

\$7.00 U.S.

INSIDE: REPORTING & BUSINESS INTELLIGENCE: SIERRA BRAVO

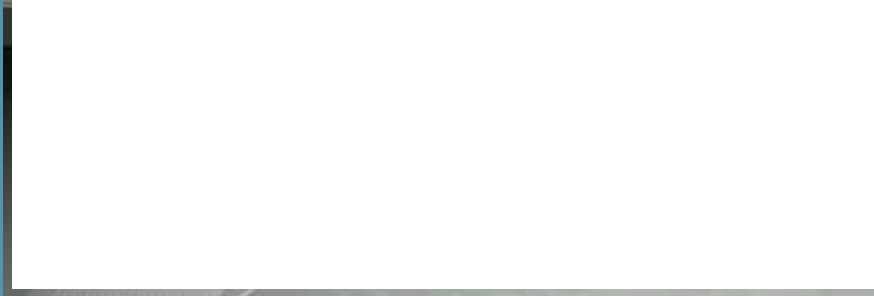
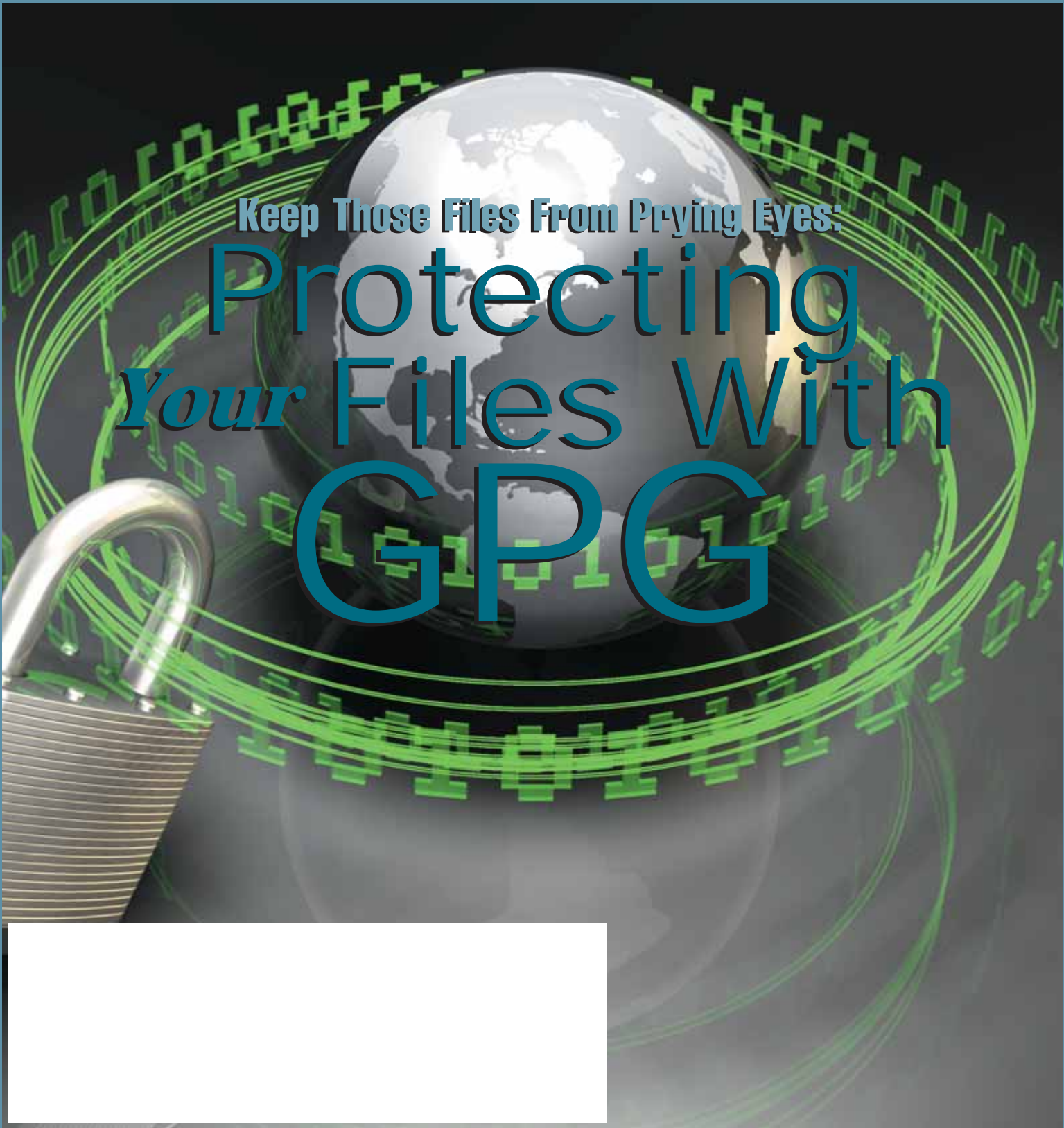
# INTERNATIONAL Spectrum

THE MULTIVALUE  TECHNOLOGY MAGAZINE | MAR/APR 2008

PLUS!  
Reality File  
Triggers

Keep Those Files From Prying Eyes:

# Protecting *Your* Files With GPG



Innovations by InterSystems

# Embed the ability to scale.



For software developers seeking competitive advantages, InterSystems Caché® makes applications more valuable by increasing their speed and scalability, while decreasing hardware and administration requirements. Embed our post-relational database in your applications, and enjoy the combined benefits of high-performance object and relational technologies. Thanks to its innovative architecture, Caché spares Java and .NET programmers a lot of tedious work by eliminating the need for object-relational mapping. Caché is available for Unix, Linux, Windows, Mac OS X, and Open VMS – and it supports MultiValue development. Caché is deployed on more than 100,000 systems worldwide, ranging from two to over 50,000 users. Embed our innovations, enrich your applications.

InterSystems  
**CACHÉ**®

# Make Applications More Valuable

Download a free, fully functional, no-time-limit copy of Caché, or request it on CD, at [InterSystems.com/Cache26WW](http://InterSystems.com/Cache26WW)



### Encrypting Files With GPG: The Basics You Should Know

**6** GPG is a well-known and widely accepted public-key encryption program with a number of options. This article brings you up to speed in using GPG to encrypt and decrypt files. BY JEFF BUTERA, PH.D.

### 12

**IT PLANNING: WHY PROGRAMMERS SHOULD PLAN** Planning. It's not just for managers. Planning is an important part of a programmer's career, also. BY CHARLES BAROUCH

### 14

**REPORTING AND BUSINESS INTELLIGENCE TOOLS: SIERRA BRAVO** Next in this series, we talked with the folks at Sierra Bravo about two of their products — Bravo Reports and Bravo Dashboard. BY CHARLES BAROUCH

### 26

**IBM ADO.NET PROVIDER: WHAT'S IN IT FOR U2?** The standard method of data access for the .NET platform is ADO.NET Provider. Now, the IBM ADO.NET includes support for IBM's UniVerse and UniData. BY BRIAN LEACH

### 30

**MULTIVALUE PARTICIPATION IN BUSINESS INTELLIGENCE** Learn about some key considerations for a successful Business Intelligence project and a few tools that can help your implementation. BY ROBERT HOUBEN, FUSIONWARE

### 34

**REALITY TRIGGERS** While previous issues have discussed file triggers, each platform implements them differently. Find out how to use file triggers in Northgate's Reality product. BY CANDI HART

### 36

**SWAPPING YOUR OI SYSTEM'S DATABASE TO U2** OpenInsight can now use IBM's UniVerse and UniData as the back end database. But how do you set that up, and when would you want to? BY MIKE RUANE, REVELATION SOFTWARE

### 42

**USING UNIVERSE INDEXES: PART 2** This second part in this series about using indexes on the IBM UniVerse platform discusses how indexes are implemented, how to get information about the distribution of keys, and avoiding a common trap. BY CLIFTON OLIVER, CCP

## DEPARTMENTS

**From the Inside** page 4

**Newsmakers** page 18

**New Products** page 20

**Webonomics** page 40

**Clif Notes** page 47

International Spectrum and MultiValue are a registered trademark of International Spectrum, Inc. All other registered trademarks and trademarks are the property of the respective trademark holders.

# From the Inside

BY NATHAN RECTOR

## I'm listening, but am I hearing from YOU?

Over the last 2 years, I've made a lot of changes to International Spectrum, both in the magazine and on the web site. Now, with International Spectrum 2008 upon us, there are quite a few changes to the conference as well.

Some of you have seen it in the marketing materials for the Conference. Some of you are actually experiencing it, being at the conference at this moment. Many of the changes I've made to the conference and magazine has been in direct response to comments and suggestions I've received from people who read the magazine or attend the conference.

But there are many more of you that I have not heard from. Like with everything else in the world, if you only hear from a small group of people, then your view points can become too narrow or broadly focused and not provide the information needed by the large whole.

This is one of the reasons why Clif and I are always screaming for feedback.

Clif has covered many eye-opening topics such as: "You Pay Peanuts, You Get Monkeys" and "Are You a Multi-Value Couch Potato?" While the humor factor of "Clif Notes" is always entertaining, Clif has pushed some people into thinking about things they are not used to thinking about. Whenever you introduce an idea, there are always people who are likely to disagree or who expand upon your thoughts.

These articles should have generated swarms of e-mail, but nada.

While Clif has talked about many things of interest, I know I have introduced some ideas and concepts in "From the Inside" that I figured would really tweak peoples noses: "Business Application Paradigm", "Perception: Your hourly fee being too low", "What is the most Valuable asset in your company?"

All these ideas should have created a storm of e-mails disagreeing with some of my ideas and suggestions, but again, nada.

Now with the Conference here, and in motion for those of you reading this between "Quickstart to PHP" and "Simply Implementing .NET", or "RFID 101" and "GUI and Event-Driven Programming", I have people doing surveys of attendees to find out what they most want and need out of the conference.

Now comes the hard part—from those of you that I am unable to talk to directly, what is the best way to solicit feedback on ideas, concepts, and new services?

Webinars are a service that has expanded over the years, and I would like to ask you, the MultiValue Community, what are you in most need of? What kind of training programs are needed? What topics would you like covered in webinars?

This is your marketplace, your business, and your livelihood. I'd like to make sure I continue supporting and enhancing what you need to be successful and Work Smart, not Harder.

-NATHAN RECTOR

President, International Spectrum  
nathan@intl-spectrum.com

# INTERNATIONAL Spectrum

MARCH/APRIL 2008

NATHAN RECTOR  
*President*

CLIFTON OLIVER  
*Managing Editor*

SHANNON STOLTZ  
*Content Editor*



Learn more about the MultiValue Symbol and see what MultiValue Technologies and MultiValue Communities exist to help you support and manage your business and systems. To find out more visit <http://www.intl-spectrum.com>

**MISSION STATEMENT** International Spectrum magazine's editorial mission is to be the premier independent source of useful information for users, developers, and resellers of MultiValue database management systems, open systems business database solutions, and related hardware, software, and peripherals. Published bimonthly, International Spectrum provides comprehensive coverage of the products, companies, and trends that shape the MultiValue marketplace as well as the computer industry at large — helping its readers get the most out of their business computer systems.



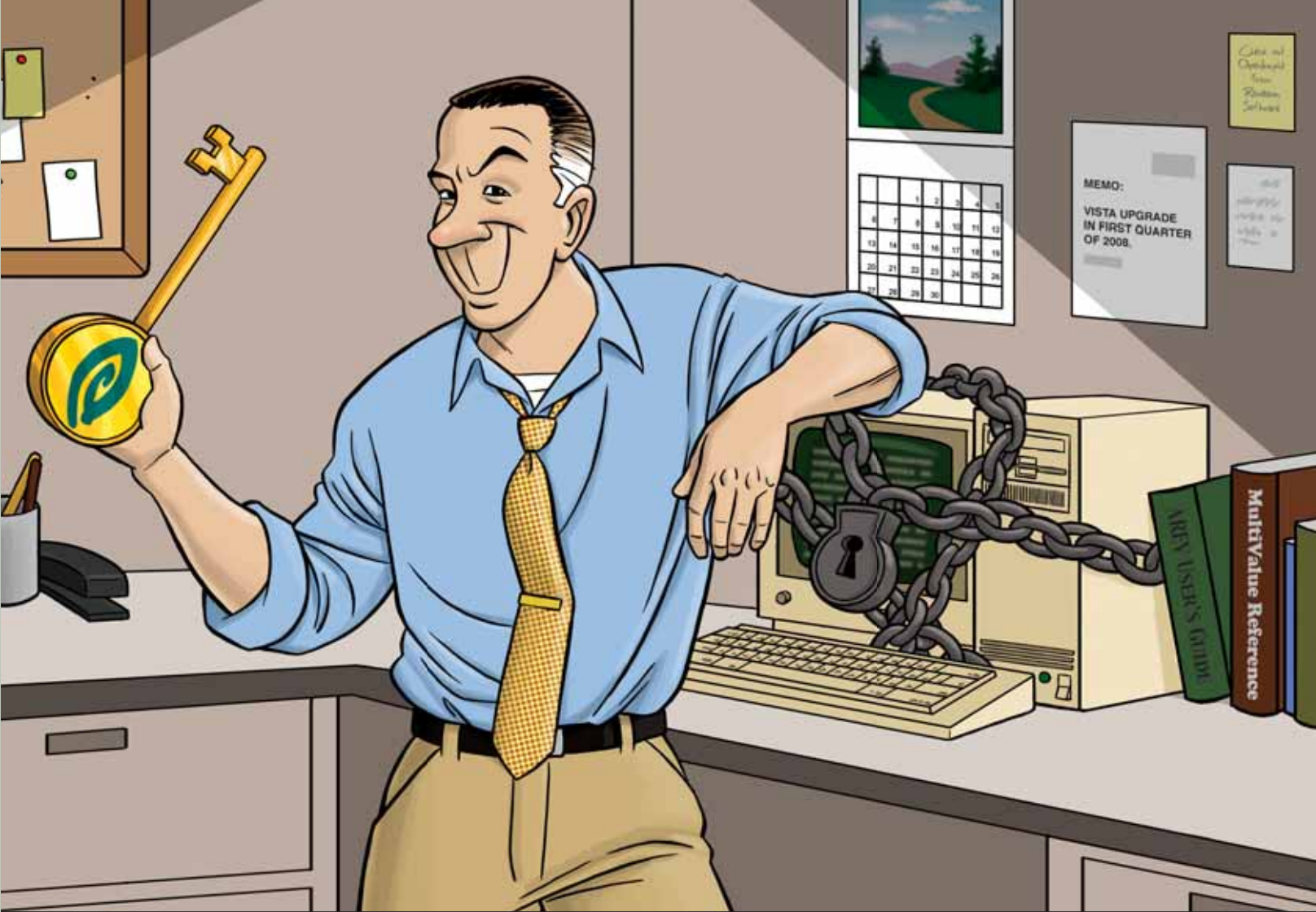
International Spectrum is published six (6) times per year at the subscription price of \$40.00 U.S. in the U.S.A.; \$45.00 U.S. in Canada and Mexico; \$50.00 U.S. for other countries. Single copy rates are \$7.00 U.S. in the U.S.A. and Canada, and \$9.00 U.S. in all other countries. International Spectrum is published by International Spectrum, Inc., 80 Garden Center, Suite 6, Broomfield, CO 80020; Tel: 720/259-1356; Fax: 603/250-0664 E-Mail: [request@intl-spectrum.com](mailto:request@intl-spectrum.com). Copyright 2007 International Spectrum, Inc. All rights reserved. Reproduction in whole or in part, without written permission, is prohibited.

PRINTED IN USA • ART AND DESIGN: CP Design; 619-246-6878; San Diego, CA

#### NEWS RELEASES/UNSOLICITED ARTICLES

International Spectrum is eager to print your submissions of up-to-the-minute news and feature stories complementary to the MultiValue marketplace. Black and white or color photographs and diagrams are welcome. Although there is no guarantee a submitted article will be published, every article will be considered. Please send your press releases, articles, and queries to: [editor@intl-spectrum.com](mailto:editor@intl-spectrum.com). International Spectrum retains all reprint rights.

International Spectrum is a registered trademark and MultiValue is a trademark of International Spectrum, Inc. All other registered trademarks and trademarks are the property of the respective trademark holders.



## FEELING A BIT TRAPPED WITH YOUR CHARACTER-BASED INTERFACE?

*OpenInsight can help unlock your application's true potential.*

If you have an in-house application or product that you sell, and it's character based, you're probably hearing comments about how old it is. And let's face it, in today's world, an 80x24 character-based screen looks antiquated, no matter how many colors are used.

OpenInsight, from Revelation Software, offers many ways to help you transform your application into

a more user-friendly, sellable system, whether you sell to customers or to management. Our Character-to-OpenInsight (CTO) and OpenInsight for U2 are just two ways we can help you out.

We won't tell you that going from character to graphical is easy, but we make it as easy as it can be. More and more companies are choosing this route; what do they know that you don't?

Email us at [info@revelation.com](mailto:info@revelation.com), or call us at 800-262-4747 for a free on-line demo. We promise you'll be impressed!

**CTO**  
CHARACTER TO OPENINSIGHT™

OPENINSIGHT™  
for **U2**

### Revelation Offices – Global

**Revelation Software, Inc.**  
Corporate Headquarters  
99 Kinderkamack Road, 1st Floor  
Westwood, NJ 07675  
Toll Free: (800) 262-4747  
Phone: (201) 594-1422  
Fax: (201) 722-9815  
Email: [info@revelation.com](mailto:info@revelation.com)  
Web: [www.revelation.com](http://www.revelation.com)

**Revelation Software Ltd.**  
45 St. Mary's Road  
3rd Floor  
Ealing  
London, W5 5RG, UK  
Phone: +44(0)208 912 1000  
Fax: +44(0)208 912 1001  
Email: [info@revsoft.co.uk](mailto:info@revsoft.co.uk)  
Web: [www.revsoft.co.uk](http://www.revsoft.co.uk)

**Revelation Software Australia Pty Ltd.**  
Suite 105  
20 Dale Street  
Brookvale, NSW 2100  
Australia  
Phone: +61-2-9939-6399  
Fax: +61-2-9939-6366  
Email: [info@revelationsoftware.com.au](mailto:info@revelationsoftware.com.au)  
Web: [www.revelationsoftware.com.au](http://www.revelationsoftware.com.au)

**REVELATION**  
SOFTWARE

Revelation Software is a division of Revelation Technologies, Inc. OpenInsight is a trademark of Revelation Technologies, Inc. All other brand and product names are trademarks of their respective holders.





# Encrypting Files *with*

# PGP

## The Basics You Should Know

BY JEFF BUTERA, P.H.D.

**With several well-publicized incidents in both the public and private sectors over the past few years, just about everyone today understands the need for protection of sensitive data — from software developers and DBAs to other far less computer savvy individuals such as retirees counting on that nest egg.**

Where these points of view diverge may be over precisely what type of data is deemed "sensitive." Again, a consensus of people might lump date of birth and tax identification numbers in this category, but a host of other data is highly sensitive, depending on the business and application in question.

Most all DBMS offer encryption for database files and encrypted protocols to ensure the security of data both at rest as well as en route between appli-

cations. However, inevitably one ends up working on a project where a third-party needs data in a file outside your DBMS. You work diligently and complete the data extraction requirements for the project only to find a short time after going live you now have a slew of files at the operating system level that contain data which you would rather have protected.

I work in higher education and while we strive to encrypt all data transfers,

often we have to work with vendors or other colleges who want data as flat (ASCII) files. The format is almost irrelevant with some wanting comma or tab delimited while others want XML. The data you need to protect is in plain text. We're also very alarmed by the number of people who ask us to "just e-mail the data." E-mail is surely one of the most insecure mediums available today. While many e-mail clients do have encryption tools or plug ins available, they're often not as platform- or application-independent as vendors might lead you to believe.

Some myths about addressing this type of problem include:

1. "We secure access to our server and nobody gets to the operating system prompt, so the files are secure."

*Continues on page 8*



# Informer

*Intuitive Web-based Reporting for MultiValue*



“With its easy, web-based, real-time, point and click interface, Informer delivers a powerful reporting solution that is affordable and would be almost impossible to be without now.”

- Kevin Houk, Application Systems Analyst, Carson-Newman College

“Looking at web-based reports is much more appealing to end-users, and working with Entrinsik has been a very positive experience.”

- David Raber, Chief Technology Officer, Paciolan



- Comprehensive Web-based Reporting
- Native MultiValue Access to Information
- Intuitive Reporting Features
- Security and Control
- Business Intelligence with LIVE Excel Interface



Stay tuned for Informer 4.0 featuring dynamic data joins across database boundaries allowing a single report to include data from a combination of U2, SQL, and any other MultiValue database!!

## FREE Webinars - LIVE & Recorded!

<http://www.entrinsik.com/webinars>

## Request Demonstration

<http://www.entrinsik.com/infdemo>

## For More Information Contact:

Entrinsik, Inc.

7501 Creedmoor Rd.

Suite 102

Raleigh, NC 27613

p: 888-703-0016

e: [sales@entrinsik.com](mailto:sales@entrinsik.com)

w: [www.entrinsik.com](http://www.entrinsik.com)



[www.entrinsik.com](http://www.entrinsik.com)

888-703-0016

```

gpg: directory `/home/jvb/.gnupg' created
gpg: new configuration file `/home/jvb/.gnupg/gpg.conf'
created
gpg: WARNING: options in `/home/jvb/.gnupg/gpg.conf' are
not yet active
gpg: keyring `/home/jvb/.gnupg/secring.gpg' created
gpg: keyring `/home/jvb/.gnupg/pubring.gpg' created
Please select what kind of key you want:
  (1) DSA and Elgamal (default)
  (2) DSA (sign only)
  (5) RSA (sign only)
Your selection?

```

FIGURE 1 - % gpg --gen-key command sample output

```

DSA keypair will have 1024 bits.
ELG-E keys may be between 1024 and 4096 bits long.
What keysize do you want? (2048)

```

FIGURE 2 - Setting the key size

```

Please specify how long the key should be valid.
  0 = key does not expire
  <n> = key expires in n days
  <n>w = key expires in n weeks
  <n>m = key expires in n months
  <n>y = key expires in n years
Key is valid for? (0)

```

FIGURE 3 - Set Key Expiration

You need a user ID to identify your key; the software constructs the user ID from the Real Name, Comment and Email Address in this form:

```
"Heinrich Heine (Der Dichter) <heinrichh@duesseldorf.de>"
```

FIGURE 4 - Prompt for entering identification for the key

```

Real name: Jeffrey Butera
Comment: Administrative Systems
Email: jvb@hampshire.edu

```

FIGURE 5 - Example of entering information

We need to generate a lot of random bytes. It is a good idea to perform some other action (type on the keyboard, move the mouse, utilize the disks) during the prime generation; this gives the random number generator a better chance to gain enough entropy.

FIGURE 6 - Prompt for action during prime generation

## Encrypting Files With GPG

*Continued from page 6*

In this case, you're only one hack, flaw, or other security threat away from a really bad day. Don't presume server security is equivalent to data security.

2. "We'll ZIP the files with a password." ZIP password protection is lightweight at best. Just perform a web search for "zip password hack" and see how many people want to help you.
3. "We'll just delete the files periodically." Even if you periodically delete files, if you have just one file when a security threat occurs, you're in the same situation. Likewise, in many circumstances you might not want to delete the file immediately after transfer for both auditing purposes as well as troubleshooting technical problems that might not arise until hours or days later.

Thus the ability to encrypt files in a robust, secure, and reversible manner is an essential tool all IT professionals should have in their arsenal.

### The Tools

Pretty Good Privacy (PGP) is software that provides encryption and authentication, originally created by Philip Zimmermann in 1991. The irony in the name is that PGP's security was intended to be far better than "pretty good." Zimmermann became convinced that an open standard for PGP encryption was important due to patent issues PGP, Inc was facing and so proposed to the Internet Engineering Task Force (IETF) that there be a standard called OpenPGP. (See The Links to learn more.)

The Free Software Foundation developed its own OpenPGP-compliant program called GNU Privacy Guard (abbreviated GnuPG or GPG). GnuPG is freely available together with all source code under the GNU General Public License (GPL). There are also several GUI interfaces for GPG that are maintained separately.



```

gpg: /home/jvb/.gnupg/trustdb.gpg: trustdb created
gpg: key 604B7CE2 marked as ultimately trusted
public and secret key created and signed.

gpg: checking the trustdb
gpg: 3 marginal(s) needed, 1 complete(s) needed, PGP trust model
gpg: depth: 0 valid: 1 signed: 0 trust: 0-, 0q, 0n, 0m, 0f, 1u
pub 1024D/604B7CE2 2008-01-24
   Key fingerprint = 87CC F271 5DD3 4868 314F E8AF 1147 5B70 604B 7CE2
uid Jeff Butera (Administrative Systems) <jvb@hampshire.edu>
sub 2048g/6596A86C 2008-01-24

```

FIGURE 7

```

% gpg --list-keys
pub 1024D/604B7CE2 2008-01-24
uid Jeff Butera (Administrative Systems) <jvb@hampshire.edu>
sub 2048g/6596A86C 2008-01-24

```

FIGURE 8 - List key example

```

% gpg --export -a --armor 604B7CE2 > my_key.pub.gpg

```

FIGURE 9 - Command to export key as an ASCII file

Precisely what is GnuPG? From their own web site: "GnuPG stands for GNU Privacy Guard and is GNU's tool for secure communication and data storage. It can be used to encrypt data and to create digital signatures. It includes an advanced key management facility and is compliant with the proposed OpenPGP Internet standard as described in RFC 2440."

There are other OpenPGP implementations as well as other competing encryption methods available. With the availability of GnuPG on many platforms including virtually every flavor of Linux and Unix, Windows, and MacOS, it has become the de facto standard.

In layperson's terms, I will show how it is easy to set up the encryption and decryption of files to ensure the protection of your data (but I will not be discussing the use of digital signatures). Likewise, it is also a straightforward process to exchange encrypted files with a third-party where they alone have the ability to decrypt them. While

I discuss the encryption of ASCII files, GnuPG can be used to encrypt any file, including binary data. Also, all examples below are presented from a Unix/Linux perspective, but work in a similar manner on Windows (although some path names might be different).

### Getting the Software

This article does not cover installation, but you can obtain GnuPG from <http://www.gnupg.org>. With both source code and binaries packages available for many operating systems, any reasonably experienced system administrator should be able to install the GnuPG software in an hour or less.

### Setup

Your keyring contains GnuPG keys you have created and/or received in exchange with other individuals. First, we will illustrate how to build a key for the first time, exchange with others, and then use the key to encrypt/decrypt files.

### 1. Building Keys

You only need to build keys once – the first time you use GnuPG. You'll need to log into your server as the user who will be encrypting and decrypting files. To build keys you issue the command

```

% gpg --gen-key

```

which will result in output similar to figure 1.

Under most circumstances the default of (1) should suffice. It will then ask you the size of the key to create (fig. 2). The larger the key size, the longer it would take to crack an encrypted file, but usually the default value is acceptable.

You will then be asked how long the key should be valid (fig. 3). If you choose anything other than 0 (no expiration), you will need to exchange keys with recipients on a regular basis.

After entering your choice, you will be asked to enter identification for your key (fig. 4).

*Continues on page 10*

```

-----BEGIN PGP PUBLIC KEY BLOCK-----
Version: GnuPG v1.4.7 (GNU/Linux)

mQGIBeEY2cYRBADZdbq8FTEKbSahh+n8XKl/ZqsA8OS3fcbibflRO40DJf5NolI3
3L+iQzydI9xHFKNLvT3XxnQE6d7k7VDbS8jw8YZndALUxhHF4giVnmVQgAX4fLHK
pxmiJZ9lKVtZ63HoamJXH6uxgG1Zr97J+8kNzuXMPQYMF1RgyIhpN+TwKwCgrV9Y
...
2Wt6tjGISQQYEQIACQUCR5jZxgIbDAAKCRARR1twYEt84iTiaKCh0grMoRgdzyuo
6qlumKwMhT9R4wCfQ+sr/K/O1jtUp8eSQ3tn93aV2fA=
=WxgZ
-----END PGP PUBLIC KEY BLOCK-----

```

FIGURE 10 - Example file "my\_key.pub.gpg"

```

gpg: key 153D8BA4: public key
"Dan Smith (Administrative Systems) <dsmith@hampshire.edu>" imported
gpg: Total number processed: 1
gpg:      imported: 1

```

FIGURE 11 - Results of a successful import

```

% gpg --edit-key dsmith@hampshire.edu
gpg: checking the trustdb
[unknown] (1). Dan Smith (Administrative Systems)
<dmsith@hampshire.edu>
Command>

```

FIGURE 12

## Encrypting Files With GPG

*Continued from page 9*

I entered my information (fig. 5).

Note that the e-mail address here is important to identify the key and will be required when you attempt to encrypt or decrypt a file. You will then be prompted to create a passphrase to protect your key. Once you enter the passphrase twice for confirmation, you'll see the message shown in figure 6.

It is normal that the process of generating the keys may take 30 seconds or longer. Once completed, you should see a message similar to that in figure 7.

### 2. Exporting Your Public Key

Once you have keys constructed, you'll need to exchange your public key with any desired recipients. First, list your keys with the information in figure 8.

To export your public key, you need the armor ID: the string on the "pub" line

following the slash. In my example (fig. 8), it would be "604B7CE2". Now I can export my key as an ASCII file for easy exchange with another individual by performing the command in figure 9.

The file "my\_key.pub.gpg" will contain something like figure 10.

At this point, you simply need to send your public key (the file "my\_key.pub.gpg") to desired recipients. Since this is public information, you may transmit this as an attachment to regular (unencrypted) e-mail.

### 3. Importing Someone's Public Key

Presuming you've received a public key from another individual, you would take their key and import using the command

```
% gpg --import dans_key.pub.gpg
```

presuming the file "dans\_key.pub.gpg" was sent to you by Dan, someone you trust. When you import a key, you'll see the results of a successful import (fig. 11).

### Trusting the Imported Keys

Once you import an individual's key, you probably want to go ahead and "trust" it. If you don't trust the key, gpg will prompt you with a warning every time you attempt to encrypt or decrypt a file. Presuming you really do trust that the key you received came from the person who claimed to have sent it to you, you would perform the operation in figure 12.

At the "Command>" prompt enter **trust** and hit enter (fig. 13).

You may choose the desired level of trust. If you choose 5, you'll see

```
Do you really want to set this
key to ultimate trust? (y/N)
```

I entered Y and hit enter. Then I enter 'quit' to exit gpg.

### Regular Usage

Once you've built and exchanged keys, you're ready to begin encrypting and decrypting files anytime you wish.

```
Comand> trust
 1 = I don't know or won't say
 2 = I do NOT trust
 3 = I trust marginally
 4 = I trust fully
 5 = I trust ultimately
 m = back to the main menu
Your decision?
```

FIGURE 13 - Trust prompt

```
% gpg -r dsmith@hampshire.edu -encrypt sample.txt
```

FIGURE 14 - Command to encrypt files

```
gpg: checking the trustdb
gpg: 3 marginal(s) needed, 1 complete(s) needed, PGP trust model
gpg: depth: 0 valid: 2 signed: 0 trust: 0-, 0q, 0n, 0m, 0f, 2u
```

FIGURE 15

```
% gpg --output sample.txt --decrypt sample.txt.gpg
You need a passphrase to unlock the secret key for
user: "Jeff Butera (Administrative Systems) <jvb@hampshire.edu>"
2048-bit ELG-E key, ID 6596A86C, created 2008-01-24 (main key ID
604B7CE2)
```

FIGURE 16 - Command to decrypt a file

## 1. File Encryption

To encrypt a file, you would perform the command in figure 14.

'dsmith@hampshire.edu' is the e-mail address of a key you had previously imported and 'sample.txt' is a file you wish to encrypt. If you simply need to encrypt a file for data protection and you have no intention of exchanging with another individual, it's perfectly reasonable to list yourself as the recipient. Presuming you've previously trusted the recipient's key, you'll see something like what is in figure 15.

At this point you'll have your original, unencrypted file sample.txt and a new, encrypted version named sample.txt.gpg. **DON'T FORGET TO DELETE THE ORIGINAL UNENCRYPTED FILE!**

Now that you have an encrypted file you can exchange this with another party using any means, including encrypted or unencrypted methods

such as FTP, e-mail, SFTP, SCP, HTTPS, and so forth.

## 2. File Decryption

To decrypt a file you would perform the operation in figure 16.

Enter your passphrase and the file will be decrypted and saved as "sample.txt". If you do not use the -output directive, the file will be printed to standard output (presumably your screen).

## Summary

GnuPG is a freely available and robust package which provides the ability for standards-based encryption and decryption of files. is



**JEFF BUTERA is a database administrator and software developer in Administrative Systems at Hampshire College in Amherst MA.**

## The Links

For a complete history of PGP:

[http://en.wikipedia.org/wiki/Pretty\\_Good\\_Privacy](http://en.wikipedia.org/wiki/Pretty_Good_Privacy)

For more information on GnuPG:

<http://www.gnupg.org>

# Why Programmers Should Plan

BY CHARLES BAROUCH

Last installment we looked at the pain points we have as IT professionals — at least as they relate to planning big projects. One could easily point to that article as proof that planning introduces as much trouble as it solves. I can see the cowboy coders in the room smiling. We all have had the instinctive urge to ditch the planning phase and jump in with our metaphoric guns blazing. Personally, I know I've given in to that urge a time or two.

However, planning has some meaningful benefits. One of the biggest has nothing to do with the project; it has to do with future employment. You see, if you keep the coding separate from the design, you can often apply your design skills to projects which will ultimately be written in other languages. This yields a few different benefits:

1. You are promotable from coder to analyst.
2. You can make system-neutral arguments which can help justify keeping and expanding the MultiValue systems you support.
3. It is easier for you to survive in a company which moves away from MultiValue, increasing your options.
4. It lets you learn new languages and incorporate them into your tools, making you a more valuable employee or consultant.

Think of it the way you think about tuning a car. You can learn how to tune a 1979 Impala, or you can learn how to tune pre-fuel injection cars in general. Learning the Impala, you might pick up some tricks which are specific to that car, making you better with that model. However, learning tuning at the broader level means you can do a good job in more situations, even if you can't do the absolutely best job in the one specific case.

Nothing is stopping us from learning both.

## Planning to Fail

One of the exciting aspects of planning is that it helps you fail faster. Given a choice between hitting a dead end six months into a project or six days into a project, I vote for the faster one. The sooner, and therefore cheaper, I find the roadblocks, the better my client or employer can make decisions that allow the project to restart or readjust. I've worked on projects where planning has allowed me to convince the boss to hire more staff or redeploy the folks we already had. I watched someone lose a job once because they didn't raise their hand soon enough. By the time management knew that things were at a standstill, the investment of time and money was so high that someone was getting fired.

So, I don't mind failing early. It is much easier to adjust the plan and try again than to adjust a million lines of code. Planning, unlike coding, is a journey

you might be able to share with other, less technical people. I've had any number of visionaries, who despite being code-illiterate, understood so much more about the business than I did. Coding as I went would have cut me off from their participation. Sometimes a failure isn't considered a failure if it is discovered communally and resolved by the group.

## Show Your Work

In math class, you could often get partial credit for a wrong answer if you showed your work. More importantly, the teacher could show you where you went wrong so that you had a chance to do better next time. I never do a project on the assumption that I will never have to do anything similar. Every project is prep for the next project. So, the better we set up the experience for learning, the less pain we feel on the next project.

When we plan, we show our work to others, including them in the process. We increase the number of voices—for good and bad—and we spread the understanding of why we do what we do. This brings me to the story of a chemist friend of mine. She called me one night in an attempt to make sense of her boss's recent hostility. When she started the job, they got along famously. He was her mentor. Recently, she had begun working more independently, and he had started shooting down all of her projects. She didn't think he could be jealous, she was still well

below his level, but she was at a loss for a better reason.

So, I asked her if she had come to him frequently with questions in the beginning and she says, "Of course." Then I asked her if she thought that the questions gave him some insight into her thought process, and she said, "Absolutely." So then I asked if she was now presenting conclusions without explaining her thought process and she said, "That's it!"

The next day she presented a new project and included a section on her thought process, her dead-ends, and her eventual conclusions. He approved the project. Showing your work is very useful.

### Leap of Faith

Let's assume that you believe that planning has a sufficient value. The next step is to understand how to maximize that value. When I have the option of setting the pace, which is certainly not all of the time, here's my preferred method:

1. Meet
2. Build a Straw Man
3. Build a Plan
4. Get Buy-in

Meetings, to quote one former co-worker, are often a group of people sitting around a table, trying to contact the living. What we are looking for here is some healthy exchange. Generally, I try to get one of the people who need the project talking and then I ask a few wide-open questions. The more general the question, the better the chance of getting a useful answer. "What's the biggest issue we need to solve?" vs. "Do you want that as a report or an inquiry?"

Once they are talking, get the other people engaged. If the project serves Accounting and Sales, make sure you get both sides talking. Otherwise you end up with half a project specification. Hopefully, the key people will start interacting and refining the idea.

*Continues on page 45*

## 10 Years Strong & Growing

Integrity, Efficiency, Service,  
Guarantee, Global Productivity,  
Midwest Rates, Universe,  
UniData, D3, Barcode Services,  
Nationwide Support, Web Services,  
Custom Barcode Programming,  
.Net Programming, Mentoring,  
Project Outsourcing



[www.pickprogram.com](http://www.pickprogram.com)  
[contact@pickprogram.com](mailto:contact@pickprogram.com)  
(614) 921-9840

**Do you...** have projects sitting on "the list" and not being completed?

**Do you...** just need some assistance from time to time?

**Do you...** want up-front, guaranteed estimates?

**Senior Consultants are Currently Available.**

*"PICK Programmer's Shop has been outstanding to work with. They work with the highest integrity, are very responsive and quite knowledgeable. I can't imagine operating without them."*

*Patti Rowlette, Rowlette Executive Search*

***It's not just an anniversary. It's a guarantee.***

[WWW.KEYALLY.COM](http://WWW.KEYALLY.COM)  
[RESULTS@KEYALLY.COM](mailto:RESULTS@KEYALLY.COM)

**TO GET MORE OUT OF THESE**

IBM/Informix/Ardent /UniVerse/UniData

Temenos/Mpower1/jBASE

Northgate-IS/Reality

Prime Information/Primos

Ultimate Corporation

Applied Digital Data Systems

Fujitsu

Sanyo/Icon

Siemens/Nixdorf

RainingData/Pick/D3

EDP (UniVision)

Microdata/Evolution/Spirit/Reality

McDonall-Douglas/Reality

Revelation (Rev/Arev/OpenInsight)

AccuTerm

ViaDuct

**YOU NEED US**

P. O. Box 540957  
QUEENS, NY 11354, USA

# Reporting and Business Intelligence Tools: Sierra Bravo

Sierra Bravo Corporation is a software development company founded in 2003. They've taken a number of interesting turns, so Luke Bucklin, President, and Mark Hurlburt, Director of Marketing, stopped by to tell us about it.

**SPECTRUM:** *So, why BI and Reporting tools? Is that what the company was founded to promote?*

**MARK:** Well, no. Sierra Bravo was really founded to help people get to their data. Most of the projects that we tackle are oriented around helping people visualize and connect the information in the systems that they use to run their businesses. That naturally feeds into the BI space.

**LUKE:** Sierra Bravo wasn't founded to promote any specific product or tool. We're a services company. Our products make up less than 10% of our overall sales. Bravo Reports, for example, is a web-based, ad hoc query tool. There are character-based reporting tools out there, but one of our customers asked us to make one that could be used by their users on the web. Later, we expanded upon it and turned it into Bravo Reports.

It's not intended to be a BI tool, really. It's a data mining tool.

**MARK:** All of the products which we offer, from warehouse management to e-commerce, are all based on real-world problems that we've run into over and over.

**SPECTRUM:** *Now that Bravo Reports is out in the market, how is it being used?*

**LUKE:** It seems that one of the primary attractions to Bravo Reports is its ability to deliver the report information in multiple formats. Microsoft Excel and PDF are the big winners. And, that it delivers them automatically on a sched-

ule. But to be honest, we really try not to present ourselves as a software "products" company. We're all about services and software packages make up such a small part of what we do.

Bravo Reports provides what we intended — a way for clients to mine data out of their systems without having to be query language experts. It's our approach to finding a good balance between "full featured" and "overly complex." It's the type of product that a user can start using on a Monday and be a power user on Tuesday.

**MARK:** The whole idea behind Bravo Reports was to create a simple, wizard-like interface for mining the data in a MultiValue database without requiring the user to understand the

*Continues on page 16*

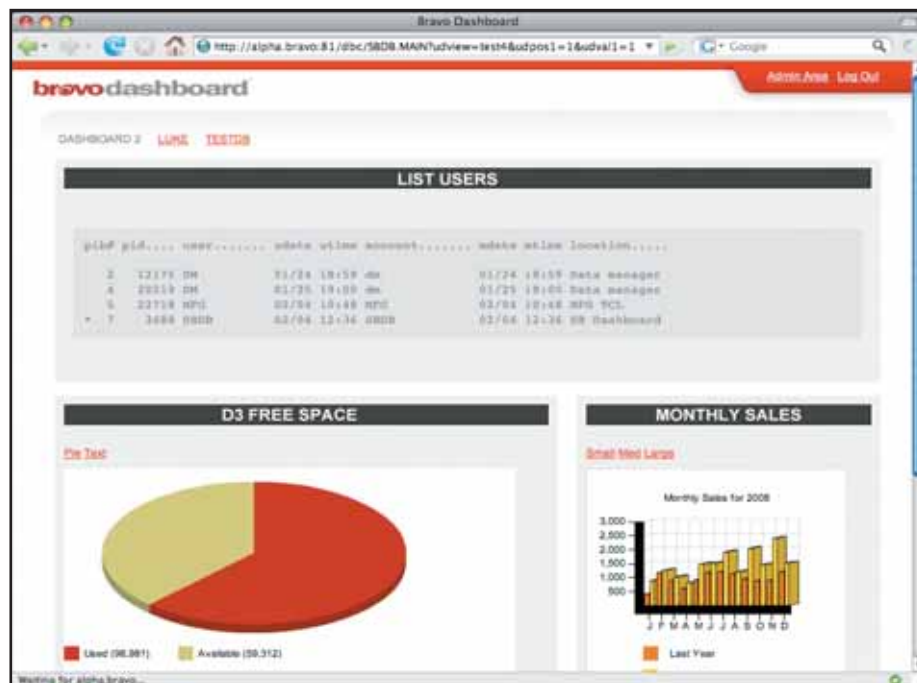
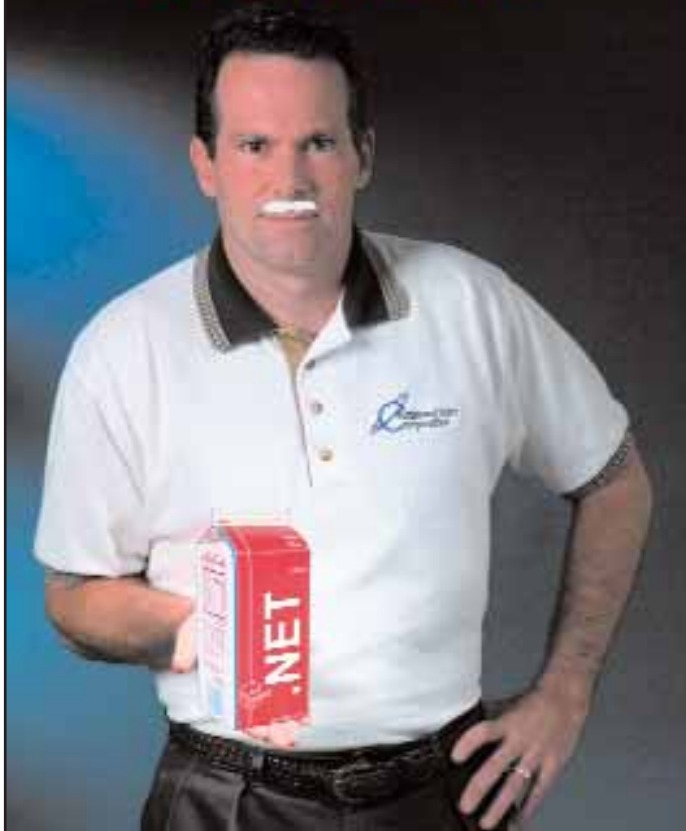


FIGURE 1 - Bravo Dashboard

# Got .NET?



**Real-Time .NET Solutions  
for UniVerse & UniData  
Anywhere, Anytime, Any Device!**

**AdvancedWare can Help You**

- Training on integrating your U2 System with .NET
- Packaged .NET / U2 Solutions
- Experienced Programming Resources skilled in both U2 & .NET

949-609-1240

[www.AdvancedWare.com](http://www.AdvancedWare.com)



# FAST CIS

**A FILE ANALYSIS AND SIZING TOOL**

*Automated file maintenance for UniVerse and Unidata files is essential for top system performance (UNIX & NT).*

**DYNAMIC FILES NEED MAINTENANCE TOO**

- Client/Server architecture
- Windows interface
- Both static and dynamic files
- Detect file corruption
- Improve system performance
- Resize your files automatically
- Join our 2,275+ customers

**FITZGERALD & LONG**

(303) 755-1102

[www.fitzlong.com](http://www.fitzlong.com)

behind-the-scenes queries that needed to be written. But, we've also worked with some customers on extending Bravo Reports to feed enterprise portal systems.

Since you mentioned BI, do you want to talk about Bravo Dashboard, the BI tool we've just released?

**SPECTRUM:** *Certainly.*

**LUKE:** Dashboard is a programmer's tool to build web-based dashboards. The widgets themselves are produced by MultiValue Basic subroutines. Non-programmers need not apply. We make it very easy for a MultiValue Basic programmer to build web-based report dashboards without having to learn a bunch of new technologies. In fact, the MultiValue Basic programmer doesn't really need to learn anything new at all. It's all done with the same MultiValue Basic programming methods that they are already using.

**MARK:** In many cases, the main thing we're bringing to the table is a new interface (to existing green screen functionality) so it's important that we make the solutions as easy to use as possible. In some ways, Bravo Reports and Bravo Dashboard do the same thing for diametrically opposed audiences.

**SPECTRUM:** *Diametrically opposed?*

**MARK:** Well, Bravo Reports and Bravo Dashboard are both solutions designed to help users visualize and mine the data in their MultiValue database. Bravo Reports approaches this solution by trying to make things as user-friendly and straightforward as possible, whereas Bravo Dashboard is a tool for real power users to do similar kind of mining.

**LUKE:** Beyond that, Bravo Dashboard is a free utility intended to be

downloaded and installed by MultiValue consultants or in-house developers. It's intended to provide the professional a new way to leverage their skills to meet the real-time reporting needs of their clients. Free to develop and free to deploy. There are no license fees for Bravo Dashboard. Bravo Reports is a commercial product.

**SPECTRUM:** *Where can people download Dashboard?*

**MARK:** <http://www.sierra-bravo.com/multivalue>

**SPECTRUM:** *What flavors does it support?*

**LUKE:** Currently, Bravo Dashboard will run on D3, UniVerse, and UniData on Linux and AIX. We have the Windows port nearly done, at which point it will support UniVerse, D3, and UniData on Windows as well. jBASE is close to follow.

The download package comes with an installation guide and a programmer's guide. It's pretty straight forward.



## Break Out and Extend your MultiValue Application

Kore Technologies can help you extend and modernize your application with our powerful integration tool suite and our flexible .NET Web solutions. Breathe new life into your MultiValue system...

### Integration

- Microsoft SQL Server Databases
- Business-to-Business eCommerce
- Best-in-Class Enterprise Applications
- Business Intelligence and Web Reporting

### Web Solutions

- eCommerce Storefront and Portal
- Sales Force Automation
- Customer Service and Help Desk
- Project Management and Collaboration

Kore Technologies is a leading provider of enterprise integration products and services for MultiValue systems. Our solutions, tools, and years of industry experience enable you to take advantage of new technology with your application, extending its life and maximizing your return on investment.

To learn more, call 866-763-KORE or visit [www.koretech.com](http://www.koretech.com) today!

solutions that work.  
people who care.



Kore Technologies, LLC  
9340 Hazard Way, Suite D  
San Diego, CA 92123  
866-763-5673  
[www.koretech.com](http://www.koretech.com)



There is also a 30-minute screencast of a web demo of Bravo Dashboard available on our web site.

**MARK:** In order to download Dashboard, users will need to register for a free MultiValue Central account.

**SPECTRUM:** *What about Bravo Reports? What platforms is it on? Where can I try it or buy it?*

**LUKE:** Bravo Reports will run on UniData, UniVerse, D3, mvBase, and jBASE on all Windows and Unix platforms. We provide WebEx demonstrations upon request.

You can buy from us or through Zumasy. They represent our products and services to their clients. We also have some individual VARs who resell our products to their customer base.

**SPECTRUM:** *Any other reporting tools?*

**LUKE:** We haven't talked about Bravo Forms.

**MARK:** That's our document workflow system, designed to streamline the formatting and dissemination of documents

**LUKE:** Bravo Forms is our solution for leveraging existing print programs that generate text-based documents to create electronic versions of the form. Bravo Forms runs on a server on the network and, using a web interface, system administrators can configure virtual printers on the forms server. Those printers can then be added to the MultiValue (or any other) host as "plain text" printers.

**MARK:** It also includes functionality to add generated content like bar codes and digitally captured signatures to printed or archived documents. The products that we've been talking about are really a nice by-product of having a huge room full of super-smart computer nerds in Bloomington, MN.

**SPECTRUM:** *It sounds like you've built products out of a lot*

*of hands-on experience. How long have you been in the industry?*

**LUKE:** Sierra Bravo was founded in late 2003; so we've been in business for just over four years. We have been providing programming and technical services to a rapidly growing list of MultiValue customers, as well as non-MultiValue clientele.

**MARK:** We were founded by Luke and his two business partners and have grown to nearly 50 people in 2008. That includes a little over two centuries of MultiValue experience on staff.

**LUKE:** We work with about 150 active customers (work performed in the last 90 days), and we deliver over 1,000 hours of programming services each week.

If our customers know us for anything, it's that we are the ones who can figure out how to get it done, and also who have the resources to actually get it done. IS



# Newsmakers

## RAM Mutual Insurance Company Upgrades Legacy Software

RAM Mutual Insurance Company, a property and casualty carrier located in Esko, Minnesota, wanted a stronger web presence to become more competitive in today's market. They were running SystemBuilder on top of an mvBase system and received notification that IBM would no longer support SystemBuilder on any non-IBM platform. They quickly realized they needed to upgrade in order to regain SystemBuilder support and, at the same time, better position themselves for aggressive web development.

After a trip to the International Spectrum Conference and many conference calls later, RAM decided a migration to IBM's UniVerse would provide the most seamless migration solution. It would offer them the platform they needed to pursue aggressive web development as well as give them the software support and upgrades for their now outdated version of SystemBuilder.

The only hurdles they faced were moving their software from mvBase to UniVerse and finding a way to continue to meet their heavy printing requirements without modifying their software. To solve these problems, they contacted Sysmark Information Systems, Inc., an authorized IBM Business Partner.

Using Sysmark's FileCaddy programs — TAPE.DUMP and TAPE.LOAD — RAM was able to convert their application accounts directly from mvBase to UniVerse. They then recompiled their programs, modified a few statements to UniVerse syntax, and tested for system integrity.

And, using Sysmark's generic Pick print spooler, SpoolerPlus, they were able to set up their printers and print queues on UniVerse just like they were on mvBase and continue to print over 3,000 completed insurance policies a month, convert many print jobs to PDF, and manage hundreds of print jobs on hold in the spooler without costly software modification.

Their first impression was the dramatic increase in speed of their software.

"Programs that used to take hours to run now run in minutes," said Bob Utech, the Senior Information Services Coordinator involved with the migration. "And, simple list statements that utilize the larger files come up in seconds now," he added.

"Even our Pick calls from our web site are so much faster with UniVerse," said Angie Salmi, a Sr. Services Analyst in the Information Technology department.

Their software had become so highly customized over the years that replacing it with some other software package was never an option. Hundreds of SystemBuilder screens and hundreds of programs that utilized the Pick spooler would have had to be rewritten.

"UniVerse has allowed us to continue to use our Pick file structure coupled with a networked system that can access the Internet and, more specifically, provide us the opportunity to build a strong web presence. This will increase our ease of doing business and help us become more competitive in today's soft insurance market," according to Steve Hinnenkamp, the Information Technology Manager.

"And, the scalability of Spooler Plus enabled us to move our software over and continue to meet our heavy print requirements without changing any of our printing procedures and without the cost of modifying all of our print processes," he added.

"All in all, the responsive support we continue to receive from Dave Taylor at Sysmark has been the key factor for the success of our upgrade", according to Steve.

**For more information about IBM U2 products and SpoolerPlus, contact:**

**World Wide:** Sysmark Information Systems, Inc. Authorized IBM Business Partner; 800-SYSMARK; 800-797-6275; info@sysmarkinfo.com; www.sysmarkinfo.com

**United Kingdom:** Brian Leach Consulting Services Limited, info@brianleach.co.uk; www.brianleach.co.uk ■

## MITS Report Fuels Popular New RV Dealer Applications from Integrated Dealer Systems

MITS and Integrated Dealer Systems (IDS) have joined forces to make it easier for RV dealers to grow their businesses, by integrating MITS Report technology into IDS's flagship Astra Dealer Management System (DMS). The new CRM Reports application is available now from IDS.

IDS showed the new solution, which provides web-based reporting capability to RV dealers wanting to analyze key customer

## Apron Corporation and Entrinsik, Inc. Partner to Bring Powerful Web-based Reporting Capabilities to the Higher Education Market



**Apron Corporation**, a leading provider of comprehensive enterprise systems for Colleges and Universities, and **Entrinsik, Inc.**, producers of Informer Web Reporting Software, have announced a partnership providing Apron customers with an intuitive web reporting tool for accessing data in real time. Apron continuously pursues a "total solution" approach for their customers, and Informer provides a great complement to their existing offering.

"Apron's software suites are made up of several applications that rely on a single data store and can be customized for individual institutions, and we chose Informer because it provided a highly intuitive conduit to this valuable data," said Tom Makosky, President of Apron Corporation. "We are excited to offer our end users this web-based reporting capability, all seamlessly delivered with our existing applications."

With the Entrinsik partnership, Apron customers will experience a fully integrated, familiar, intuitive platform for reporting, enabling them to easily and securely access data directly from Apron applications on demand and view the data in HTML, Excel, or PDF formats.

"We are delighted to have Apron as a partner," said Doug Leupen, President of Entrinsik. "We've been developing solutions for the Higher Education market for over 20 years, and we are confident that Informer will add tremendous value to Apron's already robust enterprise management platform. We look forward to working with them to enhance their customers' capabilities to turn raw data into valuable information where and when they need it." ■

relationship data, to an enthusiastic stream of RV dealers at the recent 2007 RVDA RV Dealers International Convention and Expo in Las Vegas. "The CRM application, with MITS Report embedded, was an enormous success," according to Sean Raynor, director of sales and marketing at IDS. "Our booth overflowed throughout the week with customers who want to sign up to get on the installation schedule."

Raynor adds that leveraging the MITS Report technology shaved months off his product development cycle. "By not diverting software development resources from their core DMS expertise, we were able to focus on important CRM features for our customers. At the same time, we give users all the reporting capabilities they need — and then some. It was faster and more cost-effective to use MITS Report."

The new CRM Reports application lets users interactively retrieve and analyze customer, sales, and operational information through pre-configured and user-created reports — any of which can be filtered, sorted, and totaled according to individual user needs, then exported to other formats or shared via e-mail.

IDS chose the MITS technology because it met all of its reporting functionality requirements, due to its architectural fit, and in light of what Raynor calls "the strong MITS track record" in the reporting and business intelligence for MultiValue computing platforms. The Astra DMS runs on Microsoft Windows desktops, in independent client software and via Web browsers, which interact with remote, IBM UniVerse-based capabilities via a Microsoft .NET framework.

"When we designed MITS Report, we were thinking beyond the MultiValue market," explains MITS President Fred Owen, "so we made it easy to integrate into other applications on various platforms."

Like Owen, IDS' Raynor believes software companies can and should leverage the expertise of other providers who specialize in "horizontal capabilities" like reporting. "They [MITS] have been doing this for more than ten years, and most software developers don't have their business intelligence and reporting expertise. Nor do they have much interest in pursuing it. It just makes sense to use technology like theirs."

Largely because of the positive experience with MITS Report, IDS also plans to offer MITS Discover — the company's business intelligence (analytics) solution — as an add-on product into its Astra DMS solution during the first half of 2008. IDS

revealed an initial set of standardized hypercubes for MITS Discover at the RVDA show in September, each of which enable dealers to analyze, query, and drill down into a particular area of interest, and intend to refine and augment these cubes during the coming months.

For more details on MITS software solutions, contact a MITS representative at [info@mits.com](mailto:info@mits.com) or visit the MITS Web site at [www.mits.com](http://www.mits.com). For more details on IDS Astra, visit [www.ids-astra.com](http://www.ids-astra.com). ■

## Datatel Appoints David J. Gutch Vice President of Sales

Datatel, Inc. announced that David J. Gutch has joined the company as vice president of sales. Mr. Gutch will head Datatel's Sales Division and focus on driving strategic revenue growth and positioning Datatel for continued success in the higher education technology and services market.

Mr. Gutch brings more than 25 years experience in technology-related organizations, most recently as Everest Software's senior vice president of worldwide sales and marketing. There he was responsible for all revenue and lead generation through both direct and indirect sales channels covering 49 countries. Previously, Mr. Gutch held executive sales positions at Infinium Software, a web-integrated enterprise resource planning (ERP) provider, and SER Solutions, a leading provider of software, hardware, and professional services for the call center industry.

"I welcome Dave to our Executive Team and look forward to his contributions to our ongoing growth strategy," said John F. Speer, Datatel president and CEO. "Dave's outstanding talent and experience as a leader of sales teams will strengthen Datatel's growth initiatives while at the same time preserving and enhancing our client relationships."

"I am excited to join the Datatel team and play a critical role in accelerating the company's growth," said Mr. Gutch. "Datatel's well-deserved reputation as a leader in the higher education market and its strong client collaboration offer attractive opportunities to build on the company's strong foundation."

A native of New Jersey, Mr. Gutch holds a degree in Economics from Boston College, where he was an honors graduate. Mr. Gutch resides in Waterford, Virginia with his wife and three children. ■

## SpoolerPlus®

Generic Pick® Spooler for Universe® and Unidata® (includes Reality syntax)

- Run generic Pick® software in a friendly Pick-flavor account without modifying your print processes.
- Use STARTPTR, SP-ASSIGN, SP-EDIT, LISTPTR, LISTPEQS, :STARTSPOOLER, etc. as usual.
- Reassign printers to print queues, **Plus** reconfigure the printer for the print queue automatically.
- Avoid retraining personnel in new, less flexible print procedures.

Get all the facts before you buy.  
Contact:

**Sysmark**

Information Systems, Inc



*Reseller Inquiries Invited*

Worldwide:

800-SYSMARK  
(800-797-6275)  
[info@sysmarkinfo.com](mailto:info@sysmarkinfo.com)  
[www.sysmarkinfo.com](http://www.sysmarkinfo.com)

UK:

Brian Leach Consulting Ltd  
[info@brian.leach.co.uk](mailto:info@brian.leach.co.uk)  
[www.brianleach.co.uk](http://www.brianleach.co.uk)

## PRC®

Get It Right From the Source.

Want control over the changes you make to your software?

PRC can help you get it right — and keep it secure.

For U2/MultiValue and SB+ environments

- ◆ Problem Reporting
- ◆ Change Control
- ◆ Project Management
- ◆ Time Tracking
- ◆ Test Management
- ◆ Deployment
- ◆ Rollback
- ◆ Audit

SJ+ Systems Associates  
[www.sjplus.com](http://www.sjplus.com)  
954-796-9868



# New Products

## BlueFinity Roadmap Unveils Plans for mv.NET Version 4



**BlueFinity International**, a member of the Mpower1 group of companies, has been providing .NET connectivity tools for MultiValue developers for nearly five years. The extensive range of features provided by these tools underpin many hundreds of diverse MultiValue-based applications throughout the world.

BlueFinity's flagship product, mv.NET, enables software designers to combine the power and flexibility of proven MultiValue technology with the feature rich Microsoft .NET environment. Its seamless integration with Visual Studio provides a potent rapid application development environment fine-tuned for the MultiValue developer.

As BlueFinity prepares to roll out the next major release, its developers are closely watching the market's future directions to bring the latest technologies to the MultiValue and .NET developer communities. The main thrust of mv.NET Version 4 is the support of new Microsoft technologies, namely:

### Version 4.0

#### **Visual Studio 2008 Extensibility Model**

Microsoft has enhanced the range of features and scope for third-party integration within Visual Studio. mv.NET V4.0 will take advantage of these enhancements to provide even tighter MultiValue database integration and further functionality within Visual Studio.

#### **Support for .NET Framework 3.5**

Microsoft has just released its much anticipated .NET Framework 3.5. mv.NET V4.0 will provide a version of the product targeted at this framework release while also maintaining support for Framework 2.0. BlueFinity is committed to enabling both frameworks to coexist and to providing ongoing sup-

port for new versions of the .NET Framework.

#### **64-bit Support**

mv.NET V4.0 will introduce support for Windows 64-bit platforms in addition to the current 32-bit support. Visual Studio 2008 32-bit and 64-bit will be fully supported within mv.NET.

#### **Extended Internationalization**

Further enhancements will be made in mv.NET V4.0 to extend the current support for foreign character sets.

#### **SSIS Integration**

Leveraging the functionality of mv.NET V4.0, a new Data Connector will be released to provide SSIS integration. This will provide an easy to use and versatile capability to move MultiValue resident data bidirectionally to and from the Microsoft SQL Server.

### Version 4.1

#### **LINQ Provider**

Language-Integrated Query (LINQ) will be an integral part of the .NET Framework. mv.NET V4.1 will supply a LINQ provider that leverages the unique abilities of the MultiValue database model.

### Version 4.2

#### **Silverlight Application Development**

Microsoft is still in its early adopter phase for Silverlight (<http://silverlight.net/>). This exciting technology promises to deliver to web application developers the power, versatility, and speed of application interface development that rich-client developers have enjoyed for years. mv.NET V4.2 will provide the database connectivity that will be a

vital aspect in the creation of business-based Silverlight applications.

David Cooper, Lead Developer at BlueFinity International, feels that integration with emerging technologies has become increasingly important for growth. "LINQ is the future of .NET data connectivity. It will change the way in which we (as developers) view and interact with data repositories," he explains. "Silverlight will (if its promise comes to fruition) provide web application developers with a fundamentally different way of creating solutions — one which will improve developer productivity by orders of magnitude. Here at BlueFinity, we are working at a feverish pace to ensure that we can provide our customers with tools that not only provide integration with these key technologies but tools which actively promote and leverage the unique strengths of the MultiValue model."

BlueFinity is accepting applications for the Version 4 early adopters program. Those interested in testing their applications against mv.NET V4 should email [v4@bluefinity.com](mailto:v4@bluefinity.com) for more information.

More information will be available at a series of BlueFinity seminars taking place in the USA and the UK in April. The USA show will take place on the last day of the International Spectrum MultiValue Conference in Newport Beach, California on April 4th followed by a London seminar in the UK on April 22nd. More information regarding both shows is available on the BlueFinity web site.

mv.NET is available for D3, jBASE, mvBASE, Power95, QM, Reality, UniData, UniVerse, UniVision and others by request. Visit [www.bluefinity.com](http://www.bluefinity.com) for more information.

About BlueFinity International  
BlueFinity International, a member of the Mpower1 Group of Companies ([www.mpower1.com](http://www.mpower1.com)) offers its two flagship products — mv.NET and RSDC — to the global MultiValue community. mv.NET allows the full benefits of the .NET service oriented architecture technology to be realized by users of established MultiValue applications. RSDC enables MultiValue developers to utilize the very latest Microsoft Reporting Services technology. For more information, visit [www.bluefinity.com](http://www.bluefinity.com). ■

# Document Management Solutions with UnForm®

Production › Delivery › Archiving › Scanning

```
4, 60, 5, 10, 1, 0
5, "date", only
7, "Invoice", 4
9, "Page #", un
14, "row id", 1
5, /out (61, 5, 8
7, /out (71, 5, 7
9, /out (78, 5, 2
```



UnForm is a powerful enterprise document management software solution that seamlessly integrates with any application. The UnForm suite includes laser form and electronic document production, document delivery via email and fax, document archiving and management, and document imaging/scanning. UnForm is a platform independent client server application for Windows®, Unix®, and Linux.

## UnForm Laser Forms

UnForm seamlessly integrates with any software application.

- Windows-based graphical design environment
- Eliminate pre-printed forms with laser printer output
- Produce presentation quality reports
- Create e-Documents in Adobe® Acrobat PDF format
- Email e-Documents automatically
- Print bar codes in most symbologies
- Create laser checks with MICR encoding
- Dynamic image conversion and scaling capability
- Database access via ODBC
- Microsoft® Fax Server support
- PCL 5 and Postscript® printer support
- Extensive programmability

## Document Archiving and Management

The UnForm Document Archiving and Management component provides the ability to capture, store and retrieve paper-based and electronic documents.

- Rules-based document archiving
- Archive concurrent with document printing
- Store multiple versions of a document
- 10 levels of user defined category indexing
- Document linking control
- Fast web browser-based retrieval
- Client API for application-based retrieval
- Index oriented archive browsing
- Full feature search capability

## Document Imaging/Scanning

Windows client application that provides a document scanning and importing tool for capture of documents external to the UnForm processing environment.

- Windows client application
- Integrated work environment for image capture and upload
- TWAIN compliant scanning interface
- Multiple property assignment modes
- Barcode and OCR zone detection
- Automatically match or group images with related archive documents
- Extensibility via VB Script

 Synergetic Data Systems, Inc.  
2195 Talon Drive  
Latrobe, CA 95682 USA  
(800) 446-7374 or (530) 672-9970  
Fax: (530) 672-9975  
sales@synergetic-data.com  
www.synergetic-data.com

UnForm is a registered trademark of SDSI. Other product names used herein may be trademarks or registered trademarks of their respective owners.



*Document Image Manager*

*Universal web browser document retrieval*

# New Products

## Freedombase Web Ready to be Included in OpenInsight

Revelation Software announced that it has purchased Freedombase Web Ready, a web development suite from Freedomsoft, for inclusion into its OpenInsight database development product.

Freedombase Web Ready is a quick and easy way to add web front-ends to existing OpenInsight applications, providing a fast and cost-effective means of rejuvenating existing or legacy systems and retaining the investment that those systems represent.

"Today's software user expects to be able to run applications in a browser, whether from a PC or mobile devices", states Mike Ruane, President, Revelation Software. "By purchasing the Freedombase product, we're able to give our developers and users the most efficient path for doing so."

"We have been running Freedombase on OpenInsight, as our preferred development platform, for around three years," states Glenn Groves, Managing Director, Freedomsoft. "We have been impressed with both the realistic pricing of OpenInsight and the portability of applications between Windows, Linux, and recent Macs. Incorporating Freedombase Web Ready into OpenInsight delivers fast and easy web development and web porting of existing OpenInsight applications to OpenInsight developers and is a great combination."

Revelation plans to rebrand the purchased Freedombase product as WebOI in order to eliminate any confusion between the two products. Further information can be found at Revelation Software's website, located at [www.revelation.com](http://www.revelation.com). ■

## Nebula Research and Development Announces New NebulaXLite Software



**NebulaXLite** allows MultiValue Basic code to generate real spreadsheets and workbooks that open in Microsoft Excel, Open Office, and Google spreadsheets. NebulaXLite is free for developers and only \$200 per end-user server. Bug fixes and occasional enhancements are provided free for the current release. Support is free via public forum. Developers have access to update an online issue tracker with bug reports and enhancement requests. Platforms currently supported are D3, jBASE, QM, UniVerse, and UniData.

Tony Gravagno, President of Nebula R&D says, "We know we're on the right track with NebulaXLite. The best evidence of this comes from one of our first users."

David Gordon of CardPak card packaging solutions says, "Minutes after I read your ad, I was called in by management to discuss how we can create spreadsheets directly from our database. They were tired of having to import into Excel. I downloaded the demo and had spreadsheets being generated by the following morning ... they love it! I have since added the option to most of the key reports management uses. ... The most worthwhile \$200 we've spent! Well documented and easy to use. Keep up the great work!"

<http://Nebula-RnD.com/products/xlite.htm> has product information and a link for downloads and the forum. Register on the forum to get access to the issue tracker. Product inquiries may be posted to the forum or sent directly to [Info@Nebula-RnD.com](mailto:Info@Nebula-RnD.com).

## Northgate Information Solutions Announces Availability of Reality v14.0

Northgate Information Solutions is pleased to announce the availability of Reality V14.0. Following on from previous releases, Reality continues to be enhanced. Reality V14.0 again delivers greater benefits in the areas of:

- Connectivity
- Integration
- Resilience
- Productivity
- MultiValue Migration
- By delivering new functionality in the following areas:

### Safe & Secure

#### Data Encryption at Rest

Reality has addressed the secure data concerns with its new Data Encryption at Rest feature. This refers to all data stored in computer storage, both for online access and offline data archiving. Reality V14.0 offers several new encryption components to meet these needs which are summarized below.

#### Fully Encrypted Files

When a file is created it can be identified as encrypted with access determined within a user's profile. All data types (including binary) will be encrypted when written and decrypted when read back, with this being transparent to the user or underlying application.

#### Encrypted Data in Reality Indexes

Any indexes that refer to encrypted data are themselves encrypted to ensure that the data remains hidden to unauthorized access.

#### Save/Restore of Encrypted Files

Reality's utilities save all items as is. Any encrypted data will not be decrypted prior to writing to media. Similarly, restore utilities restore data as is, any encrypted data will remain encrypted.

### Encrypted Data on Portable Media

All Reality tape devices and images allow for an encryption option which causes data written to use a specified key for data export. The data can only be decrypted and read with access to this key, thus allowing it to be transported and stored securely.

### Enhanced DataBasic ENCRYPT and DECRYPT

Enhanced versions of the existing DataBasic commands allow the use of the new encryption feature.

### Secure Management of Encryption Keys

Data Encryption is based on keys that encrypt and decrypt data. These user-defined keys are held securely within Reality and are referenced by name within a user's profile. Utilities are provided to securely manage and archive encryption keys, with DES (Data Encryption Standard), CBC (Cipher Block Chaining), and triple-DES currently supported.

### Enhanced Disaster Recovery - RealityDR

Reality V14.0 Disaster Recovery (DR) capability provides an unattended mechanism for synchronizing stand-alone or Failsafe Databases to a separate remote system. Significantly, this can operate over a slow or intermittent communications link. RealityDR is fully integrated into the resilience management utilities, simplifying the configuration and day-to-day tasks.

### Interoperability

#### English generated Web Pages

Reality V14.0 can generate HTML Web Pages directly from English without the need for programmer or third-party product intervention, enabling greater efficiencies for business reporting.

#### New ActiveX Interface

The ActiveX interface delivered with Reality V14.0 enables Windows applications written in environments such as .NET, C, VBA, and Visual Basic to efficiently call individual DataBasic subroutines remotely.

### Performance

#### Configurable Database Frame Size

Reality V14.0 now supports frame sizes of (1, 2, 4 or 8 KB) to achieve optimum application performance. Statistics are generated to assist choosing the frame size required.

#### Auto File Sizing

Auto File Sizing is now set by default to deliver optimal performance with no administrative overhead.

#### Multi-stream Account Restore

The multi-stream restore process has been optimized to reduce disk fragmentation, thus significantly improving the performance of the restored database.

#### Increased Transaction Log Sizes

Reality V14.0 increases each individual transaction log size from 2GB to 200GB or 4 billion individual transactions, whichever occurs first – thus reducing the total cost of ownership.

#### MultiValue Compatibility

Reality V14.0 further simplifies and eases migration from other MultiValue platform environments.:

- Simulate MultiValue platforms
- Options and definable MultiValue environment configurations can change the behavior of English, DataBasic, TCL, Proc, and other run-time areas
- New TCL stacker which is capable of emulating other MultiValue environments

#### Key DataBasic Enhancements

- DataBasic EQU to statements
- DataBasic functions and statements - RAISE, LOWER, SORT, COMPARE, PAUSE and WAKE
- Improved error handling within the DataBasic compiler
- Plus numerous other enhancements

### Reality Environment

#### ANALYZE "user process" Command

Key information about a user process can now be presented



### CREDIT CARD INTEGRATION

- Seamless Integrations into POS, Order Entry and e-Commerce
- Single or Multiple Merchants
- TCP/IP - Secure Internet
- Single or Multiple Modems
- Your Clearinghouse or Ours
- VAR Partnerships

Visa ■ MasterCard ■ AMEX  
Discover ■ Diners ■ JCB  
Debit Cards ■ Custom

**TotaLink**

1-866-796-7600  
Sales@TotaLinkcc.com  
www.TotaLinkcc.com

together, e.g., system and DataBasic run status, return stacks, and lock contention.

#### New TCL Logger

Reality V14.0 satisfies the new demands in security auditing and support capabilities. This new feature logs user activity across the system enabling:

- Logging and monitoring of user activity at TCL
- View or run all user TCL history, including program invoked commands

#### Advanced HTML User Documentation

Viewable from the Reality CD image or installed on any file or web server, including the built-in mini web server.

For more information and pricing or to request a free evaluation, contact your nearest Northgate Sales office, visit [www.northgate-is.com/reality](http://www.northgate-is.com/reality), or e-mail [reality@northgate-is.com](mailto:reality@northgate-is.com) ■

*Maximize Performance!  
Stay Competitive!  
Fine-Tune Your System!  
Get Expert Support at...*



## **The MultiValue Business Developers Conference & Exhibition**

**March 31 - April 4, 2008**

Marriott Newport Beach Hotel & Spa, Newport Beach, CA

It's all here - the MultiValue knowledge, resources, and technology to solve your business challenges, gain competitive advantage, improve resource utilization, and maximize profitability.



**BlueFinity**  
**FRIDAY**   
.NET for MultiValue

**mv.NET Developer Seminar**  
**Friday, April, 4**  
**Integrating .NET & MultiValue**

Register for BlueFinity Friday for only \$99  
when registering for the full  
International Spectrum Seminar  
or register for BlueFinity Friday only at  
at [www.BlueFinity.com](http://www.BlueFinity.com)

### *2007 Attendee comments...*

"I found this Spectrum as always informative. One of the things that draws me personally is being able to be around my peers." - M.F.

"We found it helpful to discuss product offerings face-to-face." - J.R.

"We were able to bring back information to help us decide which direction we should go with Web Development." - T.P.

**For more information and to register visit**



# Create your own ideal curriculum from over 80 educational sessions and vendor sessions including:

- RFID Integration
- Web Development and Integration
- .NET, PHP, and Java Integration
- Windows and Linux Administration
- EDI Implementation
- Data Mining and Business Intelligence
- Integrating SQL databases with your MultiValue applications
- Learn How to Enhance Your Vertical Application

...and many more. Plus, the industry's top vendors will be on hand to exhibit their latest product offerings, all in one place.



Register for a Full Conference Pass by **2/20/08** and save **\$200!**

| REGISTRATIONS INCLUDE                                  | REGISTER BY 2/20/08 AND SAVE UP TO \$200! |                                   |                  |                             |                                  |               | ON-SITE PRICE                    | ADVANCE PRICE |
|--|---|-----------------------------------|------------------|-----------------------------|----------------------------------|---------------|----------------------------------|---------------|
|  | SPECIAL EVENTS ON THE EXHIBITION FLOOR    | 2-DAY EXHIBITION FLOOR PASS 2-DAY | DAILY BREAKFASTS | SNEAK PREVIEW WELCOME PARTY | CD OF THE CONFERENCE PROCEEDINGS | After 2/20/08 | BEFORE 2/20/08 ACT NOW AND SAVE! |               |
| <b>FULL REGISTRATION</b>                               | ✓   | ✓                                 | ✓                | ✓                           | ✓                                | \$995         | <b>SAVE \$200!</b><br>\$795      |               |
| Sessions/Events for the Day Registered Only            | ✓   | ✓                                 | ✓                | ✓                           | ✓                                | \$695         | <b>SAVE \$100!</b><br>\$595      |               |
| <b>EXHIBITIONS ONLY</b><br><i>Wednesday - Thursday</i> |   | ✓                                 |                  |                             |                                  | \$35          | <b>SAVE \$35!</b><br>FREE        |               |

→ <http://www.intl-spectrum.com/show/2008>

# IBM ADO.NET Provider: *What's in it for U2?*

BY BRIAN LEACH

The latest edition of the IBM ADO.NET provider supports UniVerse and UniData. This is a generic provider that operates across the IBM database range, and at time of writing is only available with the DB2 client. The product integrates directly into Visual Studio 2005, though not yet into Studio 2008 or the Express editions.

## U2 and the .NET platform

U2 developers already have a wealth of options for integrating with .NET. The middleware of choice is the UO.NET member of the UniObjects family, which delivers high-performance native access for transactional applications and now sports connection pooling and XML data set facilities. For SOA architects, IBM has added web services to the two databases, while for web developers, RedBack (U2 Web DE) offers a tried and trusted model for building scalable applications. What is the need then for an ADO.NET provider?

ADO.NET is the standard method of data access for the .NET platform. It has overtaken OLEDB and ODBC as the mainstream solution to building provider-independent database applications. It also forms a major part of Visual Studio, which offers a compre-

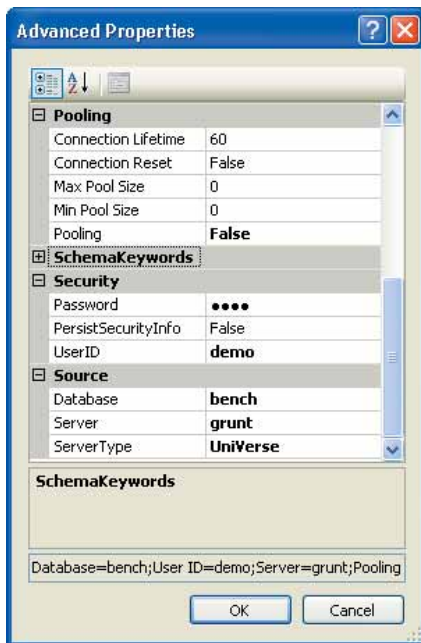


FIGURE 1

hensive set of tools for working with data sources.

As with OLEDB and ODBC before, ADO.NET is modelled around a relational view of a data source, using SQL statements to retrieve and update data represented in the form of two dimensional tables and views. The IBM ADO.NET provider therefore offers U2 sites the advantages of mainstream coherence and the prospect of integration with third-party products, while suffering the difficulties that inevitably arise from normalizing multivalued data.

## Preparing for ADO.NET

The ADO.NET provider uses the Uni Call Interface (UCI) to expose U2 files as relational tables. On UniVerse, the key to a successful implementation is to create a clean and complete dictionary layer through which the data can be presented.

One way to achieve this is by building a reporting account. This uses modified file pointers to link local, tidied dictionary files together with live data files to give a better presentation of the application data. These dictionaries should include an @SELECT phrase to list the visible fields, and should use exclusively D-type and I-Type dictionary items with multivalued fields correctly identified and all associations defined. For more details on setting up UCI, please see my articles in the U2UG Knowledge Base (see The Links).

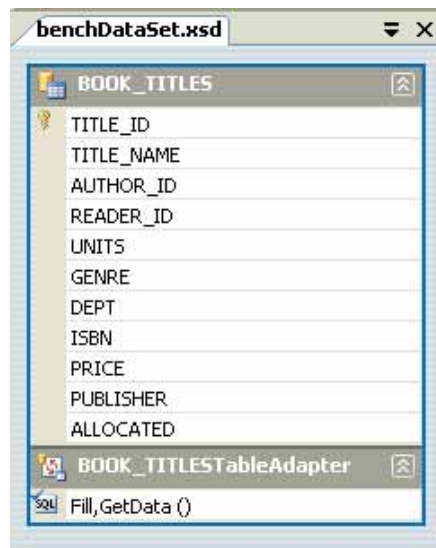


FIGURE 2

| TITLE_ID | TITLE_NAME   | UNITS | GENRE   |
|----------|--|-------|---------|
| 10       | Hancock a Comedy Genius (BBC Radio Collection)       | 22    | HUMOUR  |
| 11       | I'm Sorry I Haven't a Clue: Vol 8 (BBC Radio Cole... | 1     | HUMOUR  |
| 12       | Friends, Loves, Chocolate                            | 7     | FICTION |
| 13       | The Legend of Spud Murphy                            | 5     | FANTASY |
| 14       | Farmer Giles of Ham and Other Stories                | 6     | FANTASY |
| 15       | The Lord of the Rings: Complete & Unabridged         | 5     | FANTASY |
| 16       | The Navy Lark: Taking Some Liberties v. 17           | 1     | HUMOUR  |
| 17       | The Worst Witch: Complete and Unabridged (Co...      | 2     | FICTION |
| 18       | Friends, Loves, Chocolate                            | 3     | FICTION |
| 19       | Harry Potter and the Chamber of Secrets (Book 2...   | 27    | FANTASY |

FIGURE 3

### Creating a Data Bound Form

A key component of ADO.NET is a data set. This is an in-memory representation of a database containing tables, columns, and relations. A data set can be generated using design tools and filled using an intermediate object called a TableAdapter that acts as a conduit between the data set and a data source.

Here's how to create a data driven form in a few easy steps. This uses the IBM ADO.NET provider and the Wychbooks demo (see The Links).

First, create a blank Windows Form project and open the solution Data Sources window. Click **Add New Data Source** and choose **Database**. Click the **New Connection** button.

Change the Connection to **IBM DB2, IDS and U2 Servers** and click the **Advanced** button to open the full property list (fig. 1).

Enter the server name, database (account), server type, and your credentials. Turn off pooling unless your server has a Pooled Connection license.

Accept the dialog and the connection details, and the Wizard will connect and return a list of tables. Select **BOOK\_TITLES**.

At this point it may complain that it cannot find the table. UniVerse does not resolve the schema name: just continue and create an empty **BOOK\_TITLES** DataTable. Right-click the table in the data set view (fig. 2) and select **Configure**. Remove the account name from in front of **BOOK\_TITLES** and the data set will rebuild itself correctly.

Finally, open the blank Form1 in your solution and drag the **BOOK\_TITLES** table from the Data Source window onto the form surface. Visual Studio will create a data grid, navigator, and adapter controls. Press F5 to run the project. (Fig. 3)

*Continues on page 28*

```
String connString = getConnectionString();
String cmd = "SELECT COUNT(*) FROM BOOK_TITLES";

DB2Connection dbConn = new DB2Connection(connString);
dbConn.Open();
DB2Command dbCmd = new DB2Command(cmd, dbConn);
DB2DataReader dbReader = dbCmd.ExecuteReader();
dbReader.Read();
MessageBox.Show(dbReader.GetValue(0).ToString() + " items");
dbReader.Close();
```

**FIGURE 4 - Snippet executes a simple SELECT statement and parses the results**

```
User ID=demo;password=demo;database=books;Server=grunt;
ServerType=universe;pooling=false
```

**FIGURE 5 - DB2Connection uses a connection string like this**

```
SELECT SUM(UNITS),SUM(PRICE),SUM(UNITS*PRICE) AS "Value" FROM
→ BOOK_TITLES;

SELECT TITLE_ID, SHORT_TITLE, DEPT||'-'||GENRE FROM BOOK_TITLES;

SELECT EVAL "OCONV(@DATE,'D4') " FROM BOOK_TITLES;
```

**FIGURE 6 - Example of SQL and UniVerse extensions supported**

```
SELECT A.SHORT_TITLE, A.AUTHOR_ID, B.FULLNAME FROM
→ BOOK_TITLES A LEFT JOIN BOOK_AUTHORS B ON
→ A.AUTHOR_ID = B.AUTHOR_ID
```

**FIGURE 7 - Example Join clause**

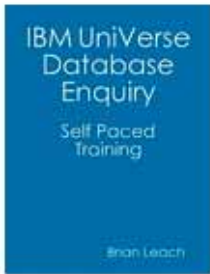
```
SELECT BOOK_SALES.ID, SURNAME, FORENAME, TITLE_ID, QTY
→ FROM BOOK_SALES LEFT JOIN BOOK_SALES_SALE_ITEMS
→ ON BOOK_SALES.ID =BOOK_SALES_SALE_ITEMS.ID;
```

**FIGURE 8 - Associations example**

```
SUBROUTINE GetTitleById( Id )
TCL = "SELECT * FROM BOOK_TITLES WHERE TITLE_ID = " : Id
T = SQLExecDirect(@HSTMT, TCL)
RETURN
```

**FIGURE 9 - Example of a stored procedure**

## NEW Self Paced Training Guide



A 190 page training course on the UniVerse Data Model and Enquiry Language, with labs to test your understanding.

Brian Leach Consulting Ltd  
www.brianleach.co.uk

## PICK PROFESSIONAL

Don't make the mistake of placing your career in the hands of just ANY search firm. We are professionals who understand the importance of CONFIDENTIALITY and RESPECT of a job search, and our database of clients is one of the largest in the country. Unlike the rest, we will work in YOUR best interests' to help you further your career. Because of our dedication and professionalism, we are recognized as the leaders in the PICK/UniVerse/Unidata placement industry in the Tri-State area and throughout the U.S. So if you are tired of putting yourself at the mercy of the rest.

CALL THE BEST! Contact...

**Matt Hart**

**EXECU-SYS, LTD**

1 Penn Plaza, Suite 3306  
New York, NY 10119

**(212) 967-0505**

(800) 423-1964 x 302

Fax: (212)947-8593

Email: mh@eslny.com

Consultants Needed Nationwide

## IBM ADO.NET Provider *Continued from page 27*

```
dbCmd.CommandText = "CALL GetTitleById(?)";  
// lines snipped  
DB2Parameter param = new DB2Parameter("TitleId",  
DB2Type.VarChar);  
param.Direction = ParameterDirection.Input;  
param.Value = txtParam.Text;  
dbCmd.Parameters.Add(param);  
dbReader = dbCmd.ExecuteReader();
```

**FIGURE 10**

### Using a Data Command

ADO.NET is a series of classes implemented by each provider. Besides the data set, which imposes considerable overheads, developers can use a Data Command to run commands and a DataReader to read results.

The IBM provider is referenced through the **IBM.Data.DB2** namespace and each class is prefixed with DB2. The snippet in figure 4 executes a simple SELECT statement and parses the results.

The connection is made through a **DB2Connection**, which uses a connection string like the one in Figure 5.

### Supported SQL Syntax

The IBM ADO.NET provider supports standard SQL including summary operations and column expressions, and some UniVerse extensions (fig. 6).

SQL uses JOIN clauses to access to secondary files. Figure 7 shows a join used to return the author name.

A special example is the treatment of multivalued data. To represent this in a form that relational clients can understand, each multivalued field or association is presented as a separate child table sharing the record id. Associations are named filename\_association, for example **BOOK\_SALES\_SALE\_DETS**. In the example (fig.8), **TITLE\_ID** and **QTY** are part of a **SALE\_DETS** association.

### Running Stored Procedures

Stored procedures often provide a better way to access data. On U2 systems, stored procedures are written as regular Basic subroutines. These can expose existing business logic and can return results using the **BCI SQLExecDirect** function (fig. 9).

Stored procedures can be called by setting the **DBCommand CommandType** to **CommandType.StoredProcedure** or by executing a SQL CALL statement.

Parameters are fed into the subroutine argument list:

```
CALL GetTitleById(10)
```

For more flexibility and control, the **DB2Command** class exposes a **Parameters** collection to pass values. Note the format of the CALL statement in figure 10.

Not all stored procedures return record sets. Basic subroutines can pass simple data and messages back through regular arguments using **InputOutput** parameters and using the **ExecuteNonQuery** method to run without expecting results. (Fig. 11)

### Performing Updates

Stored procedures can perform updates, or a **DB2Command** can execute **INSERT** and **UPDATE** commands. Data sets can update the underlying tables through **TableAdapters**. Space constraints prevent proper discussion of this topic, but in all these cases

```

dbCmd.CommandText = "CALL GetAuthorName(?,?)";
// lines snipped
DB2Parameter oparam = new DB2Parameter("AuthorName",
DB2Type.VarChar);
oparam.Direction = ParameterDirection.InputOutput;
oparam.Value = "";
dbCmd.Parameters.Add(oparam);
dbCmd.ExecuteNonQuery();
MessageBox.Show(oparam.Value.ToString());

```

**FIGURE 11**

developers need to be very careful especially when processing multivalued data.

One particular difficulty is contention: ADO.NET uses optimistic concurrency, which differs from that used in most multivalued applications. Whenever possible, ADO.NET will use time stamp columns to improve performance when testing for changes, but these are not supported by the U2 databases. And even with these, contention is the bane of ADO.NET developers. I recommend *Expert One to*

*One Visual Basic 2005 Database Programming* by Roger Jennings (Wrox Press) to anyone going down this path.

Native protocols, including UO.NET, that understand MultiValue concepts and data offer a safer route for updat-

ing and should form the backbone of transactional applications. But, for selecting and presenting data, calling stored procedures and integrating into a broad range of tools and technologies, ADO.NET is a promising new addition to the U2 stable. IS

**BRIAN LEACH is an independent consultant working in the UK. He is the current President of the IBM International U2 User Group. You can find out more at <http://www.brianleach.co.uk>.**

### The Links

U2UG Knowledge Base  
<http://212.241.202.162/kb/kbhome.wsp>

Wychbooks demo  
<http://www.brianleach.co.uk>

# International Spectrum University WEBINAR SERIES

## Back-To-Basics Series

The Back-To-Basics courses offer fundamental MultiValue knowledge comprising the backbone of the environment. This is a great place to start if you are new to MultiValue or have been working in MultiValue for a while but need a refresher of the fundamentals.

## MultiValue Programming Series

The MultiValue Programming courses are targeted to beginner and experienced programmers. This is where you can get started if you are new to programming in the MultiValue environment. Experienced programmers will find advanced topics of interest.

## MultiValue Administration Series

The MultiValue Administration Series is aimed at those who are involved with day-to-day administration of the MultiValue database environment. Each course will include the following key topics: file maintenance (creation, sizing and resizing), managing users, managing printers, managing foreground and background processes, backup, locking, working with persistent and non-persistent connections.

## MultiValue Reporting Series

The MultiValue Reporting Series focuses on getting information from your MultiValue application to other report-

ing environments. There are a variety of tools available to offer better ways of looking at the information contained in your MultiValue application if we can get this information to them or expose your information to them.

## Beyond MultiValue Series

The Beyond MultiValue Series takes you into the world of the Web, .NET, integration environments and more.

## Not Just For MultiValue Series

The Not Just For MultiValue Series presents topics of general interest regardless of your computing environment.



Visit [www.intl-spectrum.com](http://www.intl-spectrum.com) to find dates and times of available webinars

# MultiValue Participation *in* Business Intelligence

## What is Business Intelligence?

Simply put, Business Intelligence (BI) is a term that refers to processes, platforms, and tools that enable a business to analyze, understand, and manage their business better in order to reduce costs and/or increase revenues.

BI can be as simple as putting a report on an employee's desktop that they can run once a day to see certain key information that reflects how the business is doing. Or, it can be extremely complex, involving platforms that involve multiple components and servers and require client components to be installed, configured, and maintained.

Regardless how complex the approach, the data in your mission-critical MultiValue system contains key information about the health and performance of your business and must be included in whatever you use as a BI platform.

Ultimately, BI is about reporting. The reports might be in the form of an asynchronous alert that sends you an e-mail or updates an RSS feed on your business portal, or it may be something that your staff has to select and run on a periodic basis. It may occur hourly, daily, weekly, monthly, or even less frequently.

Having a successful BI strategy really requires a willingness to learn and change. The things that you originally think are key indicators may turn out to be symptoms of the real indicator. Sometimes you find that it is the data you originally identified plus something that you weren't initially aware of. Flexibility is the key. In larger organizations, you need to involve both management and users to get the most from your initiative. It is also imperative that you have proper access to enough of your data to allow you to explore and learn.

## Considerations for Business Intelligence

When considering a BI solution, you need to look at a number of issues:

### Standards

- Standards enable a larger set of solutions to work with your data access layer. You probably already have invested in tools that can work with them.
- The more your solution uses standards, the more you will find that there are people who understand and can work with the solution.

- Standards protect your investment and ensure its relevance into the future.
- Resistance to change is often reduced when users can use tools that they are already familiar with.

### Culture

- BI changes the dynamics of your company. It puts information, and therefore power, in the hands of more people. It may challenge assumptions and deep-rooted corporate beliefs. You will need to work with both your IT staff and end users to ensure the best return on this investment.

## System Resources

- BI can bring great benefits to your organization, but be aware that the additional processing involved in this analysis will either require more processing on your existing systems or additional systems to off-load the processing to, or some combination of these.

## Approach

In this article, we will explore some of the tools and approaches that can be used to enable your MultiValue application to participate in BI, along with some of the issues and benefits of each approach. Our focus will be on how the various tools that you have at your disposal can be made to access your MultiValue data. It is hoped that this will assist you in choosing a path to BI that will be successful and beneficial for you.

We will start by looking at the question of Data Warehousing or a Data Mart vs. accessing live data dynamically. For those who find the Data Warehouse or Data Mart a compelling option, we will discuss ways to get your data out of your MultiValue environment into a relational database, including considering the question of which system controls the copying of data. Then, for those who want to work directly against the live data using dynamic access, we will discuss different tools and technologies that can be used to present your MultiValue data directly to end users. All of these, of course, can access the data in a Data Warehouse or Data Mart.

## Copy or Live?

The first question that you need to ask is whether you want to do your BI

activities on a copy of the data or against the live data. The real question is: Data Mart/Data Warehouse or Dynamic Access?

### **Live Data**

Live data is never stale and does not get out of sync. Live data is easier to administer. It does not require additional systems or disk space. And, it typically involves less network bandwidth.

On the other hand, reporting against live data can put load on a server that may not be desirable. Also, there are times when there is value in working with a stable snapshot. The data you are working with will change through the course of the day if you do not filter out new orders that have come in since you started your analysis. This can lead to changes in aggregate data that can make it hard to correlate disparate views.

### **Copied Data**

Copied Data (often referred to as a Data Mart or Data Warehouse) has a number of benefits. It provides you with a consistent snapshot to work with. It off-loads processing from your MultiValue system to a (usually) relational system. It allows you to build custom reports using skills that are readily available on the open market.

The downsides are that you require additional systems, disk, network bandwidth, and administration to build and configure this type of system.

There is an additional benefit to this approach for those companies who find themselves subject to Sarbanes-Oxley (SOX) requirements. One challenge that SOX brings is that any time a report is used to support a decision that is made, that affects SOX requirements. You must retain the ability to regenerate this report. Doing this against live data is nearly impossible, unless you can cleanly time stamp all related data to a level of granularity that supports re-querying it. And you

**Having a successful BI strategy really requires a willingness to learn and change.**

cannot then delete any of the data that contributed to the report.

Using an offline copy of the data allows you to easily archive a backup of the relational databases, making regenerating of the reports for SOX purposes much easier.

### **Or Blended**

Why choose when you can have both?

Some users develop a system that starts with a Data Mart, but allows them to drill into live data if they want an up-to-date refresh of their data view. This requires more effort to design and build, but gives you the best of both worlds.

In some cases, users will import data into a spreadsheet, and then work with that data through pivot tables or other features of the spreadsheet. For smaller data sets (that will fit in a single spreadsheet), this can be an ideal solution. It allows you to work offline with a snapshot, but allows you to refresh your view with current data at will. For larger data sets, you will need to have a database to hold the snapshot, with a strategy to refresh your view with live data as needed.

### **Copying Your Data**

There are a number of tools and technologies that will enable you to copy your data to a relational database. Some questions you need to ask include: Which system needs to control the copying? Does the copy need to happen in real time? Do you need to go both ways?

That last question is technically outside the scope of normal BI, but if you are looking at an overall integration solution, this is another factor to consider.

In some cases, you will find it most beneficial to go with a blended approach that uses a one-way product to update your relational data mart with your MultiValue data, and use other tools to build out access that needs to update the MultiValue system.

### **Controlled By Your MultiValue System**

FusionWare Legacy2SQL Bridge allows you to control the copying of data to or from a relational database from within your MultiValue programs. An API consisting of MultiValue Basic subroutines is used to take the place of OPEN, READ, WRITE, SELECT, and READNEXT statements enabling high-performance, real-time access to a relational table as though it were a MultiValue file containing single-valued data.

This is ideal for those situations where you want incremental changes to be updated to your relational database. It also allows you to pull relational data back into the MultiValue program as though it were a MultiValue record with single values in it.

This solution allows you to control access from within your MultiValue applications and copy the data either in real time or on a batch basis. It is also bidirectional. The strength of this product is its performance and flexibility.

### **Controlled by Non-MultiValue System**

FusionWare Direct mv2SQL allows you to transfer data from your MultiValue system to SQL Server, Oracle, DB2, or MySQL directly. It can be run standalone, as a SQL Server DTS package, or from within SSIS. This solution allows you to perform batch updates of your relational data mart or data warehouse with data from your MultiValue system. This is a one-way only solution; it does not update your MultiValue system. The strength of this product is that it will create and configure your target tables

*Continues on page 32*

## PICK PROGRAMMERS

Urgently need PICK professionals for the following positions:

|                      |                |
|----------------------|----------------|
| Tampa, FL.....       | Salary to 70K  |
| Louisiana .....      | Salary to 65K  |
| North Carolina ..... | Salary to 70K  |
| Buffalo, NY .....    | Salary to 80K  |
| Atlanta, GA .....    | Salary to 80K  |
| New Jersey .....     | Salary to 80K  |
| Louisville, KY ..... | Salary to 80K  |
| Los Angeles, CA..... | Salary to 110K |

Chuck Okeson - VP  
**SOFTWARE SEARCH**  
at 800-949-5423 x203  
[Chuck@SoftwareSearch.com](mailto:Chuck@SoftwareSearch.com)

## MultiValue Participation in Business Intelligence

*Continued from page 31*

based on how and what you mapped from your MultiValue database.

You can use the FusionWare Direct ADO.NET Provider to build out an SSIS package that does the transfer for you, allowing you to combine it with other copies that you may be doing using SSIS. This allows you to perform batch updates of your relational data mart or data warehouse with data from your MultiValue system. It is a bidirectional solution.

Or, you can use other products, like FusionWare Direct JavaAdapter and other Fusionware middleware technologies, to enable the tools of your choice to access your MultiValue data. These tools are all bidirectional and allow either batch or real-time updates to occur.

### Presenting Your Data

You have a number of options for presenting your data.

#### Microsoft Excel

This is probably the tool of choice for actually working with and analyzing business information. The good news is that you can access your data directly from within Excel. You can also have Microsoft SQL Server Reporting Services serve up your report as an Excel spreadsheet. SharePoint data that is exposed through the Business Data Catalog integrates seamlessly

with Excel. There are many roads to getting your data into Excel.

#### Microsoft SQL Server Reporting Services

Microsoft allows you to access Reporting Services in two ways. First, you can access it through a Reporting Services Web Portal. This allows users with nothing more than a browser to view the data and request that it be served as HTML, PDF, Excel, and other formats. The formats can be extended by third parties.

Secondly, there is a viewer control that can be embedded in a Windows Forms or Web Forms application to allow an application to include a report. In this way, you can put critical information in places that your staff will find convenient to access repeatedly through the day. By embedding this control in a custom web part, you can even include it in a Microsoft SharePoint portal.

#### Microsoft Office SharePoint Server

SharePoint has a number of ways that you can expose data for your staff to access:

- You can put data into the Business Data Catalog, accessing it as Web Services through the FusionWare Integration Server, or as ADO.NET data using the FusionWare Direct ADO.NET Provider.
- You can access it using InfoPath, using the FusionWare Direct ADO.NET Provider.
- Or, you can create custom Web Parts that access your data using the FusionWare Direct ADO.NET Provider.

#### Third Party BI Platforms

The following 3rd Party BI Platforms will enable you to access the data through the FusionWare Direct ADO.NET Provider.

- Cognos
- Business Objects
- Crystal Reports
- And more...

#### Other Portals

So far, this article has been focused on mostly Windows-based solutions. FusionWare's Direct products and the FusionWare Integration Server support non-Windows clients and middle-tier servers as well. For instance, IBM Lotus Notes can access your MultiValue data, and there are many other third-party, non-Windows solutions that we support.

#### Summary

Business Performance Management enhances processes by creating better feedback loops. Continuous and real-time reviews help identify and eliminate problems before they grow. On the other hand, it provides forecasting abilities to help the company gain competitive advantage and increase the opportunity to meet or exceed earnings projection.

Providing data with Business Intelligence provides the what-if scenarios for analysis in predicting outcomes to your corporate goals. Implementing Business Intelligence successfully is the challenge. As discussed, each tier within the concept of delivering data to the data consumer is complex and needs to be defined from a variety of perspectives to achieve a successful outcome.

#### Coming Next

Over the years, we have found that many of our customers have, through mergers and acquisitions, accumulated a plethora of disparate systems. We have a wealth of experience in assisting these customers in quickly and effectively bridging these systems. In our next article, we will take a look at tools and options for integrating your MultiValue systems with other applications and systems.

We look forward to seeing you at the International Spectrum Conference in Newport Beach this year. Please visit us at booth 108 or attend one of our knowledge sessions. [is](#)



# JUST WORKS

INTEGRATED BUSINESS AGILITY



Are you being pressured to improve operational efficiency and reduce costs? Are your response times to new market opportunities too slow? Do you need to leverage existing IT systems, products and skills?

We have the solutions, the people and the experience to effectively integrate your MultiValue system with the following business needs:

- Business Intelligence
- Data Warehousing
- Web or Desktop applications
- Web Services solutions
- Service Oriented Architecture

FusionWare has years of experience integrating MultiValue systems with the latest trends in IT solutions. We work with all the major products and technologies to deliver solutions that best fit your needs. We are platform, technology and database independent.

FusionWare provides just the right solutions and people to get the job done.

**FusionWare**  
Corporation

**1.866.266.2326 x159**  
INFO@FUSIONWARE.NET



In the November/December 2007 issue of International Spectrum magazine, Brian Leach discussed UniVerse triggers. He explained how triggers originated in the SQL world and are basically just code that is automatically called every time a file is updated. Just a few examples of how they have been used are to build audit records, to force data validation and consistency, and to add full text indexing. Brian also provided some very valid design and coding considerations. In this article, I will provide examples of how to write a trigger in Reality and discuss some differences between using a trigger in UniVerse vs. Reality.

Triggers were first made available in Reality in July 2003 with release 10.0. Like all triggers, they are 'triggered' by any process that updates a file – including SQL – but they were designed specifically for the Reality MultiValue database, and not for SQL tables. The documentation for Reality triggers, therefore, is not found in the Reality SQL Reference guide, but in the Reality User's Reference Manual. MultiValue developers will find the syntax more familiar, and the use is not as restrictive as it doesn't adhere to all SQL rules. This is both good and bad. A programmer must be more diligent about good coding practices like file locks and give careful thought about what a trigger is going to be used for. I refer you back to the section in Brian's article titled 'Performance'.

Creating a trigger is a two step process. The first step is to write, compile, and catalog a Basic subroutine. The second step is to attach that subroutine to a file. The subroutine must

```

001 SUBROUTINE IM.TRIGGER(IM.REC)
002 * Trigger called from IM file
003 * Writes an audit record to IM.AUDIT
004 * This is a PRE-WRITE & PRE-DELETE trigger
005 *
006 INCLUDE FILE.EQUATES IM
007 EXIT=0
008 GOSUB ASGN.VALS
009 IF EXIT THEN RETURN
010 *
011 BEGIN CASE
012     CASE EVENT="DELETE"
013         GOSUB WRITE.AUDIT
014     CASE EVENT="NEW"
015         GOSUB WRITE.AUDIT
016     CASE EVENT="CHANGE"
017         IF NEW.QOH # OLD.QOH THEN GOSUB WRITE.AUDIT
018 END CASE
019 RETURN
020 *
021 * =====
022 ASGN.VALS:
023 OPEN 'IM.AUDIT' TO AUDIT.F THEN
024     PORT=SYSTEM(18)
025     FILEVAR=ACCESS(1)
026     ITEM.ID=ACCESS(10)
027     DELETE.FLAG=ACCESS(12)
028     NEW.ITEM=ACCESS(16)
029     BEGIN CASE
030         CASE DELETE.FLAG
031             EVENT = "DELETE"
032         CASE NEW.ITEM
033             EVENT = "NEW"
034         CASE 1
035             EVENT = "CHANGE"
036     END CASE
037     READ ORIG.REC FROM FILEVAR,ITEM.ID ELSE ORIG.REC=' "'
038     OLD.QOH=ORIG.REC<IM.QTY.ONHAND> + 0
039     NEW.QOH=IM.REC<IM.QTY.ONHAND> + 0
040 END ELSE
041     EXIT=1
042 END
043 RETURN
044 *
045 WRITE.AUDIT:
046 AUDIT.REC=' '
047 AUDIT.REC=SYSTEM(50) ;* User
048 AUDIT.REC<2>=OLD.QOH
049 AUDIT.REC<3>=NEW.QOH
050 AUDIT.ID=ITEM.ID:"*":DATE():"*":TIME():"*":PORT
051 WRITE AUDIT.REC ON AUDIT.F,AUDIT.ID ON ERROR NULL
052 RETURN
053 *
054 END
EOI 054

```

**FIGURE 1** - Sample embedded sub-routine used to track inventory quantity changes

be cataloged in the account in which the data file resides. Though on Reality the default catalog is a global catalog, if you want the trigger to run from other accounts that have Q pointers to your data file, you need to copy the MD item for the cataloged subroutine into that other account.

### Reality Differences

- Reality triggers can request input. For example, when creating an audit file, the trigger may ask for a reason for the update. I would caution against using an input statement on a file that could also be updated with SQL, ODBC, etc. without knowing how the input prompt would be handled by these other processes.
- You can debug Reality triggers. By creating the trigger subroutine with a debug statement in it, you can step through the program during testing to assure the code's accuracy. You can simply edit a record and watch it go through the code when you file it.
- You don't have to delete and recreate a Reality trigger if you want to change the subroutine. The changes will take effect when you recompile your program.
- The subroutine has only one parameter, and the ACCESS function is used to provide information about the record being updated.

### The Trigger Subroutine

This is a regular Basic subroutine, but it only accepts the single parameter that is the record that is being (or was) written. This is called an *Embedded Basic Subroutine* and is the same type of subroutine that is called from attribute eight of a dictionary item. All embedded Basic subroutines use the ACCESS function to retrieve the information about the record and its status.

Figure 1 is a sample embedded subroutine that is used to track changes to the quantity on hand in an inventory file

(IM). Since Reality does not pass the original record in as a parameter, the ORIG.REC must be read from the file before the file is updated, so this must be a PRE-WRITE and PRE-DELETE. If there are any errors opening or reading the file we just want to return without writing the audit record, not abort. The Audit file ID is unique and is a new record so no file locking is required.

### Attaching the Trigger to the File

The Reality command to attach a trigger is the same command as UniVerse, though the syntax is simply:

```
CREATE-TRIGGER filename trigger-name trigger-type
```

Where the trigger name is the name of the cataloged subroutine, and the type may be PRE-WRITE, POST-WRITE, PRE-DELETE, or POST-DELETE.

Once the trigger has been created you will see the subroutine name in attribute<4> of the dictionary of the file. The command LIST-TRIGGERS is supplied by Reality to display the triggers on a specific file. (Fig. 2)

As Brian mentioned, MultiValue programmers are not used to looking for triggers to find all file updates in an application, but I have adhered to the following conventions:

1. I name my program with the file that the trigger is attached to (IM.TRIGGER).

2. I use a case statement to determine the event so I only need one trigger subroutine per file.
3. I put a comment in the subroutine which also indicates which file the trigger is called from.
4. I have written a program to go through all files in an account and check for triggers in attribute<4> so I can LIST.ALL.TRIGGERS.

For further examples, I recommend you review the documentation and Embedded Basic Examples in the Data-Basic Reference Manual. That gives an example of using named commons

within embedded basic programs, and INPUTERR when a 'fatal' error occurs. When used in a PRE-WRITE or DELETE trigger the INPUTERR statement will stop the update on the file that has the trigger, and the error message will print on the screen. Again, be cautious if that file is updated by GUI screen drivers or other types of databases. is



**C A N D I H A R T** has been an independent consultant in Southern CA since 1980. She was known as Candi Piech when she served as president of CDBMA. She may be contacted at [candihart@sbcglobal.net](mailto:candihart@sbcglobal.net)

```
:CREATE-TRIGGER IM IM.TRIGGER PRE-WRITE
[1901] 'PRE-WRITE' trigger added to file 'IM' .

:LIST-TRIGGERS IM

File 'IM' has the following triggers:

    PRE-WRITE: IM.TRIGGER

1 trigger(s) listed.

:ED DICT IM IM
Top
.L4
001 D
002 231409,3001,110
003 B3 3001,1
004 *IM.TRIGGER
```

**FIGURE 2** - The command 'LIST-TRIGGERS' displays the triggers on a specific file

# Swapping your OI System's Database to U2

OpenInsight, Revelation Software's flagship product, provides users and developers with a feature-rich graphical design environment. It also provides users and developers with a powerful MultiValue database. This database, which is unofficially known in-house as 'Linear Hash', easily supports hundreds of tables and millions of records in an application.

IBM's UniVerse and UniData data servers also offer their own MultiValue databases. These databases scale to handle much higher volumes of data without performance degradation and offer users the ability to specify different types of filing systems and hashing algorithms.

In early 2007, Revelation Software and IBM announced a partnership and Revelation released its OpenInsight for U2 product. This product combines OpenInsight's graphical toolset with IBM's U2 back end. It provides a combination of the best of both worlds: cutting edge, easy to use, and MultiValue friendly graphical front-end and tools, and a powerful, high volume, feature rich back end.

Since that time, users have purchased the product and created applications. Users have also purchased the OpenInsight front-end for use with their existing U2 data servers, and these pages have shown how to do that in the past. However, the specifics of converting an existing OpenInsight application to use an U2 data server have not been detailed before.

So, in this article, we will explain and give detailed instructions on how you can change an OpenInsight application's database from Linear Hash to a U2 data server.

## Why Change Back Ends?

Why would someone want to change their OpenInsight application's back end database? There are a number of reasons, almost all to do with large amounts of data and the resulting performance needs.

The standard Linear Hash database that comes with OpenInsight is extremely robust. Individual files can be set with their own frame size, expected number of records, and resize thresholds, allowing for extremely flexible tuning. The files are self resizing, work well, hardly ever get GFEs when using one of Revelation's net-

work products, and are generally just 'set and forget'. However, when very large amounts of data are stored within a single OpenInsight table, performance on these tables can degrade.

The specific degree of degradation depends upon a number of factors, including type of data stored (text or images), the average size of the records as compared to the frame size, and the network packet read size as compared to the Linear Hash frame size. However, it appears that as the number of records approaches ten million in a single file, performance begins to suffer.

IBM's U2 data servers offer multiple file types and hashing schemes, and work extremely well with large amounts of data, offering an increase in performance. (They also work well with small amounts of data, but, for most Revelation users, the price difference between

```
SELECT BOOK_SALES.ID, SURNAME, FORENAME, TITLE_ID, QTY
  → FROM BOOK_SALES LEFT JOIN BOOK_SALES_SALE_ITEMS
  → ON BOOK_SALES.ID = BOOK_SALES_SALE_ITEMS.ID;
```

FIGURE 1 - Copy\_Table\_FS command

|                |  |
|----------------|--|
| Orig_TableName | The name of the original table as it exists in OpenInsight.  |
| To_Volume      | The location to which the file should be copied. This name matches the name given in the U2 Connector screen.              |
| Database       | The database name of the new table.  |
| New_TableName  | The new name for the table   |
| Lock Flag      | A Boolean value indicating whether or not the source file should be locked during the copy                                 |
| Delete Flag    | A Boolean value indicating whether or not the source file should be deleted after the copy.                                |
| Overwrite Flag | A Boolean flag indicating that it is ok to overwrite the file if it already exists.  |
| Exist_Flag     | A Boolean flag indicating the file must already exist.   |
| Status         | Return value indicates success or failure  |
| IXStrip_Flag   | A Boolean value indicating whether or not the source file's indexing information should be stripped. Not applicable to U2. |

FIGURE 2 - Copy\_Table\_FS parameters

the products doesn't justify the switch.) More information regarding IBM's UniVerse and UniData data servers can be found at the website <http://www-306.ibm.com/software/data/u2/>.

### Converting the Database

Once you've decided to change the data back end, the actual process of moving the data is not that difficult at all.

First, you must set up a connection to a U2 data source. Instructions on how to do this is described at the Revelation.com web site under the Tutorials section.

The specific command used to copy a table from OpenInsight to a U2 back end is the COPY\_TABLE\_FS command (fig. 1). The COPY\_TABLE\_FS command copies the tables from one filing system (in this case, OpenInsight's Linear Hash) to another (in this case, IBM's UniVerse). The COPY\_TABLE\_FS command takes the parameters shown in figure 2.

From an OpenInsight point of view, it does not matter whether the back end used is UniVerse or UniData. However, these products have different strengths and features. Be sure to check IBM's web site for the feature sets and which one is appropriate for your data needs.

The copy process does a number of things. First, it copies the data from the OpenInsight database to the specified volume. Second, it creates the shadow dictionary needed by the OpenInsight for U2 connector. This shadow dictionary is created in the Shadow Dictionary location specified in the U2 Connector window. Finally, the copy process creates dictionary records for the F type fields that exist in the original OpenInsight tables. Symbolic/Calculated fields are not created automatically and must be recreated by hand. OpenInsight's Symbolic/Calculated fields have different functionality than most U2 calculated fields and do not usually translate directly.

Once the tables have been copied, the original Linear Hash files should be

*Continues on page 38*



## The 300K RPM Disk Drive

Announcing affordable solid state storage solutions for enterprise servers featuring 10-30 times the performance of 15K hard disks for data intensive applications.

The next generation starts today.

[www.ManagedFlash.com](http://www.ManagedFlash.com)  
800-470-2756

# .NET Developer Training

Are you a MultiValue Developer looking to modernize your applications with Microsoft .NET?

Are you a Microsoft .NET developer requiring access to MultiValue data and programs via Visual Studio?

Do you want to transform your legacy applications into mainstream technologies?



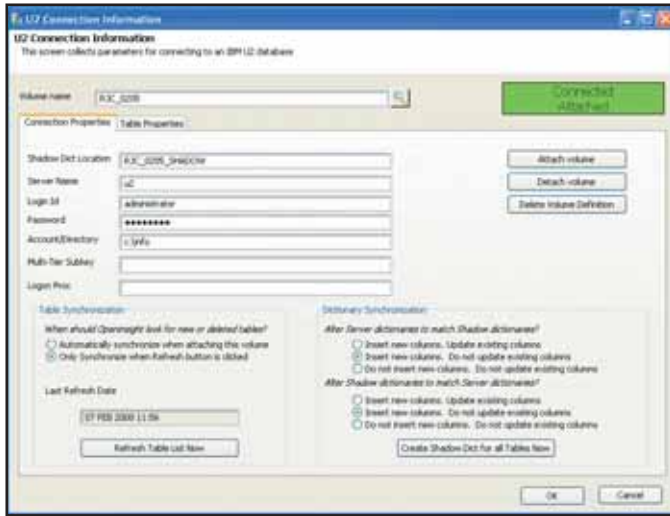
### Topics Include:

- ⇒ Visual Studio Development for Multi-Value Data
- ⇒ Microsoft Reporting Services Solutions
- ⇒ Latest Enhancements and Preview of Future Functionality
- ⇒ Technical Session for Web Developers
- ⇒ Technical Session for Smart-client developers
- ⇒ mv.NET Case Studies

## Friday, April 4, 2008

At the International Spectrum 2008 Conference and Exhibition

For more information and Registration:  
<http://www.intl-spectrum.com/Conference/BlueFinityDay.aspx>



**FIGURE 3 - A connection defined for a UniVerse server**

The longer answer is a little more detailed.

An OpenInsight application is comprised of many entities. For example, if your application has a menu, a screen, a popup, and a report, then the application contains at least six entities (yes, we counted correctly). These entities have to be stored somewhere, and this somewhere is the OpenInsight Linear Hash database. Behind the scenes of an application, these are tables named SYSREPOS, SYSREPOS-WINS, YSREPOSWINEXES, SYSREPOSREPORTS, and so on.

OpenInsight has a series of tables and

## Swapping your OI System's Database to U2 *Continued from page 37*

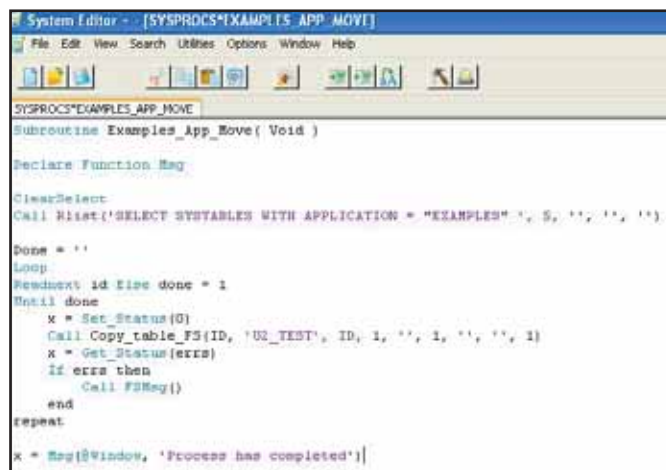
detached by using the Database Manager. Once they have been removed (not deleted!), use the U2 Connection Setup screen to attach the new tables. At this point, your system should work as it did before, except for the fact that it is using a U2 data server as the back-end database.

Figure 3 shows a connection defined for a UniVerse server, and Figure 4 shows a program listing that can be used as a starting point for a developer who wants to move all the tables from the OpenInsight-based EXAMPLES application to a UniVerse back end. It can easily be modified for your particular needs.

### What About My Programs?

Once the data has been moved back to a U2 data server, all of the existing programs, reports, windows, popups, etc. will still work as they did originally. With a different back end, one might think that there were some code changes that would be necessary. In fact, this is not necessary.

Revelation Software's OpenInsight for U2 connector helps to optimize your Basic+ code as it applies to the data on the U2 data server. In programs that have SELECT statements, the connector determines whether the statement will run faster if the selects are resolved on



**FIGURE 4 - Example program: Moves all tables to UniVerse back end**

the back end (as in true Client Server computing), or on the local workstation, if it is only a subset of data.

With regards to indexes, OpenInsight has a number of explicit index commands, such as BTREE.EXTRACT and COLLECT.IXVALS, and implicit index commands, such as SELECT, which will use indexes when indexing is available on the tables. Revelation's OpenInsight for U2 connector will make the appropriate call changes.

### Does the OpenInsight's Database Go Away?

So, once the application data has been moved to a U2 back end, does that mean that OpenInsight's database is no longer used? The short answer is no.

programs that support our repository. The repository supports and provides our inheritance model, maintains the uses and used-by relationships between the entities, security and access rights, plus much, much more. The repository and all its related components are still maintained in a Linear Hash database. The source code, symbol tables, and object code are still located in Linear Hash tables.

The bottom line: the OpenInsight database does not go away completely. Nearly all the application components still remain in Linear Hash tables; the application database is what uses the U2 data server.

### Other Back End Choices for an OpenInsight Application

While IBM's U2 data servers make an excellent back end for an OpenInsight-based application, is it the only choice? No. But it is the easiest to use because the U2 products are MultiValue products and use the same row- or record-based access method, as opposed to a set-based access method such as found in SQL.

Using Revelation's Client/Server Workspace to connect to one of these database back ends will certainly work, but will require changes to the underlying data access code. For example, where most MultiValue developers would open a file, then read a record from the file handle providing the key, the SQL-based database developers would Select a data set from a file where a certain criteria was met.

### Is a U2 Back End for Everyone?

So, should every user of OpenInsight go out and switch their back end to a U2 data server? While this author suspects that IBM would not be against the idea, it is not a practical solution or need for most users of OpenInsight.

However, for those who do have the need for a larger, faster data store, the U2 data server is an impressive back end to an OpenInsight front-end. Together, they create applications that are truly world-class. IS

**Is your Blood Pressure Rising over the prospect of down time?**  
 Let Ashwood lower your pressure! **UniData**

**Stop by our booth #201 and speak with our team about your Business Continuity needs.**

**Get your Blood Pressure checked.**

**Ashwood**  
 Computer, Inc.  
 "Your Total Solution Provider"

MultiValue Solution Provider

Serving the **MV database** community  
 nationwide since 1989  
**(513) 563-2800**

[www.ashwoodcomputer.com](http://www.ashwoodcomputer.com)  
 e-mail: [andreac@ashwoodcomputer.com](mailto:andreac@ashwoodcomputer.com)

# OpenQM

*the low-cost Multivalue Database for Windows, Linux and FreeBSD*

OpenQM is the only multivalue database available as both a fully supported commercial product and in open source form.

- *Quick and easy to install*
- *High quality pdf documentation and online help*
- *Close compatibility with most other multivalue environments*
- *Maintenance-free file system for ease of use*
- *QMClient API for development of VB, C and web-based applications*
- *Very low licensing costs for 1-500 users*
- *No mandatory support contracts*
- *AccuTerm bundled at no additional cost*

*"With 23 years in developing multi-value applications, QM/Linux is the finest platform I've used and the most cost-effective. Support is outstanding."*

William G. Crowell, VP & CTO, Crowell Systems

**Ladybridge Systems Ltd**  
 17b Coldstream Lane, Hardingstone  
 Northampton, NN4 6DB, England  
[www.ladybridge.com](http://www.ladybridge.com)

US Main Distributor: EasyCo, 220 Stanford Drive  
 Wallingford PA, 19086 USA  
[www.easyco.com](http://www.easyco.com)

**[www.openqm.com](http://www.openqm.com)**

# Web - = 1

A pet peeve of mine is the misuse of the word “irony.”

Some people say that a situation is ironic, when with all due respect, it merely appears coincidental. There’s nothing contradictory or incongruous.

Hence, I got rather tickled when I saw Microsoft going after Yahoo to stand against Google. This, dear me, was irony.

A huge desktop near-monopoly (90% of the planet’s PCs) announces the possible deal as a great opportunity to create competition in the internet market. A search engine near-monopoly (55-62% of searches) frets that the deal would be anti-web. Both companies sport brand names that are iconic. Heck, “google” is now a verb. Mixed in with this brew of self-righteousness, Google wants to partner with Yahoo to stand against Microsoft’s unwanted, uncompetitive courtship. This type of irony is so thick, you could plant a rose bush in it.

Now, I’m sure some of you have noticed that I’m

somewhat of a fan of Google and its deployment over the Web. I still think that Google’s done a great job. There are very few companies that deservedly succeed through a combination of clever innovation, useful products, and impressive vision. It’s Apple, but without worrying about retail storefronts. So, with an efficient use of style sheets, XML, Ajax, web services, and a keep-it-simple-Sammy mentality, Google has morphed into an astonishingly productive and profitable workhorse for the masses, people and companies alike.

But competition is good for us. We get new features and we see motivated development.

And ironies of ironies, Microsoft believes that it can be the force creating competition rather than impeding it. If it seems like Google has been developing features and services rapidly before, then what pray tell are we likely to see in the future?

This all ignores the fact that if Yahoo and Microsoft combine forces, there will be one less big search engine from which to choose. Not exactly competitive there.

Besides, is MicroHoo still too, well, micro? After all, their search engine market shares combined would still be less than half of Google’s.

**But competition is good for us.  
We get new features and we see  
motivated development.**

Despite Microsoft’s affection and embraces, Yahoo plays the field. Smart business sense. Why buy the milk if the cow yadda yadda yahoo? No, there may actually be other companies that could make a viable argument to merge with Yahoo. But let’s face it, who else has the cash for this cow?



Amazon? Apple? AT&T? Google can't do it, because that little thing called antitrust (ask Microsoft) could and should be an issue.

What would I like to see in a merged MicroHoo? Well, Yahoo knows more about news, dating, videos, and other squishy content. Despite the NBC connection, Microsoft's still a tech powerhouse through and through. I think I'd like to see Microsoft listen to Yahoo, spend money on what Yahoo thinks is best, but use its technical prowess to do it better and cheaper.

For advertisers, it would certainly motivate Google to stay competitive and not simply throw its weight and invoices around. After all, companies spend, ahem, \$40 billion annually on online advertising. And if advertising comes into play, what about tossing AOL into the merger maniac's stew? Companies would definitely have a compelling argument to work with an instant messenger juggernaut combining MSN+Yahoo+AIM! The combined services and feature set of chat software could finally meet the needs of hard-nosed chatterers the world over.

It could be fun.

I grew up playing musical chairs. We kids would stalk the chairs, studying how best to move forward, how best to lunge, and how to trip and shove opponents without raising the ire of the authorities, a.k.a. parents. Cavalier and somewhat blood-thirsty teenage kids, supposedly watching out for us, urged us to greater aggressiveness, largely for their own amusement. Somehow, the dance of PC and Internet titans reminds of this devious ballet, with the regulators just making sure we don't hurt anyone and the stock market trying to squeeze every ounce of fun possible from the sport.

Let the games begin! *is*



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

# mv://e-Store

*You can have e-Commerce, too...  
..Be a part of it today...*

eagle rock information systems

info@eriscorp.com

| LI | Model / Part Number                                   | Price*   | Quantity | Ext. Price | Instock** |
|----|---|----------|----------|------------|-----------|
| 1  | PD43VP6C2000-68784                                    | \$328.00 | 1        | \$328.00   | 110       |
|    | Part Number: 68734                                    |          |          |            |           |
|    | Description: Ruggedized PicoDot, Convergent Laser     |          |          |            |           |
| 2  | PD43VP6LLP W/30                                       | \$345.00 | 1        | \$345.00   | 110       |
|    | Part Number: 68528                                    |          |          |            |           |
|    | Description: Ruggedized PicoDot, Polarized Rens Laser |          |          |            |           |
| 3  |   | \$0.00   |          | \$0.00     | YES       |

# Using UniVerse Indexes: Part 2

In the last article, we generated a CUST file and indexed on the STATE field (fig. 1) to explore the performance effects of indexes.

Let's take a look at where this index is stored and how we can examine its contents.

In UniVerse, the indexes for each file are contained in a directory whose name is simply the name of the file prefixed with "I\_". For the file CUST, we would then expect to find a directory called I\_CUST somewhere. By default, when you create the first index for a file, the index directory is created in the same directory as the file. We will discuss later how to move the index directory or the file itself to another location without trashing your indexes. For now, let's assume the default location.

If we "shell out" to the host operating system level (DOS for Windows, SH for Unix) and examine the contents of our current directory (DIR for Windows, ls for Unix), we see that in addition to the

**Warning! Just because you can now use the Editor to look at indexes as if they were records, DO NOT change them and file them.**

data section CUST and the dictionary section D\_CUST, there is a directory called I\_CUST (fig. 2). This is where all indexes for the CUST file reside. Figure 3 shows the contents of this directory.

In our example, you see that we have two files in the I\_CUST directory: INDEX.000 and INDEX.MAP.

FIGURE 1

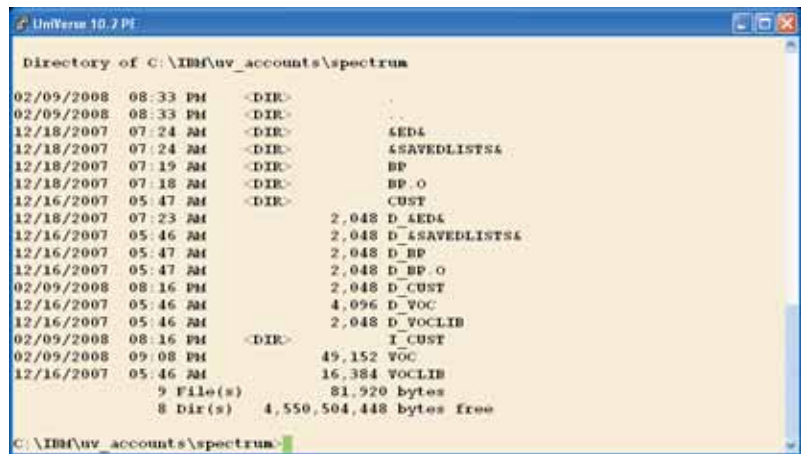
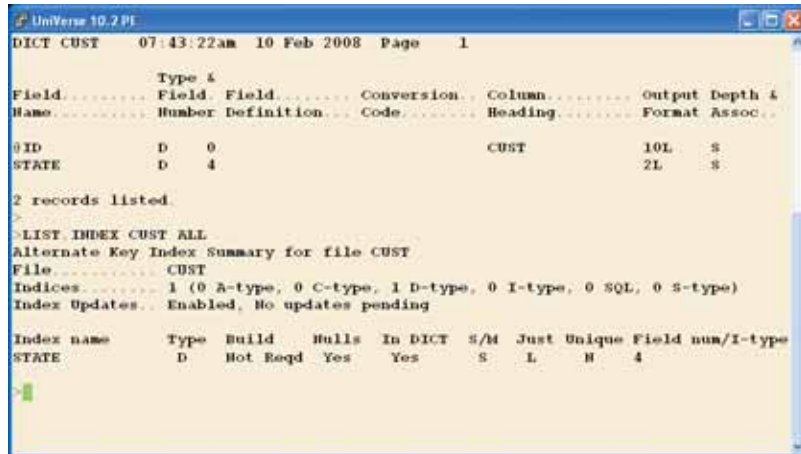


FIGURE 2 - I\_CUST directory

**FIGURE 3 - The contents of the I\_CUST directory**

```
UniVerse 10.7 PE
C:\IBM\uv_accounts\spectrum>DIR I_CUST
Volume in drive C has no label.
Volume Serial Number is A069-3FDE

Directory of C:\IBM\uv_accounts\spectrum\I_CUST

02/09/2008  08:16 PM  <DIR>
02/09/2008  08:16 PM  <DIR>
02/09/2008  08:16 PM          22,994,944 INDEX.000
02/09/2008  08:16 PM             26 INDEX.MAP
                2 File(s)      22,994,970 bytes
                2 Dir(s)    4,550,504,448 bytes free

C:\IBM\uv_accounts\spectrum>
```

is beyond the scope of this introduction, but suffice it to say that if you monkey with it with an editor, Bad Things are likely to happen.

The INDEX.000 file, which in this example is the index for the STATE field, is implemented as a B-tree file, or what UniVerse internally refers to as a Type 25 file. As such, they are not

The first index you create for the file gets names INDEX.000, the second gets names INDEX.001, and so forth.

The mapping of the name STATE to the corresponding index file is accomplished by the INDEX.MAP file. In addition, the INDEX.MAP file contains information about the index such as whether

```
UniVerse 10.7 PE
>CT VOC IDX_CUST

      IDX_CUST
0001 F
0002 I_CUST\INDEX.000
0003 D_VOC
>
```

**FIGURE 4**

it still needs to be built (populated), is it single or multivalued, and so on. Most of the information you see when you use the LIST.INDEX command comes from this file. The structure of the INDEX.MAP

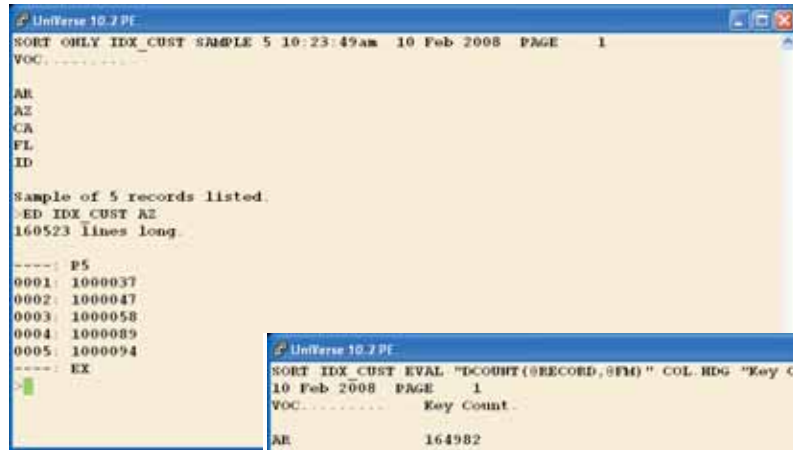
readily accessible as normal UniVerse files. There is, however, a trick you can use to access the information for reporting purposes on the number of index values and distribution of keys among them. *Continues on page 44*

**e-Xtra**  
**Stay on top of Industry News**

- ✘ Tech tips
- ✘ Job Posting
- ✘ New Products
- ✘ Corporate Updates

[www.intl-spectrum.com](http://www.intl-spectrum.com)

The advertisement features a blue background with a white and red logo for 'e-Xtra'. The main headline is 'Stay on top of Industry News'. Below this, there is a list of four items, each preceded by a red 'x' icon: 'Tech tips', 'Job Posting', 'New Products', and 'Corporate Updates'. At the bottom, the website URL 'www.intl-spectrum.com' is displayed in white text on a red oval background. On the right side, there are three overlapping images of newspaper pages, suggesting industry news content.



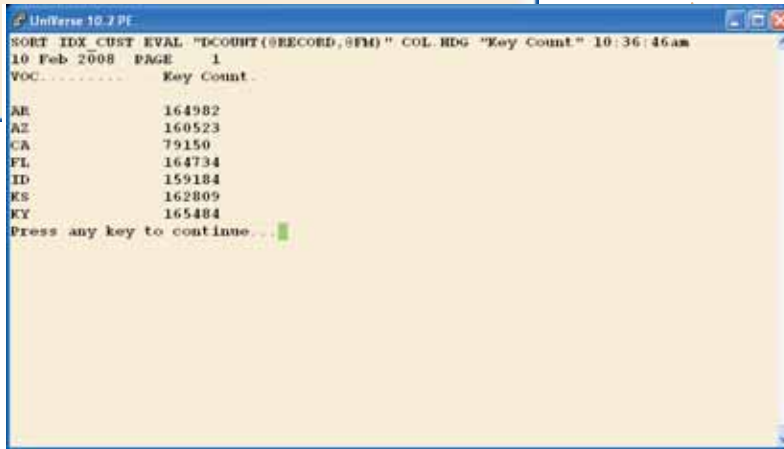
**FIGURE 5**

In the VOC file, create an F type file pointer that contains the relative path to the index of interest in field 2 and, simply to be able to use the pointer, the

name of some dictionary in field 3. I use D\_VOC because it's always there (fig. 4). This pointer can now be used to view the individual key values as if they were regular UniVerse file records (fig. 5).

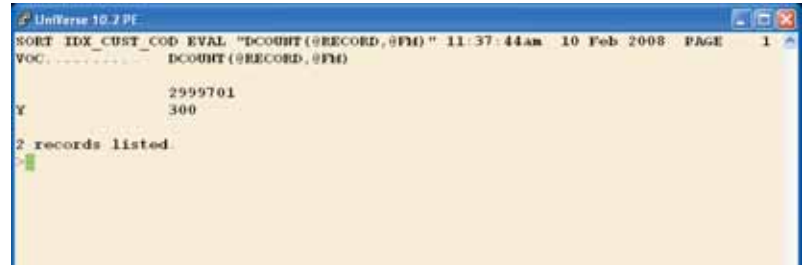
**Warning!** Just because you can now use the Editor to look at indexes as if they were records, DO NOT change them and file them. Due to differences in locking between real records and the internal structures of B-trees, you are just asking for corrupted indexes if you ignore me on this one. Neither I nor International Spectrum will be responsible in any way if you start changing indexes via an F pointer and shoot your foot off!

That being said, since we now have access to the indexes as if they were data, we can do some (read-only) reporting on them. Figure 6 shows how to list the index values and see how many CUST keys are in each one. It should be apparent that using this technique, you can use in the power of Retrieve reporting to get some valuable statistics.



**FIGURE 6 - How to list the index values**

**FIGURE 7 - The number of indexed records**



have anything in the COD field and we assume almost all selects against the file, even with the criteria WITH COD = "", are going to have to pass the entire file to build sort keys, there is nothing to



**FIGURE 8 - The sequence to define and build both indexes**

be gained by having the NULL index.

One of the options

when creating (defining) an index is NO.NULLS. This tells the indexing routines not to index this field if it is

empty. Figure 8 shows the sequence to define both indexes and build them for the CUST file under these conditions. Since STATE will always contain a value, we could have also used NO.NULLS when we created it, even though it is not necessary. I have been called in situations where the system used to work fine, with 1 to 3 second response time for a particular screen. Then, it suddenly went to 15 to 45 second response time this week. What is usually the case is that during some kind of maintenance or application upgrade, some indexes were dropped and then recreated and rebuilt, and the NO.NULLS option was forgotten.

### Second Principle

We can now state our second principle of using UniVerse indexes:

“Always use the NO.NULLS option when creating indexes unless you have carefully considered the potential size of the NULL Index and can truly justify it.”

### Next time

In the next issue, we will explore indexing on a multivalued field and indexes using an I-descriptor, including indexing the results of a TRANSLATE. [is](#)

---

**CLIFTON OLIVER** brings over three decades of in-depth experience to his work in the information industry. His expertise includes project management and facilitation, technology management, application development, data warehousing, and strategic planning for information services. In addition to being a Certified Computer Professional, he is also well known as an instructor, speaker, and author for both technical and managerial audiences. As a result of his experience with platforms utilizing a variety of programming languages, operating systems, and databases, he is well suited to help his clients identify, evaluate, and implement effective solutions for a variety of problems and opportunities.

## Why Programmers Should Plan *Continued from page 13*

The Straw Man is a term used for a military practice dummy. It is something that can be cobbled together quickly, ripped to pieces, and remade as needed. My Straw Man is the meeting notes. Publish the notes in summary to all parties and tell them that you aren't positive you have it all right in your notes, i.e., ask them to rip it apart. Most people can't write a top flight IT project specification. Almost anyone can point at your notes and say, "Line three is wrong. We never sell single units."

Once the Straw Man has been savaged—perhaps in more than one go-round—you can build your plan. The neat thing is, you have done very little work at this point. You sent one e-mail after sitting in one meeting. Instead of taking the entire project—win or lose—on to your shoulders, you have a group doing the bulk of the functional specification for you. You have people starting to feel connected to the project. You have some people besides you who see a success as their success. This will make them more helpful when we need to test or revise later. After all, it isn't your project, it's everyone's project.

With your plan in hand, knowing it may have to be altered as you go, you have a chance at producing what the users want on the first try. You've done it with a small expenditure of effort, and you've built up a lot of goodwill.

In the next installment, we'll look at planning tools, like flowcharts, pseudo-code, and RAD. [is](#)



**CHARLES BAROUCH** is the CTO for Key Ally, Inc. He is also Past President of the U2UG and a regular Spectrum Magazine contributor.

**CHARLES BAROUCH** Results@KeyAlly.com  
Consulting: (718) 762-3884x1

## Clif Notes

*Continued from page 46*

As you work your plan throughout the week, keep records. Write them down. At a minimum, make an entry each day for each of your published goals. You will be documenting your results (goals achieved). This is the most important thing in this discussion. Later, if you are so inclined, you can add more detail to your records about how long you worked on what so you have something upon which to base future estimates when you are asked how long you think it will take to make some modification.

At the end of the week, write a summary of which goals were achieved, which ones were partially completed and how much was accomplished, and what unplanned situations were handled, like those broken files from the system crash. Again, e-mail it to your boss.

By doing this, or some variation of it, you are making your results as visible as the hours you work. It clearly demonstrates that you produce as many, or more, results as the next person, even on those days you leave at five o'clock sharp because it is your turn to pick up the kids. It establishes your reputation as a planner, someone who is always using their head by thinking ahead. And, in the long term, it will teach you a lot about your own "personal software process" and reveal ways in which you can create even more results without working longer or harder.

What it won't do, however, is give you a way to keep some of your co-workers from wanting to lynch you when the boss starts walking around to their cubicles asking, "Yes, but what did you accomplish last week?"

For that you will just have to depend on your charm—or the photos from the office Christmas party two years ago. [is](#)

# FREE SUBSCRIPTION

**Subscribe on-line at  
www.intl-spectrum.com  
or  
fax this form to (603) 250-0664  
and keep Spectrum magazines  
coming FREE for 1 year!!**

NAME \_\_\_\_\_ TITLE \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

PHONE \_\_\_\_\_ FAX \_\_\_\_\_

E-MAIL \_\_\_\_\_ WEB SITE \_\_\_\_\_

SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

(All questions must be answered. Incomplete forms will not be processed. Complimentary subscriptions are limited to U.S. addresses.)

**1. What is your job function/title?**

- |   |   |
|---|---|
| <input type="checkbox"/> Principal/Owner      | <input type="checkbox"/> Sales/Marketing    |
| <input type="checkbox"/> President/GM/CEO     | <input type="checkbox"/> Programmer/Analyst |
| <input type="checkbox"/> MIS/DP Manager       | <input type="checkbox"/> Purchasing         |
| <input type="checkbox"/> Controller/Financial | <input type="checkbox"/> Consultant         |
| <input type="checkbox"/> VP/Department Head   | <input type="checkbox"/> Other _____        |

**2. Is your company a (check one):**

- |   |   |   |
|---|---|---|
| <input type="checkbox"/> Computer System Supplier | <input type="checkbox"/> Dealer/OEM/VAR | <input type="checkbox"/> Software House |
| <input type="checkbox"/> Consultant               | <input type="checkbox"/> End User       | <input type="checkbox"/> Other _____    |

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

- |                                |  |                                   |                                      |
|--------------------------------|--|-----------------------------------|--------------------------------------|
| <input type="checkbox"/> D3    | <input type="checkbox"/> Native MultiValue | <input type="checkbox"/> Reality  | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> jBASE | <input type="checkbox"/> uniData           | <input type="checkbox"/> UniVerse | <input type="checkbox"/> uniVision   |

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

- |  |                                    |   |                                 |
|--|------------------------------------|---|---------------------------------|
| <input type="checkbox"/> Accounting      | <input type="checkbox"/> Medical   | <input type="checkbox"/> Direct Marketing | <input type="checkbox"/> Legal  |
| <input type="checkbox"/> Banking/Finance | <input type="checkbox"/> Dental    | <input type="checkbox"/> Construction     | <input type="checkbox"/> Retail |
| <input type="checkbox"/> Education       | <input type="checkbox"/> Insurance | <input type="checkbox"/> Other _____      |                                 |

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

- |   |  |
|---|--|
| <input type="checkbox"/> Under \$500,000                    | <input type="checkbox"/> \$500,000 - \$1 million           |
| <input type="checkbox"/> Over \$1 million - \$5 million     | <input type="checkbox"/> Over \$5 million - \$10 million   |
| <input type="checkbox"/> Over \$10 million - \$25 million   | <input type="checkbox"/> Over \$25 million - \$100 million |
| <input type="checkbox"/> Over \$100 million - \$500 million | <input type="checkbox"/> Over \$500 million                |

IS 3/08

## Clif Notes

*Continued from page 47*

What is her reaction? I mean, the one after the period of stoney silence.

You see? She doesn't care that you stayed up all night logged into the system.

So what do people care about? Results. Plain and simple. In that last example, your boss didn't care that you stayed up all night because you didn't accomplish anything. You produced zero results (other than calling your sanity into question). She didn't care that you stayed up all night a few weeks ago fixing a slew of broken files after a system crash, although even she might think she did. She cared about the fact that you fixed them. Fixed files were the results. After all, telling her, "Let 'em stay broken until I wake up in the morning and have breakfast," wasn't really an option, now was it? That is not to say that a "thank you" or a "take tomorrow off" isn't appropriate and appreciated. But when the RIF (Reduction In Force) comes, the hardest working workers are not always the ones who make the cut. Assuming astute management, it will be the people who consistently produce the most and best results.

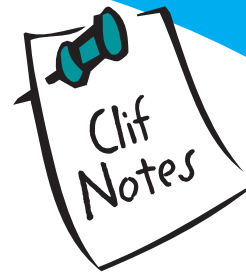
The key is visibility. We delude ourselves into thinking that working long hours counts because it is visible. People see you in your cubical at 7:30 AM. They still see you there at 7:30 PM. Yet, results are harder to see. How do they know that you came in at eight, worked until five, and produced 30% more results than other employees working seven to seven? You have to tell them.

How about this idea? At the first of each week, establish a set of goals of what you want to accomplish that week and how you plan to do it. Write them down. E-mail it to your boss. Not only does it show him that you are someone who looks ahead and plans rather than just coming into work and reacting, but it gives him an opportunity to adjust your priorities. This is a good thing. Come RIF time, you'll be one of the ones remembered as "always seems to know what I want."

*Continues on page 45*

# So? Who cares?

B Y C L I F T O N O L I V E R



**It was a rough week. You put in four 14-hour days, eight hours on Friday, then got called at 2:00 AM Saturday morning. You worked on the system recovering from an aborted nighttime run until 8:00 AM on Saturday. In all, a 70-hour week with no extra pay for overtime. After all, you're salaried. No comp time either, at least not officially. This kind of week is also not that unusual in your shop. It seems to happen more and more often. You wouldn't mind so much if they were the exception, but the last time you can remember working a 40-hour week was the three-day week before last Thanksgiving, and that was only because you took one of your "floating holidays" to have the Friday after off. And guess what?**

Nobody cares how hard you work.

You work on a conversion to move a MultiValue application from one platform to another. Unfortunately, an uncontrolled salesman at the VAR promised the customer that since the old system and the new system are both "Pick," it was simply a matter of copying everything over and recompiling all the programs. Piece of cake.

Of course, when you and your other team members get into it, you find that the application not only plays every trick in the book with the spooler interface, which the new system does not have, but one of the modules is

heavily dependent on Runoff, which the new system also does not have. Then you find that apparently some idiot found an old copy of the Green Book, figured out how to use the old Batch processor, and the application utilities are riddled with B/ADD verbs and batch strings. Of course, not only does the new system not support this, but you don't even have a copy of the Green Book to help in figuring out what this stuff is doing so you can rewrite it in Basic.

Then, add the fact that the customer was promised the go-live would happen during a three-day holiday weekend, six weeks from now. The entire

team is now frantically working from seven in the morning until nine or ten at night, including weekends, to meet that deadline. And guess what?

Nobody cares how hard you work.

In the words of the old Hoyt Axton song, you work your fingers to the bone and what do you get? Boney fingers.

The fact that nobody cares how hard you work might make you sad, angry, or depressed. It may not seem right, just, or moral. It may make you want to cry, shout, or hunt down the guy with the Green Book and hurt him. But change? I doubt the situation is going to change.

"But Clif," I hear you say. "My boss really does care. She tells me how my hard work is appreciated, how much it helps the company, and how I have her undying gratitude." You may believe that. I imagine she even believes that. But is it true? Try the following.

One morning next week, call the office early and tell her you won't be in until around noon because you were up all night monitoring the system processes. When she asks why, tell her you wanted to make sure HP/UX didn't have a hidden root-privilege process in it that ran nightly, copied all of your company confidential data, and then transmitted it to the Air Force to be beamed to a waiting cyber-repository in the vicinity of Proxima Centauri.

*Continues on page 46*

**“To get that information just type –**

```
SORT CUSTOMER.MASTER BY CUST.NAME WITH SALESMAN = "JKL" '  
CUST.NBR CUST.NAME CREDIT.LIMIT OPEN.BAL ID.SUPP  
LPTR HEADING "CUSTOMER CREDIT LIMIT REPORT 'D' 'L' "
```

**or I could just build it for you.”**



**Technical staff and users don't always speak the same language.  
Look to **MITS** for Advanced Reporting and Business  
Intelligence solutions to **bridge the language barrier.****

Management Information Tools, Inc. is the leading developer of Advanced Reporting and Business Intelligence tools for the MultiValue database market. Our products provide self-serve reporting solutions via an intuitive browser based interface and are used by hundreds of end-user organizations, resellers, and systems integrators worldwide.