBM salesman of yesteryear was called into the conference room for the announcement?

"Good morning, ladies and gentlemen! I have some exciting news to report! IBM announced today that it bought Informix Software Inc. for $1 billion."

"This is a great acquisition for the company, because it will finally give us what we need to compete with the evil Hewlett-Packard spirits in the distribution and data warehouse markets; not to mention the side benefit of possibly torquing off the Oracle himself!"

"That's great," the salesman says. "What new and wondrous things did we get from Informix that will let us dispose of once and for all these mighty dragons?"



"Well, we got Informix, of course, and we also got UniVerse and UniData, two of the most widely used database environments in the world. You should see their client list — it looks like 'Who's Who' and they have a gazillion robust business application software packages that run on them. And, you may not know this, but many of the UniVerse and UniData systems have been responsible for a ton of RS/6000 sales!"

"Hmmmmm!" the salesman pondered, "Where did these UniVerse and UniData products come from? Were they developed by Informix?"

"Well, not exactly. You see, back in the early 1980s, there was a company called APICS, which then became VMark, and they got acquired by Ardent, which later was purchased by Informix."

"Oh, I know about this stuff," the salesman interjects. "APICS was an emulation of the PICK database. You know, the stuff we always knock because it's a boutique proprietary system, but customers seem to buy it anyway. You mean, when we bought Informix we bought PICK too?"

"Yep! Ain't that a hoot!"

— GUS GIOBBI, CHAIRMAN, IDBMA, INC. —
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The End of a Maverick

BY BRUCE JOHNSON

I'm writing this with a strong sense of déjà vu. I would swear that it hasn't been much longer than a year ago that I was writing about the upheaval in the MultiValue marketplace as Informix was buying Ardent Software, the merged entity of UniVerse and UniData, and Pick Systems was being bought out by a group of MultiValue luminaries. So here we are, 12 months later and both Pick Systems (in name) and Informix either no longer exist or are on the way out. While there is no question about the commitment or direction of Raining Data (the newly named incarnation of Pick Systems), the purchase of Informix's database assets by IBM has brought out the speculator in all of us. How can I resist? And as an added benefit, I get fodder for a column.

The main question being asked by MultiValue professions is how the acquisition will impact the future support and enhancement prospects for the U2 databases. Will there be continued development? Will support be pulled at some point in the future? Will there be a forced migration to DB2? Will future versions of U2 benefit from any DataStage enhancements? I could simply say that the answers are yes, eventually, not in the foreseeable future, and no, but then I'd have to write filler for the rest of the page. Easy, but not likely to satisfy my editor.

To start answering these questions, first consider the history of IBM when it has made large acquisitions. Lotus Software is the only other purchase of a comparable size and it would be hard to argue that the result hasn't been at least as good as was expected. And as a division of IBM, Lotus has maintained a fair portion of its autonomy while continuing to develop top-notch applications. The concern was that the pinstriped suit mentality that is synonymous with IBM would poison the freewheeling nature of Lotus. This, apparently, hasn't been a problem. But Lotus was big enough to form its own division. Not so with Informix, which will have its products placed in the data management division.

Second, we need to look at IBM's reason for the acquisition. According to a statement from IBM, "this acquisition allows (us) to bring the benefits of leadership database technologies to more customers faster." What this bit of corporate speak says to me is integration. The best elements of all of the Informix databases will be incorporated into DB2 eventually. At that point, you will begin to see transition tools hit the market. Ultimately, I believe that the U2 databases will continue to be fostered under IBM. They have a history of continuing to support relatively old technologies so long as they make fiscal sense. As well, I believe you will see initiatives aimed at migrating from any of Informix's databases (and there are a number of them) to the mainstay of IBM's database division, DB2.

But if you want to stay with U2, I don't believe that you will be punished. As I have said in the past, the U2 databases are a relative cash cow for any company. They are stable, mature products with a large user base and a constant flow of maintenance payments. Even if development and enhancement costs are factored in, the databases will remain cash flow positive. And as long as they are, any company would be foolish to upset the apple cart. And I don't put IBM in the category of foolish. So I think you can safely expect the databases to continue to be supported for the next five years at least.

The one area where I don't think the MultiValue world will benefit is in the marketing prowess offered by IBM. I doubt that, in the interest of promoting its new database assets, IBM will start running full-page advertisements touting the benefits of MultiValue. In fact, unless the marketing budget for Raining Data is substantially larger than I suspect (and their focus has moved away from its roots), I don't think that we will ever see any significant marketing push ever again. Bad for us? Perhaps. But I don't think any amount of advertising would be able to convince the Fortune 1000 of the error of their database ways. The database war is won and the victors are Microsoft, IBM and Oracle. And even if the desire is there, no obvious source exists for the influx of dollars that would be necessary to make the attempt. So we need to resign ourselves to the position that, by now, should be familiar to us. Second-class citizens in the database world, satisfied that we have a superior product but doomed to remain in obscurity.

Bruce Johnson can be reached at brucej@tagconsulting.com

One of the ironies of this situation is that the database model developed and nurtured by mavericks has been bought out by suits. After years of thumbing our noses at the mainstream and flaunting the advanced capabilities of our databases in the faces of the lesser competition (dynamic field sizes, row level locking, non-first normal form), we are now owned by the poster child for conformity. Will the corporate mentality of IBM infect the U2 development staff? Not likely. But on the bright side, there are few companies large enough to be the next big fish to swallow the U2 databases. So it seems likely that, after the transaction has been concluded in the second half of the year, we should enter a period of relative calm. Unless you cast a longing eye in the direction of Redmond. **is**

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IBM *Acquires* Informix Software,

Home of UniVerse and UniData

Billion Dollar Deal Surprises and Shakes Up the MultiValue Community

At press time came the news that IBM Corp. had entered into a definitive agreement to purchase Informix Software, home of the U2 databases (UniVerse and UniData), for $1 billion. The acquisition does not include Ascential Software, an operating company of Informix Corp., which now becomes a completely independent company. The DataStage data integration product remains with Ascential Software, which focuses on providing Information Asset Management solutions to Global 2000 companies.

While the MultiValue community is no stranger to acquisitions, mergers, and changes of all manner, news of this magnitude was met with surprise and speculation that resounded throughout this industry. To many MultiValue market spectators, it's been a long and twisted road to get to the point where IBM has purchased a company that nets it two MultiValue databases.

After all these years of struggling to escape anonymity, MultiValue joins the ranks of IBM, the world's largest computer maker? At first hearing, it seemed improbable. As the news sunk in, many in the industry began to ponder what this means to the MultiValue market. Some thought it sounded familiar—years ago PICK Systems had a division marketing the Pick database with IBM hardware. Some thought the purchase was good news, bringing credibility to the table. Others wondered about the future of the U2 databases in the hands of IBM. Speculation centered on would the U2 databases continue to be developed and supported.

The official word from IBM is that it definitely had the U2 products in mind with the acquisition. "U2 was included in the acquisition because it is a "strong and profitable business," said Susie Siegesmund, vice president and general manager of IBM's Data Management Division, UniVerse/UniData Databases & Tools. "IBM intends to continue selling, supporting and updating all Informix database products, including UniData and UniVerse. When this deal closes, our U2 customers will have the name, strength and financial stability of the largest information technology company in the world behind U2, which means they can be confident in the solidity of their investment in solutions built on U2."

What was the main motivation behind the purchase of Informix? IBM said the assets of Informix Software will bolster its battle with rival software maker Oracle Corp., once a big competitor of Informix's. Along with Oracle, IBM is one of the two biggest makers of software used to manage massive corporate business operations.

Continues on page 12

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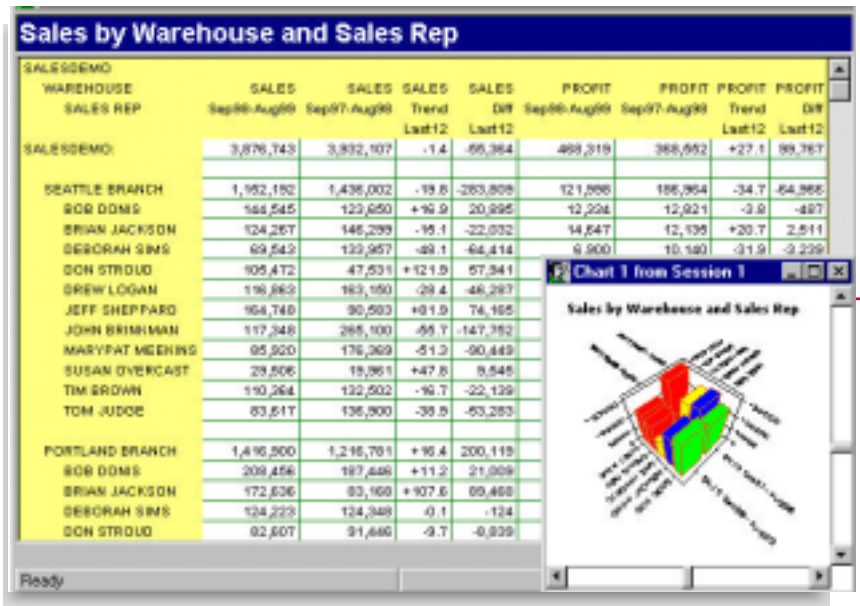

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IBM ACQUIRES INFORMIX

Continued from page 12

In the initial press release from IBM, the company said that once it completes the deal it will integrate Informix software into the IBM database system under general manager Janet Perna, combine Informix's sales team with IBM's sales force, and support existing Informix customers. This gave U2 users cause for thought about the future of the U2 databases specifically. IBM has responded to U2 customers' many questions with a letter from Perna and Siegesmund, assuring that the acquisition will have no effect on current development plans, which include releasing UniVerse 10.0 in Q4 of this year and UniData 6.0 in the first half of 2001.

"UniData and UniVerse are high-performance, cost-effective and easy to manage relational databases," the letter stated. "The U2 products form the key infrastructure for thousands of successful applications sold by our Value Added Resellers and are used by Global 2000 companies. This makes it very important technology that we intend to invest in for the foreseeable future.

"Many of you have been loyal customers since the days of VMARK and Unidata, and have been through the merger to become Ardent, and then the acquisition by Informix. Through each change we've continued to provide you with excellent support and have consistently delivered on our commitments to continue developing the U2 products and providing interfaces to the latest technology. As U2 becomes part of IBM you can rest assured that your investment in U2 technology will be supported by IBM."

Now what's going to happen with Ascential Software, the other half of Informix Corp.? Upon closing of the deal, which is expected to be in the third quarter of 2001, Informix Corp. will be renamed Ascential Software. Another source of concern to the MultiValue faction is the fact that Peter Gyenes, chairman and chief executive officer of Informix Corp., will stay with Ascential Software, as the database business is sold off to IBM. In the eyes of some, this dims their hopes that U2 will assume a prime position in the spotlight at IBM. However, Informix Software (the database company) personnel, many of whom are at Informix as a result of the acquisition of Ardent Software, is intact, which means that customers will not see a disruption in service and support, the company said.

Commenting on the acquisition, Gyenes stated: "The acquisition by IBM is good news for Informix Software's database customers, partners, employees and stockholders. IBM offers the global resources, investment protection, support and technology leadership our customers and partners need for the future, as well as exciting opportunities for our employees. This acquisition also extends the reach and relevance of key Informix technologies as they are evolved and integrated into future versions of IBM data management offerings."

Ascential Software said it expects proceeds from the sale of the database assets to be approximately $800 million after taxes. The company intends to apply the proceeds to fund the growth of Ascential Software as well as return a substantial portion of the available proceeds of the sale to stockholders.

"When completed, the transaction with IBM will establish Ascential Software, the leader in providing information asset management solutions, as a separate publicly traded company with substantial financial resources to achieve its goals," Gyenes said. "Our investors will then own a pure play vehicle to participate in one of the fastest growing sectors of the software industry."

"Ascential Software will begin its public life with approximately $1 billion in cash and no debt, a current annualized revenue run rate in excess of $130 million and strong products and partnerships, serving over 1700 customers worldwide."

Although questions and speculation abound in the MultiValue market right now, only time will tell. For the present, IBM has reassured customers that it will continue to sell, support and enhance the U2 database products, and has kept Informix Software's staff in place. In the short term, this is good news. Even though what's going to happen in the future is debatable, the general consensus is it'll be years before anything bad happens, if it happens at all. **is**

EDITOR'S NOTE: For more insight on IBM's acquisition of Informix, see Perspective by Bruce Johnson (page 8) and Gus Giobbi's From the Inside (page 6).

IBM and Ascential Form Alliance for DataStage and Media360

ASCENTIAL SOFTWARE and **IBM** have formed an alliance to develop and market business intelligence and digital asset management offerings for Information Asset Management. This partnership is aimed at bringing the advanced features of Ascential Software's products to IBM's strategic hardware and software platforms. The new relationship provides IBM with industry-leading products that complement its existing e-business solutions, while increasing the sales distribution capacity of Ascential Software.

According to IBM, the alliance will empower companies to better use business intelligence and media content management solutions to manage all their information assets across the organization. It will also allow companies to access relevant information assets inside and outside the corporation and re-purpose those assets for competitive economic advantage.

Ascential Software will integrate its DataStage product line with IBM's DB2 Warehouse Manager, giving customers the ability to integrate data from virtually any environment into a DB2-based data warehouse which fully leverages their information assets.

Ascential Software's media asset management offering, Media360, will also be part of an IBM preferred solution and will support IBM's AIX operating system and DB2 Universal Database. This will enable customers to manage an array of unstructured assets including video, audio, images, documents and Web pages, increasing operational efficiencies. IBM will market and resell these new solutions through its worldwide sales channel and Global Services organization.

MultiValue OPTIMIS

Responding to a Spectrum e-mail News Blast right after the announcement, the MultiValue market responds to the news that IBM intends to buy Informix Software:

"I will wait and see what IBM says specifically about UniData and UniVerse. If they say they will 'continue to support' U2, then I will get nervous. If they say they will 'sell and support' I'll feel better. If they say 'sell, support, and enhance' then I will feel good. Time will tell!"

—MARCIE MILLER

"The first thought that comes to mind is that this could be integrated into the current IBM commercials and give MV a real boost in recognition and counter the Oracle buzz. We are still the best-kept secret in the database world. I have

Pundits: Foretelling the Future

TS, DOOMSAYERS AND REALISTS

made some impact on people when I note that a system that was designed to work efficiently with slow CPUs and expensive memory is hardly obsolete when CPUs are faster and memory is cheap."

—JAMES H. WARD

"If nothing else, the name familiarity will be a good thing. Nobody knew what we were talking about when we said we had a PICK/UniData/Ardent/Informix database. But everyone will know what we mean when we say we have an IBM database. I am hopeful that with a more stable company, the U2 products will continue their progress."

—RON MERRELL

"U2 would represent <.01% of IBM's revenue. Can't see it getting much attention as it doesn't sell many of their servers either!! We'll see. I can see U2 being bought/given away by IBM."

—FRANCIS CARDEN

"...I think this is very good news for the MultiValue market."

—DANIEL R. HOEFFLIN

"This will be interesting. Did IBM buy Informix to get the Informix database only? Are they going to spin off UniData and UniVerse? The tale will be told I guess, but who can guess?"

—JIM HORN

"I for one am absolutely delighted with the announcement and I think it provides an even more outstanding opportunity for Raining Data..."

—VIC STANNISH

"My speculation is that IBM is going to spin the U2 products to a separate division and name it 'Pick Blue.'"

—BRIAN STONE

"Well, as you might expect, the announcement caught a lot of IBMers (like me) off guard this morning. Because of the SEC regulations, you can bet this was a well kept secret at both companies. All the Q&As, positioning statements, and conference calls will surely start to pour out soon. Time will tell how the Informix deal will unfold. The big focus around here these days is Linux. Are the MultiValue vendors doing any work in this arena? I would think many of the small and medium businesses would be interested in Linux because the price is right."

—IBM - NAME WITHHELD BY REQUEST

"Thanks for keeping us informed about important MV database events. Maybe IBM finally realizes that they would sell more systems by having a good MV database available. Maybe they also will find a way to flatten MV records better for ODBC access?"

—STEVE SHORT

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WHEN THE LIGHTS GO OUT POWER WITNESS SHINES!

TeleShaper Makes Mobile Commerce Simple for RMP

RMP Parts (RMP), one of the biggest Ford authorized auto parts distributors in the United States, was experiencing growth of 15 percent a year. Although the company was doing well, it recognized the fact that it was facing a more competitive environment in a changing market. What could it do to differentiate itself and keep its edge over the competition?

RMP opted to distinguish its services and to streamline operations with TeleShaper, from Orchid Systems of Wellesley, Mass. The challenge for Orchid Systems was to provide real-time data on core return credit amounts through wireless browsers in the field, accessing data which resides on a HP-9000 UNIX server. In addition, materials returned needed to be recorded by bin location in the truck and the actual credit printed or faxed.

The TeleShaper gateway allowed RMP to Web and wireless enable its UniData application without modifications. RMP's existing system didn't need to be altered, so deployment was immediate and inexpensive, said Bob Anthony, CEO of Orchid Systems.

What makes the TeleShaper gateway unique is the time frame in which it can be implemented and its "no muss, no fuss" approach. "Orchid's patented technology deploys business initiatives in just one-third of the time traditionally needed for integration of legacy systems," Anthony said. "Further, it requires zero alteration of existing systems so that operations continue unimpeded."

The TeleShaper gateway is a network-based device, similar to a bridge, router or firewall, which monitors the existing application data stream and transforms it for any new business initiative such as data exchange, Web or wireless integration.

Anthony gave an example of how TeleShaper works. "Consider an interaction between XML transaction sets from a Web form and a live order entry application running on a PICK or UNIX operating system," he explained. "TeleShaper is configured to make the connection to the host application, serve Web pages to the user, accept the variable data on the Web forms, navigate to relevant data entry points in the application, monitor host returns and present prompts back to the user related to those host responses."

According to Orchid Systems, one of the biggest challenges to customers when understanding new technology is understanding how they can apply it to their own situation. Traditionally, this is done with consultants, which can take thousands of dollars and literally months of time to draft an outline of how a solution fits the client's needs, the company said.

TeleModeling is a patented method of jump-starting a data integration project, defining and representing the solution system specification in a matter of days using Orchid's tool set. TeleModel engineers, who are selected for their experience in Best Practice business initiatives, can quickly apply their experience to a company's business process or data integration challenge. The TeleModel engineer works closely with the client over a period of days to understand the business problem, the network infrastructure and the client's preferred approach. This collaborative effort results in a Web-based representation of the solution for anyone in the client's team to review and approve.

So, as part of the solution for RMP, Orchid first developed a TeleModel to help managers visualize how the functions in RMP's back-office systems would appear through wireless browsers in the field. Upon approval of this design, Orchid was able to remotely configure the TeleShaper gateway to transform the interaction between RMP's existing systems and the browser displays. Field employees now routinely access "prices" for core returns from the field in real time and print credits before leaving the customer.

As a result of Orchid's implementation, RMP has a new competitive advantage: The ability to give customers real-time prices on core returns and to print credit documents on the spot. The competition, on the other hand, must wait over a month for credits to be valued and issued by the factory.

"Orchid was uniquely equipped to provide a turnkey solution for our company," said Jim Santoro, IT specialist at RMP. "Suddenly, in a fierce competitive environment, we have a solution that none of our competition has. It has made us stand apart in the customer service arena." **is**

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Atkin/Jones Takes a Back-to-Basics Approach to Service

Local Presence and Long-term Relationships Form the Basis of Quality Support

Now that the dot-com bubble has burst, it's back to basics when it comes to computer services, which means a local presence and building long-term relationships between the customer and the computer technician, according to Greg Atkin of Atkin/Jones Computer Service. For Atkin/Jones, the business of providing service and support for Value-Added Resellers (VARS) and end users has been that way since its founding in 1978.

"We've come back full circle to the value of focusing on services in a local region and the value of having technicians that know your business and can also manage other vendors," Atkin said. When service and support is provided by a local company, the customer develops an ongoing, long-term relationship with a technician who knows the customer's business and can meet their unique needs. This translates into higher quality support. Atkin/Jones provides service and support to the Southern California region, Orange County and Los Angeles.

Project management is also one of Atkin/Jones' fortes. "Sometimes companies need local and knowledgeable technicians that can also manage other vendors, such as cabling or phone companies. In other words, the customer may not be technically competent or wants to delegate the project management task," Atkin explained. "We have ongoing knowledge of their needs, and can build and roll out an infrastructure and support it."

These days, in which talented technical staff is hard to come by and the turnover rate is high, Atkin said, smaller companies are finding it hard to maintain their support personnel for many reasons, among them lack of growth and challenge. With its vast service and support offerings, Atkin/Jones can solve that problem for small to medium size companies—its target customer group. "Atkin/Jones is able to challenge technical people with a variety of projects and services," he said. "They get trained in cutting-edge areas pertaining to the MultiValue market and are properly salaried. We keep turnover to zero."

Services offered by Atkin/Jones include network design, development and planning; custom project management; outsource agreements; hardware service; information systems management service; and white box performance server sales and installation.

Atkin/Jones also markets Power Witness, which has been rejuvenated with the popularity of Linux. Power Witness is an automatic shutdown utility for MultiValue databases. It works with most UPS models to eliminate the risk of data loss by preventing an unsafe system halt when UPS batteries expire. Power Witness and its memory-resident software provide a reliable link between the CPU and UPS that automates system shutdown. ■

Power Witness prevents data loss for MultiValue-based systems by preventing unsafe system halts when UPS batteries expire.

Catalano Named New President of Via Systems

Robin White, Long-time Industry Leader, Retires

Robert Catalano has been selected as **Via Systems'** new president, replacing retiring president Robin White. Catalano takes the helm of Via Systems, a leading provider of middleware and database software products in the MultiValue (MV) market, after serving as director of Operations since joining the company in 1997.

"Bob is perfectly suited to take over the company," White said. "He was president of Synergy Systems, a MV VAR based in New

Annual jBASE Conference to Be Held in San Diego, June 6-8

The annual **jBASE User Conference 2001** will be held in sunny San Diego, Calif., from June 6 to June 8. The jBASE User Conference is a forum for jBASE users from around the world. Attendees will have the opportunity to attend technical sessions, participate in customer panels, share ideas with jBASE management, discuss product direction and help define the future.

SESSIONS

This year's Breakout Sessions include Business Issues & The Web, jBASE Web Builder, Python Integration, Moving to Release 4, Application and Performance Tuning, XML & jBASE, and detailed sessions about the upcoming Release 4 features. General conference addresses include jBASE Future — Near and Far by Jim Idle, and guest speaker Kim Goodall, vice chairman of TEMENOS NV, presenting business highlights and prospects.

LOCATION

The venue for this year's conference is the Catamaran Resort and Hotel, located on Mission Bay in San Diego, just steps away from the Pacific Ocean! Minutes from Sea World, the world famous San Diego Zoo and a wide range of other area attractions, the Catamaran Resort Hotel also offers many on-site amenities. For more information on the resort visit its Web site at **www.catamaranresort.com**.

ATTENDING

The fee for the conference is $395.00 per attendee. Accommodations are not included. You can register on line at user_conference_register.html or call 1 (877) 999-5227 (in the United States) or +1 (508) 628-4072.

York for 18 years before joining Via, where he has made enormous contributions. He has an excellent blend of management, technical and marketing skills."

Catalano commented: "Via Systems has built an enviable reputation as a leader in middleware and productivity software. Our goals for the future are to maintain this momentum, and aggressively sell our products throughout the MultiValue marketplace.

"Over the last three years, we have moved on from entirely focusing on ViaDuct as a dominant single product strategy to one that offers a suite of products and services to enhance the usability of all MV databases. The best example of this is the growth of our WebWizard products and consulting service, which is making it easier for our customers to do business over the Internet. We also see great opportunities for UniVision, which is an R83/AP/D3 compatible MV database available on UNIX, Linux, and Windows NT.

"Its versatility makes a good fit for VARs and for end users looking for an industry-standard-compatible MV database backed by the strength and financial resources of a fiscally sound company."

A well-known figure in the MV industry, White's history dates back to the late 1970s, when he joined Applied Digital Data Systems (ADDS). White was key in ADDS becoming one of the first licensed providers of the PICK Operating System, which was then customized to run on a new ADDS family of minicomputer systems.

Following these agreements with Pick Systems, ADDS formed a Systems Division in 1979 to focus on providing MV database systems through the VAR channel, and named White to lead the effort. Under his direction, the ADDS Systems Division, with its Mentor computer line, grew to become one of the most successful providers of PICK-based systems, a period that lasted until ADDS' owner, NCR, was purchased by AT&T in the early '90s. ■

Sunergos Software Premieres at Spectrum

Salt Lake City company **Sunergos Software, LLC.** will be making its first Spectrum appearance at the New England MultiValue Regional Conference in Waltham, Mass. Sunergos Software offers a portfolio of database administration and application development tools for the UniVerse and UniData (U2) databases.

"By taking full advantage of the UniObjects API, Sunergos products are very fast and require no host-based programs," said Bryan Thorell, CIO of Sunergos. "They work straight out of the box."

"We are very excited to attend the Spectrum shows," said CEO James Muir. "It gives us a chance to personally meet the rest of our brothers in the MultiValue community. Our reception into the MultiValue community has been a warm one. We're trying to facilitate interaction between all of the parties in the MultiValue world and — more importantly — growth."

To facilitate that growth and interaction, Sunergos launched its MV Central Web site last year. MV Central is a comprehensive resource for all things MultiValue, including news, programming tools, training resources, publications, user groups and many other aspects of the MultiValue world. You can visit MV Central at: http://www.sunergossoftware.com/mv_central.htm.

Sunergos will be taking additions to MV Central as well as handing out free evaluation versions of its database administration and application development tools at the New England Spectrum show in Boston. ■

Continues on page 18

Mark Pick Joins Raining Data

Raining Data announced that Mark Pick has joined the firm as director of Product Marketing. The son of Dick Pick, founder of Pick Systems, Mark is well known and highly regarded in the MultiValue community, having worked in the past at Pick Systems, General Automation, and Unidata.

"I'm delighted that Mark has chosen to join the Raining Data team, commented Rich Lauer, president of Raining Data. "He is obviously well known in the extended Pick/MultiValue community. More importantly, everyone who has worked with Mark has enormous regard for both his integrity and overall knowledge of our industry. I look forward to working closely with Mark as Raining Data continues to advance his father's original concepts to elegantly address the information needs of today's and tomorrow's enterprise."

Lauer further stated, "In his new role, Mark will be working closely with our customers as well as with the Raining Data engineering team to insure that our products and services are optimally addressing the needs of our market. This move builds upon Raining Data's strategy to leverage the best of its existing technologies to enhance the company's opportunities in the marketplace."

Mark Pick commented: "Raining Data has been rejuvenated by their new organization and commitment to the Pick/MultiValue community. This focus has enabled Raining Data to develop a long-overdue strategic direction that will drive the development and delivery of database and Web client technology that will meet the needs of our customers and the marketplace worldwide. I'm excited to be here, and looking forward to working with this great team of dedicated professionals." ■

Raining Data
Controlling IT, Simply.

NEWS MAKERS

Informix Software Acquires System Builder+ Manuscript from Precision Solutions

Agreement to Increase Availability of Technical Information to the System Builder Community

Prior to the announcement of IBM Corp.'s acquisition of Informix Software, it announced that it had acquired the manuscript and publication rights for the System Builder+ (SB+) Solutions technical reference manual from Precision Solutions Inc. of Longmont, Colo. The SB+ Solutions manual, written by Precision Solutions president and chief technologist Kevin King, is the leading technical reference manual for Informix's System Builder application development environment.

Continued from page 16

Informix System Builder is part of the UniData and UniVerse (U2) family of application development tools.

The SB+ Solutions technical reference manual is currently available in paperback print edition and CD ROM. With Informix Software's (IBM) procurement of the manual, the text is now available free of charge on the World Wide Web at www.informix.com / answers / english / docs / sbsolutions / index.htm.

"This is an evolutionary step for the manual," King said. "Informix Software has seen explosive growth in the SB+ market and is better equipped to provide the resources necessary to keep the online manual up to date as new releases and features are introduced into the System Builder product."

"We are pleased to have the rights to further expand on this comprehensive 'how-to' guide for SB+ developers," said Susie Siegesmund, vice president and general manager, UniData and UniVerse and Tools. "The SB+ community will benefit greatly from this invaluable resource. This investment demonstrates our ongoing commitment to the MultiValue database market and to further enhancing the System Builder development environment." ■

jBASE Software Moves to New Offices

Due to rapid expansion, **jBASE Software Ltd** has outgrown its Maxted Road offices and is moving to prestigious new premises.

THE NEW ADDRESS IS:

jBASE Software Ltd
Kodak House
Station Road
Hemel Hempstead
Hertfordshire HP1 1JY

The main switchboard number is: 01442 411800

Lee Burstein Joins jBASE Team

Lee Burstein, a frequent speaker at the International Spectrum conference and a contributor to *Spectrum* magazine, has accepted the position of director of Professional Services at jBASE Software. As president of Dynamic Systems, the only certified jBASE training company, Burstein conducted training sessions at jBASE sites around the world.

"I have always been a great fan of jBASE," Burstein said. "Each year we are seeing jBASE gain market share in great strides. I have been the source for jBASE training for the past two years. These activities have taken me around the world twice, back and forth to the U.K. almost on a monthly basis, as well as to a variety of other European countries. TEMENOS offices worldwide have also called on me to train their technical and customer support people, taking me to Thailand, Hong Kong and India. As the new jBASE director of Professional Services, I am looking forward to working with jBASE VARs and their customers to help train, migrate and integrate jBASE into their organizations." ■

Zumasys Selected as Premier Partner of Sitara Networks

Reseller Offers the Industry's First Integrated QoS Solution

Zumasys Inc., a national solutions integrator and a member of the Citrix Solutions Network, has gained Premier Partner status with Sitara Networks, the leading vendor of integrated QoS (Quality of Service) products. Sitara's QoSWorks caches http traffic and prioritizes different types of network traffic such as Telnet, Voice, Internet, Citrix ICA and FTP to improve overall network performance.

Companies with remote WAN locations can use QoSWorks to eliminate network congestion, slow application response, and "uncontrollable Web hogs." By addressing the inherent limitations of TCP/IP, QoSWorks optimizes overall network performance and ensures the availability of mission-critical applications.

"The nature of TCP/IP traffic is such that it will consume the maximum bandwidth available so throwing more speed at a problem is no longer a realistic option," said Paul Giobbi, president of Zumasys. "QoSWorks allows you to achieve faster response times and significant cost savings without having to pay for more bandwidth."

A QoSWorks unit installs in less than 15 minutes and comes with an easy-to-use Web interface. QoSWorks includes an integrated traffic management capability, called Accurate Traffic Management, that provides TCP rate shaping, class-based queuing, packet-size optimization and an algorithm for fair allocation of bandwidth by connection or user. A single QoSWorks system starts at $2,500.

"QoSWorks solves a real business computing problem and we are excited to represent this cutting-edge technology," Giobbi said. ■

PPI Provides Custom Programming for Palm Pilots

PPI announced that it now provides custom programming for Palm Pilots. These affordable devices are ideal for applications such as cycle counts, order picking, order entry, physical inventory, and barcode scanning. ■

Contact PPI at (800) 423-9158, ext.102 for more information.

Vermont Judicial Bureau Selects 1mage Software to Streamline Case Filing System

1mage Makes Case for Judicial Document Management

The State of Vermont Judicial Bureau (VJB), Montpelier, Vt., has selected the document imaging and management system from 1mage for an ambitious project that will start by scanning, indexing, and cross-referencing traffic tickets and associated case documents with the state's TRAFFIC Case Management System.

The digitized images will provide an integrated electronic case file. The 1MAGE system will allow the VJB to efficiently capture, index, view, and archive associated documents. Using GOVnet, the state's browser network, the system will give authorized personnel access to a secure electronic case file. Ultimately, 14 geographically dispersed counties will have the ability to share case documents, without adding expensive networking solutions, over the state's GOVnet network.

1mage Software is no newcomer to document management systems for government agencies. The company has installations in city, county, and state governments across the U.S. 1mage is currently installing a document management system at the District Clerk's office in Montgomery County, Conroe, Tex. Legal documents associated with criminal and civil cases, tax, registry, condemnation, and child support are being digitized to assist Montgomery County in managing the vast amount of paper associated with their case files. This project will also allow the county to generate revenue from an e-commerce billing system, as individuals pay to be able to access images online. ■

Maverick Linux First Choice for 1mage Software Customers

End Users Embrace Document Imaging Software on Linux

1mage Software reports that Linux is emerging as the operating system (O/S) of choice for its 1MAGE Document Management System customers. An evolving Linux O/S has gained acceptance to the point that commercial businesses are using it to run key operations.

1mage Software ported its products from UNIX to Linux in late 1999, recognizing that the Linux O/S had much to offer business users, but not realizing how quickly Linux would gain market acceptance. Since porting the document management software, the majority of 1MAGE end-user installations have been on servers running Red Hat Linux.

Companies using 1MAGE on Linux for their document imaging needs are diverse. Recent contracts have included: petroleum product trader Petro-Diamond (subsidiary of Mitsubishi Corp.); national distributor and manufacturer of packaging materials Golden State Container; distributors Sauder's Eggs and Franklin Truck Parts; and regional refiner and marketer of petroleum products, United Refining Company.

"Affordability, scalability and reliability are key factors in the success of offering document imaging on the Linux platform," stated David R. DeYoung, president of 1mage. "We decided to port our 1MAGE family of products to Linux in an effort to offer companies O/S choices other than UNIX or NT. We were pleasantly surprised to find that Linux would become the first choice for so many customers. Our end-users have overwhelmingly embraced our systems on the Red Hat Linux platform and our service department is extremely pleased with its reliability," DeYoung continued. ■

Adapt's *Methodology*: Paving the Proven Path to Success

When you deal with Adapt Software, a leading MultiValue software development and consulting firm, you quickly realize how serious the company is about providing the right solution and ensuring the success of every software development project. So serious, in fact, that the founder, George F. Graham, has honed the entire process-software design, development, implementation and post-implementation-into a science. It's Adapt Software's own pro-active "methodology" that drives the whole company's operation.

Using its methodology, the company has the ability to react to any need across technical platforms or environments. One of the system's requirements is that each consultant is certified and their skills are not only well-suited, but surpass the needs required for the assigned project, Graham said. In order to be proactive and ensure that the consultants are proficient, they are in an ongoing training program.

Adapt Software also employs its methodology in other ways, such as identifying vertical markets for which it can develop a better solution to a need or task than is currently available. In that capacity, Adapt Software is a vertical market vendor, but "only when it makes real sense in that market," Graham said. One of the company's current projects is a prime example of how Adapt Software utilized its methodology to identify a need and provide an entrance into a vertical market.

"Adapt Software is involved with developing a more effective and comprehensive solution for the needs of the housing authority market than the one that is currently available," Graham said. "The needs analysis done for a client in this market showed the current software being used could be modified to do a better job, but that would be the wrong answer to the current set of problems. This would be very expensive and still only offer a temporary fix that would continue to require further modifications as needs changed. Adapt Software's response, using the methodology approach, provides a solution through an application that, in the long run, is more cost-effective and completely empowers the customer to react to their extremely dynamic environment on an ongoing basis."

The "methodology" is such an integral part of Adapt Software's company culture, it has inspired a new product called Customer Relation Management (CRM). This new program was conceived from the desire to strategically automate the principles incorporated within the methodology. The scope of the software has been greatly increased to include many areas of customer relationship concepts that have not been utilized before, said Michael Anderson, Adapt Software's marketing director.

"This new approach to CRM is going to completely change a company's ability to react to the marketplace, the client's needs, and most important, the capability to effectively manage that information in a successful and profitable manner."

CRM will completely integrate areas such as help desk functions, source code controls, sales force automation, contact and call center management, and many others. It is also fully Web-enabled and rules-based driven. This provides the ability to "tailor fit" the program to the way each organization manages its customers. The overall goal of the new CRM product is to reduce the cost of sales and support and increase customer satisfaction and loyalty, Graham said.

Graham himself is recognized as a leading authority in SB+ training. Adapt Software has been conducting SB+ training seminars and will continue them on a regular basis. As testimony to the quality of the seminars, Informix Software (now IBM) recently purchased Adapt Software's complete SB+ training curriculum and is pursuing the development of a new training course for Adapt Software's SB+ GUI tool set.

The SB+ Training CD SET is one of the company's completely unique products. A highly specialized tool, it offers an "in the field resource" that is not meant to replace hands-on training, but serve as supplemental aid for the day-to-day user's questions. The CD SET contains 864 separate video clips that walk a user through all aspects of developing and maintaining applications written with SB+.

For the MultiValue File

Company: Adapt Software

Founded: 1997 by George F. Graham in Dallas, Texas

Headquarters: Flower Mound, Texas

Focus: Software development and consulting using Adapt Software's own "methodology" which incorporates a risk management approach to ensure success

Recent Developments: Developing a new Customer Relation Management (CRM) product designed to strategically automate the principles incorporated within the Adapt Software Methodology

Mission Statement: Our mission is to commit to every customer to provide a "proven path to success" through our knowledge and expertise. We pledge to our clients that our "methodology" and technical proficiency will provide the right solution for the task every time.

What Is the Essence of Adapt Software's Methodology?

1. A system of ordered events used to accomplish a defined goal

- Construct a needs analysis to determine the best solution for a customer's needs. Many times the analysis will indicate that the best solution to a need may be completely different than what was first considered.
- Construct a concept level approach to the problem
- Develop a "quality assurance plan" that emphasizes, "Let's do it once."

2. Goal Development

- Clearly define objectives
- Project and control costs for each phase of the project
- Document the information needed for each phase of the project in order to execute a "Total Transfer of Knowledge" upon completion of the project

3. Risk Management

- A "practice" that is pro-active vs. re-active
- Resolve problems before they occur
- Focuses on the task at hand, not the individual consultants

4. Cost and Time Control

- With the use of effective planning and development methods, project timing and cost are monitored on a step-by-step basis
- This method produces the ability to factor in the measurement of soft costs, i.e., potential gain in productivity measures the "return on investment"

5. Logical Flow-Chart Testing

- Follows program logic to assure all paths have been tested
- The use of "in development testing" helps control cost excesses
- If mid-course changes become necessary, they are made with a minimal loss of project time and additional expense

"For anyone who has had formal SB+ training, the CD SET serves as an excellent reference source for unique questions or tasks," Graham said. New employee users can use the CD SET as a tutorial with no additional fees since the initial cost of the set serves as a site license, which also includes free product updates for life.

No doubt, Adapt Software's keen focus on systematically ensuring the success of its projects is one of the key reasons it is recognized as one of the premier consulting firms in the MultiValue industry. "One of many reasons this is true is that in no way, shape, form or fashion is Adapt Software a 'body shop,'" Graham said. "Although individual consultant skills and personalities are extremely important, what makes Adapt Software unique is the burden of performance is placed not on the individual consultant's ability, but on their 'system of performance.'"

"Adapt Software's methodology incorporates a risk management approach that administrates checks and balances on a step-by-step basis. This infrastructure minimizes the impact that any one individual can have on a project. This approach lets methodology bear the burden of bringing a project in on time and on budget and, most important, on target."

Judging by Adapt Software's detailed expertise in defining the consulting and software development process, customers can only surmise that the company will apply the same level of concentration to the actual software development project. "Just as a doctor practices medicine, we practice consulting," Graham said. "We believe that just as a doctor trains and retrains for his profession, we are dedicated to staying current on the technologies required and using state-of-the-art systems to offer solutions that eliminate pain." **is**

FOR MORE INFORMATION, Adapt Software can be reached at (972) 691-1234 or e-mail Mike Anderson at manderson@adaptsoftware.com.

Adapt Software, Inc. introduces a revolutionary new knowledge source for developers and users of SB+. This CD series covers all aspects of application development and implementation using SB+. Over 850 "how-to" video clips are included on this 7 CD series which walk you through a hands on approach to issues and questions about developing with SB+. Capitalizing on it's experience as the **Industry leader in SB+ Educational and Consulting Methodologies**, Adapt provides a "real world" approach to giving you the information needed to utilize the Multivalued Market's leading Rapid Application Development tool. In addition, Adapt commits to keeping this product relevant to today's issues by providing topics that are covered in the "bleeding-edge" releases of SB+, as well as future CDs that will be kept current with the release level of the product.

This series includes the topics:

- SB+ Fundamentals
- SB+ Systems Administration
- SB+ Advanced Topics
- Case Study Analysis
- GUI Development
- SB+ HardCore Topics

SB+ Training CD Series

For pricing or more information on this product as well as our Consulting Practice Methodologies and other products available, please contact **Mike Anderson** at **(972) 691-1234**, or by email at manderson@adaptsoftware.com.

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- Educational Services

BY BRUCE JOHNSON

Diary of a Web Site

KEEPING THE FAITH

The subject of security as it relates to a Web site is a large and complex one. Or, to put it another way, there is no way that I could do it justice in just a couple of articles. So instead of tilting at that particular windmill, I thought I would settle for more breadth than depth. Even so, this subject will spill over into the next chapter in our ongoing diary.

At the lowest level, there are three main components to Web site security. We need to be able to authenticate a user in order to determine the level of access that can be provided. For sensitive information (credit card numbers, for example), we need to encrypt the data to make the simple act of theft insufficient to compromise our clients. Finally, we need to log data access and audit changes that are made to the data. We start with the issue of authentication.

Authentication

The premise behind authentication is as old as computing itself. Determine who the user is and provide only that information and functionality that the administrator has granted. But the mechanics of doing this securely and reliably over the Internet is not trivial. Consider the simplest case. A Web page displays user id and password text boxes. Once the data has been entered, the user clicks on a Submit button, transmitting the data over the Internet to the server. There it is compared against a database for validation. If successful, the user is given access to the desired functions.

The problem with this approach is twofold. First, the user id and password are sent from the user's machine to the server unencrypted (in 'plaintext'). In other words, a password of BRUCE will appear in exactly that form as the packets are transmitted from node to node along the Internet until it finally reaches its destination. And in the Internet, each node is a computer under the control of a party that is neither part of your company nor as interested in protecting your data as you are.

The second concern is a little subtler. Even though a valid user id and password has been provided, there is no certainty that the person providing the information is who they claim to be. While it may seem a little farfetched (and in reality, it is highly unlikely), it is possible for unsavory characters to impersonate a valid user. This is typically done through a technique called "spoofing." The bad guy creates TCP/IP packets that look like they come from a valid location. This is relatively straightforward as the originating IP address is part of each packet. The server, not knowing any differently, validates the login and grants access. This may not seem like a common scenario, but it is quite possible and the introduction of freely available hacking tools allow novices (so-called 'script kiddies') to accomplish results that formerly took a skilled hacker to achieve. And if you're trying to win the confidence of your customer base, it's better to cover all of the bases now

instead of spinning a problem later. Even Microsoft, with its vast array of resources, has problems dodging the public relations maelstrom caused by a hacked system.

But first things first: authentication. There are three main types of authentication over the Internet. Anonymous authentication is actually no authentication at all. This is the most common type and occurs any time you request a Web page without providing any information about yourself. Basic authentication prompts for a user id and password, which is then sent in plaintext over the Internet. Finally, digital certifications are used to establish a secure, encrypted channel between you and the server. The level of authentication that is required depends greatly on the purpose for your Web site. For a site that is static and serves as a brochure for your company, anonymous authentication is more than sufficient. If you are dealing with B2C or B2B transactions, you will want the security offered by certificates.

While any of these methods is possible regardless of your computing environment, they still require that some work be done on your server in order to achieve the desired level of security. Specifically the granting and/or denying of access rights based on the user's identity. If after all of this validation work is performed, you don't secure the files on your server, you deserve whatever fate befalls you. The problem is that a bad system administrator can wreck havoc for the rest of us as well. If you recall the distributed denial of service (DDOS) attacks that occurred in February 2000, the source for most of the attacking packets were systems that had not been properly hardened against intrusion. Hackers broke into vulnerable systems and installed software that, when instructed, flooded the target site with malformed requests. The hackers found over 1,000 systems that could be exploited this way and I strongly suspect that they didn't have to work very hard to do so.

The process of defining appropriate access levels is just one step in the hardening of your Web server. It is critical that you properly secure any system that is directly exposed to the Internet. Okay, it's not critical, just good business sense and a prophylactic for the rest of us. I can pretty much guarantee that the systems used in DDOS attacks were not hardened beforehand. Other steps that should be taken include the installation of the most recent security patches for your operat-

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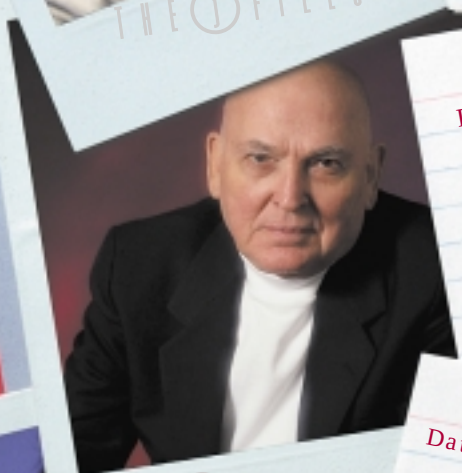

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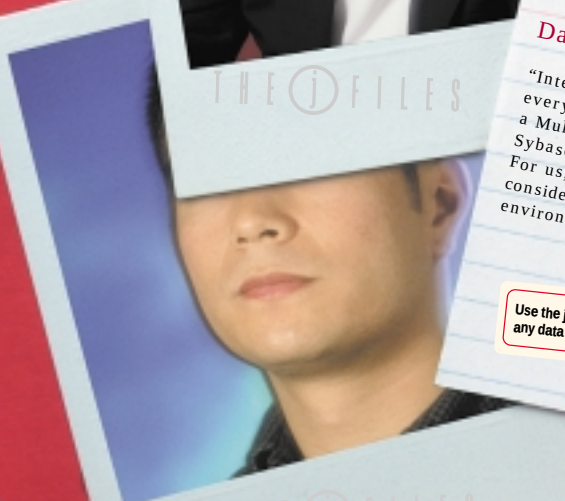

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It seems that more and more developers are exposing jBASE for what it is; an Ultra Flexible Option that is truly a Jack-of-all-trades and Master of them all!

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DEVELOP USING STATE-OF-THE-ART TOOLS.

jBASE is the launch point for connecting standard tools such as Excel, Word and Crystal Reports to the database. Once the connection is made, just access data or execute code directly from that industry-standard desktop application. jBASE OBjEX integrates seamlessly with Visual Basic for Applications (VBA). Plus, jBASE provides an OLE DB and an ODBC interface. Remember, to develop out-of-this-world applications, start with an out-of-this-world product: jBASE.

THE FREEDOM TO INTEGRATE WITH ALIEN DATABASES.

Another innovation worth investigating is the jEDI. The jBASE External Device Interface provides a common set of rules and syntax to access any database or file system. With it, you can make the move from a MultiValue database to a normalized RDBMS system like Sybase, Oracle or SQL Server without re-writing your applications. Its flexibility even extends to its support of databases using embedded SQL. So, if your environment demands a mixture of different applications and databases, jBASE provides you with a common access method to them. This means that, even when coexisting with other data environments, the investment in knowledge is maintained because the code will be completely compatible.

THE SHORTEST DISTANCE BETWEEN POINTS.

Now that the truth has been exposed about jBASE, doesn't it make sense to investigate further? To begin your mission to the exciting new world that awaits you with jBASE, call us in North America at +1 508 598-4100; in Europe +44 1442 235 515; in Australia +61 (2) 9955 2644; email info@jBASE.com or visit us at www.jbase.com. Once you make contact with us, you'll be well on your way to where you want to be today. And tomorrow.

Latest sighting

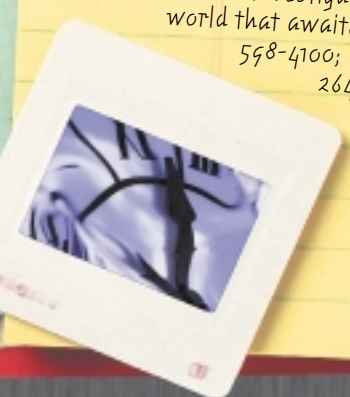
JAVA OBjEX

Java OBjEX is a recent addition to the jBASE product set. It defines BASIC and other important jBASE elements to the Java environment, and allows the interaction of jBASE with any Java technology. Java OBjEX's versatility allows it to be used with any Java integrated development environment such as Visual Age and WebSphere. Or use it to create Enterprise Java Beans. Plus, when it's used with a Java Application Server, Java OBjEX yields a robust scalable implementation of an application for the Web or any Distributed Environment.

Latest sighting

jBASE WEB BUILDER

jBASE Web Builder, the newest component of the jBASE product set, empowers developers to create industrial-strength business applications using Internet technology and their existing jBASE expertise. By providing a browser-based integrated development environment, jBASE Web Builder breaks new ground in the Web application builder arena. Simply put, it is the 'glue' that links widely available, open and standard technologies, ensuring that jBASE Web Builder applications can be deployed on all major technology platforms.



LASER/FAX Business Forms WITH YOUR MULTIVALUE DATA

While we all are looking at moving our screen-based MultiValue applications to a graphical environment, what about the other business communication media such as your printed forms and fax? We are going to look at how you can use the data from your MultiValue system to print highly graphic forms on plain paper and be able to fax those same forms.

BY ALAN GRUSKOFF
Performant Systems

This can be done with almost no third party software, relying on your existing laser printers and fax server software. The example environment is a Linux/Unix server and a Windows or Mac PC. The Linux/Unix fax server VSIfax works very well for this purpose, but any fax server system can be used. In concept, we are going to create a PCL output file, then send that file to a PCL printer or PCL aware fax server (like VSIfax).

The best examples of what we might want to accomplish are: 1) printing a company graphic logo on pages, and 2) printing invoices or other common business forms.

First - Design a Graphic

Use whatever Windows or Mac graphic design product you like, it doesn't really matter. Photoshop or Illustrator are fine. I like PhotoImpact 6 from Ulead Systems (www. ulead.com) in Torrance, Calif., because it will do both bitmaps and objects in one product. It's cheap, easy and has good file format options.

Design your image, say your logo or one page form exactly as you expect it to appear on a page. Print it to the target laser printer. That's how and where you can expect it to print as a merged form. Be aware that any color gets lost on a black and white laser printer and fax output. Try to keep the form design real simple and obvious, keep the type fonts large and legible also. Different laser printers or fax servers slightly change your output, so be aware of that.

Output the Graphic to a Print File

Now that you have your target image looking good on a 600 dots per inch (dpi) laser printer (or better) we can go to the next step. You need to capture the printed output of this image to a file. There are many ways to do this; I will cover the Windows-based format. You will need to create a new printer, see Printers/Add Printers/Local Printer, then select the target printer. The HP LaserJet 4 selection would be the universal default for this. Next, choose the port called FILE: and name this printer as something to do with file output.

Now, whenever you print from a Windows application, like your graphics editor, choose this specific printer. Windows will then ask you what filename you would like and even where to put it. A default file extension of .prn (Print File) is offered but does not have to be used. So now we have "printed" our image to a local file, let's say it is called: my_logo.prn, for example.

Chop Off Its Tail!

This is the secret trick — get out your secret hexadecimal decoder ring. If you lost your ring, then get ahold of some software that edits hexadecimal in your environment. This can be on your local PC or the Linux/Unix system where this file will wind up anyway. Get on cnet.com or zdnet.com to look for a Hex editor if needed. I like to use Hex Workshop from BreakPoint Software (www.bpsoft.com).

Your well-behaved printer driver does a polite and elegant thing at the end of the print function — it forces a page feed and resets the printer to its control panel defaults. We are going to take out these two features as we are considering the graphic output as part of a stream of data to build a printed page. We are saying that we are not done, not ready to print a page yet. Remember that laser printers print not dots or lines or characters, but pages. If it gets a full page or a form feed command — it kicks out a page.

We all (should) know that all printers respond to a Form Feed (FF) command, laser printers and even the fax servers all do this, so at least we have one common feature. A Form Feed is simply ASCII 12 or char(12) in BASIC or 0C in Hex. Open the print file in your Hex editor and go straight to the bottom. Our first task is to find the Form Feed at the bottom of the file; it will appear in Hex as 0C.

Once the 0C is located, highlight everything from the 0C to the end of the file. You should notice the Esc %-12345 which is the PCL 5 reset command. Older PCL languages used Esc "E" and that may be there as well, as this example shows. What is highlighted in Hex is:

0C 1B 45 1B 25 2D 31 32 33 34 35 58

which in ASCII is:

FF Esc E Esc % - 1 2 3 4 5 X

which in PCL means Form Feed and Reset.

Delete those highlighted characters and save your file.

Move It, Buddy

With our graphic image creation, print to file and Hex editing complete, move this file to your Linux/Unix server in a place where it can be easily read from. You might consider making a directory for these form images.

Do a little test. However you print from your server, try to print this image file: ex: lpr -P HPLJ /forms/my_logo.prn

If it prints, something is wrong! What? We want to send this image to load into the printer's "memory," but we are not done printing yet. You want to see the data light on the printer, but NOT kick out a page. Print any little text file to that same printer and you should see your logo with whatever text just underneath it. Almost there.

Merge Your Data

We are going to print completely outside of the data spooler and directly as printing a Linux/Unix (server) file. That certainly means we need to create a server file. This will differ between systems, but all of them allow you to write a file to the server O/S. This example uses D3 7.2.

```
** basic code example 1 **
** open a linux file **
include dm,bp,unix.h fcntl.h
linux.file = "/forms/my_pcl_data"
file.handle1= %open(linux.file,0$CREAT,438)
file.handle1= %open(linux.file,0$TRUNC+0$RDWR+0$APPEND)
if file.handle1 le 0 then
crt "Cannot open ":linux.file:" errno = ":system(0):
end
```

This code opens the Linux file /forms/my_pcl_data as Read/Write, Create or Truncate and Append.

From here we need to know some PCL commands; some are given as examples here. Let's start building an output file. Let's select a font, point to an X/Y position on the page and print something. Note your printer may respond to a dpi value of 300.

```
** basic code example 2 **
** PCL output **
esc = char(27) ;** Escape
font.universe.10 = esc:"(s1p10v0s0b4148T"
font.universe.10.bold = esc:"(s1p10v0s3b4148T"
font.universe.12 = esc:"(s1p12v0s0b4148T"
font.universe.12.bold = esc:"(s1p12v0s3b4148T"
**
dpi = 600 ;** dots per inch
X = oconv(1.175 * dpi,"md0") ;** 1.175 inches from the left
Y = oconv(3.350 * dpi,"md0") ;** 3.35 inches from the top
image = ""
image = image: esc:"*p":X:"X":esc:"*p":Y:"Y"
image = image: font.universe.10: "Hello Spectrum readers"
**
Y = oconv(4.000 * dpi,"md0") ;** 4 inches from the top
image = image: esc:"*p":X:"X":esc:"*p":Y:"Y"
image = image: font.universe.12.bold: "How you doing?"
```

There are a whole world of PCL language commands at your disposal. Your printer test page or manual will indicate how to select fonts as shown in examples here. You will likely need a good book to do much more, see the references at the end of the article as well as addresses of sample code I am supplying.

Wrap It Up, I'll Take It!

When our text and optional boxes, lines and shading (thank you, PCL manual) are completed, write the file out, merge it and print it.

```
** basic code example 3 **
** combine the graphic & the user data into one temporary PCL object **
**
** Now! Form Feed and Reset
image = image: char(12): esc:"E":esc:"%-12345X";** PCL 5 exit strings
chars = len(image) ; ** get the number of characters to write
val = %write(file.handle1,image,chars)
val = %close(file.handle1)
**
** give the output file a name
pcl.page = "/forms/my_form.pcl"
**
** mush together the logo file and PCL file into one new file
execute "!cat /forms/my_logo.prn ":linux.file:" > ":pcl.page
**
** print it
execute "!lpr /forms/": pcl.page
**
** delete the temp file, optionally
execute "!rm ":pcl.page
```

Hey! It Looks Pretty Good!

Note that your server spooling software must be able to handle a decent sized graphic image. I have installed the LPRng (line printer next generation) from Astart in San Diego (www.astart.com) for industrial strength spooler usage. It needs to have a Filter Binary option such as: execute "!lpr -Fl /forms/": pcl.page

That's enough for one day. See www.performantsystem.com/pcl.forms for more extensive example code or write alan@performantsystems.com. **is**

Alan Gruskoff is a software designer at Performant Systems in Pasadena, Calif., providing MultiValue database, Linux and Web design services. He can be contacted at (626) 792-9060.

REFERENCE TEXT

Hewlett-Packard PCL 5 Printer Language Technical Reference Manual, Part 5961-0509

Developer's Guide to HP Printers (Norman E. Smith) WordWare Publishing ISBN 1-55622-603-9

PDA Program Design

BY NATHAN RECTOR

In this issue, we are again looking at PDAs, but hopefully for those people that have been following this series of articles, this installment will answer some of the last remaining questions regarding PDAs.

There are several things to take into account when designing a program for the PDA:

1. PDA hardware and size
2. User and environment
3. Amount of data required
4. Processing power

Let's start with the first item: PDA hardware and size.

I have talked with many people who want to replace their traditional laptops with PDAs. Their general hope is to gain productivity since the PDA is easier to carry, and to get more of their workforce using them to run their business.

PDAs have several limitations (even with Windows CE and PalmPC devices) that make this idea a challenge. The first major challenge is the screen size.

The screen size of the typical PDA (PalmPilot and PalmPC) is 2 inches by 2 inches. That doesn't leave a lot of room to display information. That would be 32 characters by 11 rows, in a decent size font for use in office environments. I have found that 20 characters by 8 rows are best for non-office environments.

20 Chars by 8 rows

32 Chars by 11 rows

The second physical limitation is the lack of a keyboard. Most PDAs have no real productive way to enter alphanumeric data. Sure, there is Graffiti and other handwriting recognition software, but these programs can actually cause more problems than they are worth. People can still type faster than they can write, and if the user has to learn to write a specific way, this may not go over very well. Especially if you plan on requiring this information to be entered by production personnel

These two limitations alone limit the type of programs that work well on PDAs. For example, PDAs would probably not work well in the accounting department for data entry of spreadsheets due to lack of screen size and keyboard, or your sales force for intense e-mail use due to the lack of a keyboard.

Note: If you didn't know, there are speadsheet programs and e-mail clients available for PDAs if you would like to give them a try.

Don't get me wrong. These limitations should not keep you from using PDAs. There are still many other applications that PDAs are really good devices for, as long as you design your programs with the physical limitations in mind.

The screen limitation is the easiest to deal with. Only display the information that is required. We have been doing this on "green screens" for years. The keyboard limitation is a little more of a challenge. The type of applications you are creating (Inquiry or Update) will dictate your input options.

For Data Entry programs, use buttons, drop-down lists, and radio buttons as much as possible for data capture. Avoid alphanumeric

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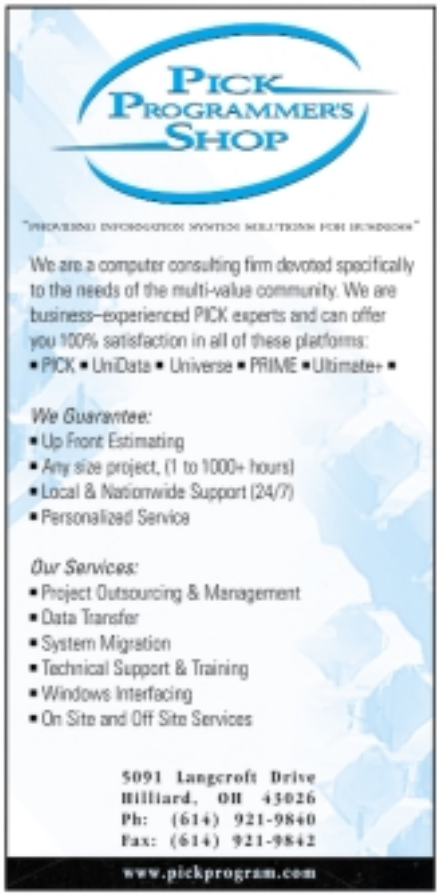

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PDA Program Design

Continued from page 28

data entry, or text fields, as much as possible since it will be time consuming for the user, but there will be applications where you just won't be able to get away from it.

For Inquiry programs, use buttons and scroll bars as much as possible for viewing or accessing information. Get as much information on the screen without overloading it. Since the screen is so small, it is really easy to overload the screen and make it hard for your users to find the information they are looking for.

Contrary to what I recommend for windows programming design, get the most use out of screen scrolling. The Palm has a really easy-to-use scroll button which makes scroll screens quick and productive.

The second item is to design the PDA program for the user and environment. Most of the time programs have to be designed for the environment more than for the user, but there are times when this is one and the same. So, ask yourself where is this device going to be used and who is going to use it? On the production floor, where the user doesn't have much time to spend entering data or is poorly educated in computer use, or is the PDA going to be used by a salesperson where it needs to be able to display as much information as possible.

Another question to think about is do you want the user to update the data, or is this just for inquiry purposes. If you want them to update the information, again think of the environment. A stylus will get lost out in the field and on the production floor. Greasy fingers or gloved hands will need to enter information as well. Then there is the bright light of the production floors or the dim light of the warehouses, which will dictate the size of the font and the amount of information that can be displayed.

The next item to think about when designing PDA programs is the amount of stored data required on the PDA to make it functional for your applications. PDAs have a finite amount of memory that has to hold your data as well as your programs, so you don't want to fill it with needless data. For example, if you are uploading a contact list, all you need is the basic account information like phone numbers and such. You do not need to include special flags that only your programs use, or credit history notes used only by the accounting department.

The other thing to keep in mind is that you will more than likely have to sync the PDA's database back to your own database. The more data you have to sync the longer and more complex the syncing will be (See the "Concepts of Syncing" article, *Spectrum* magazine, Mar/Apr 2001.)

The last bit to think about is that PDAs are not Pentium computers. They don't have the same processing speed or power of a normal computer, so make sure the complexity of your programs doesn't require the power and speed of a Pentium to generate the display or end results.

I hope this article has been helpful and did not scare you away from PDA programming. Before starting a project, just make sure you address the points I've discussed or you may spend hours and hours of time going the wrong direction.

Now that I've covered a lot of general groundwork, I would like to solicit feedback from my readers. Please send me questions you may have that I have not answered, and we'll cover that in my next article if possible. **is**

***NATHAN RECTOR** is president of Natec Systems, a firm specializing in custom programming and system administration for D3/AP/R83 environments. He can be reached at (707) 443-6716; e-mail: nrector@natecsystems.com; www.natecsystems.com.*

Ward Off Internet LEGAL WOES

BY REID GOLDSBOROUGH

As the Internet becomes ever more integrated into the economy, the old club atmosphere has given way to a more adversarial environment. While some disputes are still resolved by discussion and consensus, you're more and more likely to see someone call in the lawyers.

Legal battles are nothing new to the larger computer world. Some computer companies in fact have a not-so-stellar reputation for fighting their competitive battles as much in the courts as the marketplace.

Apple, for instance, has long sued any company that it felt might encroach on its turf by selling products that were too similar to its own. Recently Microsoft got egg on its face when it was revealed that it had threatened legal action against an independent lab for trying to publish test results showing that one of Microsoft's programs ran considerably faster on Windows NT 4.0 than on the newer and supposedly faster Windows 2000.

Now the Internet is opening up new opportunities for legal attacks. Whether you use the Internet for business or home use, or both, to avoid getting hauled into court, heed some commonsense advice.

Libel. Anybody who has participated in online discussions for any period of time has undoubtedly seen libel accusations bandied about. Very little of this ever goes anywhere, says Frederic M. Wilf, an attorney with Morgan Lewis & Bockius in Philadelphia who has extensive experience with the online world.

Continues on page 45

Learning MultiValue Basic Programming in a Visual Basic World

In recent years, the MultiValue community has been grappling with retraining issues. After years in the trenches as BASIC programmers, developers need to learn more modern application development languages. Many workshops and articles have addressed themes like, "If you know MultiValue-style BASIC, this is what you need to do to learn Visual Basic, Active Server Page Scripting," and so on.

BY STEVE BACKMAN
President, Database Designs Associates Inc.

We recently found ourselves in the opposite situation. We had the need and the opportunity to train a group of Windows database developers the ins and outs of our shopworn, but tried-and-true, character-based programming environment, and learned some perhaps useful lessons from the process.

In the heyday of Pick-style software application development in the late '70s and '80s, the typical programmer learned on the front lines, without formal academic or mainstream computing background. Even today, programmers more likely emerge from the ranks of database administrators. We still see a well-worn path from mastering the MultiValue retrieval language as a survival mechanism, figuring out the editor and learning to write batch procedure files (PROCs) to save time, and over time starting to dabble in BASIC coding to gain independence.

Maintenance and enhancement of long-standing MultiValue software still requires lots of this sort of work. But typically, including in our own work, complicated data entry and processing systems get written in modern programming languages or integrated development environments. At this point, many consulting groups, including our own, try to limit their work at the BASIC level to creating stored procedures or processing functions to support business rules and reporting.

We like to think in terms of leveraging existing, working morsels of tried and true MultiValue code against entirely new applications. In this way, development teams can combine focused Windows and Web-oriented developers with savvy MultiValue database programming experts. Sometimes, however, the Windows programmers want to or have to learn more about how the other half lives.

In our recent experience, we learned some lessons in adapting a typical MultiValue programming outline. Here are five tips for learning MultiValue BASIC programming on your own or teaching it to new programmers who are coming from a modern database development-oriented programming language. While the article title refers to Visual Basic, it applies equally well to those with Delphi, PowerBuilder or other business application oriented programming languages.

EMPHASIZE THE POSITIVE

Despite the ancient feel to the development tools, the MultiValue style BASIC language gives some typical programming constructs fairly neat twists.

For example, every programming language has some kind of CASE statement to tidily organize optional processing steps based on a list of values. In Visual Basic, however, you only evaluate one variable per CASE structure. In a typical Select Case statement block, you might have:

```
Select Case myvariable
Case 1
   ...handle this case
Case 2
   ...handle next case
Case Else
   ...handle everything else
End Select
```

Useful, but not totally flexible. In the real world, options may not work themselves out to values of a single variable. In a MultiValue style CASE statement block, you can evaluate just one variable or you can line up choices based on more than one, or combinations of variable values. So you might have:

```
BEGIN CASE
CASE myvariable = 1
   ...handle this case
CASE (myvariable = 2 AND mystatus = "A")
   ...handle this combination of factors
```

```
CASE myvariable = 2
   ...handle just this case
CASE 1
   ...handle everything else
END CASE
```

We won't provide a lot of code snippets in this article, but the comparison here illustrates an arguable point for a class of experienced developers. Where MultiValue BASIC language syntax varies from the traditional, it offers flexibility that better fits the everyday complexity (one might say, messiness) or real-world business application development.

Other MultiValue style controls structures offer similar flexibility. The LOOP.UNTIL/WHILE.REPEAT structure allows statements before and after the evaluation conditions. Similarly, the FOR.NEXT loop structure provides the capability to mix in a WHILE or UNTIL clause. You can say, do the following procedure from 1 to 100 times, UNTIL a certain variable value results in the middle.

In Visual Basic, you can accomplish similar objectives using the EXIT FOR and EXIT DO statements with an IF clause. But these feel like messy GOTO escape clauses in the middle of a code structure. Having the option of putting the UNTIL / WHILE clause right in the FOR..NEXT definition seems more elegant and more attuned to the complex combination of choices business applications have to model.

Do these little niceties outweigh the archaic, command line user interface? Not really. But they may help the experienced database developer understand and appreciate the motivation behind the more important unique features of the development environment. Instead of just discussing the differences as syntax variations, it's worth considering where the usage differences might help someone working through a real problem.

LEAVE ROOM FOR REFLECTION ON DESIGN

When dealing with more fundamental issues, such as the use of untyped variables, it becomes even more important to weigh the dangers the inexperienced programmer may fall into against the advantages to business applications. While now-familiar Web scripting languages don't required typed variables, this appears pretty strange for a full development language.

As a first approximation, you might consider all BASIC variables as "variant" types. If a database table has ID fields mixing numbers and strings (such as BOS*123), you can use string functions to extract the string value of "123" and then perform arithmetic on it. For example, you might need to increment the numeric portion by one to get the next sequence number and then reassemble it with the prefixed code to produce the next record ID. While other languages certainly have functions to convert numeric strings to actual numbers, that's different than just letting the system convert things back and forth as the program's usage changes.

Since deep down, the system stores all data as variable length strings, programming code might as well start by assigning all data values as strings.

At the same time, every conversion of a number to a string or string to a number costs something. At run time, the variables do get treated as numeric or string at any given point. Each time you ask the run time engine to seamlessly convert between the two, you pay some marginal performance penalty.

Here, as in so many other places in writing MultiValue programming code, the programmer can chose to follow good programming conventions or not. He or she can use and reuse X, Y and Z, or myvariable1, myvariable2, and myvariable3 for any local, temporary tasks, whether string or numeric. But the professional programmer on his or her own can define and even name variables according to a formal design scheme and stick by it to produce good, clean code. Without typing and dimension statements, the design environment (i.e., the line editor or "moral equivalent") won't enforce any rules, but you can still follow them.

FOCUS ON THE DATA MODEL FIRST

Developers new to MultiValue programming may already understand the concept of multivalues without really understanding what the data actually looks like. But without first spending time on the nitty gritty details of MultiValue data storage, distinguishing such things as traditional arrays from dynamic arrays won't make that much sense.

Data warehousing, OLAP (online analytical processing) and other large-scale reporting requirements have forced mainstream relational database vendors to lurch in the MultiValue direction. Today's administrator of SQL Server, Oracle or other relational database probably will bring to MultiValue database development some appreciation of terms like multi-dimensional or nested tables. A client may have already set up ODBC tables to map out MultiValue ORDERS into ORDER_ MASTER and ORDER_DETAILS or some such thing.

Understanding these things as business entities doesn't properly prepare the programmer for working with these data structures. Creating a table with multi-values from scratch using the line editor sure isn't fun and may not seem essential to a BASIC programming class. But it's important to spend enough time looking at and creating tables with values and sub-values. You have to actually see and "touch" the data as variable length strings with embedded system delimiters to appreciate the various programming options available.

For example, coming from another language, functions like INDEX or the string extraction function ("[n,m]") make immediate sense. These permit a section of code to locate a certain value and extract a sub-

Continues on page 38

NEW PRODUCTS

New Messenger **Comes to Windows:** **MacPopUp** works with Macintosh and UNIX

Kanex Group Inc. has unveiled an update of its flagship application MacPopUp 2.5b. MacPopUp allows Windows users to exchange instant messages with other users on any local area network. Users can easily communicate with anyone on corporate, school and home networks. Its interface is simple but amazingly effective, the company said. And it works with Macintosh and UNIX computers too.

The new version is even more effective in networks with a large number of users. They can now:

- Send simultaneous messages to multiple users or multiple workgroups
- Be members of multiple workgroups
- Print received messages

MacPopUp 2.5b has all the functions of previous versions:

MacPopUp features the advanced technology of text-to-speech so MacPopUp can be left working in the background and all incoming messages can be listened to while the user continues to work. MacPopUp also utilizes Speech Recognition software and accepts more than 25 speech commands. Incoming messages can also be correctly displayed in different languages.

In today's fast-paced technological world, time is at a premium. MacPopUp is faster and more efficient than e-mail, more reliable than the telephone and more discreet than shouting across the room, Kanex Group said. Message delivery is guaranteed. No special server is required; installation is instant and the program is easy to run.

The preview beta version of the MacPopUp 2.5 is available at: www.macpopup.com/ downloadb.html. The final version is scheduled for release in May 2001.

Sync **MultiValue Data** With a PalmPilot

Natec Systems has announced the release of the mvConduit for the PalmPilot Version 1.0. The mvConduit for the PalmPilot is a Palm Hotsync conduit used to sync data from a MultiValue database with the Palm Address Book, Date Book, Memo Pad, and/or To Do List. The mvConduit for PalmPilot does not rely on ODBC or ADO. The mvConduit will call a MultiValue BASIC program when syncing the data between the Palm and the MultiValue database.

A 30-day demo version can be downloaded from www.natecsystems.com; contact nrector@natecsystems.com for more information.

Natec Systems has been providing MultiValue solutions for the Windows and PDA environment since 1990. The president of Natec Systems, Nathan Rector, is a well-known speaker at the International Spectrum conferences and author of "Tech Tips" in *International Spectrum* magazine.

Teltech.com **Reduces Time Spent** on Internet Searches

Is there a way for businesses to find the needle of knowledge they need in the growing Internet haystack of information? Sopheon/Teltech has developed a Web-based research portal to help businesses quickly find the information they need on the Internet.

The Internet contains a wealth of information — probably exactly what you're looking for, if you've got unlimited time to search for it. The problem for businesses is that they don't have unlimited time. They find themselves inching their way through this vast resource with blunt-nosed tools designed mainly for relatively broad and leisurely consumer or academic use. Moreover, in a classic case of "too much of a good thing," the information overload is growing daily — 20 million Web sites now, two billion pages of content.

To solve this problem, Sopheon/Teltech has created Teltech.com, which combines the reach of the Internet with smart software, human knowledge sources and customized content and services. The initial Teltech.com offering has been shown to reduce unproductive Internet search time by more than 50 percent. And now, with a year of client-usage data and feedback, Sopheon has introduced a faster version that can be customized for a company.

Designed to provide one-stop access to technology, market and competitive intelligence, Teltech.com's features include:

◆ Do-It-Yourself research, providing organized options for accessing business and technical content in both the public Internet and top fee-based databases.

◆ Sopheon-assisted research, connecting researchers with top experts in more than 33,000 areas of science, technology and business

◆ Alert services, delivering news, recently published literature, patents and Web information

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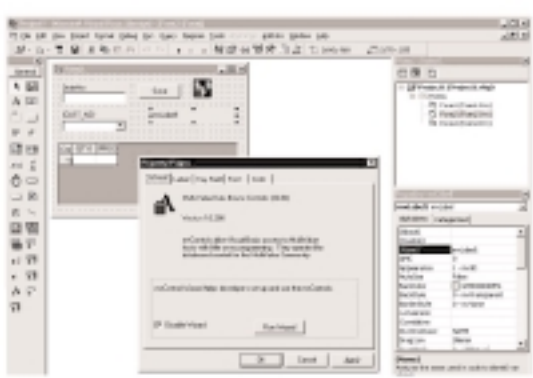

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Frustrated, you instead start paying your bills. Check after check after check. Your hand cramps, so you let it rest a bit and you wonder why checks are still necessary. After all, if your paycheck was deposited directly to your bank account, why can't you pay someone else automatically?

For both scenarios, the answer has changed. You can do online payments with many businesses. Many banks and credit unions offer easy payments to your Payees. In addition to those benefits come responsibilities; your Web site may be expected to do online payments as well.

Now, first and foremost, I offer a disclaimer. Not all consumers are gung ho about online payment schemes. E-cash does not yet seem ready for the big league. In fact, the electronic payment world suffered a big dot-com casualty in CyberCash, which filed for bankruptcy this past spring.

Consumers still rightfully fear e-cash because of the risks to personal information, to computing security and of outright fraud. And money is based on the concept of trust in the value of what money represents.

Moreover, there just seems to be no end to the number of payment options available online; CyberCash is just one of them. We thought it was bad enough to choose between MasterCard, Visa, Diner's Club, Discover, and American Express, but today's online payment options are entirely more complex, fragmented, and non-standardized. There's still Amex's Blue Card, Microsoft's Password, Yahoo Wallet, Beenz, PayPal, and Flooz.

So most of us still depend on credit cards and checks to manage our payment schemes. Wouldn't it be great to have a single online account that works with any of your online vendors? It would be nice to access that account using the telephone, PDA, cell phone, or even a plastic credit/debit card. Right now, the only thing that comes close are those credit cards. And it's unlikely to change until the Wal-Marts, Home Depots, and banks buy into standardized online cash methods.

PayPal still remains a highly viable payment scheme. It actually incorporates much of the credit card and check payment mechanism for consumers into its payment methods. For businesses, credit card validation and debit card payments can also be handled by PayPal.

Although one would think that PayPal could go the way of other dot com disasters, it's actually a popular choice at the one big New Economy company that makes money and hasn't disappeared off of Nasdaq: e-Bay. Over a quarter of e-Bay's sales are handled by PayPal. With acceptance like that, PayPal has been making inroads in many areas of retail payment. Besides, its method of using e-mail

makes it an easy way to make out checks to people you know, much less making checks to only vendors.

An interesting alternative to PayPal is AOL QuickCash, which is actually the branded name of Citigroup's offering. AOL QuickCash might make inroads in this marketplace when one considers the huge influence of AOL on consumer behavior. It copies PayPal's approaches. I doubt it will be as influential as PayPal, at least under the current pricing mechanism and with its current inconveniences, but I rarely bet against AOL.

In contrast to one-off payment approaches, Paytrust and Paymybills allow consolidated payments. By subscribing to their bill paying systems, they handle payments for you automatically. You just need to decide whether you prefer a larger monthly subscription fee with 30 or so free transactions, or you'd rather have a lower monthly fee but no transactions. In other words, they act like your checking accounts. Of course, many banks, such as Wells Fargo, offer these services as part of their offerings, but then you won't be dependent on any one bank for your bill management.

But some of these solutions seem like overkill for many people. Many want the ease, simplicity, and security that they get with their payroll direct deposits. Unlike direct deposit, 4 million paychecks were stolen or lost in 1999 and maybe 2,000 fraudulent checks are cashed each day. Direct deposit, used by half of all employees and 91 percent of federal government workers, is streamlined and uncomplicated.

Likewise, huge financial companies are simplifying simple payments for home financing, such as mortgages. Money can be transferred electronically and even automatically every month. These services are some of the most popular for consumers because they are simple, limit that nuisance factor, and ensure prompt bill payments.

So, given the current consumer resentment towards the complex and the non-standard, what should a business do to improve their payment options?

At this point, you really have just one option: take credit card payments. Now, not all consumers will accept this, and maybe something like PayPal or AOL QuickCash can supplement those transactions, but for most, credit card payments have become more comfortable and acceptable.

Next month, we'll talk about some of those credit card payment options available to you. Stay tuned. **is**

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string. The FIELD function adds an often-missing flexibility of extracting "words" of text from longer strings based on any delimiter the code specifies. Once you know you want it, most MultiValue-world programmers migrating to newer application languages probably seek out or write their own equivalent function to FIELD when shifting to a modern programming language.

Here's a FIELD function for Visual Basic or Office VBA, which if nothing else, shows the bit of effort required to recapture a function so basic it's taken for granted in BASIC:

```
Public Function GetField(strText As String, strSearchFor As String, intInstance As Integer) As String
' Purpose : returns word in delimited string
' Inputs : strText - string to search
' strSearchFor - string or character delimiter to search for
' intInstance - number of delimiters to skip forward to
' Output: word in intInstance'th position
' Usage: strWord GetField("abc|def|ghi","|",2) returns def
' Author: Steven A Backman , rev. 4/2001
'
Dim intIndx As Integer
Dim intStartPos As Integer
Dim intEndPos As Integer
Dim strTmp As String
Dim strResult As String


On Error GoTo Err_GetField

strResult = "" ' holds output

intIndx = 1
If intInstance <= 0 Then
GoTo Exit_GetField
End If

intStartPos = 1

If intInstance > 1 Then
For intIndx = 1 To intInstance - 1
intStartPos = InStr(intStartPos, strText, strSearchFor)
If intStartPos = 0 Then
Exit For
Else
intStartPos = intStartPos + Len(strSearchFor)
End If
Next intIndx
End If
If intStartPos > 0 Then
intEndPos = InStr(intStartPos, strText, strSearchFor) - intStartPos
If intEndPos < 0 Then
intEndPos = 9999
End If
strResult = Mid(strText, intStartPos, intEndPos)
End If

Exit_GetField:
GetField = strResult
Exit Function

Err_GetField:
MsgBox Err.Number & " " & Err.Description
Resume Exit_GetField

End Function
```

On the other hand, coming from a typical modern programming language environment, the average person might gravitate toward sticking with the generic string extraction functions in MultiValue BASIC for dealing with multivalues rather than poke around with dynamic array functions. A new MultiValue programmer can easily miss the whole point of dynamic arrays with their INSERT, DELETE, LOCATE, EXTRACT operations. Separated from the data model, dynamic arrays just look like regular arrays without fixed dimensions but with a performance penalty.

Working with MultiValue data week in and week out, viewing data in the editor or querying it with the command line retrieval language prepares a database administrator or analyst to intuitively grasp the programming tools available while traditional programming experience might encourage confusion. As a programmer gains experience working with actual data, dynamic arrays, in conjunction with standard arrays, will begin to show their advantage over the generic string extraction functions. The programmer will develop methods that reflect the essential virtue (and low-level optimizations) of the data model.

MAKE THE RIGHT ANALOGIES

Long-time developers often say, if you know one programming language, you can learn any other. That makes some sense, but, like similar claims about learning spoken language, doesn't tell the whole story.

For example, we have all heard the assertion that, if you know MultiValue BASIC, you can easily learn Visual Basic, because they're both based on the original Dartmouth BASIC of the early '70s. Leaving aside the validity of this statement, consider the opposite one: If you know Visual Basic, you can pick up (no pun intended) MultiValue BASIC.

Comparing the language constructs, as we have done here, only tells part of the story. The Windows database developer taking a look at the MultiValue database environment may find it quite unnerving at first. For a younger generation of developers used to Microsoft, Borland, PowerBuilder or other programming environments, with their visual code debuggers, full screen code editors, graphical table design and query wizards, the native MultiValue terminal sessions, command line, and text editor programming tools require some getting used to.

Few younger programmers today will raise their hands when asked if they have programmed with MS-DOS or GW BASIC on a PC, so it's hard to see the point to making an analogy anymore between MultiValue BASIC and those BASICs. On the other hand, some database developers learning MultiValue may feel a bit at home from working with Fox Pro or Paradox for DOS or from older UNIX-based database systems. It's definitely worth comparing the MultiValue database development experience to those realms.

The MultiValue marketplace has long had 4GL development tools such as System Builder. These provide menu-driven, screen-oriented tools, but learning one of these doesn't solve the problem of learning the inherent programming language. AccuSoft Enterprises has contributed one small tool that should find its way into many MultiValue shops over the next year or so: the new release of AccuTerm includes an easy-to-use full screen editor with some of the same tools Windows-based programming editors have. (VantagePoint Software also bundles this editor with its Visual Basic tool set.)

SUPPLEMENT THE NATIVE ENVIRONMENT WITH SELECTED TOOLS

For new MultiValue programmers, especially those coming of age since Windows 95, the disconnect may intensify when teaching and learning programming for data access.

At one level, you can compare the methods for iterating through a set of MultiValue records with a SQL-based recordset. Typically, in MultiValue BASIC code, you:

Issue a select statement (EXECUTE "SELECT." CAPTURING MYDATA.LIST,

Connect the results to a table (SELECT MYDATA.LIST TO MYDATA.FILE)

loop through the data until you reach the end (LOOP. READNEXT ID FROM MYDATA.LIST ELSE .REPEAT).

A couple differences stand out, however. First, an alleged virtue of true relational databases rests in the protection of all raw data from access except through SQL. You retrieve, update, and insert data based on SQL, even when programmed in code.

In MultiValue environments, while you can develop a standard construct from walking through a recordset, you do in fact read raw data. While some MultiValue versions, such as D3, allow you to set system functions in the data file definitions, on the whole, the programming environment lets you do what you want with data.

Further, the MultiValue community appreciates and relies on the power of data dictionaries (such as the ability to permanently record joins as translate functions for a particular function field name). We may therefore over-

Continues on page 44

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Pixel Builds a Bridge from Green-S

With the advent of GUI environments, the Internet, and wireless devices, many organizations using legacy, "green screen" computer systems were faced with a significant dilemma—how to integrate their legacy systems with this new world of technology. Rewriting the legacy host application to an open environment with a graphical interface seemed the obvious answer, but was an expensive proposition with a significant risk of failure. Many companies with huge IT budgets tried and failed. What was a simpler, more inexpensive way to enable the data in their time-tested legacy host applications to interact with newly introduced technologies?

Screen-scraping - A Dirty Word?

One approach to this problem was "screen scrapers," which a few short years ago had a bad reputation. The "fat-client" terminal emulation solutions that were available then had a negative perception as complex, slow and unforgiving, says Francis Carden, CEO and founder of Pixel USA Inc. But a lot has changed since then.

"Nowadays, there are serious server-based solutions for building data objects mapped straight into your green screens," he says. "These data objects are called by your Web application or wireless application to deliver data straight out of your system, in real-time, to the Web and wireless worlds. These objects can be embedded in Word, VB or any development tool, making your transactional data more open than even the most sophisticated SQL-based application environment."

Building a serious, server-based solution is exactly what Pixel has done with the introduction of the latest HOSTACCESS Server, the core server-based component that supports HOSTACCESS Gateway, HOSTACCESS Thin Client and HOSTACCESS OpenObject solutions. Written from the ground up, with over 14 years of emulation and connectivity experience behind it, HOSTACCESS acts as the bridge for legacy applications to Web and wireless technologies.

"No other product provides the ability to take transactional data right out of the application screens and into interactive Web pages in hours," Carden says. "Clients are using us to build mission-critical business Web applications, cost effectively. We don't have to touch a single line of source code or add any additional code on the host whatsoever."

FOR THE MULTIVALUE FILE

COMPANY: Pixel USA Inc.

FOUNDED: 1988 (Authors of TERMiTE)

FOCUS: Building tools that Web-enable legacy, "green screen" applications and enable legacy integration with Web, wireless and next-generation technologies.

RECENT DEVELOPMENTS: The release of HOSTACCESS Server

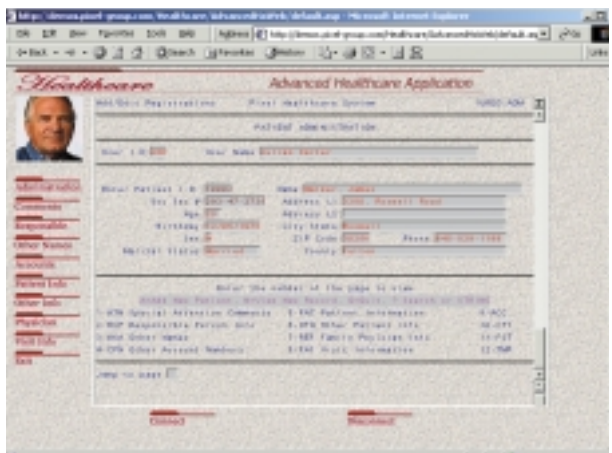
OFFICES: Atlanta, Ga., and United Kingdom

NUMBER OF EMPLOYEES: 40

WEB SITE: www.hostaccess.com

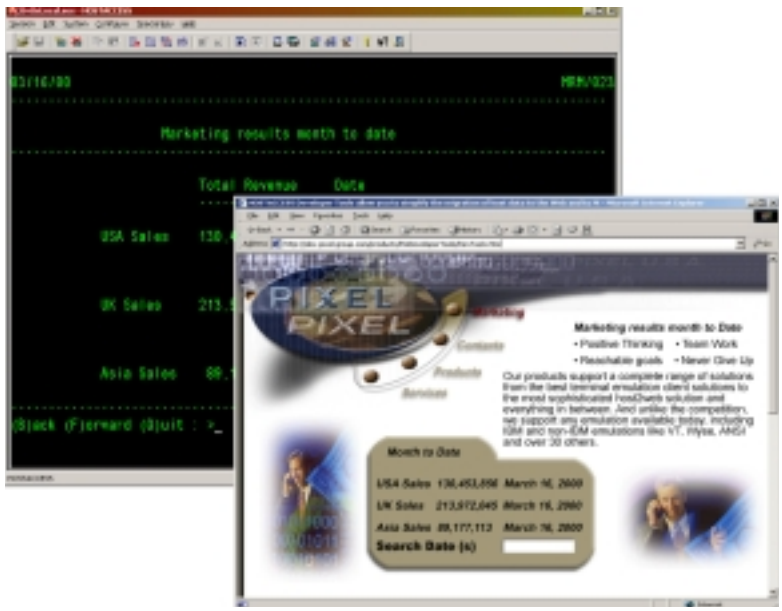
Building Bridges for Legacy Applications

Formed in 1988, Pixel focuses on the Enterprise Application Integration (EAI) market. The company develops and sells to users, systems integrators and software houses, the tools to integrate host-based legacy applications with the next-generation of technologies.



HOSTACCESS OpenObject (thin client) emulation in a browser utilizes Javascript to enhance the emulation window.

creen to Web



Pixel's server-based tools allow users to rapidly extend the life of legacy applications—bridging the gap between "green-screen" applications and Web and wireless technologies quickly. This picture shows how HOSTACCESS Gateway enables a non-invasive migration from a green-screen application to a full HTML solution.

HOSTACCESS Gateway is a powerful middleware server-based product that runs on Windows 2000 and NT. HOSTACCESS Gateway connects the legacy applications to Web and wireless technologies and enables the building of new composite solutions. In addition, there are now HOSTACCESS Thin Client and HOSTACCESS OpenObject, which provide an install-on-demand, feature-rich terminal emulation solution that can be run standalone or embedded in a Web browser. When embedded in a browser, the objects support Javascript or Vbscript, enabling the building of powerful new user interfaces under browser control. The user is no longer constrained by proprietary macro languages; integration and an improved user interface are no longer limited by imagination, the company says. This is a leapfrog in current thinking of emulation solutions.

"The vastness of legacy applications with green screens is still phenomenal with over 70 percent of data still residing on legacy systems," Carden states. "Pixel rapidly Web-enables green screen applications non-intrusively. Too many Web-enablement solutions around today are too cumbersome or too costly to implement. Pixel has powerful server-based tools that allow you to rapidly extend the life of legacy applications for as long as they are required. For some companies, this is a short-term solution, but for others it can be a long-term solution."

Pixel Goes Global

Pixel has literally grown up in the MultiValue market, beginning as a terminal emulation solutions provider and evolving into a global EAI solutions provider in all sectors of the marketplace. With more than 1.5 million users of its products sold, the company is the largest provider of connectivity products in this market. And, according to Carden, Pixel's HOSTACCESS is the only server-based connectivity and integration tool available in the MultiValue market today.

As the developer of one of the world-leading connectivity products, Pixel is being tracked by the Gartner Group as a serious player in the "GUI legacy extension" market and has even added the company to its magic quadrant, Carden reveals. In addition, signings with major systems integrators such as healthcare.com, Bowcutter and EDS further demonstrate the credibility of Pixel's product. HOSTACCESS Gateway has recently been installed at major police forces, healthcare organizations, government bodies, travel, automotive, manufacturing and the services industries across Europe, the USA and Asia.

Future Proofing With HOSTACCESS

Utilizing Pixel's object-based technology to "front-end" green screen applications essentially "future-proofs" a company's strategy, Carden says. He explains: "For instance, using our application navigator to build the COM object data map to the green screens, the data map can be used to deploy Web ordering or customer service solutions in hours and days, not months and years. Using the same data map, you can now also build automatic XML interfaces to your legacy data. Pixel's Host Integration products future proof your application integration solutions by providing a migration path to .net and soap as they become more widely adopted."

As a server-based component, HOSTACCESS provides total flexibility on the deployment methods and openness of the product. "If we want to build new interfaces, we just write new components to talk to our new objects," he says. "Development time for new features is typically down to days. We had a systems integrator connect with our products—to become their universal adapter—in just two hours, for full working functionality!"

Too Good to Be True?

Last quarter's revenues were one of the company's best ever, Carden says, due to the fact that Pixel has proven that its solutions work and are implementable now. "We can show anyone with a green screen application how they can move forward in hours without major investments and with low risk," he says.

If it sounds too good to be true, don't worry. Pixel is ready and willing to back up its claims. According to Carden, the company's short-term goal is to "show any green screen application user or developer that Pixel has developed something revolutionary that really has to be seen to be believed."

And the long-term goal? Like the technology underneath its product, Pixel hasn't set boundaries on the potential for its HOSTACCESS suite of products. According to Carden: "Our long-term goal is to become the standardized adapter for integrating any legacy application without the high risks associated with alternative solutions." **is**

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☐ Over $10 million - $25 million ☐ Over $25 million - $100 million
☐ Over $100 million - $500 million ☐ Over $500 million

IS 5/01

Diary of a Web Site

Continued from page 23

ing system and applications and turning off all background processes that are not required for the server's operation. There are, of course, other steps, but I don't want to bore you with details that may not be appropriate. If you run Windows NT, check out http://www.microsoft.com/technet/security/iischk.asp. For Windows 2000, www.microsoft.com/technet/security/iis5chk.asp has the details. For UNIX, it depends on the hardware vendor, so check out the individual Web sites. And for Linux, look at www.linux.com/howto/Security-HOWTO.html for the information. As well, you would greatly benefit by subscribing to one of the list servers that e-mail bulletins and other security related information on a regular basis. The SANS Institute (www.sans.org) and the CERT Coordination Center (www.cert.org) are both good sources. By doing this, you can easily keep up with the latest developments in both preventive tools and recently discovered holes.

If the services that your Web site provides to your clients require the transmission of sensitive information, you will definitely look at the Secure Sockets Layer protocol and digital certificates.

Digital Certificates

The purpose of a digital certificate is twofold. On one hand, it is used to ensure the user that the site that they are sending the sensitive information to is who they say they are. On the other hand, it is used to encrypt the incoming data in such a way that the only entity that can decrypt the data is the intended destination.

A trusted certificate authority, typically a public company like Verisign, issues digital certificates. At the time the certificate is assigned to the user, they must provide a user id and password. Every time the certificate is activated for use, the same password must be specified. In other words, the mere possession of a certificate is not sufficient to authorize its use.

Figure 1 illustrates the flow of information when a digital certificate is used. Note the use of the third party to verify the identity of the server. This is an important part of the authorization process.

Secure Sockets Layer

The purpose of Secure Sockets Layer (SSL) is threefold. It ensures the confidentiality of the data that is being transmitted both to and

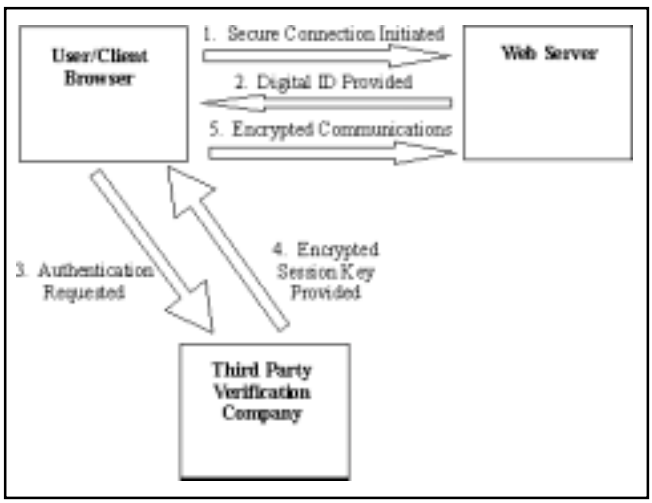

Figure 1 - Digital Certificate Process Flow

from the Web server. It makes sure that the data being transmitted has been unaltered en route. And it establishes a situation where there can be no later claim by the customer that they didn't initiate or approve the transaction. The underlying structure of SSL is a public key encryption algorithm provided by a company called RSA. The algorithm provides two mathematically mated keys called a public key and a private key. Both of these keys are required to encode and decode a message. For more details on the mathematics behind the algorithm, drop me an e-mail address. I'd like to think that the math degree that I earned 15 years ago could be put to some use.

Only the owner knows the private key mentioned above. The public key is published for use by anyone. When a secure message is to be sent, the sender uses the public key to encrypt the message. Because of the mathematical relationship, the only way to decrypt the message is to use the corresponding private key. This lets the sender be certain that only the receiver can read the message. If the message requires that the sender be authenticated, the message is first encrypted using the sender's private key followed by the receiver's public key. On the receiving end, using the receiver's private key followed by the sender's public key decrypts the message. In this way, the source can be identified with certainty, allowing for the non-repudiation goal mentioned in the previous paragraph.

Now appreciate that the details and mechanics of the digital certification and SSL process we just described are completely invisible to the user. While you as the system administrator need to configure your server appropriately, Joe User just hits your site with his browser. Both SSL and digital certificates are supported by the vast majority of browsers currently in use. Good thing too, as requiring a user to perform some overt action to ensure security is a lot like asking a child to stop eating candy. Both will only do so if something starts to hurt.

While it might seem that the area of security is complicated, the positive spin is that there is a lot of information available to assist you. Microsoft, the UNIX/Linux vendors and the security organizations mentioned are dedicated to helping you with any configuration questions that you might have. The downside is that our discussion has just skimmed the surface of security. Our next article will continue the process by looking at the encryption of data and auditing. **is**

Bruce Johnson can be reached at brucej@tagconsulting.com.

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MultiValue Basic Programming

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look at first the important difference with data retrieval schemes such as ADO or DAO, in that MultiValue record set reading and writing does not include any inherent link with the data dictionary.

Even when experienced MultiValue programmers don't use full 4GL type tools, they typically have some standard means to link dictionary definitions with data retrieval and updating in code. We have seen many suitable ones in looking over new clients' existing code base. In some cases, programmers create tools that build integer constants corresponding to field attribute numbers. If the data file has first name as the first attribute, a utility function might build and maintain a suitable set of constant values such as EQU FIRSTNAME$ TO 1. This approach produces clean-looking code where field references take the form of:

...MYDATA.RECORD(FIRSTNAME$)...

It in turn compares with a DAO style construct like MYDATA.RST![FIRSTNAME]

Another variation, which we favor, uses a utility function to build references to the array location itself, so that we start off with

MYDATA.FIRSTNAME = MYDATA.RECORD(1)
MYDATA.LASTNAME = MYDATA.RECORD(2)
and so on.

The programming environment won't enforce use of constructs like these. Programming teams that develop and use good tools can achieve something like the consistency of relational database programmed access.

No doubt, others learning or teaching MultiValue programming after newer database environments could offer other useful tips and lessons. Despite all the uncertainty and changes in the MultiValue sector, it has been exciting to run across not just new users, which we always see, but new programmers entering with relational database and other business application development experience. The MultiValue sector needs this infusion of developers. While respecting the variety and power of other database development environments, we need to have more discussion on how to convey the strengths of the MultiValue data model and learn to effectively program with it. If you have thoughts on this topic, please jump in! **is**

One of our Spectrum regulars, Steve's company, Database Designs Associates, provides application development and general business consulting to clients in the MultiValue and Windows database realms. Questions and comments can be directed to him at sbackman@dbdes.com.

Ward Off Internet Legal Woes

Continued from page 31

This country has a long history of protecting speech. To win a libel suit and collect damages, you have to do a lot more than prove your reputation was tarnished. Typically, you have to also prove that what was said was false, that the person saying it was negligent in determining whether it was true or false, and that you suffered tangible financial losses.

This doesn't stop people from hiring lawyers to try to intimidate others into offering online apologies, Wilf says.

Your best bet is to stick to the issues and avoid personal attacks. Your mother's advice still holds: Think before you speak.

Copyright. The legal brouhaha surrounding Napster, the online music sharing program, has focused attention on online copyright. Despite the Internet's laissez-faire origins, copyright doesn't mean people have the right to copy everything they see or hear on the Web.

Just as in the offline world, the copyright law gives the creator of intellectual property on the Internet, including Web text, graphics, audio, and video, the right to determine how it can be copied.

Some companies hire public relations agencies to uncover incidents of copyright infringement, says Marc Brown, an attorney with Oppenheimer Wolff & Donnelly in Los Angeles who focuses on e-commerce issues. When someone is caught, often the infringer will receive a cease-and-desist letter from a lawyer.

You do have the legal right to copy without permission a small part of the work of others under certain conditions, such as when offering criticism or using it for educational purposes.

One common fallacy is that unless the work is accompanied by a copyright symbol (a "c" within a circle), it doesn't have copyright protection. Since 1989 all creative works are copyrighted the instant they assume a tangible form, whether on paper or on the Net.

Trademarks. Another hot legal issue concerns domain names, those Web addresses expressed in an easily recognized way such as "Yourname.com." People shouldn't think that just because a domain name isn't currently used that they can use it for their own Web site.

Regulations of the Internet Corporation for Assigned Names and Numbers (ICANN), the non-profit corporation responsible for domain name management at http://www.icann.org, prevent you from using a domain name that's too similar to a trademarked business name owned by someone else.

Despite the Internet's laissez-faire origins, copyright doesn't mean people have the right to copy everything they see or hear on the Web.

If you're creating a Web site and choosing a domain for it, choose one not likely to confuse others into thinking that you're someone else, Wilf says. Trying to feed off the name recognition of a trademark holder can cause ICANN to force you to relinquish the name and even lead to legal action.

It's also a good idea before settling on a domain name for a business site to do a trademark clearance search, or hire someone to do one for you, Brown says.

If you have a domain name based on a trademarked business name, it's good practice to periodically search the Web to see if anybody is using your mark in a way likely to confuse your customers.

Excellent Web sites where you can delve further into Internet legal issues include Cyberspace Law and Regulation at http://law.about.com/cs/cyberspacelaw and GigaLaw.com at http://www.gigalaw.com. **is**

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