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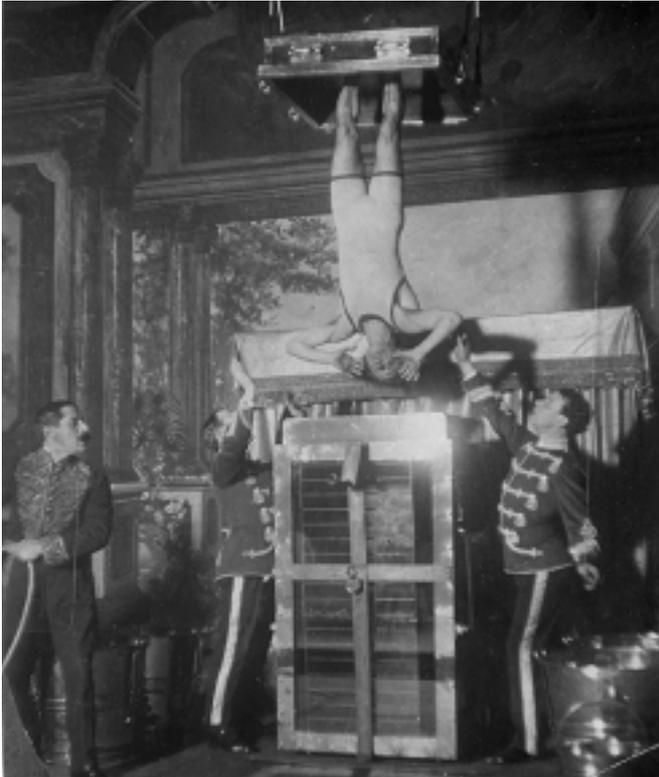


PUBLICATION

**FICTION** OR **FACTION**

*Is the MultiValue  
Industry Really Shrinking?*

*Facing Tough Deadlines on the Web?*



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COVER STORY

32

DEBATE ON THE FRONT LINES: THE STATE OF THE MULTIVALUE MARKET

After all the transformations that have occurred in this industry, does a distinct MultiValue world still exist? The cover story probes the viability of MultiValue in today's computer market as a whole.

BY STEVEN BACKMAN

DEPARTMENTS

6 From the Inside

16 Newsmakers

34 New Products

46 Marketplace

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FEATURES

40 SPECTRUM SPOTLIGHT: NORTHGATE INFORMATION SOLUTIONS - REALITY RETURNS TO THE U.S. MARKET

Word on the street is that the Reality DBMS is on the comeback trail after being absent from the U.S. scene. Northgate unveils its global strategy to roll out the flagship Reality V9.0 DBMS and how it has continued over the years to keep Reality on the technical cutting edge.

20 PALM PROGRAMMING TOOLS

Creating a Palm program is not as hard as you may think. Learn about the many different programming languages that can be used to create a Palm application. BY NATHAN RECTOR

26 GETTING STARTED WITH INCORPORATING C CODE INTO YOUR UNIBASIC DEVELOPMENT ENVIRONMENT

As a programming language, UniData's UniBasic has a lot to recommend it; however, some tasks are hard to accomplish without third-party tools and add-ins. The C programming language is very good at filling in some of those gaps. Here are three steps that allow a C function to be called from within a UniBasic program. BY OWEN MARKS

36 WEBONOMICS 101: POST-MODERN PLASTIC

Many Web sites, especially from traditional, offline brick and mortar shops, do well enough without credit card payments. But expectations are changing, and you may need to address the online credit card payment issue to attract new customers to your e-business. BY MELVIN SORIANO

22 DIARY OF A WEB SITE - ENCRYPTION

Continuing the discussion of Web site security, this installment of the diary takes a look at how to keep data from the prying eyes of people we don't want to see our data. BY BRUCE JOHNSON

10 FIELD-BY-FIELD WEB APPLICATION DEVELOPMENT

Since the early days of Web experiments, the challenge has been on to make browsers act more like terminals so they can support an "evolution not revolution" approach to Web-enabling existing applications. See how Pixieware Software accomplished its mission. BY JOHN CALDER

8 PERSPECTIVE: SERVICING THE WEB

The idea behind Microsoft's Web Services is not a new one. It's a recycling of the component reuse philosophy of the early 1990s. But this time around, will the idea take off and gain acceptance? BY BRUCE JOHNSON

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[FROM THE INSIDE]

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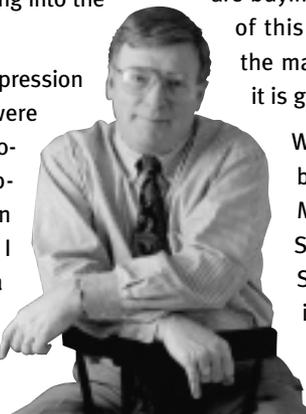
## Is the MultiValue Industry Really Shrinking?

Do you think the MultiValue market is growing, staying the same, or shrinking? That was a key subject of panel discussions we conducted in Chicago and Boston last month at the Spectrum Regional MultiValue Conferences (See also Steven Backman's article on page 32 in this issue).

As moderators in both cities indicated that the market was shrinking at an alarming rate, other panel members and members of the audience anxiously shifted in their chairs and raised their hands like townspeople at a city council meeting discussing whether a sewer processing plant should be built on Main Street!

How could the perception be so different? There were as many opinions as there were people in attendance, but here's one impression that stood out. Representatives in attendance from Informix, Raining Data, jBASE and VIA Systems were incredulous at the suggestion that there were "no new customers" coming into the MultiValue market.

I had a similar positive impression in that it felt like there were more than normal new people requesting subscriptions to this magazine in recent months, so when I returned home, I took a look at our database to see if the facts backed up the feeling.



Here's what I found out. Since January 1, 2001, 367 new companies had requested a subscription; 172 used UniVerse, 106 used UniData, 63 used D3, 21 used jBASE and 5 used UniVision. Eighteen of the companies had recognizable names including Marriott, USA Sprint, Unisys, Serta, CBS, Cigna and Blue Cross.

If you want my opinion (you know I'll give it to you anyway), here's what I think those panel discussions suggest might be going on. The VARs with quality vertical market software and Internet savvy are penetrating fewer but more substantial new customers. To them, the market is growing. VARs with strictly legacy applications see a shrinking market. The MultiValue consultants are so busy they don't care. Older legacy end users who were used to getting everything in the past for a nickel over cost are being ignored, and the newer, more substantial customers are not always aware (nor do they care) that what they are buying has a MultiValue engine. All of this lends to the perception that the market is shrinking when in fact it is growing.

We're going to continue this debate at the Spectrum Regional MultiValue Conferences in Seattle and Cincinnati in September, and in New Jersey in November. Come join us and add your perception to the knowledge base.

— GUS GIOBBI, CHAIRMAN, IDBMA, INC. —  
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# Servicing **the** Web

**W**ithin the next few months, you will start to see the newest generation of Microsoft's software technology. If you've managed to avoid the pre-release hype, I'm talking about Web Services in general and the introduction of .Net specifically.

BY BRUCE JOHNSON



Unless things have changed in the past 10 years, the same mentality that made reusable components a passing fad is still in place. In itself, this would seem to indicate that Web Services are destined to the same fate.

At least for most of corporate America. But I believe that there are a number of other currents running through today's Internet-driven business stream that might change the ultimate outcome. The first is that major forces (read Microsoft, Sun and IBM) are aligning themselves behind the concept, if not the technology (like we expect these three to agree on anything without coercion). The second is the development of micropayments—the ability to collect small (less than \$1) payments from people for using a service. The result will be a slowly growing tide of companies that provide Web Services for others to use. Similar to the arrival of developers who created ActiveX controls for Visual Basic, many companies will start to deploy Web Services in their place.

What has a better chance of being a problem for the deployment of Web Services is their dependence on the Internet. Without an active connection, the service is unreachable. As yet, there are few meaningful Quality of Service clauses in most ISP agreements. So why would a company choose a Web Service to be deployed as part of a mission critical application? It wouldn't, of course. In fact, the mentality of most IS departments is such that there would have to be a significant advantage to utilizing Web Services for them to be included in any application. Not a small hurdle to jump, but one that will be surmounted in time.

OK. Let's assume for a moment that this small psychological stumbling block can be

overcome. The trick then is to arrange for information about the Web Services to be readily available. In comes the UDDI (for Universal Description, Discovery and Integration) standard. By creating a description of your Web Service in UDDI, other people can find it automatically, determine the functionality that is provided, the methods required to access those functions and the parameters that are passed. And since UDDI is based on the open standards of XML, SOAP (Simple Open Access Protocol) and HTTP, it will probably be supported by more Web service tool providers than Microsoft.

So, will Web Services be a hit or not? In my opinion, not immediately. There are certainly areas in which a Web service might be useful. One of the first to cross my mind would be some kind of address standardization/validation service. You know, a service takes address information that is provided by your customers either over the phone or through your Web site. The service would then massage the data, correcting misspellings and erroneous zip codes and ensuring that all abbreviations are consistent. In this kind of niche, the service is not mission critical. When the Internet is not available, its absence is not too much of a problem. Yet its utility is enough that most companies would be willing to pay a couple of pennies per transaction. Beyond that limited kind of situation, I believe that there are significant enhancements to the

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underpinnings of the Internet that need to take place before widespread acceptance of Web Services will occur. I give it three to five years before the idea takes a firm hold. After that, watch out. The growth will rival that of ActiveX controls in its speed.

On a more personal note, this will be my final Perspective column. It has been, if memory serves, a little over seven years since I penned my first one and I feel it's time to hang up the quill. Over the past few years, my focus on working as the CTO for a number of companies and Web architect for others has left me with too little time to do the writing that is deserved. Thank you for your readership and support through the years. Regardless of where my travels take me, I will continue to be an advocate for MultiValue. Good luck. is

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**THE DAY THE DATABASE WORLD DIDN'T STAND STILL.**

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# Field-by-Field Web Application Development

**WHEN USERS “surf the Web” most of them are not aware that they are always making and breaking contact with Web sites. Web sites stay connected for only as long as it takes to feed us the requested documents, pictures and media and then we look at the detached copies of this material now parked temporarily in our machine's local memory. Moving from one page to another page of a Web site is a completely new re-connection, and navigation within a Web site gives you very little speed advantage over someone else linking to the page as new, from a quite different Web site.**

**BY JOHN CALDER**

**JOHN CALDER is chief designer and developer of the PixieWeb software from Pixieware Software (NZ), developers of legacy system rejuvenation software. You can find out more by visiting [www.pixieware.com](http://www.pixieware.com).**

Such a protocol has its advantages for simple actions such as passively reading documents and it conserves bandwidth well. Figures like 1,000 plus visitors “hitting” a Web site at once or “a million hits in one day!” are not as dramatic as they look. Most visitors will only be working the system for a few seconds to get pages which may keep them occupied for minutes of reading time. That million hits in one day could translate to between 10 and 500 users

actively connected at any one time, and any Web event that pulls a big crowd also causes devices like “caching proxy servers” to kick in all through the communication channels and help out with feeding local copies of repeating transmissions like pictures.

Our PICK programmers were not pleased with our early Web experiments, with the way the Web “makes and breaks” along with its deeply embedded standard that the “browser document window” completely clears on any exchange of data with the Server. Therefore the common Web application programming model is based on expecting the user to complete a screen full of data entry, then send the lot in for processing in one form-submit batch. This was common practice with IBM mainframes and terminals in the '70s and '80s, and our PICK colleagues did not like it then and they don't like it now! The objection is the lack of validation-as-you-go. It is too easy to make an error in data entry that ruins a screen load or more of typing and not know about it until after a lot of time is wasted.

Other objections include:

**A** Web batch input/output practice is highly incompatible with the valuable resource of existing terminal applications based on field-by-field validation.

**B** There is a high programming workload of tracking and managing the state of the user within an application.

**C** There are security issues around the Web's freedom of navigation from page to page.

The challenge was on to make browsers act more like terminals so they can support an “evolution not revolution” approach to Web-enabling existing applications.

*Continues on page 12*

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## FIELD-BY-FIELD

*Continued from page 10*

Our work up until early 2001 was based on Microsoft's "remote scripting" technology. Quoting from <http://msdn.microsoft.com/scripting>:

"With remote scripting, developers can now create seamless, interactive Web applications in which the browser can call scripts on the server without reloading the Web page. Prior to remote scripting, developers would have to require the user to reload the calling page, often several times, to interact with the server. This created a slower, disjointed, user experience and inefficient use of the server."

"Remote scripting" worked well for us, but required additional installations on the Web server and the use of some complicating additions to the user session (e.g., the loading of an "RSPROXY" Java applet). "RSPROXY" supports IE4 and above. Netscape 4 can be handled with considerable difficulty. But Netscape 6 is a no-go.

Internet Explorer 5 and above have a suitable transmission method built-in, the "XML Download Behavior." This is fast, and makes for much simpler application installation on the Web server. The application only depends on the basic features of IE without any issues around Java or any other installation optional extras.

The "XML Download Behavior" has become our preferred method, but we do have another slightly slower but more flexible one. Our Web application templates are easily changed to the "Array of IFRAMEs" method. The use of separate invisible windows ("frames") to take the hit of being erased at each conversation step is an old idea. We have been experimenting with it since late 1998. Its main problem is that it fails to manage requests in queues, as in a user working fast from field-to-field can cause new transmissions to destroy earlier ones in progress. We have recently solved that problem by using 3 IFRAMEs which rotate in turn at being the transmission device. In theory, the array of IFRAMEs demands more processing power from the client. In practice, most recent machines can run it almost as fast as the XML Download Behavior. Apart from

supporting IE4, the IFRAME object is now available in Netscape 6, so at the time of this writing, we have successfully translated our client-side BASIC VB-script template page into JAVASCRIPT to support Netscape 6 as well.

## P R O T O C O L

A transmission method needs something meaningful to transmit. Our protocol in brief:

**SERVERS** can control and rewrite the supplied template Web page with delimited string commands.

**INPUT FIELDS** have ids of "fx1", "fx2", "fx3", etc. Other active objects use other prefixes, e.g., "gx8" is a grid, it has rows "gx8x1", "gx8x2", etc., and input fields within rows have ids like "gx8x2x4".

Example Server transmissions:

GROWINS | gx8x3 - insert a new row into grid number 8 above row number 3

VALID | fx3=John - colour field fx3 green to show validation and display "John" in it

VALUE | fx3=John^FOCUS | fx6 - display "John" in fx3 and focus on fx6

Example Client transmission:

fx3 | Andrew - user has entered "Andrew" in field fx3

The similarity of purpose to Microsoft SOAP and the use of something called "XML Download Behavior" as a transport mechanism naturally inspires the question "Why isn't this protocol XML-based?"

The purpose of XML is bulk data transfer with definition of the meaning of each item and sub-item. This situation of thin-client screen-interface is a different need. At each step only small quantities of data are transferred in a simple format, therefore an approach based on Richard Pick's principle of single-character delimiters is appropriate. Our parsing routine is openly published as source code. It is small, clear and fast; our experiments show it to be at least 10 times

faster than XML equivalents going through an XML parser. Now that we have translated the routine into JavaScript, it has a more universal reach than the variety of XML-parsing objects, and it has no dependence on browser proprietary optional extras like Java Applets or ActiveX objects.

Compared to Microsoft SOAP, our FBF protocol is:

**2-WAY:** server-calling-browser-functions as well as browser-calling-server-functions. To this writer's best knowledge, SOAP only offers 1-way browser-calling-server-functions and with less flexibility.

**UNIVERSAL:** simplest, freely available programming toolkits, e.g., Java Script, to implement it.

**IDENTICAL** on IE and Netscape.

**FASTER**, because FBF is not carrying unnecessary baggage in order to appear to be fashionable.

**FREE**, with open source code provided, simple principle familiar to any PICKie and easily customizable.

**FRIENDLY** to PICK/BASIC and similar routines inside PICK, etc., because of commands and data moving to/from the browser in a dynamic-variable format.

Microsoft's "XML Download Behavior" is probably named to support Microsoft's current "get XML mentioned with everything" policy. It serves as an object for the browser to receive any text, which could include XML tags.

## BROWSER AS SUPER-TERMINAL, OTHER CONSIDERATIONS

The protocol is a big step towards turning the browser into a super-terminal which we can quickly bring into the PICK fold. To complete the picture and make this "evolution not revolution" easier and more economical, some other recent browser advances work to our advantage.

**CSS POSITIONING.** HTML version 4 supports absolute x-y positioning of labels (<DIV.>s). IE5+ also supports direct positioning of input fields. Netscape 6 and IE4 require them to be parked inside a positioned <DIV.>.

This means that existing terminal screen designs and layouts can be used in Web applications by replacing @(x,y) with a Web equivalent. We call ours SUBROUTINE WEBDU for labels and SUBROUTINE WEBIU for input text fields, text area boxes, buttons and checkboxes.

We use a browser pop-up window workspace of 720 pixels x 500 pixels, so multiplying existing x values by 9 and existing y-values by 22 nicely translates character-based coordinates to Web.

**DHTML**, dynamic creation on the fly of page elements.

With our Web application page able to have an ongoing conversation with the server, it is possible for that page to be a standard blank slate, like a terminal, with

the server able to rewrite part or all of it (FBF keywords "IREPLACE", "INSERT"). The issues around control of user freedom of navigation are solved at a stroke. Here the entire application consists of only one template page and the user is locked down to that page. Leaving it or closing it cues the application to log off and disconnect.

```
Excerpt of PICK/BASIC code from WEBDU ...
Translate positioning from character co-ords
x = (xraw * 9):'px'
y = (yraw * 22):'px'
```

```
Example of call to WEBDU for a label:
In terminal-serving PICK/BASIC this was:
SC = SC:@(4,2):" Supplier Code" )
```

```
In the Web application version, this becomes:
CALL WEBDU(4,2,0,0, " Supplier Code ", "", "", SC)
Then to define an active GUI input field, do this:
CALL WEBI5(22,2,0,0, "", "fx0", "", SC)
```

*Continues on page 14*

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## PICK-TO-WEB SERVER METHODS, PERSISTENCE, NON-PERSISTENCE

A Web page talking to a PICK application requires a Web server in between acting as a relay station. This article has been about the Web server-to-Page step of a two-step transmission. The question arises, what about that other PICK-to-Web server step? Of course we use our own product "PixieWeb" software for this. It is a "socket-with-attitude," small and light enough to be persisted in the Session Object of the IIS Webserver. When run this way it can maintain a terminal-like, "persistent" ongoing conversation with conventional PICK/BASIC programs. These programs converse with the Web page with the familiar PRINT and INPUT statements. This makes the Web server role quite minimal with only three or four template scripts required and the entire Web application being run with PICK/BASIC. Such a configuration does mean that each connected Web application user requires a licensed port for the entire user session. The classic "Web-app batch-submission non-persistent" approach for all its complexity does offer

the sweetener of saving on licensed ports because you only need them for the moment the user finishes and submits an entire form.

Field-by-Field is probably most needed for expert data-entry by in-house employees, or an elite group of trusted outside-world associates, for whom enough licensed ports would already exist anyway for their current terminal work.

So could the advantages of Field-by-Field and licensed-port-savings be combined? It is possible but the coding for Field-by-Field validation and field-navigation needs to move to the Web server, e.g., as VBSCRIPT which is a little like PICK/BASIC and could be adapted from existing PICK/BASIC Input/Output code. The PICK/BASIC programs would play a back-server role of data READ/WRITE at the start/end of a form in a similar way to the batch approach.

Could Field-by-Field be used with connectivity providers other than "PixieWeb" software? Naturally we have not been motivated to try! To fully support PICK/BASIC Field-by-Field, providers need to offer a persistent connection option and be friendly to existing PICK/BASIC code. For example, a possi-

ble but untested PixieWeb software emulator may be Raining Data's FlashConnect product using its "W3Input" method. Providers who are non-persistent only could support a hybrid of Web server and PICK/BASIC coding.

FBF Offered as an Open Standard  
We regard the Field-by-Field protocol, scripting source code and Web server templates as supporting examples and documentation for PixieWeb. That is, we sell PixieWeb software; we make "FBF" freely available on an open source model, requiring only that our copyright notice remain in the resources so we get the promotional benefit.

Working example Web applications, and more details are available at: <http://203.109.148.138:7301/pixieinfo/rsdemointro.htm>

The FBF protocol is published online at: <http://www.pixieware.com/PixieWeb/PWDocu7.htm>

If any non-PICK enthusiasts read this article, FBF and PixieWeb software has been tried and tested on another database environment, filePro, where a B2B Web site is being successfully developed with this technology. *is*

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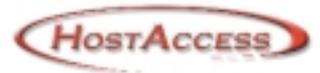


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## The Ashwood Computer Company Receives ISO 9001 Registration

**The Ashwood Computer Company Inc.**, a leading VAR and systems integrator for the MultiValue/Multidimensional database arena, announced that it has successfully implemented a state-of-the-art ISO quality management program and received official ISO 9001 registration. With its successful registration, the Ashwood Computer Company, based in Cincinnati, Ohio, joins the elite group of VARs in the world that have achieved ISO 9001 registration.

"As a world-class Value Added Reseller of MultiValue database information systems and services, Ashwood's having achieved our registration as an ISO 9001 company is just one aspect of many in an ongoing project of company-wide improvement that we began in 1998," said company president Rod Owens. "Our goal is continuous improvement in the quality products and services we provide for our existing customer base and our new clients, and we are taking great strides in that direction."

Owens wishes to thank his entire "A" Team for the extra efforts extended by all of them during the registration process. The entire Ashwood Computer Company "A" Team also wishes to extend a heartfelt "thank you" to Ingrid Fabian of LBG Consulting of Cincinnati, Ohio, for her guidance and professional assistance during the registration process, and to Terry Dipple, Ron Byrge, and Jeff Byrge, of CWC International Inc., also of Cincinnati, Ohio, for their assistance in the actual ISO pre-assessment and ISO audits prerequisite to Ashwood's registration.

The Ashwood Computer Company, founded in 1989 by former McDonnell Douglas Computer Group employees, is a VAR to the MultiValue database industry offering products and services to their clients, nationwide. Ashwood specializes in assisting legacy "MultiValue" computer systems users in their migrations to open systems environments, in optimizing those systems' performance, and in offering a complete "end-to-end" services solution thereafter. Focusing on "MultiValue" systems users as a "horizontal" market, the Ashwood Computer Company services a wide variety of vertical markets including: manufacturing, distribution, education, banking, financial, printing, medical, government, and eCommerce.

Capitalizing on the savings realized by maintaining and updating a company's existing application software, maximizing ROI in that existing application software, minimizing end-user retraining, and stressing the efficient utilization of existing resources rather than proposing unnecessary expenditures, Ashwood has built and maintains a continually growing and loyal customer base. ■

## VARMARK Announces New SmartStart-II Service for Windows NT/2000 Servers

**VARMARK** has announced the availability of on-site installation and phone support of IBM Windows NT and Windows 2000 servers. The new SmartStart service is designed specifically to enhance the timely and successful installation of IBM Xseries systems running Windows NT, Windows 2000, and RedHat Linux. Since August 2000, VARMARK has been installing IBM RS/6000 and now pSeries RISC systems for its reseller clients. The company said the process has been very successful with over 15 systems installed.

*Continues on page 18*

## New Sales & Marketing Manager Joins Modular Information Systems



Patrick Shabram joins Modular Information Systems as manager of Sales and Marketing.

**Patrick L. Shabram** has joined **Modular Information Systems** as its new manager of Sales and Marketing. He has vast experience in all aspects of marketing and sales including market research, product development, sales forecasting and customer relations. Shabram also has a strong background as a business consultant in a variety of industries, including the wine industry. He most recently worked for Rewards2K.com as its director of Operations where he oversaw the launching of several e-Commerce Web sites.

"His extensive knowledge of sales, marketing, consulting and the wine industry makes Patrick a perfect fit for Modular," said Lisa Corbett, president of Modular. "We look forward to his fresh ideas for marketing our winery management software, TSM Vintage, as well as our professional IT services."

Modular Information Systems offers a complete range of professional services and products for businesses using Microsoft- and UNIX-based computing solutions. They are a Microsoft Certified Partner, an Informix partner and are authorized resellers of many quality hardware and software solutions, including IBM, Compaq, and Hewlett Packard. Among Modular's many offerings are Informix's DataStage, the most comprehensive Business Intelligence (BI) infrastructure solution available today, and TSM Vintage, a winery management software suite. ■

# WHO'S OLDER?

## YOUR COMPUTER SYSTEM OR YOUR GREAT AUNT ETHEL?

### Ethel

**Main Memory:** Not so good

**Weight:** 97 pounds

**Mean Time Between Failure:** Any Day Now

**Maintenance:**  
Donuts & Social Security



### Pick System

**Main Memory:** 16K

**Weight:** 1/2 Ton

**Mean Time Between Failure:** 35,000 hours

**Maintenance:**  
\$5000/month

If your Pick system is more than two-years-old, it's time to call Zumasy's for an upgrade. Zumasy's specializes in providing "zero downtime" migrations to new state-of-the-art servers and industry-standard databases such as Raining Data's D3. Zumasy's offers custom-built Terian, Compaq & RISC-based servers all backed by high-quality national on-site service. And regardless of whether you want to upgrade to Linux, Windows NT/2000, Citrix, AIX, SCO or UnixWare, Zumasy's will provide you with a "single source" for all of your ongoing technical support.

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# NEWS MAKERS

Continued from page 16

SmartStart is basically an on-site installation service for new IBM systems that allows the integration of the IBM system into the existing data processing environment. This includes all existing terminals, PCs and printer equipment, as well as local and wide area communication equipment. It is a turnkey service that allows the reseller to follow VARMARK into the site and simply install their software onto a running system that is ready to go operational.

In addition, VARMARK provides basic administration and operational training on the system along with a disaster recovery tape for each installation. VARMARK said that it has dramatically reduced pricing for the new Windows and Linux version of the SmartStart service.

VARMARK also now provides on-call technical support for the Windows-based products. All Windows support requires the installation of Systrol Management software on the supported server (For more information on Systrol, see New Products in this issue.). ■

## Via Systems Appoints Better Results Software as Exclusive North American WinLink ODBC Distributor

**Better Results Software** is now one of the exclusive sources for Via Systems' WinLink ODBC (Open DataBase Connectivity)

products and support services. This agreement makes Better Results Software the exclusive distributor of WinLink ODBC in North America for all MultiValue platforms except for Ultimate Plus.

ODBC technology has become increasingly important to the MultiValue database market recently as the primary tool for users to move application data into open systems. According to Brian Riedlinger, Better Results vice president of Technical Services, "Once our ODBC technology is installed at a customer site, all levels of employees can access MultiValue data and easily present it in meaningful reports using industry standard tools such as Excel, Crystal Reports, Word, Access and Visual Basic."

Recently appointed president of Via Systems Robert Catalano

## Brown-Strauss Steel Selects 1mage Software to Replace Imaging System

**Brown-Strauss Steel**, headquartered in Denver, Colo., has chosen **1mage Software** to install an electronic document imaging and management solution to replace its existing imaging system. Brown-Strauss Steel is the largest distributor of structural steel in the Western United States, including wide flange beams and structural tubing. As part of a company-wide upgrade of computer and networking equipment, Brown-Strauss Steel will be installing 1mage Software's 1MAGE, 1SUITE, 1API and 1SCAN products.

"1MAGE will be a big improvement over our current system," stated William Singer, director of Systems at Brown-Strauss Steel. "Due to a lack of customer support, we have not been able to expand imaging beyond its initial purpose of digitizing mill test reports. We will now be able to move imaging into other areas of the company, in particular in our warehouse operations, where it will help keep track of documents like signed bills of lading."

David R. DeYoung, president and CEO of 1mage Software, said: "The scalability of our products and our solid customer service have long been strengths for 1mage. We are pleased to be able to help Brown-Strauss Steel achieve their document-imaging goals." ■

added, "We are very excited about the addition of Better Results to our team of software distribution experts. Each company brings years of MultiValue programming experience to our network of value added distributors. These changes will result in a broader and deeper knowledge base from which to support our WinLink customers, whether it be for technical issues or application development."

This relationship with Via Systems includes the transfer of all existing support arrangements for ODBC to Better Results Software. Jeff Jakus, vice president of Sales and Marketing for Better Results, stated: "In addition to taking over the support functions, Better Results will aggressively pursue new ODBC sales, support and installation opportunities throughout the entire North American MultiValue database market."

Better Results Software personnel have been involved with hundreds of

ODBC installations on many different MultiValue databases. This level of technical experience, coupled with the top-of-class WinLink ODBC product, allows Better Results to stand alone as the premier North American ODBC solution provider to the MultiValue community, the company said.

Better Results Software Services, headquartered in Los Angeles, Calif., has sales offices in Marina del Rey, Calif.; San Diego, Calif.; and Point Pleasant, N.J. The company has specialized in providing software solutions to the MultiValue database community (including orphaned users) since 1991. Expertise includes, but is not limited to, UniVerse, UniData, Prime Information, mvBASE, mvENTERPRISE, D3, jBASE, System Builder and SB+, pcVerse, PI/PC, UNIX, AIX, HP/UX, DG/UX, Solaris, Linux, Windows NT, Windows 2000, ODBC, OLE/DB, HTML, XML, Visual Basic, Microsoft Query, VB Script and JAVA. ■

## Application Hosting Group Fills Void in MultiValue Market

### WHO IS APPLICATION HOSTING GROUP?

**Application Hosting Group Inc. (AHG)**, of Naperville, Ill., is a newly formed company created by "old-time" consultants pursuing a new business paradigm—application hosting, says one of its founders, Tom Dodds. AHG's mission is to fill a vacuum for UniVerse and UniData (U2) database users and developers, providing a variety of support services that the three principals have identified as lacking in the MultiValue community.

"The Application Hosting Group delivers reliable and efficient application hosting services through state-of-the-art Internet/Intranet technology, concentrating on data cleansing, system tuning and operating system auditing," Dodds explains. "Part of our mission is to provide an economical, secure data center for our clients. To accomplish that, we have selected a Windows 2000 Advanced Server operating system. That selection was made because it provides a secure, reliable, scalable, and cost-effective platform for U2 applications. Our years of experience has shown that there are economies of scale in operating a data center. By sharing the considerable costs involved in creating a state-of-the-art data center, our clients can realize the advantages and share the cost.

"With the prevalence of Internet technologies today, the idea of outsourcing your data center operation to take advantage of these shared cost savings provides a

valid alternative to maintaining your own in-house data center."

Founded by Dodds, Jon Kristofferson, and Harry Reiter, AHG's roots are in service. They each have more than 20 years of experience in the industry with a wide variety of exposure to applications from nearly every business aspect. Kristofferson has spent years with Prime Computer, VMark Software, Ardent, and most recently, Informix Professional Services, as well as independent consulting firms. Dodds has 23 years invested as an independent consultant, while Reiter has years of experience working for Devcom Mid-America and holding a management role at a leading insurance firm.

### WHAT IS APPLICATION HOSTING?

According to AHG, application hosting represents the latest trend in information technology. Put simply, application hosting is outsourcing your U2 application. AHG provides a staff of U2 professionals that will maintain your U2 application on its hardware in its facility.

AHG's hosting service includes configuring the operating system and U2 for optimum performance. A full backup is performed each day with restores made upon request. Regular application file maintenance is performed monthly on the client's application files. AHG also performs system administration tasks such as adding and deleting users and printers. AHG monitors the system for possible problems

such as running out of disk space and runaway processes.

AHG follows the SAS-70 and ISO-9000 quality standards to insure the safety and security of the customer's data. The company also can provide additional systems for disaster recovery, application testing and software development. Its staff offers 7 to 6 CST telephone support, with 24/7 support available, and can handle network, operating system and U2 support calls.

"Our consulting staff can handle any U2 technical task including application development, application testing, application maintenance, data warehousing, performance tuning and Web integration," Dodds says. "The costs for our services are surprisingly low, often less than the salary of a systems administrator."

### HOW APPLICATION HOSTING WORKS

What's involved in application hosting? The first step is to provide a network connection from the client's office to AHG's data center. This can be accomplished through the Internet via the client's ISP (Internet Service Provider) or by means of a dedicated communications line. There are a multitude of networking alternatives — "we can provide wide area networking to 66 countries around the world," Dodds comments.

If the client already has a network in place, the only difference application hosting would make is

accessing the client's dedicated server at AHG's data center as opposed to a server at the client's office. If the client doesn't have a network, AHG provides one, with "some amazing benefits by using Internet appliances," according to Dodds.

"We can accommodate dumb terminals and printers by using intelligent terminal and printer servers," he says. "We can also provide local phone access to your server through our networking services anywhere in the United States. If you are using a PC with a terminal emulator or an Internet appliance, you already have the tools necessary to access a remote host.

"Finally, we will convert your application to run under Windows 2000 and the latest version of UniVerse or UniData. Windows 2000 provides for a very high level of performance and reliability. U2 has many special features available while on Windows 2000."

Once the conversion is completed, the client can access the application running on a dedicated server at AHG's data center. "Our staff of highly trained U2 professionals will insure that you have the highest available uptime possible," Dodds states. "With constant system monitoring and monthly file sizing, your application will run better with fewer problems than it has ever before." ■

# PALM

## Programming Tools

**CREATING A PALM** program is not as hard as you may think. The hard part of any Palm programming is actually the conduit, which I've discussed in previous articles. There are many different programming languages you can use to create a Palm application that I'll discuss here.

The Palm development tools are broken down into three general categories:

**Low level, high level, and data capture. Each has its own advantage and disadvantage. Let's talk about them for a bit.**

Low-level programming tools are the Palm Assembly, C and C++ tools. Historically, Palm applications have been developed using C and C++. There are several C and C++ programming tools. The most mature is CodeWarrior, but like every other OS that C and C++ work on, there is a free tool kit that you can use with a GNU license. This is PRC-Tools.

CodeWarrior is a commercial package from Metrowerks, with versions for Macintosh and Windows. It's a typical commercial development environment, similar to Microsoft's and Borland's C++ environments. Most of the books that talk about Palm programming use CodeWarrior exclusively.

PRC-Tools, or sometimes called GCC, is free and can be downloaded from the Internet. PRC-Tools runs on Windows and Linux/Unix. Contrary to CodeWarrior that provides a nice GUI IDE, PRC-Tools does not come with one. It is designed as a command line compiler, so you feed it the names of the files that contain the C code and the definition of the Palm screen. Although PRC-Tools does not come with an IDE, there are several people that have made them.

That last set of C programs are actual C compilers that run on the Palm itself, as opposed to compiling the program on a PC and uploading the compiled code to the Palm. They allow you to write programs in the Palm Memo Pad and then compile them directly into Palm applications. They are PocketC and OnBoardC.

The next set of programming tools is the high level. These consist of Java, Basic, Pascal, and a few other languages. These programming languages are much easier to work with than C and C++, but they usually require a utility program, or a runtime module, to be loaded on the Palm in addition to the program you write.

*Continues on page 45*



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Application Hosting Group, Inc. are seasoned U2 professionals with 18 to 29 years experience with Pick like systems. We have a total of 57 years of consulting experience in this environment. The data center is managed by our strategic partner WORKNET, Inc. They have a staff of experienced technicians and currently have 30 existing ASP/AHP customers. The recently completed data center was designed with your data security and maximum uptime in mind. Only escorted access to the data area, 200 pound impact drywall, biometric identification to data area makes sure your data is safe and secure. Redundant OC3 data service, UPS, Diesel Generator, 24/7 on site operators, automatic error condition notification, automatic load balancing, and Hot swappable components keeps your data accessible.

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# Diary *of a* Web Site ENCRIPTION

IN OUR LAST INSTALLMENT, we discussed some of the issues, limitations and solutions regarding the security of our Web site. In this iteration, we'll look at a slightly different take on security. Namely, how to keep data from the prying eyes of, well, people we don't want to see our data.

There are two points at which we are concerned about our data. The first is while the data is moving from the client browser to the server (Data Transmission). The second occurs once the data is on the server (Data Storage). Although some of the concepts are similar, the details of the implementation are not.

## Data Transmission

For most data transmission security, Secure Sockets Layer (SSL) is sufficient. However, understanding SSL is useful, if only to be able to judge its appropriateness for your own situation. In an SSL connection, the data is encrypted by the browser. The encryption key is retrieved by making a request of a certificate server. Typically, although not necessarily, this server will be hosted by a trusted third party. Verisign is the most popular provider of this service. The encryption key is used to encode the data before it is being sent to the server. At that point, it is decoded and processed as an ordinary request.

When discussing SSL, you will frequently hear the terms 40-bit and 128-bit. These phrases refer to the number of bits in the encryption key. SSL utilizes a technique from a family of algorithms called public key encryption (PKE). The mathematics behind the algorithm involves

the selection of two very large prime numbers. By large, we are talking about 60-digit numbers or more. These two numbers are multiplied together to get an even larger number representing the product. This number (the product) is published as the public portion of the encryption. It is this value that is returned by the certificate server when the key is requested.

In order to decode the message, a function utilizing the two large prime numbers is used. For those of you who might be mathematically challenged (or just never gave it a first thought, much less a second), the process of identifying the prime factors of a number is labor intensive. What this means is that, even though that large number is publicly available, it would take a long time and a lot of computing power to determine its factors. The time involved increases with the size of the number. This is the reason that more bits equals more security.

But make no mistake. It is possible to break an SSL encrypted message. It is just a question of how much time and effort the hackers are willing to exert. At the moment, you can break (assuming that you have a powerful enough computer—one that checks a billion possibilities a second) a 40-bit code in 18 minutes. The DES-breaking machine (called Deep Crack, a distributed network of computers connected through the Internet) was processing 250 billion keys per second at its peak. If you had a machine a billion times more powerful than Deep Crack, it would take 10 to 15 years to break a 128-bit code. Secure enough for most people, I would think. But not for all.

In some instances, you may neither want nor need to send SSL-encrypted data to the server. The most common example of this is a password. Many sites ask you for a user id and password before accessing any information. This makes a convenient and appealing place for hackers to start their efforts. But through a couple of simple changes to your site, you can greatly increase the resistance of your site to this problem. Consider these tips to be like a vaccination for your site.

#### Encrypt the Password Before Transmission

In many instances, the user id and password are sent in plaintext (i.e., unencrypted) to the server. A diligent hacker would have no trouble picking off that request and stripping out the user id and password. Even with an SSL connection, it is still possible to hack the information, because most people do not change their passwords that frequently.

The solution is to encrypt the password in the browser. The algorithm used is not the same as the PKE technique used by SSL. Specifically, this is a one-way encryption also called a hash. There is no way to decode the encrypted message to determine the original password. Instead, the encrypted password is passed to the server when it would be compared to the real password run through the same algorithm. In this way it is possible to determine that the two passwords match without ever knowing what the passwords themselves are. The JavaScript code to perform an encryption using the MD5 algorithm can be found on my Web site

([www.tagconsulting.com](http://www.tagconsulting.com)). It is too complex to include in this article. One look at the code and you will see why I made this choice. This algorithm is typically used to create digital signatures.

#### Password Hacking

A very common method of password validation is to take the incoming user id and password and construct a query string along the lines of the first statement shown in Figure 1. If this is execut-

fore more secure) the encryption key is, the slower the process.

Now I don't want you to get the idea that each field will take a second or more to decode. It won't. But if you do a query that returns 10,000 records, the delay will be noticeable. As well, you won't be able to view the results of a query in a standard tool. You will need to create a special browser that decrypts the data before display. Not difficult, just extra work.

```

STATEMENT 1
SELECT * FROM Users WHERE UserId= '<userid>' AND Password = '<password>'

STATEMENT 2
SELECT * FROM Users WHERE UserId = 'ABC' AND Password = 'OR LEFT(UserId,1)= 'A'

STATEMENT 3
SELECT Password FROM Users WHERE UserId = '<userid>'

```

FIGURE 1 - Password Validation Statements

ed and a row is found, then the validation succeeds. While this is all fine and good, what if I, in a moment of sheer e-vil, enter a password of " OR LEFT(UserId,1) = 'A' ". It is probably difficult to see in text, but the second statement in Figure 1 shows how this translates to a query. Worse yet, if this query were to be executed, it will return at least one row if there is a user id that starts with 'A'. Not an ideal situation.

The solution is to modify the validation technique slightly. Instead of using the password in the initial SELECT statement, just use the user id and retrieve the password. See Statement 3 in Figure 1. Then do your comparison of the password. Alternately (or as well) you can restrict the length of the password and ensure that string of alphanumeric (letters and numbers only) are allowed.

#### Data Storage

The problem of securing data storage is not dissimilar to the issues addressed by SSL. Any encryption needs to be two-way (i.e., decodable), so there is always a chance that the data can be viewed. As well, there is a performance penalty to pay for this capability. Every piece of encrypted data must be decrypted before it can be used. And the larger (and there-

If you are working on a Windows NT platform, the best solution is to use the Crypto API. OK, that's not an entirely true statement. The documentation for the Crypto API is not the best and there are few books that cover it well. Instead, I would suggest purchasing a third-party component to do the work. Check out [www.aspcrypt.com](http://www.aspcrypt.com) for one product that I have found to be useful.

As well, you should be selective about the data that is encrypted. There is rarely the need to encrypt absolutely every piece of data. Look at what is considered to be sensitive and work from there. That process will significantly reduce the performance penalty for the encryption.

On a more personal note, I'm afraid that this will be the last installment of our diary. With my current workload, I am finding it difficult to devote the time and attention that writing demands. If any of you have specific questions that you would like addressed, I would be happy to apply whatever experiences I have to your situation. As always, I appreciate your readership and support and wish you the best of luck in your future Web endeavors.

**BRUCE JOHNSON can be reached at [brucej@tagconsulting.com](mailto:brucej@tagconsulting.com).**

# TO SOME, jBASE IS A UFO.

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## Web-ify

"Clearly, the Web was the way to go. Today, our completely Web-enabled application has streamlined work processes and reduced errors. Thanks to our using jBASE, OBJEX and Active Server pages, which all interface nicely with BASIC subroutines, we now have a state-of-the-art application."

Use jBASE Web Builder, Java OBJEX, JDBC, and OBJEX with Active Server Pages, Java Applets, Browsers, etc.



## Desktop and Development

"Around here, the process never stops. We're continually enhancing the application and bringing on new functions, which is why we're pleased to have jBASE helping us move the process along. We're fully confident that jBASE will be with us well into the future."

Use JDP (including OLE DB, ODBC, ADO, and JDBC) or OBJEX with Excel, Word, Crystal Reports, etc.



Use Java OBJEX, JDBC with development tools like Cold Fusion, jBuilder, etc., as well as with jBASE OBJEX with Visual Basic or Delphi etc.

## Database Interoperability

"Interoperability is critical because everything must interact with everything else. jBASE has been key to allowing us to move from a MultiValue database to a normalized RDBMS system — like Sybase or Oracle — without having to rewrite our application. For us, nothing else was as flexible as jBASE, especially when you consider that we need to access and store data in other database environments."

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THE jFILES

THE jFILES

THE jFILES

THE jFILES

## THE SECRET IS OUT.

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!

## WEB-IFY APPLICATIONS WITH EASE.

Face it, developers love exploring the limitless possibilities of the Web. Why not? Web-enabled applications are more competitive. And they take advantage of the newest technology. So don't let other development products ground you, reach new heights with jBASE. We provide you with an array of products and tools that make Web-ifying applications a blast. They include jBASE Web Builder, Java OBJEX, JDBC, and OBJEX. Each is designed to work hand-in-hand with many of today's leading industry Web tools such as Active Server Pages, Java Applets, Browsers, and lots more. Now that the truth has been uncovered, put jBASE to work creating Web-enabled applications that are worlds apart.

## 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](mailto:info@jBASE.com) or visit us at [www.jbase.com](http://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 jBASE Web Builder arena. Simultaneously, 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.



# Getting Started with Incorporating

# C Code into your UniBasic Development Environment

“

*Darn it, I forgot  
to use two equal  
signs again!*

”

AS A PROGRAMMING language, UniBasic has a lot to recommend it. It's an excellent high-level language, similar enough to “standard” Basic that the right folks can pick it up fairly easily, it's rich in text manipulation functions, and, of course, it is tightly integrated with the UniData database itself. On the other hand, it can be cumbersome to write serial communications protocols (although it surely can be done — we've done it!), and it is difficult or impossible to write socket-level network or Web-aware applications without resorting to third-party tools and add-ins.

The C programming language happens to be very good at filling UniBasic's gaps in the sense that it can readily perform system calls and otherwise work at a very low system level. Once a module of C code has been debugged, calling it from within UniBasic allows it to function as a black box; UniBasic programmers are able to use it without ever having to deal with the C code itself. In this article, I'm going to cover the three steps required to allow a C function to be called from within a UniBasic program, specifically:

1. Write and compile the C program
2. Edit the appropriate UniData configuration files and run some “magic” programs
3. Rebuild the actual UniData executable (sounds dangerous, but it's not!)

For our example, we're going to write a C function which accepts two integer arguments and returns their product. We'll then write a UniBasic program which passes two integers to our C function and prints the product.

Step 1: Write and compile a C function called "multiplier()"

```
/* accepts two arguments and returns the product */  
int multiplier(int x, int y)  
{  
    return x * y;  
}
```

We now compile our C function; remember to specify the option which prevents sending object files to the linkage editor, since the lack of main() will cause the compiler to produce all kinds of interesting error messages. (These screen shots happen to be from an AIX box, on which that option is "-c"; check your compiler documentation for the correct option on your platform.)

```
$ pwd  
/home/oam/C  
$ cc -c multiplier.c  
$
```

Next, we need to create a work directory for ourselves anywhere; in this example, I'm putting it under my own home directory (/home/oam). We'll then copy some needed files from the "real" UniData work directory into ours, and finally, we'll

copy the object code from our C function into our work directory as well:

```
$ cd /home/oam  
$ pwd  
/home/oam  
$ mkdir work  
$ cd work  
$ pwd  
/home/oam/work  
$ cp -p /unidata/home/work/* .  
$ cp -p /home/oam/C/multiplier.o .  
$
```

Step 2 - Edit the appropriate UniData configuration files and run some "magic" programs

In UniData's default work directory (probably /unidata/home/work), there's a file called "cfuncdef"; it needs to be copied to a file called "cfuncdef\_user" in your own work directory:

```
$ pwd  
/home/oam/work  
$ cp -p /unidata/home/work/cfuncdef .  
$ cp -p cfuncdef cfuncdef_user  
$
```

*Continues on page 28*

*Introducing...*

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## Getting Started with C Code

Continued from page 27

The file “cfuncdef\_user” then needs to be edited as shown here:

```
Before editing cfuncdef_user

/* test for adding C function to the RUN Machine */

/* comment lines come here.          */

/* C function declaration format:
function-name:return-type:number-of-
argument:arg1,arg2,...,argn
*/

SSFUN /* beginning of C function */

SSOBJ /* *.o come here */

SSLIB /* library comes here */
```

```
After editing cfuncdef_user (changes highlighted)

/* test for adding C function to the RUN Machine */

/* comment lines come here.          */

/* C function declaration format:
function-name:return-type:number-of-
argument:arg1,arg2,...,argn
*/

SSFUN /* beginning of C function */
multiplier:int:2:int,int
SSOBJ /* *.o come here */
/home/oam/work/multiplier.o
SSLIB /* library comes here */
```

Once the files have been edited, run these three “magic” UniData processes:

```
$ pwd
/home/oam/work
$ SUDTBIN/genefs
$ SUDTBIN/gencdecl
$ SUDTBIN/genfunc
$
```

UniData supplies their standard makefile (called base.mk). Copy base.mk to new.mk:

```
$ pwd
/home/oam/work
$ cp -p base.mk new.mk
$
```

Next, modify new.mk as follows (only the relevant portion of the file is shown). As indicated below, you’ll need to insert your object file name in the appropriate place. I also strongly recommend that you change the name of the executable to be made from “udt” to something safer, e.g., “test\_udt”:

```
Before editing new.mk

OBJS = funthead.o interfunc.o callcf.o efs_init.o

udt: $(OBJS)

$(CC) $(LDFLAGS) $(OBJS) $(NEWOBJS)
$(NEWLIBS) \

$(libpath) -lapidummy $(libs_clt) \

$(addlibpath) $(addlib) \

-o $@
```

```
After editing new.mk (changes highlighted)

OBJS = funthead.o interfunc.o callcf.o efs_init.o
MYOBJS = multiplier.o
udt_test: $(OBJS)

$(CC) $(LDFLAGS) $(OBJS) $(NEWOBJS)
$(NEWLIBS) \

$(MYOBJS) \

$(libpath) -lapidummy $(libs_clt) \

$(addlibpath) $(addlib) \

-o $@
```

Continues on page 30

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## Getting Started with C Code

Continued from page 28

Step 3 - Build the new UniData executable

It's finally time to create the new UniData executable. This is simply a matter of establishing an environmental variable called WORKPATH and running the "make" command. Once that's done, we'll create a "bin" directory for our new executable, and, as the last step, we need to copy a few key UniData files into our new "bin" directory:

```
$ pwd
/home/oam/work
$ WORKPATH="/home/oam/work"
$ export WORKPATH
$ make -f new.mk udt_test
      cc -qnorO -qarch=com -DNLS -DNULL_OK -DSQLTP -DNEW_INTER -
DUDMS -O -c funthead.c
      cc -qnorO -qarch=com -DNLS -DNULL_OK -DSQLTP -DNEW_INTER -
DUDMS -O -c interfunc.c
      cc -qnorO -qarch=com -DNLS -DNULL_OK -DSQLTP -DNEW_INTER -
DUDMS -O -c callcf.c
      cc -qnorO -qarch=com -DNLS -DNULL_OK -DSQLTP -DNEW_INTER -
DUDMS -O -c efs_init.c
      cc -K funthead.o interfunc.o callcf.o efs_init.o
multiplier.o -L/unidata/home/lib -lapidummy -lshare -ludsql -ludmach
-lbasic -lretl -lperf -lides -lpipe -lfunc -lndx -lshm -lmgln -lulc
-lcmn -llicn -ludus -lnfacInt -lud -lm -lcurses -lbsd -o udt_test
$ mkdir bin
$ cd bin
$ pwd
/home/oam/work/bin
$ cp -p ../udt_test udt
$ cp -p $UDTBIN/mchinfo .
$ cp -p $UDTBIN/product.info .
$ cp -p $UDTBIN/udtsort .
$
```

If you are familiar with the syntax of makefiles, then you may be wondering why, in the "make" command itself, I specified the executable name, since you probably know that thanks to the reference to "udt\_test" in the makefile, the new executable will automatically be named correctly. My excuse is simple paranoia; nothing more, nothing less. Like you, I've spent too many nights and weekends recovering from rogue development techniques, so I tend to use the suspenders-and-belt approach at all times; in

this case, I'm just making triple sure that the production version of "udt" doesn't somehow get overwritten.

At this point, I could test my new executable by simply changing my current directory to the appropriate account and executing "/unidata/home/work/bin/udt\_test"; there is no problem running different versions of UniData in this way. Here at The Systems House, however, we've written a number of commands and scripts which make assumptions about the UniData executable, namely that it's called "udt" and that it resides in \$UDTBIN. In our case, I would need to finish up by renaming "test\_udt" to "udt", changing \$UDTBIN to my test bin directory, and putting it first in my PATH so that the old "udt" never gets executed:

```
$ pwd
$ /unidata/home/work/bin
$ mv udt_test udt
$ UDTBIN="/home/oam/work/bin"
$ export UDTBIN
$ PATH=$UDTBIN:$PATH
$ export PATH
$ echo $PATH
/home/oam/work/bin:/usr/bin:/etc:/usr/sbin:/usr/
ucb:/usr/bin/X11:/sbin:/unidata/bin/ud:/unidata/
bin/tsh:/usr/sbin:
$ cd /unidata/home/TEST_ACCOUNT
$ udt
```

Since our C function accepts two integer arguments and returns their product, we're finally ready to write a UniBasic program that sends two integers off to the C function and then assumes that it's getting back the product:

```
ARG1 = 4
ARG2 = 3
PROD = CALLC multiplier(ARG1,ARG2)
PRINT ARG1 : " x" : ARG2 : "=" : PROD
```

If you've followed all the steps carefully, running this program should result in the following:

```
:RUN BP.OAM CALLC_DEMO
4x3=12
:
```

As you can see by the preceding example, writing a C function which is callable by a UniBasic program is not particularly difficult. There are, to be sure, a number of steps involved, but, as we here at The Systems House have done, you'll be able to automate some of them with a few relatively simple scripts. To summarize, here's a checklist of the steps:

1. Write and compile the C program
2. Create a work directory (e.g., /unidata/home/work\_oam)
3. Copy the contents of /unidata/home/work into the new work directory
4. Put your C object file(s) into the new work directory
5. Put a copy of cfuncdef, called cfuncdef\_user, into the new work directory
6. Edit cfuncdef\_user to include your function definition
7. From within the new work directory, run:
 

```
SUDTBIN/genefs
SUDTBIN/gencdecl
SUDTBIN/genfunc
```
8. Copy base.mk to new.mk and:
 

```
Insert your object file names
Change "udt:" to something appropriate (e.g., "test_udt:")
```
9. After setting WORKPATH, run "make -f new.mk test\_udt"
10. Put the newly built executable into its own bin directory and rename it "udt"
11. Copy mchinfo, product.info, and udtstort into the new bin directory

**I' D ENJOY HEARING about your efforts; feel free to drop me a line at [omarks@tsh.com](mailto:omarks@tsh.com).**

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BY STEVEN BACKMAN

# Debate *on the* Front Lines

## *State of the MultiValue Market*

**SPECTRUM RETURNED TO THE Boston area for the first time in several years. A modest but energetic crowd spent an intense two days learning Web-oriented and other new programming, pumping the hardy crew of vendors for details with old user group friends. And of course, as traditional in these affairs, the conference provided plenty of time throughout for speculating and pontificating about the future of MultiValue and our various places in it. To facilitate this soul-searching process, conference-meister Gus Giobbi generously provided a luncheon panel discussion on the future of the MultiValue marketplace.**

MultiValue folks have done this for years. This conference may have worried the same issues, but certainly in a new context. We have gone from early chatter about “good database, poor communications” to a conference dominated by Web-enabling, Windows, XML, palm and wireless tools. And we have gone from “great product, but not mainstream” to publicly traded colossi, from IBM-Informix on down.

Well, kinda, sorta.

The panel afforded a brief interlude to honestly probe the place and viability of MultiValue in meeting the needs of software users and developers alike. This author got snared into moderating the session, which featured Dave Bryant, president of jBASE, and Jay Adams, Raining Data East Coast technical marketing director, followed by comments from his Gus-ness, and other industry notables from Via Systems, Informix and end-users.

After years of lead vendors competing with each other to avoid the Pick or MultiValue moniker, the sense of the gathering reaffirmed the continued existence of a distinct MultiValue world. Moreover, the discussion took this as a good thing. Adams captured the general sense that “there certainly is a MultiValue world driven by our reseller solutions, our lower cost of ownership and our ability to change. MultiValue offers savvy business folks that understand specific industry space, the package of a natural database, simple programming language and ad hoc reporting.”

To make sense out of this virtue, we need to step back and consider the emerging industry context.

From the late '80s through early '90s or so, as the relational database sector forged ahead to make itself the standard and the mainstream, its lead vendors competed with each other and with other database sectors in terms that said: “The database matters!” “Standards matter!”

"Non-relational means legacy, and legacy means end of the road!" This all worked to our collective disadvantage as a VAR- and solutions-based enterprise. The MultiValue sector rushed to embrace SQL and other so-called standards, and the user community beseeched vendors to meet the relational titans on the marketing and advertising field of battle.

Interestingly, we have now entered a new phase, where the relational database vendors have gotten a little bit sheepish about how much the database itself matters. First, the RDBMS world underwent a serious consolidation, with Sybase, Informix and lesser lights steadily getting absorbed into the big three of IBM, Microsoft and Oracle. The terms of this battle had more and more to do with proprietary extensions of the SQL model rather than its successful implementation.

After 20 years of pseudo-academic jargon, the relational database theorists gradually admitted that SQL had no particular sanctity in modeling the real business and organizational world. First, vendors competed more on their proprietary, non-relational, procedural programming languages than on SQL itself. You didn't know relational databases used procedural languages? They may get called fancy terms like stored procedures and triggers, but those things are as procedural as a block of PICK/BASIC code written 20 years ago to establish credit-worthiness for a particular customer. SQL still matters, but after years of trying to have it, we find that the rest of the industry now focuses on it less and less in its pure form. If you can run a function from a Web page or compiled business object, it matters less and less whether it speaks to the data in SQL or some other language.

Major vendors also busied themselves figuring out such things as how to allow multi-dimensional access to flat table data for analysis and warehousing; how to shoehorn in spatial operations to permit mapping and geographic-oriented analysis; how to store and move text on the Internet and other such things. So suddenly, MultiValue, nested relations, multi-dimensions and so on all have a certain charm.

Third, the relational database vendors armored their databases with a whole array of Web- and desktop development languages and tools, aiming to rope in long-term customers more with development products than with the database engines themselves.

The consolidation of MultiValue database engine developers with tool developers, such as what has happened this year in the formation of Raining Data, but also in the evolution of Via Systems and others, parallels what has happened with the big three relational database vendors.

Hanging over all of this has been the return to a focus on software packages offering complete business and organizational solutions. If you read the industry press in recent years, we have re-entered an era where competent VARs, systems integrators and consultants customizing proven solutions have a stronger appeal than the chance to create whole new applications from scratch. Hello? Here we are.

Taken together, we passed into and out of a phase of competing over databases themselves and back to a battlefield over tools and solutions. This should favor the MultiValue sector and Adams, Bryant and others all stressed the mainstream-like power, capabilities and familiarity of our sector's new desktop and server-side development tools.

JBASE's Bryant commented: "As our database technology gains strength with new functionality, and as we add platforms, jBASE enables the MultiValue resellers not only to do new development but also to sell into markets that have in the past been out of reach. Basically, we are committed to growth by bringing the MultiValue marketplace to the mainstream." And Adams added, "To steal a Clintonism—It's the VARs, stupid!"

Yet if it's a bit of back to the future, nothing happens the same way twice. To succeed in the new era, the MultiValue community has to adapt to some key changes.

User sites long comfortable dealing with, and often insistent on dealing with, single lines of support face a big change. For most, the era

of perhaps one VAR or consultant providing support for almost everything has ended. Corporate mergers bringing multiple systems, integration of customers and clients with their own software into internal systems, the networking complexities of eCommerce, wireless and VPNs, all favor having to deal with more of a consulting army than in the past. And the windy path upward into these realms may also upset years of steady, modest maintenance budgets for infrastructure and development. Systems administrators and database administrators long-accustomed to emphasizing how lean and mean MultiValue ran have to adjust their sights or see their still-excellent line of business operations swept aside.

For software developers and VARs, there's an equivalent reference point in the industry at large. Out there, software application developers, such as in the accounting and financial management arenas, as well as relational-database hosted solution providers are consolidating into big companies, while the industry leaders continue to shift more and more to system integration services and not just software sales. Trusted, experienced MultiValue VARs and consultants will need to find their way into teams and extended families with more of an array of systems integration skills. This would seem to matter as much or more today, in 2001, than how quickly the applications themselves rid themselves of their "green screen" character-based roots.

Yet despite these concerns, from the sensibilities and sensitivities of the Boston crowd who are always on the leading edge, of course, it would seem that the MultiValue community knows what it is up against, that it has vendor support readier than ever to meet the challenge, and that we experienced professionals are enthusiastic to play. is

---

**STEVE BACKMAN'S company, Database Designs Associates, provides consulting services and software development support for MultiValue and relational database clients. You can reach Steve with your comments at [sbackman@dbdes.com](mailto:sbackman@dbdes.com).**

# NEW PRODUCTS

## LIVEWIRE Messaging Makes Telecommuting More Efficient

EVEN AS THE RANKS of teleworkers swell to all-time highs, many companies remain hesitant to jump on the bandwagon for fear of decreased productivity and accountability. Now ExecutiveWorks ([www.executiveworks.com](http://www.executiveworks.com)), a leader in the telework solutions industry, has introduced a tool to solve common telecommuting difficulties. The product, LIVEWIRE Messaging, is the newest module to Ex-

ecutiveWorks' popular OfficePilot and allows a company's on-site employees to work face-to-face with remote workers in real time via a secure, wireless-enabled intelligent messaging portal.

"Typically, a major obstacle to implementing a telework arrangement is management's feeling that they can't effectively manage employees they don't see on a daily basis or that teamwork will be diminished if

all employees are not working in the same location," explained Sondra Stewart, ExecutiveWorks president and director of R&D.

"LIVEWIRE Messaging and OfficePilot enable managers, on-site teams and remote workers to connect in real time, using a variety of methods."

Recent reports of companies' and employees' dissatisfaction with telecommuting cite teamwork issues, security risks, and teleworkers' fear of diminished chances for career advancement as common reasons for not implementing telework arrangements or for discontinuing existing telework programs. "We agree that these issues need to be resolved for teams to telework successfully," Stewart said. "OfficePilot and LIVEWIRE Messaging affordably address each of those concerns."

LIVEWIRE Messaging was developed to help teleworkers save time and increase efficiency. "Many managers identify with having to sort through dozens of e-mail and voice messages each day," Stewart said. "A day or two away from the office can mean hundreds of messages to deal with upon their return. But e-mail and telephones assemble all data in one place, requiring the recipient to manually sort and prioritize the incoming data, which is a daily and time-consuming process."

## Sunergos Software Releases HyperEDIT 7

LESS THAN NINE MONTHS after the release of HyperEDIT 6, Sunergos Software has officially released HyperEDIT 7. HyperEDIT is an integrated development environment (IDE) for the UniVerse and UniData databases and takes advantage of the UniObjects API now common to both environments.

When asked about the quick turnaround on versions, Sunergos CIO Bryan Thorell commented, "It all seemed to start when we added record locking to HyperEDIT 6. The response was phenomenal. So we decided to refocus and narrow our efforts and create the best programming environment for U2, and I think we've accomplished that."

New features in the development tool include a Multiple Document Interface with support for simultaneous connections to different hosts and accounts, as well as an intriguing feature that lets events such as OnOpen and OnSave interact dynamically with host-based subroutines. "We added the dynamic events primarily to enable simple integration with all of the version control applications out there," Thorell said.

With the creation of a subroutine, developers can receive messages and prompts from their version control software without leaving the HyperEDIT environment. "We're already working on bundling routines for several packages including SCCS and Susan Joslyn's PRC," Thorell added.

Thorell attributes most of the improvements in HyperEDIT to user requests. "I don't think you have to be psychic to be successful in this business, just responsive," Thorell said. "We encourage developers to download our products and tell us how we can improve them. Some of the requests we have received are brilliant ideas."

HyperEDIT is for UniVerse and UniData developers who are dissatisfied with programming with line and text based editors. Sunergos has posted evaluation versions of HyperEDIT on its Web site, [www.Sunergos-Software.com](http://www.Sunergos-Software.com). ■

## Prevent the 'Blue Screen of Death' with System Mechanic

SYSTEM MECHANIC keeps PCs in check with 15 tools for speed, reliability and security. With recent advances in communication and connectivity, more and more people are starting businesses out of their homes. Similarly, large companies are becoming less skeptical about hiring consultants, which often sends them scrambling for the technology to keep things running smoothly.

Whether you're a home-based professional or corporate technology officer, this wave of change has created an increased need for PC utilities. System Mechanic is comprised of 15 different utilities designed to enhance the stability, performance, and overall reliability of the PC. "System Mechanic can speed up your Internet connection by up to 300 percent, clean up your system registry, remove unnecessary files, fix and remove broken Windows shortcuts, and streamline your overall system maintenance. Plus, we've made it easy for anyone to use," says Francis Johnson of iolo technologies.

"For someone who's trying to be productive, either in the office or from their home, there's nothing worse than a PC that's slow, unstable, and full of useless junk files," Johnson says. "System Mechanic is an essential tool for individual employees in the field, as well as the home-based professional. However, it's not meant exclusively for these individuals. System Mechanic has been very popular with corporations of all sizes and in all industries, keeping headquarters and satellite offices alike running smoothly."

Perhaps most important is the System Mechanic Mobile Tool Kit, which is the enterprise version of System Mechanic, made to run directly from CD-ROM. This will especially appeal to IT administrators who maintain a large number of machines.

Because it runs directly from a CD, the power of System Mechanic Mobile Tool Kit can be easily transported and used on any number of computers, simply by inserting the CD into each machine, performing the maintenance required, and then removing the CD afterward. "It's a computer-independent license, so one CD can be used to portably maintain any number of machines," Johnson says.

System Mechanic's unique blend of usability and cutting-edge tools led the software to beat out Symantec's Norton SystemWorks for Home Office Computing's 100 Gold Award for the top utility software in 2000. In order to maintain and increase the value of System Mechanic, iolo has recently added even more capability, including consolidation of critical system maintenance and automatic updating, with its self-repairing WebUpdate feature.

**I O L O can be visited on the Internet at <http://www.iolo.com>. ■**

In contrast, LIVEWIRE Messaging allows communication by task-specific or project-specific e-mail, instant messaging, voicemail, white board, voice-over IP, and Web-enabled person-to-person or multi-user video. Information is organized by task or project as it is sent and received, eliminating the inefficiency typically caused by congested voicemail and e-mail.

The interface is Web-based, secure and password-protected, and integrates seamlessly into OfficePilot, a Web-based activities management

system and ExecutiveWorks' flagship product. Launched late last year, OfficePilot acts as a desktop for remote workers and their teams, centralizing all strategic and tactical activities and providing daily and weekly wireless-enabled action plans and productivity reports. "Everyone says teleworkers are more productive," Stewart said, "but OfficePilot's scheduling and reporting features give proof." ■

### Rauch Medien and Arco Technology Present World's First Remote RAID Monitoring System

RAUCH MEDIEN ([rauchmedien.com](http://rauchmedien.com)) has decided to base RAID Alert, its upcoming remote RAID monitoring system, on Arco RAID technology ([arcoide.com](http://arcoide.com)). The RAID Alert system is a combination of hardware and software that continuously monitors your RAID system and, in the event of a problem, alerts you with important information via email or email-enabled device like a pager or cell phone.

"We believe RAID Alert will prove to be a very valuable tool to the IT community," said Robert Loda-to, marketing director for Rauch Medien. "It will enable system administrators to know precisely which drive failed on which server, as soon as it happens."

The RAID Alert system continuously monitors your RAID array and alerts you when any problem has been detected. The RAID Alert system can be configured to respond with detailed technical information on your system. This includes system status, identification information (IP address, host name, and alert alias), error information, hardware configuration information (such as hard drive specs), and RAID status code. The alert can then be received via email or email-enabled device like a pager or cellular phone.

The RAID Alert system is perfect for call centers, data centers, and corporate networks where large IT managerial tasks exist. The RAID Alert system streamlines these tasks by automating the monitoring of your network's storage and keeping your IT staff informed on current network events. This addition to Rauch Medien's email alert system that comes standard on all servers, provides peace of mind not available with any other server on the market, the company said.

Rauch Medien has based RAID Alert on Arco's proven RAID technology. "Arco's RAID technology is a very mature product that has proven its reliability in the field, which is what counts," said Cory R. Rauch, director of Technology for Rauch Medien. "This, coupled with excellent technical support, is why we chose to go with Arco."

*Continues on page 44*

Post-Modern

# Plastic

## Online Payments at Your Site

BY MELVIN SORIANO



MELVIN M. SORIANO works at Eagle Rock Information Systems (ERIS), an Internet Application Service Provider and MultiValue Developer. ERIS has deployed enterprise-wide solutions on most MultiValue platforms and operating systems. Mel can be contacted at [mel@eaglerock-is.com](mailto:mel@eaglerock-is.com) and visited at [www.eriscorp.com/](http://www.eriscorp.com/). You can always call him directly at ERIS's Pasadena offices: (626) 535-9658.

**Sometimes you have to raise the bar. Just can't keep jumping the same hurdles month after month, click after click.**

Many Web sites, especially from traditional offline brick and mortar shops, do well enough without credit card payments. In fact, many don't need them whatsoever, as they handle payments through credit accounts, purchase orders, and monthly statements. These B2B (Business to Business) sites are more extensive than most people realize. But expectations are changing, and although such setups might work for your existing customers, they might not attract new customers to your e-business. Last month, I suggested that "for most, credit card payments have become more com-

fortable and acceptable" online. So with that reality, I think it's time that we force the issue and assume that even some traditional businesses will either face demands for some online retail payment solution, or must impress their prospective customers with so-called mainstream computing features on their Web sites.

Let's assume that your company accepts Visa, MasterCard, Amex and Discover cards, just to name a few. You might even allow customers to enter the credit card information in a form and just forward orders from that form to an email account. If so, you may have already begun tackling the most fundamental credit card payment issue, namely credit card number validation.

Without a live connection to a bank or a card validation service, however, there's precious little you can do up front with the card information. You are thus either delaying the order process until the card can in fact be validated, or you are taking a preposterous risk and processing the order with the assumption that the card is valid, was entered correctly, and belongs to the person who used it.

Your programmer can count the number of digits in the card, making sure that the format is approved for the specified card. You can run the card through a checksum subroutine to see if the numbers are valid. (Contact me at mel@eaglerock-is.com if you need access to that algorithm.) You even can make sure that the date of expiration has not already passed. But at some point, all you will have is a number that still needs to be passed manually through a point-of-sales terminal, called in to the bank, or (gasp) to be written physically onto a carbon-copied receipt.

So, if you are not doing electronic validation, your procedures may be more susceptible to cause an error than if you performed the acts automatically. Any intervention by someone's hands opens the doors to mistakes. A human clerk or

salesperson could enter the wrong information or correlate the card payment with the wrong order. And of course, any mistake that causes delays merely confuses the customer further; the customer, as far as she is concerned, thought the card was valid, as the order was accepted beforehand.

The mistakes and delays may not even be the primary concern for some. Security might be a larger puzzle to solve in these implementations. Orders transmitted to a clerk or salesperson by way of e-mail usually are sent unencrypted and therefore are unsecure. You may have sent your customer through a complex set of secure Web pages, but the final transmission, the one that actually gets to the salesperson, was completely transparent, visible, and accessible on the World Wide Web, along with that credit card number.

The customer, thinking her credit card was encrypted from the secure pages, does not realize that the card number was transmitted within such a lax environment. If this reality does not match any promises of security, or may cause the customer to feel misled, then you might have a privacy and security issue blowing up in your face.

Automatic payments not only ease the possibility of error, therefore, but also help keep your customers' information confidential. The different ways of accepting credit card payments may differ, but they at least offer you these benefits in addition to the increased ease-of-use and marketability of your e-business site.

One method of managing credit card payments is through MultiValue software. You could write your own software

*Continues on page 38*



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## Webonomics 101

Continued from page 37

that will take hold of your server's modem and connect to your bank. The details of such transmissions are therefore completely under your control and can be manipulated to your company's needs.

Likewise you can just purchase existing credit card verification software packages that are written in MultiValue Basic. Existing software packages allow you to enjoy the benefits of shared development costs as well as bundled features and edit checks that you may not have considered.

Both these choices can integrate easily with most every MultiValue database platform out there. They usually are written as called routines that can be called from any of your software packages.

Depending on your e-business site, you may already be accepting orders directly within your MultiValue system. If you use Web integration tools, such as Web-Wizard, FlashConnect or RedBack, you merely need to connect the order commitment and the credit card validation software. These credit card validation software packages are blind to online versus traditional input mechanisms.

This input-independence not only makes your programmers' lives easier; it might be cheaper for your company on a transaction basis. Many banks that offer merchant accounts demand higher percentages from pure Web merchants. Because these software packages are mixed use, and do not distinguish Web-based transactions from off-line transactions, there is no markup associated with Internet-based commercial activity.

Outside the realm of MultiValue validation software, some merchant banks and application service providers make it easy for you to use their validation software. Two options seem to be available for this approach.

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In the first, you install a software program on a server in your network. More likely than not, the software will reside on your database server. For better security configurations, however, you may choose to place it outside the innermost secure areas in which your database server resides. You shell out of your Multi-Value database and pass the credit card information to the software program. The software program opens up a low-level network communication to its main servers back at the bank or operational facility, validate the credit card, then returns a signal with some success or failure code. Your programmers then take the success/fail code and process the transaction accordingly.

Another option is to use a service provider. You are essentially doing the same thing as the first option, except the data is passed not to a software program running on your network. Instead, the data is passed via a URL to a remote Web site. The Web site takes the credit card information over secure communications then returns a success or failure Web page that you determine.

With this approach, the MultiValue programmer does not technically call the program. Instead the information is just redirected to the service provider to process. The reply will call up a Web page that presumably uses your MultiValue connection software.

With these different ways of validating credit card information, then, your site doesn't have to get by with less than valid credit card validation. Respond quickly and automatically to give your customer a solid sense of security and comfort. In a virtuous circle, they'll return with more business and your site provides top-notch service that Web surfers are beginning to expect as standard. is

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# northgate

## INFORMATION SOLUTIONS

**Word on the street is** that the Reality MultiValue DBMS is on the comeback trail. However, according to its owner and developer since 1974, U.K.-based Northgate Information Solutions, that perception is not quite accurate. The reality is that Reality never really left. Northgate, a company with deep ties to the MultiValue marketplace, has ensured that Reality has annually kept up with current technology so that it remains on the cutting edge, said John Letham, CEO of NIS Inc., Northgate's new headquarters in the U.S. It's just that, because of distribution issues, users in the United States didn't have access to the new releases of Reality. But now all that is about to change. The company is marshalling its resources to launch a global strategy for the latest release of its flagship product, Reality V9.0.



John Letham, CEO of NIS Inc., poses in front of Northgate's new U.S. headquarters located in the prestigious University of California at Irvine Research Park.

## *Reality Returns to the*

### Northgate Plans Reality V9.0 Rollout in U.S.

Located in the heartland of the MultiValue industry in the prestigious University of California at Irvine Research Park, NIS Inc. will be instrumental in raising the profile of Reality and the launch of Reality V9.0 and all of its bundled utilities in the U.S. market. CEO John Letham spoke to *International Spectrum* magazine about the latest version of Reality, V9.0, and the company's global strategy to market it.

Letham said that the perception that Reality had disappeared is partly due to the fact that Reality users in the United States are using a much earlier version of the database manage-

ment system (mostly V5) than their counterparts in Europe and other countries. NIS is remedying that problem, taking the reins into its own hands and assuming control of the distribution and servicing of its own technology.

"Previously, Northgate pursued indirect strategies to distribute Reality, using distributors to represent us," Letham said. "We think we can do a better job ourselves. Our intention is to let customers know how good and capable Reality is, and what they can get out of Reality."

Plans call for the release of Reality V9.0 in the September/October timeframe, complemented by an all-out effort, including a direct mail campaign, to reconnect with the U.S. Reality customer base and to make them aware of the ease of migration to V9.0, according to Letham. NIS is also offering a simplified, "easy to deal with" licensing model to customers.

"Customers can go from V5 to V9.0 with no application change and no recompilation," he asserted. "There are no changes to the data set that clients have had to undergo with other MultiValue database management systems. That's a big plus. Customers are pressurized to provide access to the Internet and secure business-to-business transactions. This is the launch pad to answer customers' needs."

The fact that Northgate owns all of its technology—Reality and its bundled utilities—makes for a "winning proposition," Letham said. "We own all our own technology, which means that we are completely in control of how our product is developed and moves forward."

### Technical Innovations

On the technical side, Reality can more than hold its own with other MultiValue database offerings. "We are delighted with Reality's ca-



Letham, in the server room at NIS, says the company plans to launch Reality V9.0 in the U.S. in the September/October timeframe.

## U.S. Market

pabilities today; we've kept up with technology more than anyone expected us to," Letham said. Reality V9.0 has many "special ingredients" that businesses today require—SQL, JDBC, ODBC read and update, powerful and efficient indexing capabilities, transaction logging, transaction handling, a remote tape utility, among other features—and simplified Web extensions that allow Reality users to call objects within Java applications and make a direct call right to the Web.

Stressing the ease of interfacing with the Web, Letham further explained that the "Java extensions within Reality V9.0 allow customers the opportunity to implement Java applications which call DataBASIC subroutines, whether a Java client application or Web extension. This means that the many man-years of development of business logic can be reused without the need for extensive rewrites." In addition, these elements are addressable via standard URLs under an extended security model.

If, however, you are looking for a quick way of presenting your applications on the Web, then "RealWeb" provides that mechanism. RealWeb provides DataBASIC programmers with a significant number of APIs that allow them to present existing applications directly to the Web. Via RealWeb, Microsoft Internet Explorer and Netscape browsers have dynamic read and write access to Reality database information. In the U.K., Northgate already has customers who use this method to allow their

customers to order items over the Web, updating their back-end systems in realtime.

"Reality Explorer" is a graphical front-end to the Reality database enabling Windows Explorer file management. Users benefit from an improved Windows look and feel, and the ability to use "Windows Explorer—with its ease of navigation and speed—to get down to the lowest level of data item detail within files," Letham commented.

One of Reality's strengths is its indexing capabilities. Letham gave an example that demonstrates the power of Reality. "Users can have a data store of hundreds of gigabytes of data," he said. "One customer, a member of the security services, has a 256Gb database recording stock movements throughout the world. Within this database, one file alone contains in excess of 29 million stock transaction records, and with the implementation of indexing, they are able to very quickly inquire on the contents of this database using an ODBC-compliant Business Intelligence application. Reality can stop transaction movement with subsecond response with 29 million records.

"These are integral parts of Reality, and they allow our customers to move forward without expensive rewrites of core parts of the business applications."

### Where Did Northgate Enter the Picture?

If you're a longtime affiliate of the MultiValue industry, you may be familiar with the Reality DBMS, but not the relatively new Northgate Information Solutions name. Northgate Information Solutions' business dates back to 1969 when it was established as a provider of

data entry systems. The business was acquired in 1979 by McDonnell Douglas Corp. (MDC), a U.S.-based aerospace company, to be part of its international information systems business. MDC expanded its information systems business during the 1970s and 1980s so that by 1986, it had sales of U.S. \$1.2 billion. In 1989, MDC began to withdraw from the IT industry by disposing of its information systems businesses including what was then called McDonnell Douglas Information Systems (MDIS), also known as Microdata.

MDIS's management, supported by institutional investors, completed a buyout of the information solutions company in 1993. MDIS built a significant physical presence in the U.K., but by 1999, was experiencing declining revenues and a general lack of direction caused by warring business units.

Northgate Information Solutions emerged from a major reorganization that spanned a six-month period in late 1999 and early 2000. "We began restructuring 18 months ago," Letham said. "We carefully looked at the successful components of our business and the unsuccessful components. We streamlined and downsized 20 percent of our workforce and closed some areas of our business."

In the process of streamlining, the company decided to focus on its areas of strength, one of which is the Reality database, he said. "We chose to invest in our technology, focusing on the things that we are good at and make money at. We are leaner and meaner than before."

### Front Office Solutions Come to the Forefront

Besides adopting a new name, a new focus crystallized for the company: "Front Office Solutions." Front Office Solutions address "how organizations react and interact with customers," Letham said. "The interaction could take place over the phone, the Internet, or face-to-face, but from a computing point of view, Front Office Solutions allows a person to have a single view of the person they're interacting with or talking about. In the healthcare sector, it's dealing with the patient; in the government sector, it's dealing with the

*Continues on page 42*

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|---|---|---|
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**3. What MultiValue Databases does your company use? (check all that apply)**

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**5. What major business/industry most clearly describes your company?**

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**IS 7/01**

**Northgate Information Solutions** *Continued from page 41*

citizen; and in business, it's dealing with the customer."

In Information Technology over the last 20 years, great gains have been made in automating the back office, yet an interaction in the front office can require various people to handle it because one person doesn't have access to all the data needed from the computer system. This is because all the computer systems aren't linked together, Letham explained. In some cases, like in healthcare, not having access to all information can be life threatening. For instance, a doctor or nurse needs to have all information at the same time in order to effectively treat a patient, especially in an emergency. This is where Front Office Solutions comes in.

"Front Office Solutions is the glue between back-office systems and front-office contact," he commented. "The solutions allow anybody in an organization to have a single view of the patient, citizen, or customer in the computing system; streamline processes; and make better decisions and better use of resources."

**Mission-Critical Solutions in Many Settings**

Northgate uses the same technological expertise to provide different solutions that are deployed in many settings including Customer Relationship Management (CRM), E-commerce, electronic patient records, and electronic government one-stop shop. The solutions are written in Reality, which provides the mission criticality needed, and are backed by Northgate's nearly 30 years of experience and expertise, he said.

Currently, about half of Northgate's business is in the public sector—police, government, and healthcare, according to Letham. The company provides mission-critical solutions to over half of the U.K.'s local governments, 95 percent of its police forces and 20 percent of the population's healthcare providers. The other half of the business is the private sector.

Mission-critical applications that require real-time updates is one of Reality's areas of excel-

lence. Whether the application is for the private or public sector, mission criticality has become a crucial aspect of running the organization, a perfect match for Reality's capabilities in this area. "Over the last 20 years, Northgate has really grown in mission-critical business applications," Letham said. "As more businesses become increasingly dependent on computing, mission criticality becomes far more important. For some organizations, if the computer system is down, the entire company is down. We have built a tremendous reputation for providing systems that don't break down; they work. Based on Reality, these applications are rock-solid and do the job."

#### Reversal of Fortunes

Judging from Northgate's announcement of preliminary results for the 12 months ended April 30, 2001, the restructuring has turned around the company fortunes with a return to profitability. In its first full year as Northgate Information Solutions, the company reported

more than 15 percent growth in core business revenues, an operating profit, and a strong cash position. Northgate sees the financial turnaround as tangible proof of the success of its new strategy.

And now with a clear strategy to target the U.S. market, and Australasia later in the year, Northgate is continuing its momentum. In fact, NIS is already handling Reality customers in the U.S. that were previously under other distribution agreements. Letham acknowledges the assistance that NIS has received from GA Services, "a strong maintenance organization. They've helped us get delivery of maintenance service right, assisting with providing 24X7 support, upgrading hardware and Reality, and with extended service contracts."

In addition to reconnecting with Reality users, NIS is also targeting other MultiValue customers in the U.S. "There are lots of opportunities for us in North America," Letham said. "We are serious about the growth of this busi-

ness sector; we believe that MultiValue database management systems have a role to play in the 21st century. We want a voice in the MultiValue market, and we want to be an active participant. We believe in the MultiValue database model."

If you're wondering what's next in Northgate's global strategy, you won't have to wait very long for an answer. NIS will be revealing more of its plans over the next several months, and Letham said NIS will be going public at the International Spectrum show in February in San Diego. Although Northgate never really left the MultiValue fold, you can bet it'll feel like a homecoming—especially to Reality users. *is*

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*To find out more about Northgate Information Solutions, visit [Reality@northgate-is.com](mailto:Reality@northgate-is.com) and [www.northgate-is.com](http://www.northgate-is.com).*

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# NEW PRODUCTS

Continued from page 35

"Arco is pleased that our DupliDisk II technology has been selected by Rauch Medien," said Joel Rieger, marketing manager for Arco Computer Products Inc. "DupliDisk II technology remains the proven solution leader for IDE RAID in the Linux marketplace."

To learn more about what RAID Alert, visit [www.rauchmedien.com/raidalert/](http://www.rauchmedien.com/raidalert/).

Rauch Medien, headquartered in New York, develops, manufactures, and markets Linux and Open Source based hardware and software. Rauch Medien also maintains the operating system and computer tech site OSFAQ ([osfaq.com](http://osfaq.com)). Since conception, Rauch Medien has focused on providing Linux and Open Source based solutions for real world applications. Its comprehensive product line includes workstations, servers, clusters, and storage. ■

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In order to perform the most basic of server operational tasks, Level 1 monitoring of system health, network availability, CPU usage, memory usage, and event logs, the reseller needs to only access their server's console. VARMARK's support staff is also available to support resellers.

On one screen, Systrol gives the reseller the following information about each server that they are managing: system DNS name, IP addresses, operating system name and version, CPU count, current CPU utilization, current memory utilization, and paging activity. Event logs (system and application) are displayed in real-time and updated as events occur. Details of events can be viewed by double clicking on the event summary. Along with its extensive information display, Systrol lets the reseller interact with the operating system of the targeted server. The interaction encompasses virtually all functions required to manage a server and its attendant services and processes. Interactive functionality is provided by Systrol for: remote command/shell prompt, services administration and operation, processes administration and management, domain user administration, domain server administration, remote explorer and remote shutdown with optional server restart. ■

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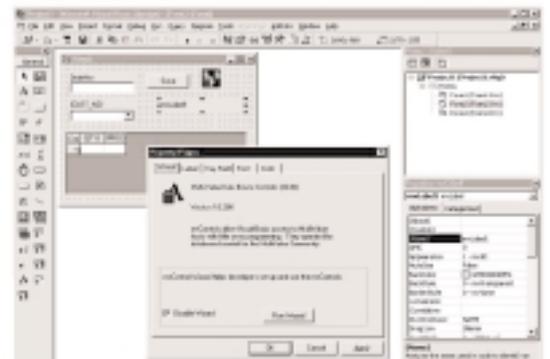
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## Palm Programming Tools

Continued from page 20

Java is a very popular programming language in use these days, so someone decided to try and write a Java Virtual Machine (JVM) for the Palm. It has met with mixed success. Since a true JVM requires memory and CPU, and Palm devices do not have these resources, there have been two approaches. One is to try to write a JVM and require the use of a more expensive PalmPilot with extra memory and such, or to convert the Java code into the native Palm programming language like a C and C++ compiler does.

VisualAge Micro Edition is a Java environment for the Palm based on IBM's VisualAge for Java product, and requires a JVM to run the program created using this tool.

As for a version of Java that doesn't require a JVM, a compiler called "Jump" has been developed to convert Java .class files that follow certain guidelines to native Palm executables. It is in active development and is an open source product, which translates to free under the GNU license.

Now, there are several different BASIC programming tools: HotPaw, NS/Basic and AppForge. All of these tools require a runtime module to be loaded into the Palm in addition to your application.

AppForge is a Visual Basic add-on that allows you to convert a Visual Basic program to Palm applications, or to create Palm applications using the Visual Basic IDE. This program is very nice, and people that already work in Visual Basic do not have to learn anything new.

NS/Basic is very much like Visual Basic, but has its own IDE and does not convert or use any existing Visual Basic modules that you may already have, but it does not cost as much as AppForge and does not require a version of Visual Basic 6, either.

HotPaw looks more like GW Basic found on DOS platforms, and does not have as much functionality as NS/Basic and AppForge. But it is much less expensive, and in order to distribute an application written in HotPaw, each person you send the application to has

to buy a copy of HotPaw. NS/Basic and AppForge allow you to freely distribute the runtime module for them.

The last group of programming tools is the data capture tools. These tools are by far the easiest to work with since they are not really programming languages—even though you can create some complex applications with them.

Most of these tools are very much like 4GLs. You define what you want on the screen and where, and then a program on the Palm creates the data capture form. They also generally have a conduit included that will transfer data from the Palm application to another database.

Pendragon Forms is a commercial database system that allows you to define a Microsoft Access database and a Palm program that work together to allow users to collect data on the Palm that is automatically synchronized with the PC database. All the data that is collected on the Palm magically appears in the Access database, and any changes made to the data on the Palm or on the PC are automatically synchronized.

Satellite Forms is a commercial database/forms designer with enough functionality to be a direct replacement to full-blown C development for database applications. When you synch the Palm device, it puts the

data into a dBase table, then other products like Microsoft Access can import the information.

There are several shareware and freeware database products for the Palm. Most of these are flat-file table managers that convert the data into Comma Separated Value files on the PC. The biggest names are, in no particular order, JFile, MobileDB, DB and ThinkDB.

One of the last data capture tools is from Raining Data. Called Omduit, it works with their Omnis products and allows you to display an Omnis screen on the Palm, and sync the data back and forth between the D3 databases. Since it's an add-on to Omnis, you have to be running Omnis before you get the full advantage.

There are  
several  
shareware  
and  
freeware  
database  
products for  
the Palm.

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The last tool to tell you about is still in testing stages as of the time that this article was written. It is called "MobileMV," and allows you to define the data capture screen using dictionary items and a few other pieces of information like locations and type of input the field will be. You can then sync the data between the Palm and the database like D3, UniVerse, UniData, or almost all other MultiValue databases.

Well, for those who asked, I hope this gives a good starting point to start creating Palm applications for your databases. is

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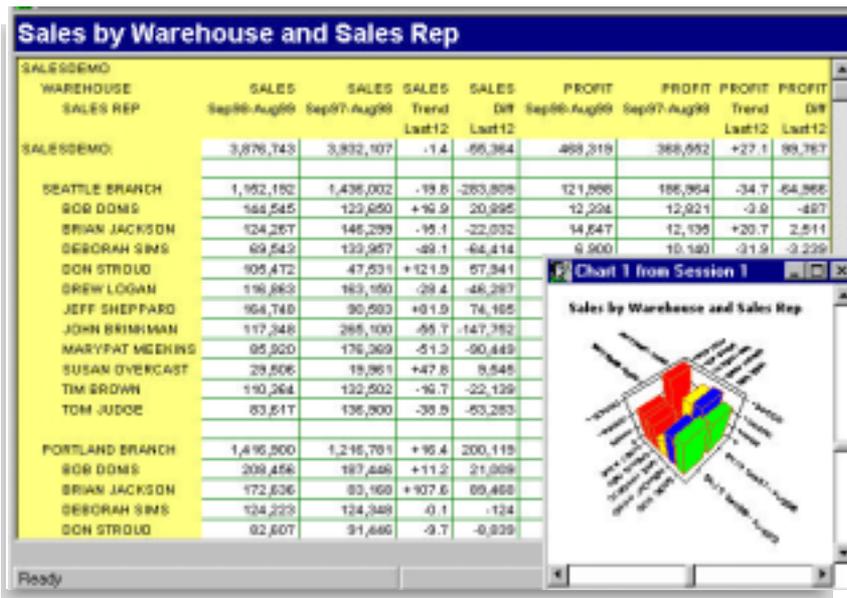
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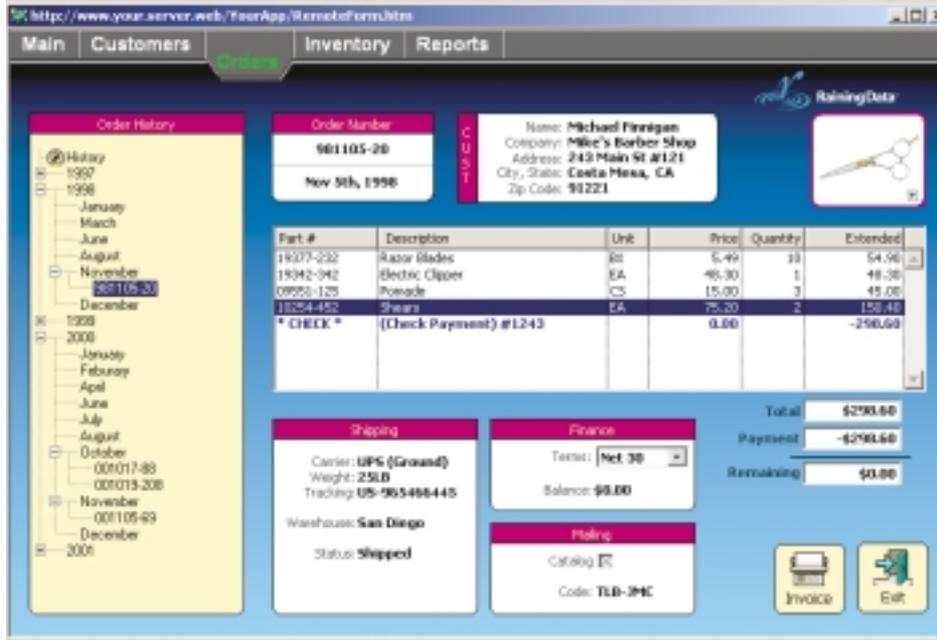
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