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**TORONTO USERS GROUP for Midrange Systems**

January 2005: Vol. 20 No. 3



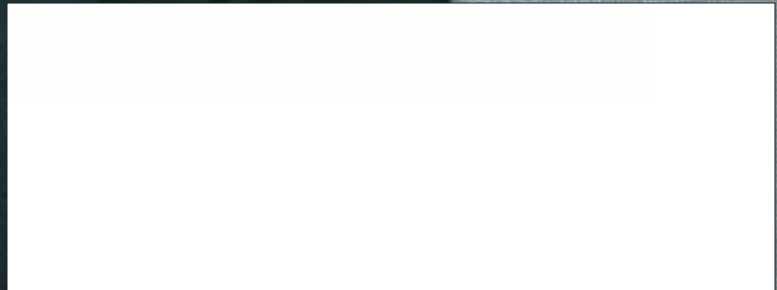
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***January 19  
TUG MoM Speakers:  
Richard Dolewski and  
John Still***

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Our January 19 Meeting of Members will return to the Travelodge, where Richard Dolewski and John Still are the featured speakers. See page 10 for topics.

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## 16 BOOK REVIEW: SQL TRICKS & TECHNIQUES FOR iSERIES

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When purchasing this book, I was interested in several aspects of SQL. They were: performance, cursors, and stored procedures. On these topics, I did find information in a number of chapters but nothing very organized or coordinated...

## 18 PROJECT MANAGEMENT TALES

Δ *Debbie Gallagher*

(This month's PM Tale is entitled *Broken Telephone*.) "There was considerable concern among Acme management about the possibility of disclosure to the competitor of any data in the database. To alleviate management's concern, the Acme project manager decided to act as the communication channel..."

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Modernizing Security and Recoverability – The iSeries legendary hardware and software reliability is so good that many CEO's and other senior managers outside IT assume it will always be this way and no investment is required in operational environment and processes...

## 23 ARE YOU CERTIFIABLE? (or Just TECHnically Good at What You Do?)

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Managers are looking to hire the best staff that they can find, and the applicant who has a certification in their area of expertise will get the attention...

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*Encoded Vector Indexes (EVI)*

EVI's were designed to assist in the performance of many SQL queries. They do not replace our traditional binary radix indexes, but are an additional method that the optimizer can use to implement a query.

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\* All articles are the views of the authors and do not necessarily reflect those of the TUG eServer magazine or of the Toronto Users Group for Midrange Systems.



## TUG eServer magazine

is a regular publication of the Toronto Users Group for Midrange Systems (TUG), and is distributed to members and industry associates six times per year. It contains updates on activities of the group, as well as articles from members and non-members, which are of general interest to the "eServer community." All rights reserved. Articles may be reprinted only with permission. Manuscripts should be submitted to the Editor via email. (See address below.)

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**Current Circulation: 4,800**

Canadian Publication mail agreement #40016335



### Publishing and Graphic Design

Eclipse Technologies Inc.  
416-622-8789  
[www.e-clipse.ca](http://www.e-clipse.ca)



AMANDA GRAPHICS LTD.

### Printing and Binding

Amanda Graphics Ltd.  
416-497-0500

### Clip Art

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### Cartoons

The 5th Wave  
by Rich Tennant  
(978) 546-2448



[www.the5thwave.com](http://www.the5thwave.com)

### Mailing

Grant's Mailing Services Inc.  
905-624-9082



Deadline for next issue:  
Friday, February 11, 2005



# President's Corner

By Léo Lefebvre,  
President, Toronto Users Group for Midrange Systems



Léo Lefebvre

Well, 2004 has passed and we're already charging headlong into 2005. We had many good times last year and the coming year is promising to be even better!

## The Importance of Registration

The last TUG Meeting of Members in 2004 was certainly a great success. For the first time in years we had to tell people we could not take their reservation because we had reached our limit. We even had to turn people away at the door because they had not registered in advance. It's unfortunate for the attendees who missed our great line-up of topics, but I have to admit that it does feel good to get a blow-out turnout! By the way, you can see some pictures of that meeting in this magazine. And, if you want to see more, go to the TUG web site: [www.tug.ca](http://www.tug.ca) and follow the "Photo Gallery" link.

That brings me to the importance of pre-registration. As any other group, when we make our reservation for a meeting room at the hotel or other location, we have to figure out how many people will be attending the meeting, in order to get the right-sized room – and in TUG's case, the proper amount of food. A right-sized room is essential to be able to seat all of the people at the meeting, but we also do not want to get an over-sized room where people would feel "lost."


Price is a consideration, too. A bigger room means a bigger price tag. Food-wise, it is also very important to get the right amount for people at the meeting. Not enough food leaves attendees hungry. Too much food goes to waste. In this case, waste is on two levels: spoiled food (not too smart in a society where many people don't have enough to eat) and "spoiled money" (not too smart for a non-profit users group). Wherever we meet, we have to give the catering group the number of people we are expecting, so that they can prepare the right amount of food. We are charged for whatever number we declare.

We always have a target number when we reserve the room and we adjust it with the registrations received. Normally, we have to firm up our numbers two to three days prior to the event, and that number is the number we are charged for. That's why your registration is important and your presence at the meeting is also important. I guess, for our last meeting at Woodbine Racetrack, all the numbers were right.

## Any suggestions?

To attract members to meetings, we have to present topics that you want to see and hear about. Obviously, we do have choices in topics and speakers but we are still unsure how well the group will respond. So, If you have any topics you want to see and/or speakers to suggest, don't hesitate let me know. I am always open to new ideas. Contact me at [leo@tug.ca](mailto:leo@tug.ca).

Maybe that speaker is you! Let's get in touch and let's see what TUG can do for you, (or better still, what you can do for TUG and its members.) Perhaps you would like to "volunteer" someone else to present a session. That could be done as well, as in the case of our speaker on HMC (Hardware Management Console) on January 19, 2004 – **John Still**.

Do you have suggestions for venue(s)? Let us know if you can recommend a good place to meet, where the rent is reasonable, the food is good, with easy access, and free parking (if possible). In the meantime, best wishes for a great year 2005! See you often at TUG's meetings (and other places) and don't forget to register early. 

## The 5th Wave

By Rich Tennant



"Did you click 'HELP' on the MSN.com menu bar recently? It's Mr. Gates. He wants to know if everything's alright."

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# – TUG MoM Review –

## The November 2004 Meeting of Members

By Stephen Bingham

Anyone who bet that **Guy Vig** would be speaking to a packed house on November 17<sup>th</sup> would have had money in the bank. In the time that I have been attending the TUG Meeting of Members, this is the first time that I have ever heard of people being turned away at the door, because there was not enough room for them.

### Matinee Session

Our event started shortly after 5:00 p.m. with our president **Léo Lefebvre** introducing our guest speaker, Guy Vig, Senior Software Engineer from Rochester, MN (home of the i5). Guy's first presentation of the evening was the new, "CL Documentation Enhancements in V5R3".

Using the Information Center to demonstrate, Guy pointed out that up until V5R2, the help text for each CL command required two files. The first was for the help text itself, and the second for the syntax diagram. In addition, many CL commands for licensed products were not available. Documenting changes to CL commands had been a developer's nightmare, as they attempted to keep three sets of documentation in synch. To boot, each set of documentation was in a different format, requiring its own unique language tag (UIM, SGML, and HTML).

### Enter V5R3 and the new information center.

- The V5R3 information center will only have 1 file per command.
- All CL commands for each licensed product starting with product ID 5722 are included.
- The ability to find CL command by product has been added.

The V5R3 Information Center has the same familiar feel as previous ver-



Stephen Bingham

Photos by Léo Lefebvre



Guy Vig





Léo Lefebvre

### Guy Vig

sions, but has been enhanced with links to major sections contained within the same file. All text from the online help is included. What does this mean for you, the end user? Whether you use iSeries Navigator, iSeries Access for the Web or Remote System Explorer, all of the online help will be identical.

Guy then walked us through the basics of creating help text for your own commands using a tag language called UIM. This is an effective tool for documentation purposes, and could help to avoid some of those late night phone calls and get your programmers off the proverbial helpdesk.

V5R3 also brings us the GENCMD-DOC command. This command uses information from the \*CMD and help text (\*PNLGRP) to build an html document which can be posted on the web or imbedded in a Word document. This, in combination with the new chapter 10 of the “CL Programming” book will make adding online help to your own commands a much simpler task than in the past.

For a more detailed explanation of the UIM language and some examples, see the link to the TUG website, below.

### Intermission

After everyone had taken their fill at Woodbine’s world famous buffet, we were back to work with a little user group business. Léo had the pleasure of introducing the recently elected President of the COMMON user group, **Beverley Russell**. Beverley is the first Canadian and only the second woman to ever be elected President of COMMON.

All those in attendance received a special gift: A TUG user group collectable lapel pin.

**Glenn Gundermann**, the TEC Chair, provided an update on our 12<sup>th</sup> annual

conference, coming up in April. Glenn asked the TEC committee to join him at the front of the room. We have been hard at work planning this year’s conference and once again we are adding new features to this must-attend event. The lab sessions at IBM have been expanded to 4 this year. We are also working to bring you the opportunity to write an IBM certification exam on-site at TEC, at no cost.

We were fortunate to have been the recipient of two COMMON backpacks. The first was given away as a reward for signing up for TEC. The second will be given away in January. Remember, you can’t win if you don’t attend the MoM.

### Evening Session

With local business out of the way, we cleared the stage once again for Guy Vig’s second session of the evening, “CL Compiler Enhancements”. With each new release of OS/400, IBM modifies existing commands and adds new ones. In V5R3, IBM modified 247 commands and added 57 new commands. As a side note, there are now over 1500 OS/400 commands and an additional 2000 commands for licensed products.

There were also some enhancements for the programmers. These enhancements include the introduction of DO loop commands in multiple flavors: DOWILE, DOUNTIL and DOFOR. There is support for nesting up to 25 levels of DOXXXX loops. To combat the problem of the never ending loop, IBM has provided two new commands: LEAVE and ITERATE.

- **LEAVE** passes control to the next CL statement following the loop ENDDO.
- **ITERATE** passes control to the end of the loop and tests the exit condition of the loop.



Alena Sabo

TEC team members: Léo Lefebvre, Vaughn Dragland, Wende Boddy, Bohdan (Chili Bob) Lesiw, and Jay Burford

Both LEAVE and ITERATE allow for the ability to jump out of multiple nested loops, but default to \*CURRENT. Your CL program will also now allow for up to 5 instances of the DCLF command. These instances can be for the same or different files.

V5R3 is the biggest release for the CL Compile since ILE CL compiler in V3R1 and has the most new commands since the System/38. The CL develop-




Guy Vig with Léo Lefebvre and Alena Sabo

The only exception to this rule is the multiple DCLF commands.

It is the intention of the CL development team to keep bringing enhancements to you, the iSeries customer, but they need your feed back. If there is something you would like CL to do, let them know.

Guy wrapped up his presentation on CL Enhancements by providing a glimpse into the future. Here is a list of

For a copy of Guy Vig's presentation, please visit our website [www.tug.ca](http://www.tug.ca), and click the link: **DOWNLOADS**. Both of Guy's presentations are available in PDF format. See you in January at the Travelodge Hotel! 



Léo Lefebvre

ment team in Rochester realizes that not every system in your company may be upgraded to V5R3 at the same time. With this in mind they have released a series of PTF's to enable developers to use the enhanced features of the V5R3 compiler on systems running V5R2.

some of the things that we might see in future releases.

- CL Subroutines.
- Pointer CL variables.
- Longer CL variable names.
- Single dimensional arrays.

**Stephen Bingham** is the TUG Secretary and works for CGI as an iSeries Technical Analyst. He can be reached at 905-821-2252 ext. 7866, or [stephen.bingham@cgi.com](mailto:stephen.bingham@cgi.com)



TEC team members: Glenn Gundermann, Stephen Quan, Ed Jowett, Jerry Dmytraz, Alkarim Sachedina, and Stephen Bingham

Alena Sabo



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# THE AGENDA for our next Meeting of Members

## Wednesday, January 19, 2005

**LOCATION: Travelodge (@ Highway 401 & Keele)**

### 5:00pm: Session 1 – Installing V5R3 on iSeries

#### Speaker: Richard Dolewski



**Abstract:** This session covers all the steps in moving your iSeries operating system from one release to the next. Learn and understand what needs to be done on your system prior to upgrading your system. The installation process for V5R3 has changed. Understand the differences so your OS upgrade goes smooth and you are up for business Monday morning. Systems preparation and the technical procedures will be reviewed to ensure a successful implementation. OS level V5R2 will also be covered.

**Biography:** Richard Dolewski is a certified systems integration specialist and disaster recovery planner. As VP of Systems Integration and Contingency Services at Mid-Range Technical Services, he has extensive experience in disaster recovery planning, backup & recovery program design, and server consolidation. Richard has implemented a variety of iSeries solutions for customers in Canada, the U.S., and Mexico. He has supported multiple computer room disasters, and has conducted over 150 disaster recovery tests. Richard is the past president of the Toronto Users Group for Mid-Range Systems (TUG) and is a frequent speaker at technical conferences, including IBM, COMMON, PeopleSoft, Help Systems and IBM Executive Series. Winner of the “Best New Speaker Award” at the COMMON conference in New Orleans and “Best Conference Speaker” at COMMON Mexico, Richard holds 10 COMMON Bronze medals and a Silver Medal. [Note: Richard’s presentation at the upcoming TUG MoM is one of those award winners.]

### 6:00 pm Intermission **TUG Meeting of Members (MoM)**



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### 7:00pm: Session 2 – The New Console on the Block

#### Speaker: John Still

**Abstract:** When IBM announced the new i5 systems this year, they also introduced the Hardware Management Console. We’ve come a long way from the old twinax and PC Operations Consoles. The HMC is packed full of features and this session will highlight them all. You will learn how to get the HMC set up and connected to the i5. You will also see how the HMC can be configured to allow WebSM, Telnet, and Secure Shell connections, which provide a full range of remote console capabilities.

**Biography:** John Still is the Director of Technology & Systems Integration with Mid-Range. Since 1984, John has been involved specifically in the IBM 3X, AS400, and iSeries implementations throughout North America. John is a server consolidation specialist who has extensive knowledge of both the IBM software and the hardware architecture. John has performed successfully hundreds of hardware implementations, system migrations, disaster recovery tests supported several disaster declarations for customers throughout North America and Mexico. He is an IBM eServer iSeries Certified Specialist in Technical Solutions Design and was also one of the first students to attend the iSeries Logical Partition (LPAR) Concepts and Implementation course at IBM’s facilities in Rochester, MN. He has been a key player in numerous LPAR projects providing planning, installation, and configuration services as well as classroom instruction.



**What topics would you like to see in future? Drop us a line with your suggestions at: [leo@tug.ca](mailto:leo@tug.ca)**



# Hardware Management Console (HMC) – An Introduction

By John Still

This year, I had all the windows in my house replaced. The windows that were originally installed by the builder were scratched and faded, the wood frames were rotting, and the insulation factor was next to nothing. It was time for an upgrade... Time to take advantage of the newer materials, better security, and increased insulation factor found in today's windows.

The console on your AS/400, iSeries, or i5 system is the most important window in your I.T. environment. The system console can do things no other terminal connected to your system can do. Have you thought much about your console lately? Is this all-important window due for an upgrade?

The work that I do quite often requires putting the system into a restricted state. Hence, when I visit computer rooms, I am led to the system console. More often than not, this is a 10-year-old twinax terminal with the sign on screen burned into the glass and a bunch of key caps missing. The images on the screen are out of focus and the brightness knob has long ago lost its ability to shed some light on the subject. A lot of these shops have come from System/36 or System/38, to AS/400, to iSeries (with a few upgrades in between). The system console usually survives these upgrades and is just simply plugged into the new system. It is typically over looked.

It's time to take a look at what's new. With IBM's announcement of the new Power5-based eServer i5 systems came the introduction of the Hardware Management Console or HMC. But before we get into all the features that are included with this new device, let's have a brief look at its pedigree.

I'm sure many of you remember the System/38. The powerful predecessor of the AS/400 had one feature that stood out... the console and keyboard were built right into the system unit. (See **Figure 1**.)

For the System 36, IBM engineers decided to set the console free but 20 feet was the limit they put on how far it could roam from the system. Customers now had a choice of a handful of 5250 display stations to choose from. One of my favorites was the 5251 Model 011 (all 40 pounds of it!). I loved the way the keyboard would click and buzz at you. (See **Figure 2**.)

When the AS/400 was introduced in 1988, two types of consoles were offered – ASCII or Twinaxial. I never saw an AS/400 with an ASCII console... Twinax was the reigning champion. Over time, IBM would enhance their lineup of 5250 display stations to include such features as multi-session and 132 column capabilities.

As personal Computers became more popular in the workplace, IBM came out with 5250 emulation cards. By installing one of these cards in a PC, you could open 5250 sessions and also turn your PC into a system console. All you had to



**Figure 2. IBM 5251**



**Figure 1. IBM System/38 console**

do was to make sure you were connected to port 0 on the first workstation controller and that your address was set to 0.

With Client Access came PC Console and, as Client Access became iSeries Access, PC Console grew into Operations Console. Your options for system console connectivity now included:

- A direct attached PC connected from a communication card on the iSeries to a serial port on the PC. With an optional remote control panel cable, you could get a GUI version of the iSeries control panel.
- LAN Console – a PC connected to a LAN via TCP/IP. If you could PING the iSeries from your PC, you could become the system console. This required a dedicated Ethernet card in the iSeries.
- The good old twinax terminal (or a PC with a 5250 emulation card).

In my travels, twinax terminals are still the most common followed by PC Operations Console and then LAN Console. LAN Console provides the most features, most importantly is its ability to provide full console capability remotely. It can be tricky to configure and troubleshoot and a lot of shops that use LAN Console usually have a backup twinax or direct attached Operations Console.

Enough of the history already! Let's take a look at the newest addition to the console family...

The HMC is actually not a new device. It has been a part of the pSeries world since 2002. With the convergence of the pSeries and the iSeries line becoming more of a reality, it was only a matter of time before the HMC would move into the iSeries world.



Figure 3. IBM 7315-C03

Officially, it is called the IBM Hardware Management Console. It is a LINUX based PC (xSeries) appliance designed specifically for the eServer Power5. Currently, there are two models available. The 7315-C03 (Figure 3) is a desktop model and the 7315-CR2 (Figure 4) is a rack-mounted model. Both of these models come pre-loaded and are closed and dedicated... unlike earlier PC Consoles, you cannot load any other software on them. Minimum HMC configuration includes 1gb memory, 40gb Disk, DVD-RAM, 10/100/1000Mbps Ethernet port, internal modem, diskette drive etc. The rack-mounted HMC comes with two Ethernet cards, the desktop HMC comes with one. I would recommend adding a second optional Ethernet card to the desktop model (more on this later).

The i5 systems require an HMC for LPAR configuration and management as well as managing Capacity on Demand (CoD). Operations consoles or twinax consoles will not be able to handle these functions. Also, some service functions will be more easily handled through an HMC. If you disconnect the HMC from your i5 system, the i5 and any configured partitions

will continue to run as normal because the partition configuration is also stored in NVRAM on the i5, you just can't perform any LPAR or CoD functions. A second backup HMC can be installed if you want full redundancy. If you are not using LPAR or CoD, then an HMC is not needed however I would argue that the features the HMC provides would be worth considering anyway.

When you power up the HMC for the first time, it will automatically launch a guided setup wizard. This wizard will help you to configure the Ethernet ports, user IDs and passwords, service contact information, Service Agent settings, and security among other things. The IBM Information Center provides planning worksheets that you can fill out ahead of time to make this step a little easier.



Figure 4. IBM 7315-CR2

The next step is to connect the HMC to your Managed System (the i5). Connection from the HMC to the Managed System is made by means of a private network. The first Ethernet port on the HMC is connected to the HMC1 port on the i5. When the guided setup wizard was run earlier, this port would have been configured so that the HMC was flagged as a DHCP server and the i5 as a DHCP client. As soon as the i5 is plugged in to a power receptacle, the service processor begins to power up. The HMC assigns an IP address to the MS and the connection between the two is complete.

Optionally, the second Ethernet port on the HMC can be configured for open network connection. This provides VPN connection to IBM for service functions and also gives you the ability for remote console capability using WebSM from a web browser or by TELNET into the HMC. You can use a secure shell (SSH) connection directly to the HMC as well. When you log in, you are given a restricted shell. Most partition management commands can be executed using this restricted shell command line. So if you're inclined to type commands like `lshwres - m "managed system" -r proc -- level sys` rather than use the HMC application GUI, you can.

The HMC has its own firewall that can be used in conjunction with your own network firewall. In addition, System Manager Security is an application on the HMC that can be used to set up SSL between the HMC and its clients and to also generate keys and certificates. (See Figure 5.)

When the HMC is powered up, you are presented with the HMC application GUI. (See Figure 6.) The navigation pane on the left provides a view of the Managed Environment and the applications available to you. The applications can be expanded

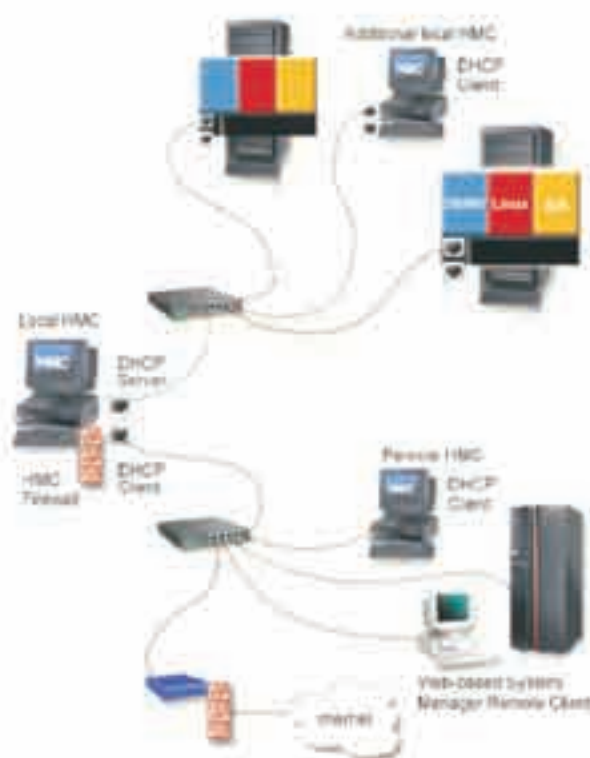


Figure 5. HMC Firewall and SSL

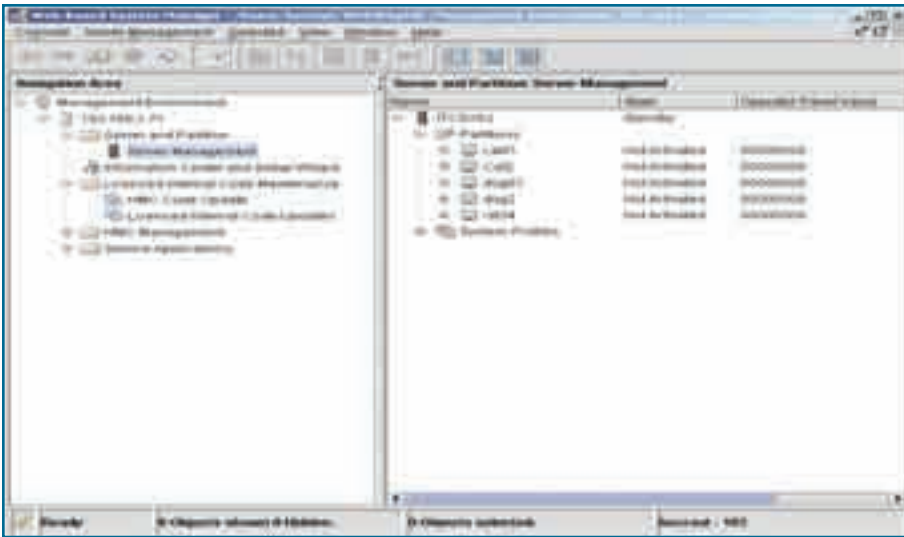


Figure 6. HMC application GUI

or contracted depending on the detail required. The content window on the right will display the specific application that is selected from the navigation pane. Across the top, the menu bar lists options such as Console, Host, Selected, View, Window, and Help. Depending on the application selected in the navigation pane, the menu bar will present options specific to that application. There is a status bar with five segments across the bottom of the HMC interface. The first segment contains an open or closed lock, which indicates whether the systems management security has been configured on the HMC. The second segment contains the state of the HMC, the third and fourth segments contain information on what is being viewed, and the last segment shows the account you used to log in to the HMC.


From the application GUI, you can start and stop the i5, create and manage partitions, start 5250 console sessions, work with CoD, download fixes, install new versions of HMC code, perform service functions, and much more.

The HMC can be backed up directly to its DVD drive or the backup can be sent by FTP to another server. Backups can also be scheduled. Typically, you would want to back up the HMC before updating its code level. Anytime you make configuration changes to the HMC, it's always a good idea to run a backup as well.

For those of you that have recently installed an HMC or if any of you are looking at upgrading to an i5 system, IBM has provided an excellent on-line course entitled "How to Use the Hardware Management Console for

POWER5 Systems". Go to the following URL and log in with your IBM user ID and password. If you do not already have an IBM user ID, you can register at this site as well:

<http://www-1.ibm.com/servers/resourcelink/svc03100.nsf?OpenDatabase>

The HMC and the i5 are a great fit. If an i5 is on the horizon for you and you plan to use LPAR and/or CoD, the HMC is going to provide all the tools you need to manage these environments and more. If LPAR and CoD were not part of your i5 plans, I would still consider putting the old twinax console away and making the HMC your console of choice. 

*John Still is the Director of Technology & Systems Integration with Mid-Range Computer Group Inc. He can be reached at 905-940-1814 or via email at [johns@midrange.ca](mailto:johns@midrange.ca).*



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# “SQL Tricks & Techniques for iSeries 400” Where’s the Beef?

Book Review by Thibault Dambrine

Like many former AS/400 – now iSeries – programmers, my background is well rooted in the RPG language. Recently, I took a new job where SQL/400 is the language of choice. Coming from a traditional RPG and CL background, using SQL for most tasks on the iSeries is great although it does take some getting used to.

Using SQL on large databases, one learns quickly that SQL is not only about syntax but also about performance. Often the same results can be achieved with more than one technique. Working with SQL, one quickly learns that it is surprisingly easy to produce code that works for a small sample but does not scale well with larger amounts of data. In many ways, SQL is a tool where one learns a lot from experience.

Like any other specialized field, the iSeries market has its recognized experts, its centers of knowledge, and its books that some like to refer to as “bibles”. I have heard **Skip Marchesani** at COMMON conference once and was very impressed with his presentation and knowledge of the iSeries database. On the strength of his name, I purchased *SQL Tricks & Techniques for iSeries 400* from iSeries 400 Experts through the Web. The web page stated “Tackle your toughest challenges with...” next to a picture of the book cover with the CD in front of it.

The price was steep at \$199.00 US, but can you put a price on time? If there were anything I could learn to write better performing code, it would all be worthwhile.

Here are my impressions:

## At a Glance

*SQL Tricks & Techniques for iSeries 400* contains only 171 pages, not including the “About the Experts” bio page, a few ads at the back of the book, and the CD that comes with it. At the spine, the book is about 1 cm thick and it has the feel of something that one could put together at a photocopy shop. I understand that this comment may sound irrelevant. Let me remind you of the price I paid here – \$199.00 US. When was the last time you spent that much cash from your own pocket on a book? Let’s just say I had high expectations – all the way down to the presentation. If the content was more impressive, I would not have mentioned this detail.

## Figure 1. Topics sorted by Author:

Create and manage database objects with SQL, Part I	By Skip Marchesani
Create and manage database objects using SQL, Part II	By Skip Marchesani
How to change physical files on the fly	By Skip Marchesani
Identify duplicate rows with SQL inner join	By Skip Marchesani
Learn how to Count with SQL	By Skip Marchesani
Learning SQL: AS/400 database management tool of the future, Part I	By Skip Marchesani
Learning SQL: AS/400 database management tool of the future, Part II	By Skip Marchesani
Learning SQL: AS/400 database management tool of the future, Part III	By Skip Marchesani
Learning SQL: AS/400 database management tool of the future, Part IV	By Skip Marchesani
Leverage the power of the SQL-based tool Query Manager to ease end user apps	By Skip Marchesani
New V5R1 enhancements trigger DB2 functionality	By Skip Marchesani
Query Manager: SQL powered queries	By Skip Marchesani
Save time with SQL Subquery and subselect, Part I	By Skip Marchesani
Save time with SQL Subquery and Subselect, Part II	By Skip Marchesani
Save time with SQL tricks and techniques: Use characters to edit a numeric field	By Skip Marchesani
Search by sound: The SOUNDEX function	By Skip Marchesani
A home-grown SQL BindRow function makes the SQL CLI APIs easy to use	By Ron Turull
Embedded SQL programming without SQL/400 – A working example	By Ron Turull
Getting data off your iSeries	By Ron Turull
Hidden treasure – SQL Call Level Interface APIs lets you do embedded SQL	By Ron Turull
Jazzing up SQL-generated tables in Net.Data	By Ron Turull
SQL enhancement set for DB2 with V5R2	By Rizal Ahmed
Java Database connectivity delivers AS/400 data for e-business	By Jim Mason
Simplify iSeries access with user-defined functions	By Howard F. Arner
Reuse code and boost performance with Stored Procedures	By Howard F. Arner



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iSeries 400 Experts

The book lists five authors: **Skip Marchesani, Howard F. Arner, Jr., Jim Mason, Craig Pelkie** and **Ron Turull**. All five have impressive biographies and I can personally vouch for Mr. Marchesani's skills as a valuable and informative content speaker.

It comes with a CD, which contains a copy of the book, including the source code. You can install the contents of the

CD on a network directory and share the information quite conveniently. I would encourage all publishers of technical material to include such a content/code CD with their books.

### The Material

As one who is already coding with SQL, one of the first things I looked for in this manual was an index, in order to see what topics were available. As it is, the book has a table of contents with descriptive titles (Figure 1) but no index. Although they did provide a CD which can be searched with Windows Explorer, the index is a big omission.

Rather than attempting to be a conventional manual, this book is really an anthology, a collection of articles, each exploring a different aspect of SQL and DB2 on iSeries. As such, they each have limited scope and depth. There are 26 articles, 16 of them written by Skip Marchesani. There is no reference to where or when these articles may have been published before. The topics explored in each chapter are all interesting on their own. (See **Figure 1**, for a list sorted by author.)

“Getting data off your iSeries”, the choice for the first article in this “in-depth” SQL book is interesting. It discusses the use of FTP and Client Access – nothing to do with SQL! One wonders what this article is doing there, and as a first chapter to boot.

The next four chapters are about learning SQL: “AS/400 database management tool of the future”, Part I to IV. Part I has a representative subtitle: “What is SQL and why should I use it?” My understanding of “in-depth” and “Tricks and Techniques” implies some measure of advanced topics – hardly the place for wondering what SQL is all about.


Some of the other articles are a bit more interesting. The API, trigger and soundex are examples. There are also some real-life examples, such as the one identifying duplicate rows in a mailing list with SQL inner join, and editing numeric fields with characters by using casting functions.

When purchasing this book, I was interested in several aspects of SQL. They were: performance, cursors, and stored procedures. On these topics, I did find information in a number of chapters but nothing very organized or coordinated. In the absence of an index, to find where a topic may be explored, I needed to load the CD and use Explorer to scan the material for what I was searching.

### In Conclusion

I am all for paying for value, and was willing to bet that *SQL Tricks & Techniques for iSeries 400* would deliver. There is nothing wrong with any of the articles within the book. They are all very good. They remain however, a collection of articles. Not all of them are expert level or in-depth material or in one case even related to SQL. As such, the “in-depth” billing on the front of the book and the “Tackle your toughest challenges with...” on the seller's web page (<http://www.iseries400experts.com/ts4/8.jsp>) are, in my opinion, misleading.

Since this book did not do a great job as an advanced topic manual, one may ask “would it be a good introductory SQL book?” My answer is: “No.” There are many other manuals that are cheaper, provide more content and are more effectively organized than this one. As a point of comparison, the *SQL/400 Developer's Guide* by **Paul Conte** and **Mike Cravitz** for \$75.00 US is much more comprehensive and well organized.

After buying *SQL Tricks & Techniques for iSeries 400* I felt short-changed. All things considered, I would say that this book would be good and fair value at around \$29.00. Until the asking price comes back to Earth, I would advise against purchasing this book. 

*Thibault Dambrine* is an IT consultant. You can find his website and other articles at [www.tylogix.com](http://www.tylogix.com).



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# Project Management Tales – Broken Telephone

By Debbie Gallagher



Debbie Gallagher

*Each story in this series of Project Management Tales is true, but company names have been changed. Some stories occurred in Canada and others took place in the US or overseas.*

## Background

Acme Corporation, a large German financial institution, decided to eliminate its personal credit card business to focus on commercial customers. As a result, Acme agreed to sell its database of customer information to a competitor.

Standard Consulting was engaged to extract the customer data and transform it into a format that the competitor could load into its own system. The competitor was creating a new marketing database system, and had hired a team of developers to build it for them. The Acme project manager estimated that it would take Standard about four months to complete the work.

## The Situation

There was considerable concern among Acme management about the possibility of disclosure to the competitor of any data in the database beyond the specific customer data that had been sold. To alleviate management's concern, the Acme project manager decided to act as the communication channel between Standard and the competitor.

The consultants from Standard could not speak directly with the competitor or with the competitor's development firm. Instead, they directed their questions

by email to the project manager at Acme. Then the Acme project manager would obtain an answer from the competitor and direct it back to Standard. The communication process was cumbersome and time-consuming. Because the questions and answers were all exchanged by email, there was no opportunity to ensure that the receiving party completely understood the question being asked and as a result, it would sometimes not be answered satisfactorily. Follow up questions would be needed, and the process was repeated.

Because the competitor's marketing database was still being developed, the data requirements were still changing, resulting in changes to the extraction programs being built. Sometimes these changes were not communicated to Standard via Acme quickly enough, and as a result test migrations of data would fail.

In addition, the project manager had other responsibilities, so follow up of slow responses didn't occur as early as they should. The project ran late, but still the process continued. Some issues required significant analysis and discussion between Standard and Acme's competitor, but all of these took place via email through the Acme project manager.



## Action Taken

The project had now run for twelve months instead of four, and still it was not finished. Acme was concerned that it might be sued by the competitor for non-delivery of the customer data. The Acme project manager was replaced. The new project manager met with the Acme and Standard teams to develop a comprehensive list of outstanding tasks and the dates by which the tasks needed to be done.

In addition, she had brief team meetings every day. At the daily meeting, the tasks due that day were determined to have been completed or to have slipped. If a task had slipped, remedial action was taken immediately. Representatives of the competitor attended part of the meeting by phone, so that outstanding issues requiring their input could be resolved immediately.

## Epilogue

The project finished after sixteen months, a full twelve months longer than the original estimate of four months. Acme's competitor did successfully load the customer data into the new marketing database system, and Acme did avoid getting sued.

## Conclusion

The original time estimate for the work was much too low. The Acme project manager did not realize the impact on the timeline of having so many parties involved in the process. Those who have successfully delivered multi-party, multi-location projects are painfully aware of

### Dear Editor:

This is the end of my series. Many thanks to you and the TUG readers for allowing me space in the magazine for such a long time. I've really enjoyed the series, from interviewing project managers about their successes and failures, to hearing feedback from TUG readers.

Sincerely,  
Debbie Gallagher


how time-consuming the coordination effort is. Anything that can be resolved in an hour with one company involved can easily take ten hours with three parties involved. There is significant effort in the scheduling, discussion, resolution, and follow up for every issue. This data migration project had four parties: Acme; Standard; the competitor; and the competitor's development team. Dealing with multiple locations is also time-consuming, as the immediacy of face-to-face contact is lost. Sometimes, when the related team is not physically present, it is easier to forget to keep them up to date. This project had two locations, one with Acme and Standard, and another with the competitor and its development team.

The communication process designed by the original project manager was rigid. However, it could have been made workable by assigning that liaison role to someone else. Because the project manager had other responsibilities, the management of the communication process often fell to a lower priority and caused project delays.

The project manager should have considered placing a person to fulfill that analyst/communication role full time. That analyst should have been given the authority to speak with both parties by phone and in person, in addition to using email correspondence. This would have improved the response time for questions and issues considerably. It also would have reduced the number of times that emails went back and forth between parties who were trying to understand the issue well enough to get it resolved. Key hiring criteria for that analyst role would be verbal and written communication skills, organization, documentation (to capture decisions and agreements), and ability to prioritize issues.

The cost of that one additional person on the job would have been significantly less expensive than having Standard continue to re-work and wait for issue resolution from the competitor.

When it was clear that the project tasks and issues were not being completed on time, the new project manager did the right thing by ensuring very frequent

meetings to review completion status and follow up. The new project manager also brought the competitor to the status meetings, a step that helped immeasurably in getting issues resolved quickly. 

*Debbie Gallagher is a Manager at Deloitte, Toronto. She can be reached at (416) 643-8767 or [dgallagher@deloitte.ca](mailto:dgallagher@deloitte.ca).*

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[Debbie's previous "Project Management Tales" are available on her personal web site: [www.gallaghers.ca/debbie](http://www.gallaghers.ca/debbie).]



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# COMMUNICATING WITH SAM

## Modernizing Security and Recoverability



**Sam Johnston**

### Question:

**O**ur company has used the iSeries platform since the late 1980s. We have developed our own applications and maintained them. For many years our business has been relatively unchanged, while the iSeries has been very stable and thus application changes have been relatively few. However, we have recently consolidated multiple iSeries servers onto a logically partitioned machine and integrated a Windows application server. In the future we are looking at integrating Linux applications. The rate of change is increasing and we feel that we need to review our legacy applications to ensure we are following best practices in security and recoverability. We also want to make sure we have incorporated the latest enhancements in the operating system into our applications and operational processes. Our IT organization has never faced the prospect of such a dynamic environment, and is generally not well equipped to manage the potential pace of change. What can we do to ensure that we respond to the business needs without creating chaos?

### Answer:

**I**t is not uncommon to hear your scenario. Many companies have benefited from the iSeries legendary Hardware and Software reliability. This reliability is so good that many CEO's and other senior managers outside IT assume it will always be this way and no investment is required in the iSeries operational environment and processes. We know this is not true. The real issue is that IT systems are becoming more complex and more integral to business performance than ever before. This puts pressure on IT to achieve higher levels of application availability and reduce any planned or unplanned outages. However, there are limits to the improvements that can be achieved without significant investment in redundant hardware, OS, High Availability software, application enhancements, and of course operational processes.

Given that your applications have changed little for sometime, while your business has become increasingly dynamic, then clearly you are in need of a modernization project for both the applications and processes. The key success factors are not uncommon or different to any other project – appropriate investments in capital and resources, coupled with a strong executive sponsor to ensure cross-department synergy and co-operation. Assuming these factors are in place, tactically they will need to be supported

with a strong, flexible foundation for your software management strategy.

The first step is to ensure that you have well documented programming standards and processes in place. You will need an auditable process in place for code promotion to the production environment; that is complied with, understood and agreed upon by all Development, Production and Computer Operations staff.

This process would include documentation of the required steps used for development, testing, user acceptance and promotion to the Production environment within your company. You should also establish the security requirements for each step to ensure a smooth and timely transition to production.

Many companies have limited controls over development that are often not effective due to the lack of strict processes coupled with weak documentation. This allows application objects to be promoted into production with insufficient security or testing. It is not uncommon to observe objects running in the production environment from development libraries. This should not be allowed and can quickly lead to a chaotic environment. The result is that no one will know which objects are required for production and it can impact which objects are actually saved impairing recovery capabilities.

To ensure processes are followed and enforced you may want to invest in an application to manage the process for you. Having this type of software in place to automate the development management process will improve development productivity. Just as important it will protect the production environment by minimizing mistakes, simplifying managing multiple versions and protecting developers' work.

Object level security needs to be designed into the application as part of the development project. Without object level security you are highly exposed to data theft, corruption, and any accidental deletion, change or modification of private and/or confidential data. For example, during a hardware consolidation project we performed for a customer, we observed that print files of payroll jobs were on the system and accessible to anyone. These files contained employee pay information, account numbers, payroll amounts for individuals, and other sensitive information such as their social insurance numbers. We have all heard about the disgruntled employee that distributed payroll information, and it crucial that your development processes don't inadvertently make it easier to do so.

Access to Objects is the means of gaining access to business data. Each object on the system needs to have the proper level of security tied to it so that it is acces-

sible to only those people within the organization that should have access. A company's use of data can make them successful and provide them a competitive advantage. Your company like other companies has data that is personal and confidential. Unauthorized access to this data could harm employees, customers, supply partners or the company if put into the wrong hands.

Today's Open database industry standard has created more and more ways for people to access data. No longer is data secure by menu options. You need object level security to protect against rogue ODBC, FTP, TFTP, JDBC transactions and to stop unauthorized people from accessing privileged confidential data.


Governments are now starting to take a firm hand and demanding data protection and integrity via privacy legislation such as the Health Information Privacy Act, Personal Information Privacy Act, not to mention corporate governance initiatives such as the United States' Sarbanes-Oxley.

In the near future it is possible that companies without a strong security process in place will lose business and partners due to the way laws are written. The laws are written so that if a company does business with a company that is deemed NON-

compliant, than that company is also judged NON-compliant, regardless of how much money or time the company has spent trying to become compliant. Therefore, companies that are compliant will seek business partners that are also compliant and these companies will be required to conform to annual Security Audits, Change Control Audits and have formal Disaster Recovery processes in place with associated test documentation.

To determine the most appropriate strategy for your organization, the first step is to conduct a Recovery Needs Workshop. This is a session conducted with IT and the Key Business Process Owners. In order to develop a disaster recovery plan for the company, IT must understand the critical business processes and map them to the IT processes. The Recovery Time Objective and Recovery Point Objective for each process must be established and agreed to by the Business Process Owners. This will allow IT to develop a disaster recovery plan, and implement technology and processes that support the business needs. You won't be able to cost justify your Recovery Plan, without identifying the business risks, process needs and the priorities.

With the knowledge obtained from the Recovery Needs Workshop it will be possible to recommend a technical solution that meets the business needs at a price that is justifiable. Availability economics are simple - the faster the recovery time and the closer to the last transaction the more it will cost, usually increasing on an exponential rather granular scale. The key issue is to get the right level of recovery and test it regularly to ensure staff is experienced with the process. The key to justification of recovery is to be certain it will meet expectations, so if you don't document, train and regularly test the process you can be fairly certain that the expense will never be justified regardless of size.

Ultimately, achieving high levels of availability or business continuity requires considerable effort in Application Development, Security and Recovery Processes. All elements are linked and interdependent, requiring a life cycle management approach. The starting point is always sound business practices and procedures, supported with automation tools to reduce or eliminate the potential for human error. Change management tools deliver the silver bullet in this effort by complimenting strong business practices with structure, allowing organizations to improve productivity through compliance, while ensuring that approval is pushed to the right level. 

**Sam Johnston** is a partner and Chief Technology Officer of Intesys Network Communications Ltd., providing value-added networking and e-commerce solutions to the iSeries community. He can be reached at (416) 438-0002 or via email at [sjohnston@intesys-ncl.com](mailto:sjohnston@intesys-ncl.com). Any TUG member wishing to submit a question to Sam can forward their typewritten material to the TUG office, or to Intesys. The deadline for our next issue is Friday February 11, 2005.

## The 5th Wave By Rich Tennant



"Our automated response policy to a large company-wide data crash is to notify management, back up existing data and sell 90% of my shares in the company."

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# Are You Certifiable? (or Just TEChnically Good at What You Do?)

By Stephen Bingham

Have you gone for a walk in a bookstore lately? Have you wandered past the book section labeled: COMPUTERS? If you have, you probably noticed a few books on the subject of certification. I couldn't help notice all the books and prep exams to help pass the MCSE and A++ exams, among others. There is an entire industry striving to get computer programmers, security administrators, and pc desktop support staff to prove the extent of their knowledge by writing these exams. Why do we write them? To begin with, for those in search of a job, they are almost a pre-requisite to even get your resumé reviewed.


Managers are looking to hire the best staff that they can find, and the applicant who has a certification in their area of expertise will get the attention.

So as a manager, why should you encourage or support your existing staff to get certified? Will they not just ask for more money? Use the exams as a tool to identify training needs, so you can put your training budget to the best possible use. When employees request training during the annual performance review, make certification a goal. This can be an added incentive to ensure that the skills learned in the classroom are put to work back at the office.

As an employee, why should you seek out certification? In today's competitive market place, you can never have too much going for you. Be prepared for the worst-case scenario. Get certified; show your employer how much you know. You never know ... it may pay off.

While I was at the bookstore, I did not find any books on IBM or iSeries certification. There are many books available on iSeries security, performance management, WebSphere, and DB2, but none of those books are directly linked to any certification exam.

For those of you who have attended COMMON in the past, you may have had the opportunity to write an IBM Certification exam of your choice for free. We are working to bring this same offering to you at April's TEC conference in Toronto. Each TEC attendee will be able to write one exam of their choice from a variety of topics including system administration, DB2, and WebSphere.

We will provide a complete listing of the exams that will be available at TEC in the coming months. 

**Stephen Bingham** is the TUG Secretary and works for CGI as an iSeries Technical Analyst. He can be reached at 905-821-2252 ext. 7866, or [stephen.bingham@cqi.com](mailto:stephen.bingham@cqi.com).

## THE MAYONNAISE JAR

*When things in your life seem almost too much to handle, when 24 hours in a day are not enough, remember the mayonnaise jar...*

A professor stood before his philosophy class and had some items in front of him. When the class began, he wordlessly picked up a very large and empty mayonnaise jar and filled it with golf balls. He then asked the students if the jar was full. They agreed that it was.


The professor then picked up a box of pebbles and poured them into the jar. He shook the jar lightly. The pebbles rolled into the open areas between the golf balls. He then asked the students again if the jar was full. They agreed that now it was.

The professor next picked up a box of sand and poured it into the jar. Of course, the sand filled up everything else. He asked once more if the jar was full. The students responded with a unanimous, "Yes, finally. It's full..."

The professor then produced two cups of coffee from under the table and poured the entire contents into the jar, effectively filling the empty space between the grains of sand. The students laughed. "Now," said the professor, as the laughter subsided, "I want you to recognize that this jar represents your life."

"The golf balls are the important things – your God, your family, your children, your health, your friends, and your favorite passions – the things that if everything else was lost and only they remained, your life would still be full. The pebbles are the other things that matter, like your job, your house, and your car. The sand is everything else – the small stuff. If you put the sand into the jar first," he continued, "there is no room for the pebbles or the golf balls. The same goes for life..."

"If you spend all your time and energy on the small stuff, you will never have room for the things that are important to you. Pay attention to the things that are critical to your happiness. Play with your children. Take time to get medical checkups. Take your partner out to dinner. Play another 18. There will always still be time to clean the house and fix the disposal."

"Take care of the golf balls first, the things that really matter. Set your priorities. The rest is just sand." One of the students raised her hand and inquired what the coffee represented. The professor smiled. "I'm glad you asked," he said. "It just goes to show you that no matter how full your life may seem, there's always room for a couple of cups of coffee with a friend..." 

Forwarded by Wende Boddy

(Author Unknown)

# JACKIE'S Forum

## Encoded Vector Indexes (EVI)



**Jackie Jansen**

Talking to a group of iSeries customers recently I was disappointed at how few of them had implemented Encoded Vector Indexes (EVIs). I decided that it was time I wrote another column on this subject. It appears that no-one paid much attention when I wrote about EVIs exactly five years ago this month.

EVIs, introduced with V4R3, were designed to assist in the performance of many SQL queries. They do not replace our traditional binary radix indexes. They are an additional method that the optimizer can use to implement a query. The optimizer can use EVIs in one of two ways. It may choose to use the EVIs during execution of a query or it may simply use the EVIs to get statistics about the data to assist in building the access plan.

The good news is that you don't need to tell the optimizer which index to use. You simply create the indexes ahead of time and the optimizer will choose the appropriate implementation method.

To create an EVI you can either use the SQL "CREATE ENCODED VECTOR INDEX" statement or you can use iSeries Navigator. When you create an EVI the system will generate a symbol table and a vector. The symbol table has one row for each distinct key value in your table. It also specifies the relative record number (RRN) of the first row in a table that has that specific key value and the last row in the table that uses that same key. If you look at the example, the system would know that if you were searching WHERE PROVINCE='British Columbia' it would start looking at record 2 but it could stop searching at record 150,432 even if the table

had a million records. In addition the symbol table contains a count of all the rows containing each distinct key value. In V5R3 the system may choose to use only the EVI and not even access the data for queries that want either a count or a list of distinct values. If your application currently fills a drop-down list with distinct

CODE	RRN
8	1
2	2
1	3
2	4
3	5
5	6
8	7
...	

SYMBOL TABLE		VECTOR		
Key Value	Code	First Row	Last Row	Count
Alberta	1	3	64002	4033
British Columbia	2	2	150432	78762
....	...			
Quebec	8	1	875943	223989
Saskatchewan	9	41532	643022	20384


EVIs don't fit every query. They are not used for grouping or ordering. Where they are appropriate is with columns that have fairly low cardinality or a relatively low number of distinct values. If your query is going to select somewhere between 20% and 70% of the rows then EVIs are often considered. If your query has complex ANDing and ORing EVIs may be used. On the other hand if your query is only going to select a few records then a binary radix index may be a very good fit. If the query is going to select almost all the records in a table then the system probably won't use an index at all, it may simply scan the entire table.

values for a user to choose from you may see a nice performance gain.

The vector contains one element for every row in the table. Element 1 in the vector represents RRN 1 or row 1 in the base table. Element 2 in the vector represents row 2 in your table etc. The symbol table contains a unique code for every distinct key value. This allows for data compression. This code is stored in the vector. In the example shown here row 1 or relative record 1 in your table would contain the key 'Quebec'. When searching for PROVINCE = 'QUEBEC' the system will create a bitmap or an array of 1's and 0's where

the first element of the array references relative record 1 etc. The array will contain a 0 if the code doesn't match your selection criteria and a 1 if it does. If you have a query WHERE PROVINCE='QUEBEC' and PRODUCT = 'COLA' the optimizer can choose to look at the EVI you have previously created for PROVINCE and the EVI you have previously created for PRODUCT and then "AND" the two EVIs together. Any element in the array or bitmap that contains a '1' after the ANDing will point to a relative record that matches your search criteria.

Customers who implemented EVIs saw queries that took hours go down to minutes and queries that took many, many minutes go down to seconds.

By the time you read this column Service Pack 3 for iSeries Access for V5R3 will be available. You can run the V5R3 client for iSeries Access even if your server is running V5R2. Service Pack 3 includes new functionality to indicate when an index has been used either during query execution or to gather column statistics during query optimization. This same functionality is being added to V5R2 via PTF SI16313. Update iSeries Access, evaluate your queries, create EVIs and then analyze if the EVIs are being used and if your performance has improved. Good luck and happy querying. 

*Jackie Jansen is a Senior Consulting IT Specialist. She currently works in the IBM Americas Advanced Technical Support Solutions Centre. Jackie is a frequent speaker at iSeries Technical Conferences and User Group meetings. Contact her at [jjansen@ca.ibm.com](mailto:jjansen@ca.ibm.com).*

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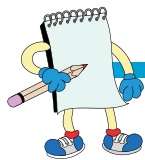
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# TUG NOTES

## TUG's Calendar of Upcoming Events

- ☒ **January 19, 2005 – MoM**  
(At The Travelodge)
  - ▶ 5:00 Session: “Installing V5R3 on your iSeries”  
Speaker: Richard Dolewski
  - ▶ 7:00 Session: “The HMC”  
Speaker: John Still
- ☒ **March 23, 2005 – MoM**  
Speaker & Topic: TBA
- ☒ **April 19&20, 2005 – TEC**  
(Sheraton Parkway)
  - ▶ Executive Breakfast
  - ▶ Vendor Showcase
  - ▶ Keynote: **Trevor Perry**
- ☒ **May 18, 2005 – MoM**  
Speaker & Topic: TBA
- ☒ **June 15, 2005 – Golf Tournament**  
(Date may change)


## Lucky Winners

of the door prizes at the November MOM (held at Woodbine Racetrack) were: **Carolyn Bradley, Irene Hong, Tony Tran, Ann McGinn, Kevin Trotman, Christine Maddison, Marsha E. Petch, John Lawryk, Stephen Collins, Joseph Tam, Matt Frepp, Francisco Caringal, and Alena Sabo.** Special thanks to MC Press & The Toronto Users Group for providing numerous great prizes. Wishing everyone health and happiness in the New Year!  
– Wende Boddy

## Great News!

The Handouts for our last TUG meeting are now available on the TUG Web site. To download the file(s) you want, go to [www.tug.ca](http://www.tug.ca) and click on the appropriate links. Previous meeting handouts and selected articles are also available under the “Articles & Downloads” icon on the left of the TUG main page. Enjoy!

– Léo Lefebvre

 **Home Computer** Predictions are hard to make, particularly when they concern the future! This is apparently a 1954 (Rand Corporation) prediction concerning a 2004 home computer. *(Forwarded by Eveline Gaede)*

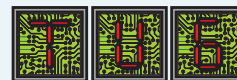
*Scientists from the RAND Corporation have created this model to illustrate what a “home computer” could look like in the year 2004. However the needed technology will not be economically feasible for the average home. Also the scientists readily admit that the computer will require not yet invented technology to actually work, but 50 years from now scientific progress is expected to solve these problems. With teletype interface and the Fortran language, the computer will be easy to use.*



## Cute but Fake

The “RAND Corp.” picture above is actually an entry in an image modification competition at <http://forums.fark.com/cgi/fark/comments.pl?IDLlink=1115586>. It was taken from an original photo of a submarine maneuvering room console found on a U.S. Navy web site. The picture was taken in 2000 at the Smithsonian Institution exhibit: “Fast Attacks and Boomers: Submarines in the Cold War”, and depicts a full-scale mock-up of a typical nuclear-powered submarine’s maneuvering room in which the ship’s engineers control the power plant and electrical and steam systems. (The gray-suited man, the teletype machine, and the old fashioned monitor were added, but the steering wheel is in the original photo.)  
– Editor

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