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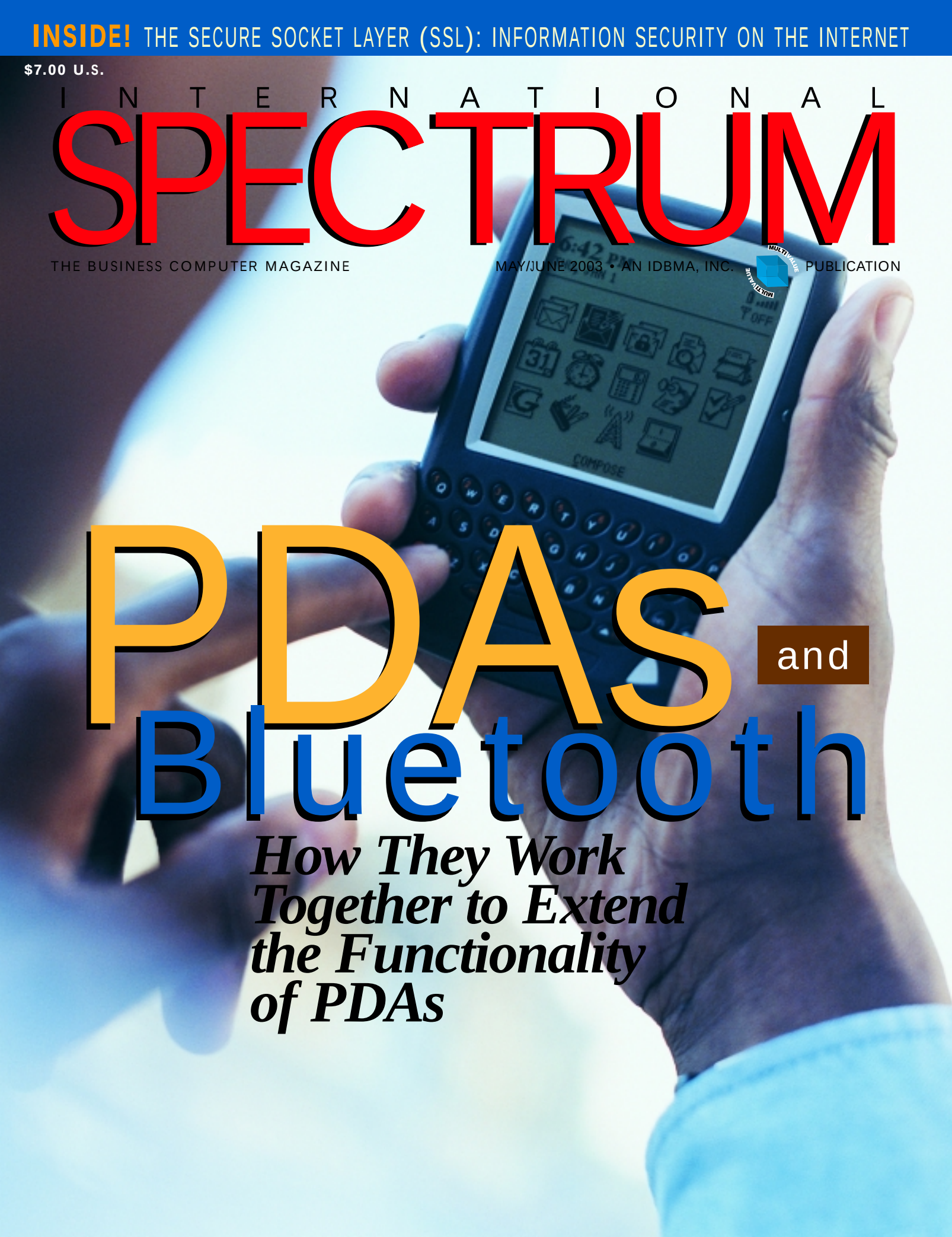

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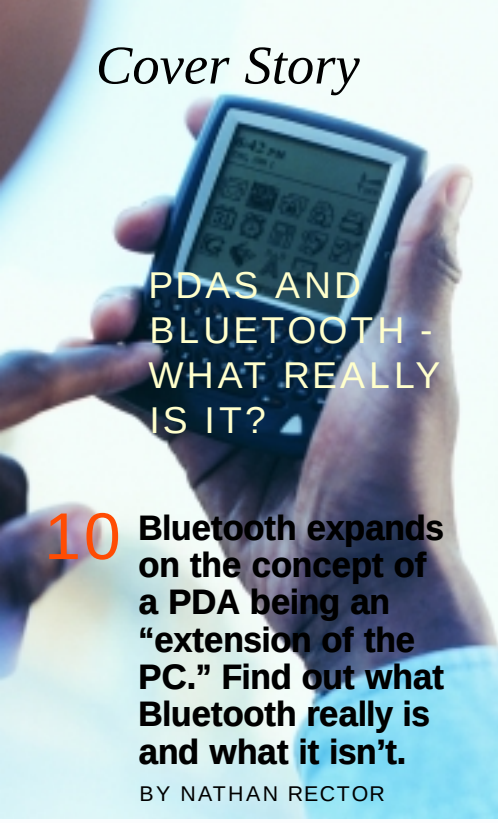

PDAS AND BLUETOOTH - WHAT REALLY IS IT?

10 Bluetooth expands on the concept of a PDA being an "extension of the PC." Find out what Bluetooth really is and what it isn't.

BY NATHAN RECTOR

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40 SPECTRUM SPOTLIGHT: OHM MAKES WAVES ON THE WEB WITH WADE

Software developer OHM Systems Inc. wanted to move its manufacturing software application onto the Web, but couldn't find a product that met its requirements. The company finally found the right solution with the development of its own Web-centric Application Development Environment (WADE), a product that goes to another level of technology while taking advantage of the power of PICK.

28 LEGACY CORNER: QFILES AND MULTIPLE ACCOUNTS ON UNIX-BASED SYSTEMS, PARTS 1 AND 2

The simplicity of native MV systems easily allowed for the concept of the SET-FILE verb and its result, QFILE. PICK programming veteran Mark Johnson has installed a manual method of creating QFILES on U2 systems. BY MARK JOHNSON

32 LOCKING IT UP: KEEPING IT QUIET WITH SSL

Back in the early 1990s, we didn't worry much about information security on the Internet. But times have changed and so too has the issue of Internet security. This is where Secure Socket Layer (SSL) comes into play for folks who want security while on their browsers. MELVIN SORIANO

20 IMHO (IN MY HUMBLE OPINION) - MANAGING THE MIGRATION: A MODEL FOR SUCCESS, PART 2

An estimated 72 percent of all IT projects are late and over-budget. A defensive weapon against software migration failures and overruns is the Strategic Migration Maturity Model. BY STEVE VANARSDALE

24 MVTOOLCHEST — TWO FRESH NEW PRODUCTS ENHANCE MULTIVALUE APPLICATIONS

Visual e 4.0, from ScanNet System Corp., is a comprehensive suite of products designed to improve the functionality of your MultiValue database, enabling e-mailing, faxing, scanning, data mining, import/export, Windows Application Development, screen capture and local printing.

mvWebstore, developed late last year by Cypress Business Solutions, is a fully functional, real-time e-Commerce application with a wide breadth of features.

13 CONSUMER CHRONICLES

AdvancedWare helps Preco Electronics Inc. deploy MITS for company-wide productivity gains. BY LEANNE GREEN

44 SCREEN VARIABLES

MultiValue systems are a natural for combining single value fields and multi-value fields within the same data record. This article removes the mystery of multi-page displays on maintenance programs. BY MARK JOHNSON

36 REVELATION TECH TIPS: NET GAINS — REVELATION'S NETWORK PRODUCTS

Networks have their share of problems — power surges, outages, end users who abnormally end their applications. To prevent data corruption, Revelation developed a suite of network products that guard your data from the pitfalls of a networked environment. BY KEVIN RUANE

8 THE HISTORY OF MULTIVALUE, CHAPTER 11: PICK DOES THE UNTHINKABLE — EMBRACES UNIX

The introduction of Advanced Pick/UNIX in 1990 represented a real concession to market pressures on the part of Dick Pick, who had previously considered UNIX to be a competitive multiuser operating system. BY GUS GIOBBI

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[FROM THE **INSIDE**]

Money Never Goes Away
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A Good Peddler Knows the Way
TO FIND OUT WHERE IT LANDS!

WE'RE ALL IN THE BUSINESS OF SELLING, whether it be selling our time, selling a product, or trying to sell an idea. Selling is about ignoring periods of rejection with the confidence of knowing you'll be rewarded with occasional success. In tough economic times like these, everybody has to work harder to make their numbers.

That said, this is an excellent time to dust off the 'ol selling rules and do a refresher. Here's my personal check list — bounce some of the deals you're working on (even those with your spouse or boss) off this list and I think you'll find it revealing.

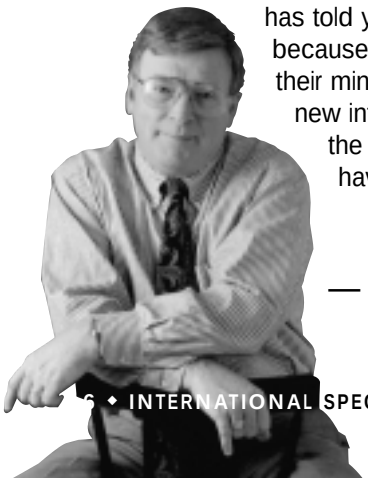
1 Are you talking to the person who can sign the order? Are you sure you know the answer to this question? Have you asked? If you haven't asked, you don't know. This is one of the first questions you should ask of a prospect; and one of the most frequently overlooked. I can't tell you how much time I've wasted by chickening out in asking this in-your-face, but necessary, first question. The polite way to ask: "Will you be the person who will sign the order?"

2 If you're not talking with somebody who has the authority to sign the order, is your message reaching the person who can sign the order? It took me a long time to conquer this one. We all want to believe the person we're talking to is in a position of influence in the company, but if your message is blocked from reaching the decision-maker for any reason, you don't have a prospect. Move on to the next opportunity. There are a whole bunch of people in this world who just enjoy "window shopping," but they can't even buy a paper clip without permission.

3 Have you qualified the prospect? Don't engage in wishful thinking here. In this day and age, there's no excuse for not looking up a prospect's Web site. It's your job to determine from this and other easily obtainable information about the prospect whether they could really benefit from what you're selling. If they can't, move on!

4 Have you adequately explained the benefits of what you're selling? Duh! Don't assume the prospect magically understands what you can do for them. Chances are, it's not obvious and they don't have a clue, so it's up to you to educate them.

5 Have you overcome the prospect's objections? Don't even think about going on with your sales pitch if the prospect has told you he "doesn't think he wants to buy your widget because..." When people voice an objection, that's the rut their mind is stuck in, and they're not going to digest any new information until you are able to pull their mind out of the rut. If you can't overcome an objection, you don't have a prospect. *Continues on page 23*



— GUS GIOBBI, CHAIRMAN, IDBMA, INC. —
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IDBMA's *International Spectrum* is published six (6) times per year at the subscription price of $40.00 U.S. in the U.S.A.; $45.00 U.S. in Canada and Mexico; $50.00 U.S. for other countries. Single copy rates are $7.00 U.S. in the U.S.A. and Canada, and $9.00 U.S. in all other countries. *International Spectrum* is published by IDBMA, Inc., 7596 Eads Avenue, Suite 140, La Jolla, CA 92037; 1-858-551-7855; **E-Mail:** requests@intl-spectrum.com; **Website:** http://www.intl-spectrum.com. Copyright 2003 International Database Management Association, Inc. All rights reserved. Reproduction in whole or in part, without written permission, is prohibited.

PRINTED IN USA • ART AND DESIGN: CP Design; 858-642-6878; San Diego, CA

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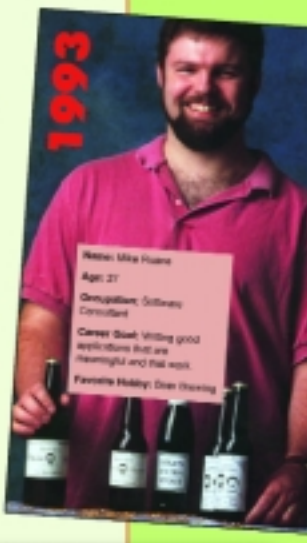

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BY GUS GIOBBI

The History of MultiValue

CHAPTER 11

Pick Does the Unthinkable — Embraces UNIX

In the last installment (see May/June 2003), we did a synopsis timeline of the history of MultiValue from its inception through the 1980s. We now pick up the story (no pun intended) with 1990.

At the Spring 1990 Comdex in Atlanta, Ga., AT&T and Pick Systems announced the formation of PICKTel, an affiliated company of Pick System that would deal exclusively with sales of PICK-based business solutions on AT&T Intel-based 386, 486 and StarServer hardware running UNIX System-V.

Dubbed Advanced PICK/UNIX, the system represented a real concession to market pressures on the part of Dick Pick, who had previously considered UNIX to be a competitive multiuser operating system. However, UNIX possessed a superior communications, networking and graphics capability that Advanced PICK lacked. Before the year was out, Advanced PICK/UNIX was also ported to AT&T's 3B2 line, IBM's RS/6000, and Data General's AViiON. In addition, there was a version available on SCO/UNIX 386 for Santa Cruz Operation.

Clinging to the idea of Advanced PICK being a complete operating system with a prominent future in its own right, Pick Systems used a "separate but equal" philosophy in the implementation. Although the resultant system was touted as an integration of PICK and UNIX, the two environments "communicated" by importing and exporting files between the two separate portions of the system. In the implementation, PICK files and virtual memory management were handled by the PICK side rather than using the UNIX file management system. This approach added an extra layer of system management requirements, but it pre-

PICK AND PICK-RELATED LICENSEES

Company	Pick Version Licensed
Adds/NCR	R-Series/OA
Alpha Microsystems	OA
Altos Computer	R-Series/OA
Archford Computer	OA
Data General Corp.	AP
Electronique Dassault	OA
Fujitsu Australia	OA
Fujitsu Espana	OA
General Automation	R-Series
IBC	OA
Nissho Electronics	Not Available
PickBlue	OA/AP
PickTel	AP
SANYO/ICON	R-Series
Scan-Optics	R-Series/OA
Sequoia Systems	OA
Siemens/Nixdorf	R-Series
Stratus Computer	OA
Tau Engineering	OA
The Ultimate Corp.	R-Series
XMark Corp.	OA
Pick Related Licensees:	
Revelation Technologies	"Revelation"
VMark Systems	"UniVerse"
Trademark Agreements:	
McDonnell Douglas Information Systems International	"REALITY"
Novadyne	"REALITY"
Prime Computer	"INFORMATION"

UNIVERSE HARDWARE PLATFORMS

Manufacturer	Model
Arix	System 90
AT&T	6383 WGS
Convergent Technology	PC Server 386
Bull H.N.	DPX/2, XPS 100
COMPAQ	DESKPRO (SCO UNIX) SYSTEMPRO (SCO UNIX)
Concurrent	MC5000, MC6000
Data General	AViiON
Digital Equipment	DECstation (Ultrix) DECstation (Ultrix) applicationDEC 433MP DECsystem 3XX (SCO UNIX) VAX (Ultrix)
Encore Computer	MultiMax Series
Hewlette-Packard	HP 9000
IBM	RT, RISC System/6000
IN2	6000
MIPS	RISComputer Series
Motorola	Delta Series 3000 Delta Series 8000 (88000RISC)
NCR	32/450/650 32/300/500/700 32/800/850 System 3000
Nixdorf	Targon 35 Targon 31
Olivetti	LSX 3020 LSX 3030 LSX 3040 LSX 3070/3080
Prime	EXL Series
Pryramid	90X 90X/98XE 9805/9810/9820 9830/9840/9845 MIServer Series
Sequoia	Series 200
Sequent	Symmetry
Sun	System 3 System 4
Unisys	5000/30/35 5000/55 5000/85/95 6000/10/31/51/55/60 *6000/70/80
Generic 386	All 386/486 systems certified to run on SCO or Interactive's UNIX.

served the "ease of migration" of PICK applications from platform to platform so cherished at the time.

The system did achieve its goal of allowing users to take advantage of the complementing strengths of PICK and UNIX. It also represented one of the major turning points for Pick Systems' market strategy, which evolved to embrace UNIX as a necessary vehicle for continued growth of the PICK market. But by the end of 1990, the race for market share between PICK, UniVerse and UniData was in full steam as could be evidenced by these charts showing the proliferation of the systems by year's end. **is**

UNIDATA HARDWARE PLATFORMS

Machine/Model
386 Machines with AT-bus
386 Machines with Micro Channel or EISA
Data General Corp.:
AViiON
Digital Equipment Corp.:
MicroVAX 2000
VAXStation ll/GPX
MicroVAX 3300/3400
MicroVAX 3500/3600
DECSystem 3200
VAX 3900
VAX 8250/8350
VAX 8550
DECSystem 3100
VAX 6210/6220/6310/6320
DECSystem 5400
VAX 8810/8820
VAX 6230/6240/6330 6340/6410/6420
DECSystem 5800
VAX 6430/6440
VAX 8830/8840
VAX 6450/6460
VAX 9000

Machine/Model
IBM:
PS/2 - Models 70 & 80
IBM RT
RS/6000 POWERserver
320
520
530
540
930
IBM 370
9370
43XX
3090
MIPS:
RISComputer Series, M/120, M/2000
Motorola:
8408, 8608, 8864SP, 8864DP
NCR:
Tower 32/400
Tower 32/600
Tower 32/800

Machine/Model
Edgcore (Acquired by Arix):
1100 Series
2000 Series
Fujitsu (Acquired by Alpha Micro Systems):
A-Series
M730
M760 - Models 4 & 6
M760 - Models 8 & 10
M760 - Models 20 & 40
M780
Hewlette-Packard:
HP 9000 Series
808S
815S
825S
832S
835S
635SV
835SE
845S
645SV
845SE
850S
855S
870S/100
870S/200

Machine/Model
Novadyne:
Unspecified
Prime:
EXL 20/25
Pyramid:
MIServer Series
Sequent:
S-27, S-81
Sun:
III, Sun O/S, 1V
Unisys:
6000 Series
6000/31
6000/51
6000/55
6000/70
6000/80
Tandem:
Integrity S2

BY NATHAN RECTOR

PDAs and Bluetooth

What Really Is It?

We've all heard of the Bluetooth wireless standards, but how many of us really know what Bluetooth will do for our business? O.K., so it's another wireless connectivity tool like 802.11 (WiFi), but why do you or I care? Why bother with it when 802.11 can do what our company needs better than Bluetooth?

What Bluetooth Is and Is Not

Well, before I start answering these questions, let me give a little background on what Bluetooth is and what it is not. First of all, Bluetooth is not a competing product for 802.11. Bluetooth radio signals only have maximum range of about 30 feet. In reality, it's more like 5 to 10 feet, whereas 802.11 is designed for a maximum range of 300 feet.

Another difference between Bluetooth and 802.11 is that 802.11 is designed to be a wireless Ethernet. Bluetooth is not. Bluetooth is designed to replace anything that uses a wire to connect to something else: printers, keyboards, mouse, cell phones, syncing, just to name a few.

You've probably heard the term "Personal Area Network" in relation to Bluetooth as well. When you hear the term "network," you probably start thinking about computer networks again. I know I do. What they really mean by "Personal Area Networks" is "Personal Area Device Connectivity," not computer networking. Don't get me wrong, you can use Bluetooth to access your Ethernet network wirelessly, but this is really a poor implementation of Bluetooth connectivity.

Why Do I Care?

Now, let's get back to the question of "Why do I care?" Bluetooth expands upon the concept of a PDA being an "extension of the PC." Anyone who has worked with a PDA has found that there are a lot of advantages due to the small size and light weight of the device, but those advantages are also its disadvantage. There is only so much you can do with a device that is 3 inches by 5 inches. There are add-ons that you can include within the PDA, but when it comes to trying to interact with other things in the environment (printers, GPS, barcodes, syncing, cell phones), you either could not, would have to connect a wire to the device, or purchase a specialized PDA to interact with the environment (i.e, barcodes).

Bluetooth devices are hitting the mark left and right. As more and more PDAs are released with Bluetooth enabled, you'll have more peripherals created that can take advantage of this. Already you can sync your PDA without a cradle, and you can use a full size keyboard to enter data on your PDA without having to set up a keyboard docking station.

You should also take a look at the Bluetooth connectivity between your PDA and your cell phone. If you want to use the cellular data networks to access the Internet, you don't have to purchase a PDA/cell phone combo, you just need a PDA and regular cell phone that are Bluetooth enabled and your PDA can access the Internet.

Even though most PDAs do not support printing natively, you can still take advantage of printers that are Bluetooth enabled. This allows your PDA application to print to any Bluetooth printer within range. You no longer have to physically attach a printer, or try to get the IR port between the PDA and the printer to communicate.

There has even been a release of a Bluetooth barcode scanner, so you don't have to purchase a special PDA (Symbol or Intermic) to scan barcodes within your environment, although this requires using both hands, one for the PDA and one for the barcode scanner, instead of one hand.

Security

Anyone that has put together an 802.11 network, knows that they have to think about security. So, how do you secure your Bluetooth connection so that people are not looking at your personal data on your PDA?

Please forgive me if I get a little technical here, but I hope I can put how Bluetooth security works into less technical jargon than some of the articles that I've read. Most of us are not encryption and security specialists — nor have math PhD's.

Continues on page 12

PDAs and Bluetooth

Continued from page 11

Bluetooth security is provided at the link level between two devices. Very similar to how SSL works on the Web. It provides authentication and encryption when a link between two devices is created. The encryption and authentication is based on a unique "private key" that is shared between the two devices. This key is generated when a link is first made between the two devices.

In addition to this private key, each Bluetooth device has a unique address, very similar to a MAC address in an Ethernet card. Every Bluetooth radio has a unique and different address from each other. This allows logging and tracing of communications easier when there is a potential violation.

Before two Bluetooth devices can be linked, a PIN number must be supplied. There are three security modes that Bluetooth supports:

Security Mode 1 - Devices operating in this mode do not implement security control. Any device in the area is able to pair with devices operating in this mode.

Security Mode 2 and 3 - These modes require authentication and encryption of the link before another Bluetooth device can communicate with it. The major differences between Mode 2 and 3 is when the encryption is actually started. Mode 3 forces the encryption to start before the link is actually created.

Once there has been a trust established between two devices, then that device can automatically connect and authenticate without any user interaction. If the Bluetooth device is not set up as a trusted device, then every time it tries to connect to your PDA, it will require your PIN number to be entered again.

Because this is based on PIN numbers, there is a security weakness. The authentication process is only as good as the length and complexity of your PIN number. Most devices only have a PIN number of four digits, and by default the PIN is 0000.

Conclusion

As more and more Bluetooth devices are released, you will be able to expand upon your PDA applications to allow more interaction with the environment than ever before. **is**

Nathan Rector, a regular contributor to Spectrum, is owner of Natec Systems, a consulting firm specializing in D3, AP and R83 environments and custom programming. He can be reached at nrector@natecsystems.com or http://www.natecsystems.com.

Contract Manufacturer Creates MITS Hypercubes to Enhance Manufacturing and Engineering Processes

AdvancedWare

Helps Preco Deploy MITS for Company-wide Productivity Gains

Preco Electronics has a 58,000-square-foot manufacturing facility and 175 employees.

BY LEANNE GREEN

The Company

Preco Electronics Inc., a 56-year-old contract manufacturer based in Morton, Ill., provides electronic products and manufacturing services to many of the industry's leading Original Equipment Manufacturers (OEM's). Its solutions include concurrent engineering, design assistance, PCB and electronic assembly, test engineering, software programming, system integration, final testing and post-manufacturing services.

Preco's 58,000-square-foot manufacturing facility and EMS services may be robust, but its IT and business operations run lean. The 175 Preco employees are supported by an IT staff that includes just one system developer and one network administrator, supported by one part-time intern and one part-time liaison between manufacturing and IT.

This resourceful IT department supports Preco's $30 million manufacturing operation using the DataFlo ERP system on a Win2000 server running IBM's UniVerse database. Additionally, Preco uses add-on solutions from AdvancedWare, an IBM reseller that integrates real-time browser and mobile handheld solutions with U2 (UniVerse and UniData) database systems.

As a successful manufacturing partner, Preco prides itself in embracing state-of-the-art technology and offering turnkey services with efficient operations. This gives the company the required flexibility to meet rapidly changing customer needs in the contract manufacturing industry. This motto was the driving force behind its recent decision to implement the MITS business intelligence system company-wide.

The Circumstances

"As our company has grown, the IT staff has not," said John Koch-Northrup, systems analyst at Preco. "Therefore, we're constantly looking for productivity enhancements and efficiencies to get the job done with less people in less time."

Koch-Northrup said he realized many years ago that too many man-hours were spent responding to end user requests, which included gathering, converting and

Continues on page 14

AdvancedWare

Continued from page 13

manipulating data for a variety of customized reports — and then recreating the wheel every time. "We generated many of our reports by dumping the DataFlo data into Excel and manipulating it into spreadsheets," he said. "But we only did this on an as-requested basis, because it was a difficult and time-consuming process. The data was hard to access so we had to force feed it to get what we wanted."

According to Jason Janssen, Preco's Kaizen Leader and the liaison between the manufacturing and IT departments, "Most of the daily and weekly requests from our DataFlo users were for reports. An example would be, 'How many of this particular product did we ship to all of the different facilities?' It wasn't easy to get a breakdown out of the DataFlo system where all of those shipments went."

Janssen said the report requests were escalating throughout the company. "Although it's been more prevalent with middle management, just about every group in the company has requests for some type of report, including program managers, order analysts, engineers, purchasing, accounting, etc.

"Our business lives on data," Janssen exclaimed. The circumstance? Preco needed a business intelligence solution to help it better understand, anticipate and act on business data in a timely and real-time basis.

The Search

Koch-Northrup began the process of reviewing potential business intelligence solutions a few years earlier. That's when he found MITS, an Online Analytical Processing/Business Intelligence (OLAP/BI) suite of products designed to gather, manage, distribute and analyze data for improved strategic and tactical decision-making. "I'd seen MITS demonstrated at DataFlo user meetings in the past and liked it immediately because of its versatility and ability to run natively on UniVerse," he said. "All other solutions I'd seen involved transforming the data to another platform, such as Microsoft SQL Server. It would have been a problem to add another database that none of us were very fluent in managing."

> 'We're constantly looking for productivity enhancements and efficiencies to get the job done with less people in less time.'
>
> **- John Koch-Northrup**
> **Preco Systems Analyst**

"One of the driving factors of going with MITS is that we have people in-house that understand how UniVerse works, how the programming works and how the dictionary works," he continued. "MITS sits right in UniVerse so it uses the same dictionary structure, connects directly to the DataFlo files in production to create the cubes, understands MultiValue and runs in a Web browser."

Although Koch-Northrup and his peers were already sold on the idea of MITS, it wasn't until Preco became a customer of AdvancedWare last year that it got the ball rolling to install MITS in late 2002. AdvancedWare had become a MITS reseller earlier in the year, using MITS as the engine behind its data-warehousing product, AWSalesReport. AdvancedWare integrates MITS with ERP applications that run on UniData or UniVerse, including DataFlo, Avanté, ManFact and others.

Preco has embraced all of AdvancedWare's solutions to date, including AWMail, a solution that allows Preco to email directly out of DataFlo; AWForms, which allows the creation of forms from DataFlo into MS Word and then be directly emailed or faxed; AWXML, which allows Preco to set up orders and ASNs through XML and a customer site; and AWViewer, which allows any document, such as drawings or specs, to be launched from within DataFlo.

The Solution

With sales and technical support from AdvancedWare, Preco purchased MitsMaker in addition to AWSalesReport. MitsMaker is a Windows-based design tool that allows rapid design and deployment of OLAP hypercubes from any MultiValue system file.

According to Koch-Northrup, "MitsMaker was an important tool for us because we wanted to delve into the way we do business, and sales analysis, although important, wasn't our top priority. We don't track sales by territory or region the way other companies do."

Preco initiated the MITS implementation at the end of 2002, and began to roll out AWSalesReport and other MITS cubes to the first departments in early February 2003.

"AdvancedWare provided top-quality training and phone support during the entire implementation phase," Janssen said. "After our first day of training, we already had two cubes cranked out. It was a piece of cake! It's so easy to start working in MITS when you already know the UniVerse environment."

Koch-Northrup agreed: "Once you get past the initial training, MITS is pretty intuitive. User training has gone smoothly, we haven't had too many questions directed our way, and the users have been digging into it from the start. So far, it's been a very user-friendly program."

The Results

Janssen and Koch-Northup were eager to share this new tool with the company, and so excited that within the first two months they

had already created 10 hypercubes using MitsMaker, customizing them for a variety of Preco's business functions. This first group of hypercubes include: MRP, Shipment, Backlog, Scrap, DOWN.TIME, PS (part shortages), Receipts, Inventory, and Sales.

Preco's middle managers were the first to be trained on the new OLAP tool, including how to use AWSalesReport to slice and dice the company's sales information.

Next, the engineering department was given the SCRAP hypercube to look at scrap dollars, parts and assemblies. "The engineers love it because they can look at the main causes behind scrapping materials, isolate the problems, and get them resolved immediately," Janssen said.

Engineers are also utilizing two other cubes customized to make their processes more efficient. "The INVENTORY hypercube allows them to drill into the inventory data and look at the value of inventory by customers, parts classification, buyer, and more," Janssen continued. "The DOWN.TIME hypercube permits engineers to evaluate the downtime of critical equipment and make timely adjustments to enhance productivity."

With 10 hybercubes under its belt and proving productive, the Preco IT team isn't about to rest on its laurels. It already has four more hypercubes in development, including BUDGET (actual versus projected costs by GL code with drill-down by director and manager); DEFECT.DATA (a Visual Basic application collecting defect data, and moved into UniVerse through Redback); BACKLOG.HIST (a weekly snapshot of open orders for the Accounting Department to compare this week's orders to the orders that existed last week); and FORECAST (a quarterly forecast that is currently handled in Excel).

One of the first groups to embrace Preco's newly created analysis tool was the Purchasing department. Its unique MRP hypercube displays MRP data to analyze excess supplies per buyer and project inventory levels.

"Before MITS, it would take me about 45 minutes every Monday morning to generate this Supplies report for Purchasing," Janssen remembered. "I'd take data from three different Dataflo reports and combine it in Excel to come up with the data the buyers were looking for."

Today, Janssen is a happy man, with a lot more time to do other projects on Monday morning. "With MITS, the buyers now have data at their fingertips that's more accurate and more up to date than anything I've ever seen. So not only are we saving 45 minutes at least once a week, the buyers can now look at this information every single day. And it's so much more accurate!" **is**

newsmakers

Letters to the Editor

Dialog on Mark Johnson's article, "Dynamic Versus Dimensioned Arrays" (Mar./Apr. 2003)

Dear Editor,

The May/June 2003 issue of *International Spectrum* magazine carried an article by Mark Johnson entitled "Dynamic Versus Dimensioned Arrays," featuring "pros and cons" for each of the two types of arrays. This subject is one that has been discussed (or argued, as the case may be) for as long as I have been involved in the PICK community, which is now 19 years. Just a few moments ago, I FTP'd a mailing-list file to an organization that is licensed by the U.S. Post Office to make corrections to addresses and zip codes. The file contained over 98,500 customers, creating a CSV file with a size of 7.2MB.

The program that generates this CSV file has been in place for several years, but, having seen the most recent discussion of "DIM vs. DYNAMIC," I decided to run some tests. First, I should state that the platform being used is a Compaq 1600 Proliant server, with dual 600MHz Pentium processors, and 384MB of memory. The first test I ran used dynamic array, compiled unflashed. The first 3000 items processed at 23 seconds/1000 items; 6000 items took 25 seconds/1000; at 9000 items and increasing to 33 seconds/1000 items to process, I aborted the job.

I then flash-compiled that application, and found the following results: 9000 items processed at 12 seconds/1000 items; 16000 items took 16 seconds/1000; and at the 45,000 item mark, or roughly 46 percent complete, the process had run just over 30 minutes, or 40 seconds/1000 items. I let this process run to completion, consuming over 2 hours and 20 minutes to finish. That's approximately 1-1/2 minutes-per-thousand items to process. The incremental processing time just grows and grows as the number of items increases.

Before running the final test, I rebooted the system, just to reset memory. Then I ran the process with the normal program, using dimensioned array in flashed code. The first step in that program is to execute a "sselect", sequencing the file for eventual process. "SYSTEM(11)" returns the count of the items to be processed; that count is used in a variable to dimension the array. The final result, using dimensioned array — 1 minute, 11 seconds to process those same 98,500 customer items to a CSV file. That's less than one percent the time it took to process with dynamic array.

I'll let you draw your own conclusions.

Jim Cronin

Director, MIS

Kittery Trading Post

Kittery, Maine

Mark Johnson Responds

Thanks for the reply, Jim. I received a few e-mails about this article and they all expressed that in the case of large count arrays, dimensioned arrays are clearly the better choice compared to using dynamic arrays. The exponentially increasing efforts to count to the next available attribute would certainly cause this kind of degregation.

I guess that each of us programmers would have to experience firsthand where the array element count becomes excessive when using dynamic arrays. Jim's example was 98,000 rows. I've had systems where 20,000 on a dynamic array was not that much of a burden. One of my AP-Pro clients (166 Mhz, 128MB) handles 43,000 using a single dynamic array. Perhaps I'll eat my words if this record grows to 98,000 and I wish I had programmed it using DIM in the first place. But many systems cannot dimension dynamically (Freudian slip?) as Jim's example probably has

```
DIM ARRAY(99000)
```

instead of

```
EXECUTE "SELECT FILE"

X=SYSTEM(11)

DIM ARRAY(X)
```

I also find that since this exercise is typically used to export data to another system, CSV in Jim's case, that the clearly most efficient (albeit less portable) method to use would be commands in the OSWRITE family where you can write directly to the host's file system. Thus there are never any arrays involved as you are clearly appending to the record you are building. One client writes out over 200,000 rows and watching the progress bar, it processes in a consistent rate.

ONgroup/New York State Migrate UniVerse Applications to SQL Server

New York State runs the nation's first statewide amateur sports program, the Empire State Games. The Empire State Games is the largest program of its kind and a recognized program of the U.S. Olympic Committee.

The annual event of 2,400 games has been supported by applications developed on the UniVerse DBMS platform. The applications consist of a collection of BASIC programs, dictionary definitions, paragraphs and sentences. The system has been fine-tuned over the years and supports the Games functionally very well. In this information age, however, real-time access to the Games data is imperative.

NY State, with the help of ONgroup, recently moved the Games database to SQL Server. Why move from UniVerse to SQL Server? The State has been providing Games data on the Internet for years.

"I've been accomplishing this with ODBC," stated Pepper Rayfield of NY State, "but it is difficult. I first have to export the data and then make it available on the Web. The main benefit of this move is that we now can view real-time Game results in Active Server Pages (AS) on the Net; my data is now directly available."

SQL Server gives the NY State IT team the tools they need to accomplish their IT goals easily and effectively. "We've put so much work into this system over the years," Rayfield said. "We couldn't justify tossing it aside and starting over. ONgroup offered us an interesting alternative, the best of both worlds. We keep our applications, but move our data to standard relational technology."

NY State made the choice many organizations are making when they consider the value of their legacy MultiValue applications. Mature applications are the heart of the organization. Re-engineering them or replacing with an off-the-shelf package can take years, upwards of millions of dollars and introduce risk, according to ONgroup. NY State chose to continue to use their legacy systems and incorporate the new technology needed to succeed.

According to Denise Buttrey of ONgroup, "The first step in a project like this is to copy the data files to SQL Server using the ONware Enterprise suite of products. File pointers are configured. The BASIC programs and dictionary objects are then compiled in ONware, and the QA process begins."

"ONgroup put together an effective team, and we enjoyed working together," Rayfield said, "and as a result we learned how to find our way in the new SQL Server environment. We were able to continue to get value out of our UniVerse staff while learning new technology."

ONgroup specializes in helping organizations with MultiValue technology, such as UniVerse, UniData, Prime and PICK, migrate to or integrate with standard relational technology such as Oracle and SQL Server.

Visit www.ongroup.com for more information.

Maryland Technology Group Signs an OEM Agreement with IBM

Maryland Technology Group LLC (MTG), a leading provider of information technology and e-Business infrastructure, announced a business partnership with IBM allowing MTG to sell the full line of IBM U2 Products (UniVerse/UniData) as well as the IBM Layered Products and Tools including System Builder Products (SB), RedBack, MITS, COBOL Direct Connect, wIntegrate and other associated products.

"We are delighted to partner with IBM," said Nasser Zureick, president of Maryland Technology Group. "This partnership will enable MTG to continue providing our customers with a quality product offering going forward with IBM. In addition, we will combine IBM's U2 products with some of our major business applications."

Maryland Technology Group LLC is a privately held company based in Columbia, MD. MTG is a full-service provider of information technology, providing consulting, contractual and outsourcing IT services in the areas of Systems Integration, Data Conversion, Health Care, Retail, Wholesale, Logistics, Supply Chain, Manufacturing, EDI and Financial Systems. MTG has over 20 years of experience in MultiValue environments. More information about MTG's products and services can be found at **http://www.mdtechgroup.com.**

Lee Software Development Marks Its 10th Year

Lee Software Development— specializing in enhancing legacy applications, developing MultiValue Web applications, and providing XML and other integration solutions—recently marked its 10th year of serving the MultiValue community.

Since its inception, Lee's mission has been to provide professional, affordable solutions to help its customers grow and manage their businesses. In addition to providing Web and XML integration, migration to and from different platforms, and connectivity solutions, Lee Software Development offers the Construction Management System (CMS), a full-featured cost-effective software solution designed for builders, contractors, and subcontractors.

For more information about Lee Software Development, visit www.leesware.com.

Revelation Coming Soon to a City Near You - Check Out "On The Road" Schedule

Revelation Software will be taking it to the streets again in 2003, with a more ambitious schedule than it's ever had before. Check out the dates and locations below, and see if you can attend one or more of these venues: If you or members of your staff wish to attend an event, please contact Lynn Rigoletto at **(800) 262-4747,** marketing@revelation.com.

JUNE 2003

June 2 ..... New York Roadshow - NY Metro

June 10 ..... Portland Roadshow - Portland, OR

June 11 ..... L.A. Roadshow - Los Angeles, CA

June 12 ..... Dallas Roadshow - Dallas, TX

June 13 ..... Memphis Roadshow - Memphis, TN

June 21 - 23 ..... O.S.D.A. - Clearwater, FL
O.S.D.A. is the largest and most aggressively active MultiValue/Pick User organization in the U.S. The Revelation team will be exhibiting and presenting.
Call (800) 262-4747 for more information.
http://www.osda.org

June 24 ..... Atlanta Roadshow - Atlanta, GA
Details coming soon.

June 26 - 27 ..... International Spectrum - Los Angeles, CA
Norwalk Marriott - **http://www.intl-spectrum.com**

newsmakers

Sanderson CMI Announces jBASE Partnership

Premier Supplier of Local Government Managed Solutions Adds Leading MultiValue Database Engine for Greater Flexibility, Openness and Power

Sanderson CMI, an industry leader in managed solutions for local government, announced that it will embed the jBASE MultiValue database solution and associated development tool set into its application products. The Remote Communication Service for jBASE developed by SANDERSON CMI introduces a uniform XML-based communication layer for client/server and Web applications. This enhancement will enable customers and the SANDERSON CMI development team to use new features and functionality, such as transaction journaling and external data integration via the jBASE JEDI layer, to increase development productivity and to support expanded applications.

SANDERSON CMI applications are used by over 400 local government entities including counties, cities, villages, libraries and non-profit agencies. The solutions offer a wide range of client/server and Web applications for financials, tax collection, deregulated utility billing, public safety records and dispatching and court case management. The applications are offered on multiple platforms including AIX, Linux, Windows NT, Windows 2000 and Windows XP.

Application users will be able to take advantage of powerful new languages and tools that can greatly increase the performance, reliability and multi-database capability of the applications. The business plan calls for the migration of all SANDERSON CMI products to jBASE and the installation of jBASE for all customers over the next two years. SANDERSON CMI is now delivering new products with the jBASE engine to all new customers.

"After an extensive evaluation, we chose jBASE because they offer state-of-the-art databases, development tools, and a premier support network that enhance our existing technology and provide a unique complement to our business," said Chuck Powder, managing director of SANDERSON CMI. "This partnership takes our most robust client/server applications and puts them onto a technology platform that gives our customers even broader options including interoperability with industry-standard databases such as MS-SQL, Oracle and DB2, utilization of industry-standard development tools for graphical and Web applications and a service partnership tailored to the needs of local government."

"jBASE International is extremely pleased to welcome such a well respected partner as SANDERSON CMI to the jBASE community," stated Dave Bryant, president of jBASE International Inc. "This relationship and its resulting technological exchange have already proved beneficial to both companies. We look forward to joining SANDERSON CMI in delivering the jBASE advantage to their customers."

For more information, visit www.jBASE.com.

Natec Systems Offers Spectrum Presentations on CD

Many people could not make it to the Spectrum Show in San Diego this year for one reason or another. Also, some people that did make it to the show, weren't able to attend all the classes they wanted.

Because of this, Natec Systems decided to record the classes that Nathan Rector gave for those who did not get a chance to attend or now want someone else to see and hear the same information.

These recordings include both the voice and the visual presentation together in Real Media format. The following popular classes where recorded:

- Techniques for Adapting Your MultiValue Applications to PDAs
- Programming PDAs
- Programming Wireless PDAs
- Interfacing MultiValue Data with Word and Excel.

All four of these presentations are available on one CD for $150.00.

For more information, please visit http://www.natecsystems.com and go to presentations.

Modular Information Systems Signs VAR Agreement with Revelation Software

Modular Information Systems (MIS) of San Ramon, Calif., and Revelation Software (Revelation) of Westwood, N.J., have agreed to a value-added reseller agreement which will allow MIS to sell, distribute, and support Revelation's database, and application development products and services including OpenInsight and JOI.

An industry leader since 1985, Modular Information Systems is an authority on MultiValue technologies. "We took a long hard look at Revelation's development tools and really liked what we saw," said Lisa Corbett, president of Modular Information Systems. "We also are extremely impressed with their marketing efforts. We think Revelation Software will be a major player in software database and development tools."

Revelation Software, which was purchased by WinWin Solutions Inc. in 2000, has taken steps to revive the Revelation brand while making significant improvement to their product offering. The results have been very favorable as Revelation has seen a steady increase in sales and market share around the world. The new partnership with MIS figures into their U.S. expansion plans.

"The relationship with Modular Information Systems is important; not only are they a respected organization, but they will allow us to significantly increase our presence on the West Coast," said Michael Ruane, president of Revelation Software.

The new relationship will focus on serving the existing Revelation Software user base, attracting new developers to Revelation's offerings, and providing a sales and support system for current OpenInsight and JOI programmers.

Modular Information Systems is a full service IT consulting company offering a complete range of professional services and products for businesses using Microsoft, UNIX, and Netware computing solutions. They are a Microsoft Certified Partner, IBM Business Partner, jBASE Authorized Reseller, Raining Data Value-Added Reseller, Reality Authorized Reseller, Revelation Solution Partner, Via Systems Authorized Reseller, and authorized resellers of many quality hardware and software solutions, including IBM, Cisco, Hewlett-Packard, and Compaq. Among Modular's many offerings is the world-class winery management software suite, Vintners Advantage.

Revelation Software delivers a suite of application development tools and companion services that take full advantage of leading network computing architectures, messaging, groupware, and client server platforms. Today, the company's flagship product, OpenInsight for Workgroups, is the only database development and application environment that provides both Windows and Java-based GUI tools to develop and deploy Web-based and client server applications that support native and relational XML, SQL, Lotus Notes and the leading legacy MultiValue data sources such as ARev, Pick and IBM's UniVerse.

For more information about Modular, visit www.miscorp.com. For more information about Revelation, visit www.Revelation.com.

IMHO

Managing the Migration: A Model for Success, Part 2

You probably know as much about project management as I do. So let's chat, and make sure. *For example, you may know that lurking behind some successful systems are some project catastrophes. In fact, a recent Standish Group survey estimates that an incredible* ***72 percent*** *of all IT projects are late and over-budget. And this is down 11 percent from their 1995 study! (See footnote1.) The average cost overrun is 189 percent, and some are more.*

In my own experience, the record-setters in IT are usually software migration projects. But let's build a defensive weapon. We'll call it the **Strategic Migration Maturity Model***, loosely based upon the Carnegie Mellon University's Software Engineering Institute (SEI) "Capability Maturity Model," and J.Kent Crawford's "Project Management Maturity Model" (PMMM). Our* **SMMM** *will be a multi-level measurement of readiness for the job-wrenching task of re-engineering one's environment and one's self.*

Level 1 - ***Initiation***

Level 2 - ***Orderly process***

Level 3 - ***Optimized criteria and standards***

Level 4 - ***Managed process***

Level 5 - ***Optimized process***

The **SMMM** *is loosely structured along public-domain aspects of the Project Management Maturity Model, but is focused solely on the particular requirements of successful migrations. Most important, while the PMMM has a gradual three-to-five-year benefit to an organization, the SMMM will therefore be a logical and reliable method for immediately lowering the risk,* ***and reducing the cost,*** *of any strategic IT migration project.*

We talked about Level One in the last article in the preceding issue of Spectrum. So let's look at **Level Two:**

This level is achieved when an organization has created an orderly migration process that is oriented toward success. It ought to be easy. Migration is the one thing most IT systems do most often, so it ought to be like coming to America:

Fill out the forms. Get a visa. Get on the cruise ship.

Instead, most migration projects are conducted more like discovering America:

Step 1: Pick a direction.

Step 2: Sail until something happens.

The problem is a fundamental one. A project is basically a temporary endeavor, full of exciting opportunities to overcome challenges and surprises. A migration, on the other hand, is by definition the journey from what's known and comfortable to a place that's unfamiliar. A migration project involves more risk, certainly, but should be fun. Yet more than half of all such projects fail, and half of those are death marches for the participants. So if you're a stakeholder in the migration, you'd like to improve the odds. Stakeholders who want to lower the risk of failure and cut the cost therefore will not start a migration until achieving at least Level Two on the SMMM.

How does an organization know what level of maturity, and readiness, that it has? The best way, of course, is to hire one of the great project management firms. It's only due consideration to mention the source of the PMMM and SMMM, J.Kent Crawford's company **PM Solutions Inc.** (Full disclosure: I do contract work for them. A very impressive bunch.) Anyway, this way you not only get assessment, but you also get fixed. There's a quick rule-of-thumb for determining whether you're a Level 1 and need to become Level 2. All that this do-it-yourself approach requires is that you take a look around your place.

◆ Are there project management processes in the organization, but they are not yet an organizational standard?

◆ Is there some documentation on the project processes, but it is not widely distributed, nor followed?

◆ Does your management support the practice of project management but there is neither a consistent understanding, consensus, nor management mandate for compliance on all projects?

◆ In other words, do you usually have functional managers involved in the larger migration projects, and these projects are executed in a pragmatic one-off method ... as opposed to prescribed migration practices performed by specialists in project management?

◆ Are there some basic metrics used to track cost and schedules on projects, although data is collected and stored manually in a spreadsheet? And is it usually summary data, while the detail data on how long an activity took or cost is typically unwieldy or even unavailable for later analysis?

If the answer to two or more of these questions was YES, then Bunkie, you're mired in Level One, and probably unprepared for a migration project that could cost you your job ... or maybe everybody else their jobs as well.

Level One maturity was about making migrations into projects. Level Two preparation is about making migration into an orderly process. So, how do they make a migration project into an "orderly process"? Simple. The Level Two organization learns the route, maps the pitfalls, and figures out a way around them. In other words, they:

◆ Create an orderly progression of steps, then activities, then specific tasks within those activities, based upon an objective and elevated perspective on what the project should accomplish, and most importantly, on how to get the most out of doing the project.

◆ Identify the critical path of these activities, and the obviously risky tasks.

◆ Mitigate the risks, or come up with appropriate workarounds when they should occur.

Most important, of course, is that the Level Two organization will plan and document all this, so that the process is defined, can be communicated, can be analyzed, ***and is repeatable.***

So at this point you are ready to migrate? **No.** It's not enough to just come up with a detailed plan. While you know that more than half the migrations fail, it might surprise you that according to recent studies, more than 70 percent of organizations are actually fairly good at defining what they want and how to get there. Maybe it's a logical result of the obsessive IT practice of asking what the user wants (even when the common assumption among IT types is that MIS management knows better what the user

Continues on page 22

needs.) So it's typical that many projects, if not most, are started with a scope and set of deliverables defined by the people who will deliver them. It's no wonder that they match.

But then why do so many projects still fail (nearly a third; see footnote 2) and fully half the remainder exceed budgeted time and cost? Because no matter how detailed a plan might be, it is simply not enough. Successful migration takes more than making a plan, it takes more than following a plan, it takes **using** the plan. Assuring "Level Two" success in strategic migrations means putting in place iron-clad methods for asking the right questions at all the right points, like "Is it working?" This means tracking progress, recording time, and checking costs on the fly, during the work instead of after.

IMHO, the real trick is to make sure that the tracking takes less time than the doing. Such tracking is most successful when hidden behind a casual progress monitoring system. One way is a daily status meeting. Another, less intrusive way is an hourly time-keeping report, perhaps via the intranet. The best way, of course, is to make the tracking an integral part of the work itself: My favorite method is to make hours tracking a part of version control, and applying it to every module, and even every document.

In any case, no matter how you choose to get the statistics on the progress of your migration project, these are the details that are essential to ensure an orderly process is created and followed. And they are the essential requirements for achieving the next level of migration maturity, where real benefits are measured in real dollars.

In order to do that, you need to be at Strategic Migration Maturity Model Level Three, managing the migration project effectively for its success, through Level Five, optimizing the project for (your) triumphant visibility. In the next article, I'll describe the SMMM third level, and the precision measurements to turn your next migration nightmare into a career boost. ***=/srv***

Steve VanArsdale is a contract consultant and project manager, working and writing from beautiful Chicago Illinois. where "heartland" means putting one's heart into the work. steve@vanarsdale.com

1. The Strategic Project Office, J.Kent Crawford, pub. 2002 by Marcel Dekker Inc.

2. THE STANDISH GROUP REPORT "CHAOS", © The Standish Group 1995, Yarmouth, Massachusetts.

http://www.scs.carleton.ca/~beau/PM/Standish-Report.html

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 Continued from page 6

6 Have you answered all of the prospect's questions? Did the prospect ask you if your widget comes in chartreuse? Why not! Weren't you listening? They're not going to buy Jack until they know whether it comes in chartreuse!

7 Have you asked the prospect if there are any unanswered questions or objections? Repeat steps 5 and 6 over and over until you ask this question and they say, "No, I don't have any more questions or objections."

8 Have you asked for the order? The millisecond number 7 is out of the way, that's the time to ask if there's any reason why the order couldn't be signed. Check and check-mate. This is when you'll find out if the prospect has been sandbagging some objections or still has some unanswered questions. Don't be discouraged if there are — you got this far, which means you still have a very viable prospect that needs a little more work to get back to this magic point again.

9 Have you made it easy to order? Congratulations! The prospect said he'd sign the order! Did you forget to bring a pen? Did you forget to bring a contract? Does the prospect have to fill out a 50-page form to buy your widget? Too bad! You stand a good chance of blowing the sale. Remember — if a prospect has to do more than sign his name and write a check, you have not made it easy enough to order.

10 Is the money in the bank? It's not? Then have a quiet celebration, but keep your mouth shut! There's a million things that can go wrong between getting the signed order and having the check clear the bank! I'll give you a classic, true story to illustrate the point. Years ago, I had traveled for the third and hopefully final visit to close the deal to sell an MV software system to a major Washington D.C. office supply chain. I met with the Board of Directors and got the contract signed by the Chairman of the Board. Returning triumphantly to my company in California, I was greeted as a hero and toasted far and wide. "Signed by no less than the Chairman of the Board!" I boasted. The next morning, a lawyer called. He explained that the stock of the company was held in trust for the deceased owner, and that the Board had no authority to purchase the system.

Check!

Editor's Note: Do you have an incredible story about "the one that got away" or an unbelievable sales experience you'll never forget? We'd like to hear about it! Address your email about it to editor-spectrum@cox.net.

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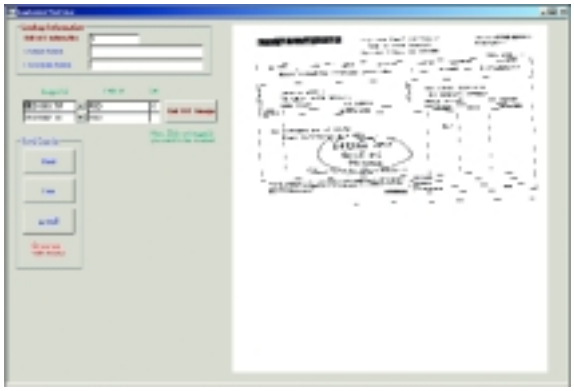
VISUAL *e* Adds New Life and Enhanced Value to MultiValue Application Programs

Windows-friendly Tool Provides Scanning, E-mailing, Faxing, Data Mining, Import/Export and GUI Capabilities

Visual *e* 4.0 is a suite of products from ScanNet System Corp. that is designed to update and improve the functionality of your MultiValue database through its Microsoft Windows integration. A comprehensive Graphical User Interface (GUI) tool built to run on MultiValue database platforms—IBM's U2, Raining Data's D3, mvBASE and mvEnterprise, jBASE or Ultimate+ —Visual *e* enables e-mailing, faxing, scanning, data mining, import/export, Window Application Development, screen capture and local printing.

Visual *e* got its start in 1995 as a GUI Windows development tool. Since Windows development was its only function at that time, it was called Visual Pick. The original concept of being a true Windows front end to any application still holds true today. When Windows 2000 was first introduced, certain new functionality could not be taken advantage of because the client was programmed in 16-bit technology, according to ScanNet. In November 2001 a project was started to rewrite the client utilizing the latest 32-bit technology. With an aggressive programming staff, the project was beta tested and completed in December 2002, with many new functions being added. Visual *e* has become a very mature, robust product, the company said.

"This all-in-one suite of products is designed to empower the user," said Terry Turzynski, president and CEO of ScanNet System Corp. "It is intuitive to use, increases productivity and adds immediate value to your business. A Windows doorway is provided when you install the Visual *e* Internet Client on your PC. Immediate access is given to your data with this Windows interface to your existing applications, which are enhanced by taking advantage of the built-in tools and methods provided by the Visual *e* suite."



The Visual *e* 4.0 Proof of Delivery system for the trucking industry enables on-line tracing of shipments, allowing staff to trace shipments quickly.

The Visual *e* Internet Client provides a Windows or character-based screen connection to the database server over Local Area Networks or the Internet. The client is a thin client which can work with a Virtual Private Network. Once connected to the server, DATA/BASIC programs provide connectivity to

the client, which in turn communicates with Microsoft Windows. E-mailing, faxing, scanning, data mining, import/export, Windows application development, screen capture and local printing are all available when using the Visual *e* Internet Client coupled with DATA/BASIC programs.

While there are other products on the market that perform some of the same functions are Visual *e*, Visual *e* is unique because of its all-in-one design and speed. "Bench tests on our Visual *e* XL show that its functions are twice as fast as some of the other products on the market," Turzynski said. "An end user defines what they want to download or upload from a list of fields, and presses a button. Many of the other products are very unfriendly to end users."

While there are other products on the market that perform some of the same functions as Visual *e*, Visual *e* is unique because of its all-in-one design and speed.

The Visual *e* E-mailing, Faxing and Scanning functions are all controllable by DATA/BASIC programs. Very simple interfaces are provided for ease of use when custom applications are created. Otherwise, these functions are all provided with a standard set of interfaces right on the Visual *e* Internet Client.

The Visual *e* Application Developer was developed for a true Windows interface. Unlike other products, no Visual Basic, C++, or Java code is needed. A complete working data entry window can be completed without any programming. "I don't know of anyone else performing this task where all the code is written in DATA/BASIC," he said. "The design criteria of the Application Developer is event-driven, unlike the other products that started out supporting green screens for dumb terminals. In the green screen environment, the program controls where the cursor goes next. Visual *e* provides a unique method for the programmer to control this event-driven logic. The two concepts are like oil and water; the only thing in common is the fact that they both have a display window."

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-from the Project Management Book of Knowledge (PMBOK) Project Management Institute (www.pmi.com) 2000 Edition

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Additionally, when used over the Web, the Visual *e* Internet Client does not have a persistence problem like some of the other Web-based products. "A typical example is when a form is filled out in a Web-based developed application, at the bottom of the screen a button must be pressed that says 'Submit,'" Turzynski said. "The reason for this is that once a form is displayed, you are no longer connected to the server that sent the form. That is why another window is displayed and any items entered in error are highlighted and must be corrected. In the Visual *e* connection, the server is always in communication with the client. Therefore, no persistence problem exists. Real time-editing occurs as data is being entered."

Cryptic methods and processes are a thing of the past with Visual *e* on the user's desktop. Executives, managers and staff are given an intuitive, Windows-friendly tool to perform their analytical tasks. With the push of a button, all data from MultiValue applications is available for any detailed analysis or report creation.

The Visual *e* Search Browser is a data mining tool that runs directly off of the MultiValue database without having to build "cubes" or any other auxiliary files to operate, he said. The search browser takes advantage of the file structures already built, and can be run on any file in the application account.

Visual *e* Import/Export provides enhanced connectivity to Microsoft Excel and other spreadsheets and is very intuitive. An example, Turzynski said, is that sales data could be summarized by Territory, Product Line, Sales Person, etc.—the possibilities are endless.

While anyone who has a MultiValue database can save dollars and increase productivity by using Visual *e*, one of the specific business applications ScanNet has targeted with this product is the trucking industry.

"The built-in productivity tools can best be described by analyzing one of the many impressive real-time applications created with the product," he said. "For example, a Proof of Delivery system designed with our Windows Application Development Tool for the trucking industry enables on-line tracing of shipments, thus providing immediate confirmation of the inquiry. The manual and time-consuming tracing process included locating the signed Bill of Lading, then either faxing, e-mailing or sending a copy of the document to the inquirer. Visual *e* 4.0 Proof of Delivery was used to replace this manual process, which allowed all functions to be performed through Windows screens, totally automating the process."

Visual *e* 4.0 Proof of Delivery cut the time for proof of delivery processing in half. Turzynski explained how the system works. "By selecting a button on a window, a document scanner is directed to process each signed Bill of Lading. Images are stored in a file for future access on a central server. When a customer calls up to inquire on a specific shipment, the tracing person selects the Trace Inquiry screen. Using the built-in Visual *e* Search Browser on the key field, record searches can be performed by any field, or in this case, use the default 'company and date of shipment.' Once the correct Bill of Lading is located, the image of the document is displayed. Selecting the desired button, the document is faxed and/or e-mailed immediately, or printed and sent to the customer. Going one step further with this capability can eliminate the phone call altogether. This is done by providing the customer with a copy of the Visual *e* Internet Client, and they perform their own search and printing of the document at their place of business."

The traditional dispatching system used by trucking companies has been a Dispatching Board with slots representing the order of pickup or delivery. The Visual *e* 4.0 Dispatching Board performs the same task with a window full of buttons. Each button represents a delivery or pickup. The buttons are color coded to highlight the tasks that require immediate action. A red button represents immediate action, yellow is caution, and silver is normal. By clicking a button, a dispatcher can gain access to detailed information about the pickup or delivery.

The Visual *e* 4.0 Dispatching Board replaces the traditional dispatching systems used by trucking companies. With the click of a button, dispatchers can access detailed information about pickups or deliveries.

The cost of ownership for the Visual *e* suite of products is low because it's an all-in-one product with bundled pricing for the entire suite of products, Turzynski said. "The ease of use dictates a short learning curve," he stated. "From a programming standpoint, a 10 to 1 productivity improvement is achieved. For example, how many programmers can design and write a program that works the first time? When a data entry window is designed, the only programming necessary is for custom rules that are outside the scope of the development tool. Customers using Visual *e* have experienced a complete payback on their first project." **is**

A Visual *e* demonstration is available over the Internet at http://www.snscorp.com or e-mail ScanNet at sales@snscorp.com.

MV webstore
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Cypress Business Solutions Releases mvWebstore

A Real-time e-Commerce Application for Multi-Value Users

Late last year, Cypress Business Solutions developed a real-time e-Commerce application to interface with its flagship order management system, e-CAT. Now, the company has decided to market mvWebstore to the MultiValue community at large, no longer specifically for users of Cypress's backend application.

mvWebstore is a fully functional, feature-rich product that includes the following:

Shopping Cart:

- Unlimited SKU's
- Gift Certificates (real-time validation)
- Ship Methods Priced on Demand
- Multiple Payment Methods
- Credit Cards (real-time validation)
- Multiple Ship-To's
- Secure Transactions
- Upsell / Cross-sell
- Color / Size Ready
- Dynamic Color Swatches

Customer Account:

- Address Book
- Order History
- Tracking Numbers
- Wishlist

Web-Based Administration:

- Item Modification
- Image Modification
- Upsell / Cross-sell modification
- Site Configuration

Web-Hosting:

- Unlimited Web Sites (per site change)
- Secure, Co-Location Facility
- Unlimited Bandwidth
- Redundant Bandwidth

Database Compatibility:

- UniVerse
- UniData
- Advanced Pick / D3
- General Automation

What distinguishes mvWebstore from other products is that it's not just a connectivity tool, it's a complete e-Commerce solution, said Kevin Vezertzis, Cypress Business Solutions systems analyst. "When our installation team leaves your site, you will actually have a fully functioning, e-Commerce storefront," he commented. "The ASP pages are included and the client can use the base template that is provided or can have the pages completely customized, depending on the specific business need. There is no secondary database and no redundant business rules; mvWebstore utilizes the intelligence of your backend application."

Anyone operating in a MultiValue environment who wants to perform real-time, integrated, e-Commerce transactions can take advantage of mvWebstore. "The benefits of mvWebstore are endless," Vezertzis said. "The user gets the real-time functionality that customers are experiencing at the largest e-tailers in the market. Our team can provide every aspect of the installation, including Web hosting, or we can work with your development staff to ensure a successful implementation.

"In addition, we are e-Commerce and MultiValue experts, so we completely understand the unique needs and desires of an MV operation. In short, the user gets a complete, e-Commerce solution—all for the price of a connectivity tool!"

Visit Cypress Business Solutions' Web site at www.cypressesolutions.com. **is**

QFILES and Multiple Accounts on Unix-based Systems, Part 1

BY MARK JOHNSON

The simplicity of native MV systems easily allowed for the concept of the SET-FILE verb and its result, QFILE. The structure of the fields in a q-pointer MD item allowed its automation through a proc or program.

For those files that needed a more permanent q-pointer, you could manually edit the desired filename into the MD and be done with it. The SET-FILE verb typically was used for a temporary use of another account's file as no application should depend upon a real file called QFILE.

BTW: Advanced Pick and D3 have two nice features regarding QFILES. First, their implementation allows for multiple data levels sharing the same dictionary. Thus you can type LIST CUSTOMER for the natural data level or LIST CUSTOMER,2000 and get a different data level. The comma does the trick. Regarding QFILES, you can type the following LIST ACCOUNT,FILE, or LIST ACCOUNT,FILE,FILE2, to have an on-the-fly QFILE made available. Its syntax requires the trailing comma.

U2 systems certainly aren't deprived of QFILES, they just have a harder time with SET-FILE deriving the appropriate account. Given the multiple levels of Unix directories and filetypes, it would be very hard to derive the proper path pointing to the home directory where the q-pointed file resides. Part of the problem is that there either are zero QFILES in a U2 system or all files are QFILES depending on whom you ask. When you view the contents of a file pointer, they all have F or D in the first field. You can derive if it's a q-pointer if it contains the file's name only or points to a different directory than the one you're currently in.

BTW: Some native versions don't allow for the deleting of the actual file when you delete it as QFILE. You must be on the home account and use the literal filename. This somewhat protection is gone with U2 systems, permissions notwithstanding.

I've installed a manual method of creating QFILES on my client's U2 systems. While not as easy as the native version, it gets the job done. It requires that you create a table that is already in a file that's shared by multiple accounts. It can be in a BP file or tucked away in the dictionary of a common application file. It should not be contained in the following program as it will be used by other programs in the future and should be maintained in a single place.

I call this table ACCTS and it is a simple listing of the complete path to get to that account's directory, regardless of how complex the path is. I'll use the RESULTS application of one of my clients as an example.

```
ACCTS
001 RESULTS-ARS          /dbase/RESULTS-ARS
002 RESULTS-APS          /dbase/RESULTS-APS
003 RESULTS-GLS          /dbase/PRIVATE/RESULTS-GLS
004 RESULTS-PAY          /dbase/PRIVATE/RESULTS-PAY
and so on.
```

The following is a program that should end up globally cataloged on your system.

```
***
*    TO CREATE A QFILE POINTER TO ANOTHER
FILE
*    MAJ 052892
***
     PROMPT ""
     TEST=@COMMAND
     CONVERT " " TO CHAR(254) IN TEST
     ACCOUNT=TEST<2>
     FILE=TEST<3>
     QFILENAME=TEST<4>
     OPEN "MD" TO F.MD ELSE STOP
     OPEN "PROG" TO F.PROG ELSE STOP
     READ ACCTS FROM F.PROG,"ACCTS" ELSE STOP
     C.ACCTS=DCOUNT(ACCTS,CHAR(254))
*
***  GET ACCOUNT
     IF ACCOUNT="" THEN
        CRT "ENTER ACCOUNT ":;INPUT ACCOUNT
        IF ACCOUNT="" THEN STOP
     END
*
***  FIND ACCOUNT IN ACCOUNTS
     FOR I=1 TO C.ACCTS
        IF ACCOUNT=FIELD(ACCTS<I>," ",1) THEN
        GOTO 20
     NEXT I
     CRT "INVALID ACCOUNT" ; STOP
*
*** GET FILE
20   IF FILE="" THEN
        CRT "ENTER FILE ":;INPUT FILE
        IF FILE="" THEN STOP
     END
*
*** GET QFILENAME
     IF QFILENAME="" THEN
        CRT "ENTER QFILE NAME OR <CR> FOR
        'QFILE' ":;INPUT QFILENAME
        IF QFILENAME="" THEN QFILENAME="QFILE"
     END
*
***  WRITE OUT ITEM
***  FIRST SEE IF IT'S A 'F'ILE OR 'DIR'ECTORY
     A=ACCTS<I>
     PATH=FIELD(A," ",2)
     QFILE="F"
     QFILE<2>=PATH:"/VOC"
     QFILE<3>=PATH:"/D_VOC"
     WRITE QFILE ON F.MD,"QFILE"
     OPEN "QFILE" TO F.QFILE THEN
        READ REC FROM F.QFILE,FILE ELSE
          CRT "INVALID FILE"
          STOP
        END
     END
*
***  NOW WRITE OUT ACTUAL QFILE.
***  ALLOW THE TARGET TO BE A QFILE ITSELF
     QFILE=REC<1>
     IF INDEX(REC<2>,"/",1)=0 THEN
        QFILE<2>=PATH:"/":REC<2>
        QFILE<3>=PATH:"/":REC<3>
     END ELSE
        QFILE<2>=REC<2> ; QFILE<3>=REC<3>
     END
```

```
*
***  IF QFILENAME IS QFILE THEN OVERWRITE
     OTHERWISE PREVENT
     READ TEST FROM F.MD,QFILENAME THEN
        IF QFILENAME # "QFILE" THEN
          CRT "FILE NAME ":QFILENAME:" ALREADY
          EXISTS.
OVERWRITE (Y/N/CR=N) ":;INPUT ANS
          IF ANS NE "Y" THEN STOP
        END
     END
     WRITE QFILE ON F.MD,QFILENAME
     CRT "WRITTEN AS ":QFILENAME
     END
```

This program functions with two or three parameters following the verb. The first is the other account, the second is the name of the desired file on the other account. The third is the name you want that q-pointer to be called on the account you're in. If the third parameter is missing, the program will ask you for one, defaulting to the throwaway QFILE.

Except for QFILE, it will prompt if you are writing over an existing file, verb or anything else in your current MD. Typically when QFILES are meant to be somewhat but not completely permanent, they could/should take on the filename of `ACCT-FILE`.

```
SET-FILE
SET-FILE RESULTS-APS
SET-FILE RESULTS-APS OAP
SET-FILE RESULTS-APS OAP AP-OAP
```

In Part 2, I'll illustrate a few more uses of the ACCTS table when managing multiple account applications. **is**

Mark Johnson *is a 23+ year veteran of the MV database and has worked on a variety of implementations. He specializes in maintaining and enhancing legacy systems and is available for contract, short and long-term programming projects in the New Jersey, New York and Eastern Pennsylvania areas. He can be reached at majprogramming@comcast.net.*

LISTQ and Viewing Multiple Account MD (voc) Entries Part 2

BY MARK JOHNSON

In the first part of this article, called QFILES, I created a concept whereby you saved all relevant application accounts in a record called ACCTS. This record contains not only the list of the necessary accounts, but for Unix-based systems, their actual path from the root directory.

Native systems have SET-FILE to automatically create a q-pointer file called QFILE to point to another account's file for a temporary basis. The prior article also included the code to interpret the ACCTS record with its paths to allow SET-FILE to exist in Unix-based systems in the same, if not better, fashion.

Many application packages have multiple accounts created either to hold the separate modules in different accounts (A/P, A/R, Inventory, Sales etc) or allow the same basic account to be cloned for different companies. As time goes on, managing these multiple accounts gets tricky as there are files and/or verbs that are shared on these accounts yet sometimes you wish to determine the file's true home account or directory.

The ACCTS record would be stored in a file that is universally available to all accounts. While there may be some processes to acquire the accounts' names on the fly, typically SSELECT SYSTEM WITH D/CODE = "D]" or 'ls –b | grep D_VOC', you will get more accounts than you wish to review. The effort to identify and store the ACCTS record is far less than acquiring them or weeding through unwanted accounts every time. Just manually add the new ones when they are created, which probably isn't that often.

The first of two programs in this article is a global viewer for the contents of the MD (VOC) record for each of the participating accounts. Sure, the CUSTOMER file is available in many accounts, but which one is its home account or directory? Also, you may test to see if any verbs or other MD items exist in any other accounts.

This first program, which I call LISTQ, has the form LISTQ or LISTQ TIME with the second parameter being the item-id that is to be shown for each account. It will visit each account in ACCTS and show the contents of that account's MD for the item.

This code will have a variable indicating which type of system you're running. This is because the temporary q-pointer for the ACCTS' MD varies as well as interpreting the values from TCL. You may wish to omit this logic and code for your own system type.

```
     LISTQ
     PROMPT ""
     SYS.TYPE="NATIVE"
     MY.ACCT=FIELD(OCONV("","U50BB"),"  ",2)
     IF SYS.TYPE="NATIVE" THEN
        PROCREAD TEST ELSE GOTO 10
     END ELSE
        TEST=@COMMAND
     END
     CONVERT "  " TO CHAR(254) IN TEST
     ID=TEST<2>
     OPEN "MD" TO F.MD ELSE STOP
     OPEN "PROG" TO F.PROG ELSE STOP
     IF SYS.TYPE="UD" THEN
        OPEN "CTLG" TO F.CTLG ELSE STOP
        OPEN "CTLGTB" TO F.CTLGTB ELSE STOP
     END
     READ ACCTS FROM F.PROG, "ACCTS" ELSE STOP
     C.ACCTS=DCOUNT(ACCTS,CHAR(254))
     CONVERT "  " TO CHAR(253) IN ACCTS
10 IF ID="" THEN
        PRINT "ENTER FILENAME TO FIND ":;INPUT
        ID
        IF ID="" THEN STOP
     END
     FOR I=1 TO C.ACCTS
        ACCT=ACCTS<I,1>  ;  PATH=ACCTS<I,2>
        IF ACCT=MY.ACCT THEN AST="*" ELSE
        AST=""
        IF SYS.TYPE="NATIVE" THEN
          OUT="Q"  ;  OUT<2>=ACCT  ;  OUT<3>="MD"
        END ELSE
          OUT="F"
          OUT<2>="/":PATH:"/VOC"
          OUT<3>="/":PATH:"/D_VOC"
        END
        WRITE OUT ON F.MD, "LISTQ.QFILE"
        OPEN "LISTQ.QFILE" TO F.LISTQ.QFILE
        THEN
          READ REC FROM F.LISTQ.QFILE, ID ELSE
          REC="MISSING"
          PRINT AST"L#1":"  ":ACCT"L#15":"
          ":ID"L#10":"  ":REC
        END
     NEXT I
     PRINT
     IF SYS.TYPE="UD" THEN
        READ REC FROM F.CTLG, ID ELSE
        REC="MISSING"
        PRINT SPACE(2):"CTLG""L#15":"
        ":ID"L#10":"  ":REC
        READ REC FROM F.CTLGTB, ID ELSE REC=""
        PRINT SPACE(2):"CTLGTB""L#15":"
        ":ID"L#10":"  ":REC
     END
     GOTO 10
     END
```

This program should be cataloged in all of the accounts you wish to use it. This brings us to the second program of a similar style.

These multiple account systems all started out with the proper collection of NEWAC verbs and filenames and pointers all installed from the original software vendor. Over time, many

new files and verbs may get added to the accounts, albeit individually on one account at a time.

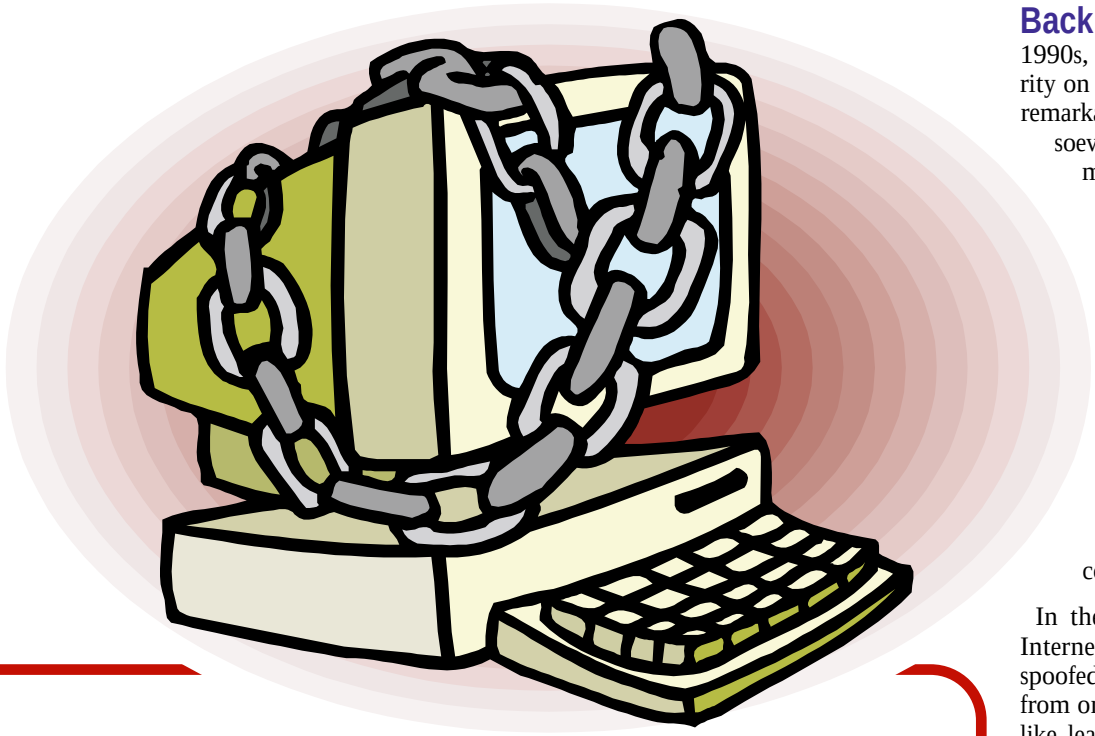
This second program is simply called UPDATE-ACCOUNT. Using the same theory from LISTQ, it will derive and open each ACCTS's MD and populate that MD with a new record as provided. It uses a secondary record that I call UA which is the data for the next run of UPDATE-ACCOUNT.

```
UPDATE-ACCOUNT:
   PROMPT ""
   OPEN "MD" TO F.MD ELSE STOP
   OPEN "PROG" TO F.PROG ELSE STOP
   READ ACCTS FROM F.PROG, "ACCTS" ELSE STOP
   C.ACCTS=DCOUNT(ACCTS,CHAR(254))
   CONVERT " " TO CHAR(253) IN ACCTS
   READ REC FROM F.PROG, "UA" ELSE STOP
   C.REC=DCOUNT(REC,CHAR(254))
   FOR I=1 TO C.ACCTS
      ACCT=ACCTS<I,1> ; PATH=ACCTS<I,2>
      IF SYS.TYPE="NATIVE" THEN
        OUT="Q" ; OUT<2>=ACCT ; OUT<3>="MD"
      END ELSE
        OUT="F"
        OUT<2>="/":PATH:"/VOC"
        OUT<3>="/":PATH:"/D_VOC"
      END
      WRITE OUT ON F.MD, "OTHER.MD"
      OPEN "OTHER.MD" TO F.OTHER.MD ELSE STOP
      FOR J=1 TO C.REC
        A=REC<J>
        IF A="X" THEN EXIT
        CONVERT="\" TO CHAR(254) IN A
        ID=A<1> ; DEL A<1>
        WR=1
        READV A1 FROM F.OTHER.MD, ID, 1 THEN
          IF A1[1,1]="D" OR A1[1,1]="F" THEN WR=0
          ELSE
              PRINT ID:" EXISTS IN ":ACCT:".
              OVERWRITE
(Y/N) ":;INPUT ANS
              IF ANS NE "Y" THEN WR=0
          END
        END
        IF WR THEN WRITE A ON F.OTHER.MD, ID
      NEXT J
    NEXT I
    END
```

The contents of UA would be that each line represents a single item to populate to all the ACCTS. It is of the form:
ITEM-ID\ATTR1\ATTR2\ATTR3 etc
In all cases, the first element delimited by '\' is the ITEM-ID of the new item and the following ATTR's are the actual field values. Use '\\\' to space out your data to provide for null fields in the resulting MD item.

If you don't delete the UA record, the UPDATE-ACCOUNT will process it completely every time it's run. If you wish to update only a few lines, make the next line a single X to tell the program to stop. This allows you to keep track of what's been automatically populated.

This is a RUN program and doesn't have to be stored as a verb. The logic surrounding the WRITE statement prevents the accidental overwriting of file pointers. **is**



BY MELVIN SORIANO

Locking It Up

Keeping It *Quiet* with SSL

There once was a time when people didn't lock their doors or didn't arm their cars with alarms, LoJack or the Club. We sent children off to school alone on city buses, and we used real forks and knives on commercial airliners. Life was so easy back in the good old days. We just needed to make sure that the Beave did the right thing.

Back in the rose-tinted early 1990s, we didn't worry much about security on the Internet either. Actually, it was remarkable enough to be on the Net whatsoever, much less worry about who was monitoring our activities. People didn't worry much about the information they were sending while surfing the Web.

But, as goes homes, automobiles, kids and jets, information security on the Internet has become a great concern today. Data transferred over the Net has become quite detailed and personal. Following closely behind these trusting individuals are the nosy, the malcontent, and the nefarious.

In the last issue, we talked about how Internet packets could be intercepted or spoofed while the data is being transmitted from one computer to the next. It's sort of like leaving mail not inside locked mailboxes but on top of the mailbox instead.

Anyone looking in that area can see the mail lying there. Not a bad thing in and of itself. But malicious hackers and crackers would do more than just pass by. They'll tamper with the envelope to get information about you. It's sort of like opening a letter with a bill inside, putting your own self-addressed stamped envelope inside it, and hoping the customer mails a check to you instead.

Because of this, folks who want some security while on their browsers need something a bit more stringent. That's where the Secure Socket Layer (SSL), or "Transport Layer Security," comes into play. SSL was introduced by Netscape (remember them?) and has been accepted on the World Wide Web as a standard way for authenticating and encrypting communication between the Web server and the browser.

This protocol permits data to be transmitted in an encrypted format during the trip from your browser to the Web server, and likewise on the return trip back. When implemented on the Web server, your interaction with that Web server should be fairly secure. But even then, the encryption levels at different Web sites could vary, so it's not necessarily a given that all is bullet-proof.

Continues on page 34

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"The choice was clear once we evaluated the options that were available in the marketplace. The fact that ViaODBC handles MultiValues properly and has the ability to display user friendly column names were both key in our evaluation."
Jeff Bender, COO Harris Computer Systems
"We immedately saw the benefit of easily moving data from our Unidata files into commonly used Windows applications. And, I have been particularly impressed with the improvements that Better Results has effected in the product since we became a customer."
Chris Schiffhauer, Dayton Metropolitan Housing Authority
Just thought I would let you know about a project I have been working on that has used the (ViaODBC) software. Payroll Budgeting info to an EXCEL spreadsheet. It works really great. By using the software, I have avoided writing a huge program to generate the data."
David Calvert, IT dir, Oklahoma City Housing Authority
@Better Results, Inc.
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MULTIVALUE

On the flip side, SSL client authentication allows the server to confirm a browser's identity. Similar to the technology used for server authentication, SSL-enabled server software can check that a client's certificate and public ID are valid and also can see if they have been issued by an acceptable certificate authority. This type of transmission could be important when, for example, a company wants to transmit confidential information to a trading partner through the Web browser.

Webonomics 101

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Nevertheless, one could say that in order to hack at the encryption of most online sites it should take thousands of computers and thousands of years to figure out what's going on. Some folks might argue otherwise, but it seems fairly reasonable to assume that unless someone has the resources and the overwhelming intent to crack the encryption, your communication should be safe.

That cute padlock or key at the bottom of your Web browser shows you are on an encrypted site. I'll list some of the main features of an SSL-enabled site.

- SSL encrypts data so that it cannot be read if intercepted
- SSL makes sure that a browser is talking to the intended server and not a re-routed server
- SSL can stop unauthorized browsers from connecting to the server
- SSL interferes with those who want to alter transmissions between the browser and the server.

How do you use it? It's fairly mindless for the end user.

1. The browser contacts your site and accesses a secured URL. A secured URL will have a Server ID (as seen by a URL that begins with "https:" instead of just "http:").
2. The Web server replies to the browser with the server's digital certificate and authenticates the site.
3. The Web browser generates a unique session key to encrypt communications with the site.
4. The browser encrypts the session key itself with the Web site's public key so only the site can read the session key.

At this point, a secure session has been established. No user intervention is necessary if the certificates are acceptable to the browser. Depending on the browser, the user may see the key or padlock icon.

For the most part, then, the hard stuff is hidden away. But much is actually happening when the encryption is occurring. Remember that TCP/IP is a basic set of protocols to transfer packets of information from one machine to another. The HTTP protocol that is used for browsers runs on top of that layer of protocols. When I say "on top," I mean that the HTTP protocol uses TCP/IP to do its magic. SSL runs between HTTP and TCP/IP. In a sense, it somewhat wraps TCP/IP in a manner that offers the desired added security.

The HTTP protocol uses the SSL layer instead of the TCP/IP layer. By doing so, the SSL-enabled server can authenticate itself to an SSL-enabled browser, the client can authenticate itself to the server, and both machines can establish an encrypted communication path.

Let's delve a little more deeply into those functions.

First, the SSL server authentication feature allows a browser to confirm the Web server's identity. SSL-enabled clients can use standard public-key cryptography to validate that a server's certificate and public ID are on the up and up and that they have been issued by a certificate authority acceptable to the client. The use of confirmation is usually important to the Web surfer whenever they are sending a credit card number over the Internet.

On the flip side, SSL client authentication allows the server to confirm a browser's identity. Similar to the technology used for server authentication, SSL-enabled server software can check that a client's certificate and public ID are valid and also can see if they have been issued by an acceptable certificate authority. This type of transmission could be important when, for example, a company wants to transmit confidential information to a trading partner through the Web browser.

Finally and probably most importantly, the encrypted SSL connection requires all data sent between a browser and a server to be encrypted by the sending program and decrypted by the receiving program. This provides a high degree of confidentiality.

On top of the encryption, the data sent over an SSL connection is checked to see if it was altered in transit. That way, you don't inadvertently answer back with information that makes the encrypted data easier to crack.

There are a couple of concepts that make up the encryption part. One concept is known as the SSL record, which more or less says what format the data will be sent in. The other is the handshaking protocol. It's really a procedure that uses the SSL record formatting to do the following:

- Authenticate the server to the browser
- Allow the browser and the server to identify the cryptographic algorithms, or ciphers, that they both support
- Authenticate the client to the server (if that is necessary)

- Using public-key encryption, generate shared secret keys
- Establish an encrypted SSL connection

Those algorithms can definitely vary. Here are a few of the most common ones.

- DES. Data Encryption Standard, an encryption algorithm used by the U.S. government (56-bit).
- DSA. Digital Signature Algorithm, part of the digital authentication standard used by the U.S. government.
- KEA. Key Exchange Algorithm, an algorithm used for key exchange by the U.S. government.
- RC2 and RC4. Developed for RSA Data Security.
- RSA. A public-key algorithm for both encryption and authentication.
- SHA-1. Secure Hash Algorithm, a hash function used by the U.S. government.
- Triple-DES. DES applied three times (168-bit).

Some algorithms are stronger than others. On the other hand, they can also be slower.

After all, encrypting and decrypting will take some time on both the server as well as the client. If a company wants, it can opt to disable the stronger algorithms on the Web server and just use the weaker ones to speed up transactions.

If you really want security and aren't interested in international commerce, you should disable anything less than 40-bit security. You see, 40-bit security and above is quite secure. Don't let your server use below 40-bit unless you have to do so.

The catch, however, is with the U.S. government. The U.S. government doesn't like that type of technology in foreign hands, so exports of software with that high level are not permitted. All those foreign Web browsers pointing to your site are not normally able to negotiate above 40-bit security levels; they'll need access to the lower strength algorithms. If you don't do commerce with foreign firms, though, you should be able to restrict your SSL algorithms to the strongest, juiciest stuff.

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The most secure is Triple-DES. Probably next in security would be RC4 and RC2, in 128-bit mode.

> If you really want security and aren't interested in international commerce, you should disable anything less than 40-bit security. You see, 40-bit security and above is quite secure. Don't let your server use below 40-bit unless you have to do so.

One concept that should be brought up is those certificates. The client will be getting a look at the certificate on the server. How does it know if that certificate is any good? There are five steps in general.

1. Are we using the certificate during a valid date range?
2. Can the issuing Certificate Authority be trusted?
3. Does that Certificate Authority's public key accept the server's digital signature?
4. Is the domain name in the server's certificate the same as the domain name of the server itself?
5. If all is O.K., then the server is authenticated.

Sometimes, the securing certificate domain names don't match. If you do not know much about the unmatched domain name, you should not accept the certificate. If you're comfortable with the unmatched domain name, it might merely be a different domain owned by the same company. If you choose to not accept the certificate, you'll use normal TCP/IP without SSL on that site.

Similarly, the domain might match but the certificate might not be from a trusted authority. Anyone can generate their own certificate (try it on your PC, it's fairly easy). Should you trust those certificates? Again, much depends on the company whose site you are visiting. You don't really have to accept anything. You could always choose not to accept the certificate and work without SSL enabled.

One thing to remember is that nobody can force you to use encryption—it's available if you want to use it. Many people just feel a lot more secure knowing that their communication and their financial, medical or personal data is not being monitored.

Most sites do require the use of SSL in some places, as the customers demand it. For the most part, the Internet is largely open and not secure, so it's best to be cautious. **is**

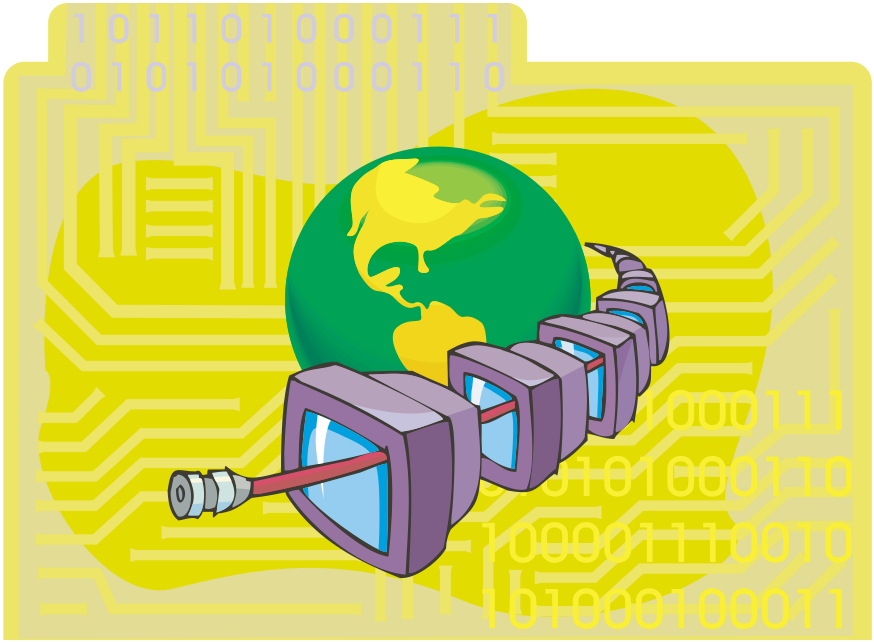
MELVIN M. SORIANO works at Eagle Rock Information Systems, an Internet Application Service Provider and Web-Wizard/MultiValue Developer. ERIS has deployed enterprise-wide solutions on most MultiValue platforms and operating systems. HTM-Mel can be contacted at mel@eriscorp.com and visited at http://www.eriscorp.com/.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

BY KEVIN RUANE, REVELATION SOFTWARE

NET GAINS

REVELATION SOFTWARE'S NETWORK PRODUCTS

A long time ago, in a galaxy far, far away, when the new up-and-coming operating system was DOS, Revelation's MultiValue implementation ran in standalone mode on the original IBM PC. That was 1982, when there were no PC-based networks. However, IBM, Novell and others soon began offering commercially viable Local Area Network (LAN) equipment and software; PCs and their data would no longer be standalone. Now, 20 years later, Revelation Software's products are no longer standalone, and no longer DOS based.



OpenInsight, Revelation Software's flagship product, is a valuable tool for developing powerful, scalable applications. Once developed, it is logical that a good application will be deployed as a multi-user system on a network. As many of you know, networks have their share of problems—power surges, outages, end users who abnormally end their applications with no thought to what it can entail for their data. To ensure that there is no chance of data corruption in a networked environment, we have developed a suite of network products that protect your data from the pitfalls of a networked environment.

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NET GAINS

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Revelation Network Products are designed to enable database activity to be off-loaded from a workstation onto the file server. This architecture dramatically reduces the amount of network requests. So when the power flickers or dies, or when a workstation surrenders to age or time, the data is safely stored on the server, protected from problems. This remains true whether your users are logged in across a LAN, a WAN, or across the Internet. For developers who use and support Revelation software applications, Revelation Network Products have proved invaluable. They reduce the downtime that data corruption would cause, and consequently it reduces support costs for their clients.

An additional benefit of this architecture is that the reduction of network requests translates to increased performance. Benchmarks show a 60 - 80% performance increase on local area networks (LANs) and a 100%+ increase on wide area networks (WANs).

Current Products

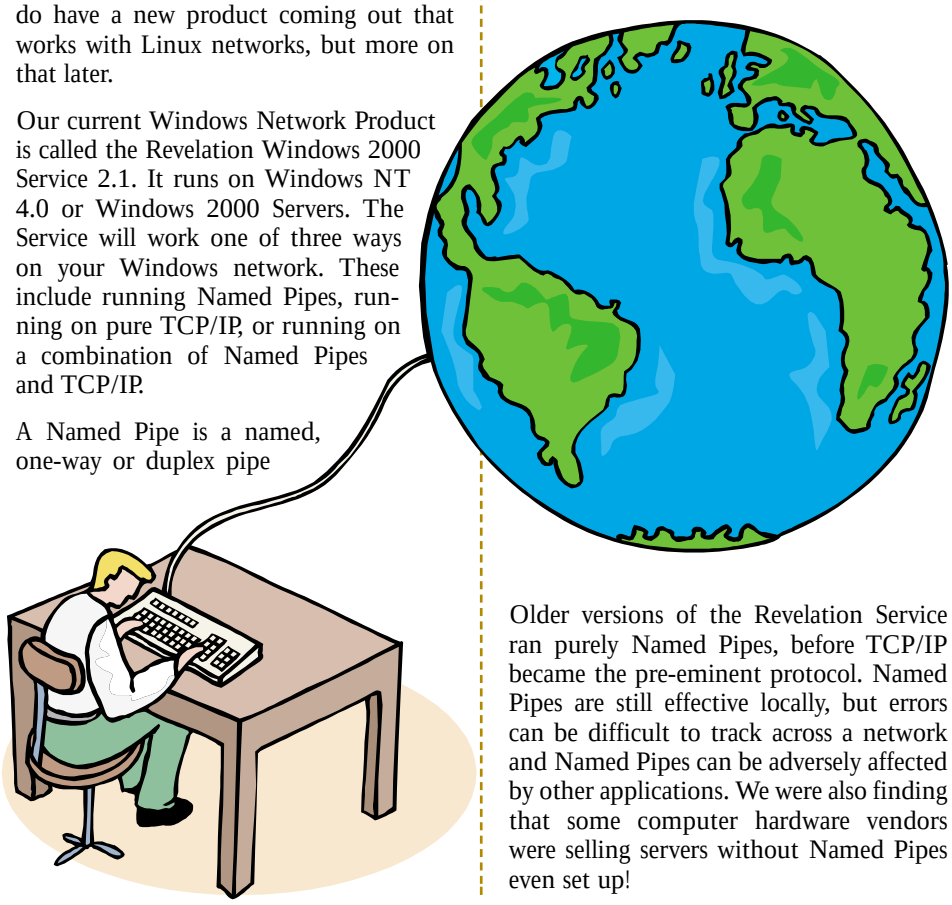
Revelation has two Network Products that we currently ship, one for Windows Networks, one for Novell Networks. We do have a new product coming out that works with Linux networks, but more on that later.

Our current Windows Network Product is called the Revelation Windows 2000 Service 2.1. It runs on Windows NT 4.0 or Windows 2000 Servers. The Service will work one of three ways on your Windows network. These include running Named Pipes, running on pure TCP/IP, or running on a combination of Named Pipes and TCP/IP.

A Named Pipe is a named, one-way or duplex pipe for communication between the pipe server and one or more pipe clients. All instances of a Named Pipe share the same pipe name, but each instance has its own buffers and handles, and provides a separate conduit for client-server communication. The use of instances enables multiple pipe clients to use the same named pipe simultaneously.

Any process can access named pipes, subject to security checks, making Named Pipes an easy form of communication between related or unrelated processes. Named Pipes can be used to provide communication between processes on the same computer or between processes on different computers across a network (definition courtesy of MSDN).

TCP/IP on the other hand, is the abbreviation for Transmission Control Protocol/ Internet Protocol, the suite of communications protocols used to connect hosts on the Internet. TCP/IP uses several protocols, the two main ones being TCP and IP. TCP/IP is built into the UNIX operating system and is used by the Internet, making it the de facto standard for transmitting data over networks. Even network operating systems that have their own protocols, such as Netware, also support TCP/IP (definition courtesy of Webopedia).



Older versions of the Revelation Service ran purely Named Pipes, before TCP/IP became the pre-eminent protocol. Named Pipes are still effective locally, but errors can be difficult to track across a network and Named Pipes can be adversely affected by other applications. We were also finding that some computer hardware vendors were selling servers without Named Pipes even set up!

This presented us with the problem of getting these servers to run Named Pipes before our Service could be effective. Now we offer the three different options to cover all the bases in the Windows world. When using Named Pipes and TCP/IP jointly, we allow the Server to allocate the TCP/IP port (Security Session Information and credentials) that will be used for the Service.

This is a popular choice as it is the sure-fire choice on networks with a number of different Windows operating systems. When you use TCP/IP alone, you determine the TCP/IP port to be used. This gives you the most control when setting up the Service for your network. The option of Named Pipes is still there if you prefer to use them instead.

The Novell Network Product we currently ship is the Revelation NLM 5.5, made to work on Netware 5.x and 6 Servers. Currently the Revelation NLM needs to use Novell's IPX protocol and client for Novell networks, but that is changing with the imminent release of our latest generation of Network Products. For older Novell systems we also sell the Revelation NLM 1.5, which works on both Netware 3.x and 4.x servers. This also runs with Novell's IPX protocol only.

Installation of Revelation Network Products

The installation of the Network Products consists of two portions, the server installation and the client installation. The Revelation NLM server installation is an NLM while the Revelation Windows 2000 Service installs a service. The size of the server installation is minimal, small enough to fit on a single floppy disk. In the case of the Service, the server side installation creates a Revelation Software registry key, with values that help to define which one of the three ways the service is set to run. After a change in the values, the Service only needs to be restarted for the changes to take effect.

The client side of the installation only needs to be performed on a single workstation. It installs the necessary drivers onto the Revelation application residing on the server. The good news is that does not need to be installed on every workstation that will access the Revelation product. Like the server side, the client installation is small enough to fit on a single floppy. Depending on what version of the OpenInsight and the Network Product is installed, the client files are already built into the application software, so there may not be a need to do the client install at all.

A New Release

As mentioned previously, there will be a new release of our Network Products out in the next month or so. With more and more people either moving up to pure IP Novell networks, or away from Windows and Novell servers onto Linux servers, we saw the need for a new product to allow for these choices. This new product is the Universal Driver, allowing you to install and run on a Windows, Novell or Linux network. The Universal Driver is going to run using IP for all three network operating systems, as well as Named Pipes for the Windows networks. What the new Universal Driver will do is the same as our previous Network Product: protect your data from file corruption by off-loading most processing to the file server.

In addition, the Universal driver will allow all three platforms to create .LK and .OV (Revelation data) files larger than 4 gigabytes and it will have the ability to completely hide all .LK and .OV files from workstations. This allows the prevention of the examination of .LK or .OV files from hex editors at a client workstation. Lastly, the LH Verify process (used to confirm there is no data corruption) will be integrated into the server side, making it much faster than it ever has been.

The Windows Service side of the Universal Driver will remain as powerful as it is now, still allowing three possible options for running: Named Pipes, TCP/IP, or a combination of the two.

One of the major changes in our new product will be with our Novell component. No longer will it run on the seemingly outdated IPX protocol, but it will run on IP for Novell. This will limit the use of the Universal Driver to Netware 5.x and 6 servers; people who still wish to use IPX for our software will need to use our NLM 5.5. The Universal Driver will work with or without the Novell Client, but we have found that many sites still choose to use the Novell client even with IP.

The other major change in the Universal Driver from our previous Network Products is the Linux component. This will allow OpenInsight users to run with their OpenInsight sitting on a Linux server from their Windows 2000 workstations as safely as if they were on a Windows or Novell Network.

So, as you can see, Revelation Software not only has a stellar development tool, but we make it possible to protect your investment and your client's data as well. We don't know how networks will change in the future, but we will make sure that our Network Products will adapt to those changes. **is**

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OHM MAKES WAVES ON THE WEB WITH WADE

For the MultiValue File

Company:
OHM Systems Inc.

Founded:
Originally incorporated in 1980. Original partners split in 1989; subsequently one of the founders, Suresh Anbil, joined with Catherine Murray (now Anbil) to continue the company under the restructure of OHM Systems.

Headquarters and offices:
U.S. headquarters, Cincinnati, Ohio. International offices in Hyderbad and Bangalore, India. Training and labs in Virginia.

Vertical market, product lines and services:
Manufacturing (MRP/ERP)—OHM's product, completely Web-centric, consists of 33 integrated modules including financial, sales, manufacturing, production, inventory and executive summary modules. It runs primarily on IBM's UniVerse on either Unix or NT. Other flavors of PICK that have Remote Procedure Call (RPC) and trigger ability can be used.

OHM offers full-scale services for all of its products. It is a total turnkey solutions provider in addition to offering offshore support locations for client projects and development.

Suresh Anbil (at Spectrum 2003) is the president of OHM Systems and head of R&D.

Once the Internet wave was upon us, and it quickly became a do-or-die requirement for software applications, traditional software developers were faced with a quandary: what would be the most effective way to jump in and ride the wave? For OHM Systems, developer of a fully integrated manufacturing (MRP/ERP) application, the answer was WADE—its Web-centric Application Development Environment—a true, Web-centric environment that goes to another level of technology, yet takes advantage of the power of the PICK database environment.

OHM SURFS ONTO THE WEB

From developing manufacturing application solutions with a unique approach in the late '70s to developing a Web application environment in 2000, OHM Systems has had a long history in the MultiValue market, anticipating and facilitating the latest technologies. Originally a partnership that began in 1978, OHM's mission was to meet contract-by-contract requirements of the manufacturing sector for integrated solutions, according to OHM's vice president, Catherine Anbil. The company continued to grow and the OHM application became more mature and systemized by using a module approach to application software.

Up to the 1980s, as with most developers of that time, the programs were in third-generation language, she said. In 1989, Suresh Anbil, the main founder and one of the original partners, headed the effort to develop a powerful 4GL tool. The tool became instrumental in OHM's ability to quickly create and maintain code and develop new features and functionality. It also became popular with resellers as an independent application development tool.

In 1992, OHM launched a GUI application to meet the needs of Windows NT. As it turned out, the 4GL that the company had developed gave the NT project a major head start. "As a result of using the 4GL tool, OHM's software application had such a tight and sophisticated design, we were able to move it to the NT environment in less than three weeks," Anbil commented. "Competitors, at that time, were taking up to 12 months to accomplish the same portability."

By this time, the Internet wave had arrived, and OHM decided to move its applications onto the 'Net. Being a visionary company always on the "bleeding edge," in 2000, the company took on the development of the WADE product utilizing its offshore technical offices. "With the inception of the Internet and technology infrastructure, OHM wanted to move its entire ERP solution and other new applications to a 'real' and complete Web-centric—not Web-enabled—environment," Anbil said. "We searched the marketplace, starting at the end of 1999 and early 2000, and found nothing existed to go to that level of technology."

Catherine Anbil, VP of Sales; Chris Page, Technical Support; and Suresh Anbil at the Spectrum 2003 show.

"We then began our project using our R&D center in Hyderbad, India, to launch first, 'tools' that would allow for a processing environment to take our existing ERP application into a Web-centric technology. In doing this, the Web Application Development Environment was being developed parallel to the MRP modules being redone."

The end result was WADE, a powerful and functional development environment that allows existing applications of any vertical to be moved into a totally Web environment or new applications to be created for the Web environment, meeting the requirements for both Internet and intranet. WADE allows developers, doing the same thing as they would with a rules-based. code-driven environment, to move their products to Web-centric technology with no programming, according to OHM. The only programming is the subroutine calls the WADE product provides to execute the business logic.

The Process of Making WADE

OHM had its share of hurdles to overcome to create a completely Web-centric environment that includes the features of the OHM 4GL product plus additional features to enhance and take advantage of the PICK environment. "PICK, being a strong multi-level structure with no fixed fields and other technologies to allow great response time and efficient database use, was something OHM did not want to depart from," Anbil said. "A group of IBM's technical staff was instrumental in offering some changes to the U2 product as an enhancement to help keep these features as we moved to a pure Web solution."

OHM made various milestones to finish the challenging task of developing a Web environment. "The completion of the base WADE product was done in 10 months," Anbil commented. "The MRP package continued on for another eight months due to the number of modules. Once the MRP package was released, the first OHM client went live in May 2002. The client continued to deploy addition-

Continues on page 42

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OHM *Continued from page 41*

al facilities including new company acquisitions and plants that were not on any previous version of OHM's MRP application. In May 2003, the company's entire domestic division will be live on OHM's MRP package that was developed from the WADE product. This consists of 11 plants and a corporate headquarters."

How Did It Work for OHM?

Since OHM has used WADE itself to move its MRP/ERP application to the Web, it has first-hand knowledge of its benefits and results. "Our development time has been cut in half and the long-term maintenance takes minimal effort," Anbil stated.

She shared how WADE can simplify the development process. "A simple example would be that you decide a few months down the road you want to make a particular screen faxable or e-mailable. There is no code writing. The system administrator goes to the screen within the WADE tool and checks the boxes of fax and e-mail. The code is already written to launch the program. Now you return to the screen within the application and you will note new icons showing that the screen or detail is e-mailable or faxable. It takes less than two minutes."

"Or for the never-ending end user request to make a report sort by different criteria," she continued, "simply go to the WADE form or report builder and designate which fields within that screen or report are sortable. Now the user can pick and choose when and how to sort and then print or not print. These are the easy examples, but it provides you with the idea that once WADE is used and implemented, there is no complex programming or hours of maintenance to make simple changes."

Productivity Is a Must

One of the things that OHM put a huge effort into, Anbil said, "was to provide an environment that would still allow productivity. Though the mouse is required in the majority of GUI and Web or Web-like products, this is not always time-efficient for the company's order entry or accounting personnel. Therefore with WADE's design, you can offer 'heads down' data keying by not making the mouse a requirement in screen navigation. The speed efficiency comes from the WADE design of 'real time' field level validation without page submission," she explained.

"First, OHM offers a momentary 'worm hole' in the WADE product that goes to your rules and tables and validates the field data based on your rules. The time savings is that you do not have to complete an

OHM'S MISSION

To understand our customers' needs, values, fears and goals

in order to maintain the highest level of customer satisfaction.

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We must learn to see through their eyes. If we serve our

customers with creativity, compassion and competence, the

competition may catch on… but they will never catch up.

entire page, submit it and find out the errors, correct the errors (which may or may not be dependent on other fields), and then submit again and keep doing this. You know at the moment of the field entry if you have validated data. If not, you receive an instant message to assist you in correcting the data right then. The efficient design of the U2 product and powerful design of OHM WADE gives super speed across any network—remote or local."

WADE of the Future

"Considering the time, effort, and cost of a project such as moving applications to the Web, why wouldn't a company want a truly Web-centric application that is the leaping point for your next project?" Anbil asks. Why not, indeed? OHM is hoping the MultiValue market will answer this question by taking a serious look at its product. Other products that have entered the same market space use technologies that are "just a GUI front with a portable technology base," Anbil stated.

OHM is aggressively marketing its WADE product to developers and companies that have home-grown systems with many users. The first WADE developer client signed up in January 2003 to start moving its existing catalog application product to a total Web solution. "In just a few short months, its development has led to a prototype that it can share with its existing clients for the direction of the product," Anbil said.

OHM is also fulfilling contracts of new sales and upgrades of existing clients to the Web-centric MRP application. As part of this, existing OHM clients are also taking advantage of the OHM Customer Relationship Management product that provides 24X7 customer service for their customers.

In addition, OHM offers offshore services to help any developer or end user with the effort to move modules of their application to Web technology—especially those companies who don't have the time or resources, Anbil said. "OHM offers a partnership; we continue to enhance our product based on those who use it." **is**

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☐ D3 ☐ Native MultiValue ☐ Reality ☐ Other_____
☐ jBASE ☐ uniData ☐ UniVerse ☐ uniVision

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

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6. What are your firm's approximate gross annual sales?

☐ Under $500,000 ☐ $500,000 - $1 million
☐ Over $1 million - $5 million ☐ Over $5 million - $10 million
☐ Over $10 million - $25 million ☐ Over $25 million - $100 million
☐ Over $100 million - $500 million ☐ Over $500 million

IS 5/03

BY MARK JOHNSON

Screen Variables

The topic for this article is removing the mystery of multi-page displays on maintenance programs. MV systems are a natural for combining single value fields and multi-value fields within the same data record. It is on this strength that many transaction files are created, with their single value fields like customer codes, dates and other "header" information and the multi-value fields for the many "detail" lines of the transaction containing product codes, quantities, prices, costs and other recurring information.

The design of a transaction program involves creating a screen to maintain the singular header information and another screen to maintain the one or more detail line information. Many MV 4GL programming "languages" handle this multi-valued editing by simply declaring an area of the screen to be the rolling page(s) of detail information and the 4GL does the dirty work. If you are maintaining standard MV systems or are creating new multi-valued detail screens, this article should be retained for future use.

There are three constants that need to be established to define the parameters of the "window" for the multi-line display and editing. These unchanging variables will be used in all of the functions and are:

```
Y1=6      ;* The topmost vertical cursor position that the
          first data line resides
LPP=7     ;* The number of horizontal lines on the page
YINC=2    ;* The number of horizontal lines each data line
          requires.
```

Another variable, CURR.PG, will manage the page currently displayed. This will also define the TOP and BOT data lines that can appear on the displayed page.

So for every multi-valued data line (MV), you can derive its vertical cursor position and the page that it is on. These two values will allow you to determine if it's on the currently displayed page, paint it if necessary and edit the data line.

Your page print subroutine will be provided the variable CURR.PG and will define TOP and BOT in this fashion:

```
TOP=((CURR.PG-1)*LPP)+1
BOT=CURR.PG*LPP
```

Thus, if you wish to edit line 39, you can easily test to see if it's on the current page if it falls between TOP and BOT. If not, the following will recalculate the current page for the line desired:

```
CURR.PG=INT((MV-1)/LPP)+1
```

then visit your page print subroutine with this new CURR.PG and reset TOP and BOT accordingly. Next for the current page shown, you will need the vertical cursor position for the data line using this equation:

```
Y=Y1+(MOD(MV-1,LPP)*YINC)
```

When you read in an existing record, set CURR.PG=1 and GOSUB to the page print subroutine. This subroutine may look like this:

```
PAGE.PRINT:
      PRINT @(0,Y1):@(-3): ;* Optional clear
      end of screen
      TOP=((CURR.PG-1)*LPP)+1
      BOT=CURR.PG*LPP
      FOR D=TOP TO BOT UNTIL REC<20,D>=""
          Y=Y1+(MOD(D-1,LPP)*YINC)
          PRINT @(0,Y):D"R#3":" ":..... ;*
          Data line information
      NEXT D
      RETURN
```

Continues on page 46

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Screen Variables *Continued from page 44*

At the 'Change Which Line' section of your program, you can have the following code to handle both the incrementing of the displayed page as well as the display of the proper page for the data line being edited.

```
CWL: MAX=DCOUNT(REC<20>,@VM) ;* Field
controlling count of data lines.
     PRINT @(0,22):"ENTER LINE TO CHANGE
     OR <CR> FOR NEXT PAGE ": INPUT ANS
     IF ANS="" THEN
        CURR.PG=CURR.PG+1
        TOP=((CURR.PG-1)*LPP)+1
        IF TOP GT MAX THEN CURR.PG=1
        GOSUB PAGE.PRINT
        GOTO CWL
     END
     MV=ANS
     IF MV LT TOP OR MV GT BOT THEN
        CURR.PG=INT((MV-1)/LPP)+1
        GOSUB PAGE.PRINT
     END
     Y=Y1+(MOD(MV-1,LPP)*YINC)
     GOSUB EDIT.LINE
     GOTO CWL
```

Obviously the input statement should be better validated. It should be noted that the user can choose to edit a line that isn't being displayed on the current page. I've seen too many programs where the users complain about this limitation. Add a few statements and you've made friends for life as they don't have to page forward just to get to line 139. You can even get more clever by allowing them to type a unique value that may be contained in the controlling field, use LOCATE to acquire its MV and then display that page and jump right to editing that line.

Backward pagination can be added with the following lines of code (Forward pagination is illustrated above by use of IF ANS="" area):

```
     IF ANS="B" THEN
        CURR.PG=CURR.PG-1
        IF CURR.PG LT 1 THEN CURR.PG=
        INT((MAX-1)/LPP)+1
        GOSUB PAGE.PRINT
        GOTO CWL
     END
```

Both forward and backward paging allow the display to start over should you exceed either boundary. This is better than having messages that advise the user that they have gone one step beyond and need to enter the opposite pagination letter.

These simple variables are all that's needed to maintain pagination. I've seen many examples of different methods, with more variables and other complicated equations. I've even seen a dynamic array prepared in the top of the program that was a FOR…NEXT loop actually incrementing the Y and CURR.PG values for 1,000 possible data lines and saving them in their appropriate indexed positions. It got the job done but clearly can be replaced with more direct calculations.

Using these few equations will allow you to focus on writing the application code instead of trying to recalculate the page and y-axis values for each new program you write. Unlike other formulas that can be easily remembered, these few need to be proofed every time if you re-engineer them.

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One final note. If the header is on the same screen as the scrolling lines, consider labeling the header fields using letters A-Z instead of numbering them. This way, the scrolling window will be easier to maintain using numbers 1,2,3 instead of being offset by the number of header fields. After all, if you have more than 26 header fields, then perhaps they should be on their own screen and the scrolling lines be on another. **is**

MARK JOHNSON is a 23+ year veteran of the MV database and has worked on a variety of implementations. He specializes in maintaining and enhancing legacy systems and is available for contract, short and long-term programming projects in the New Jersey, New York and Eastern Pennsylvania areas. He can be reached at majprogramming@comcast.net.

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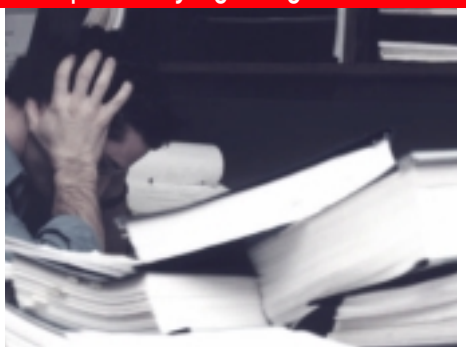

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