



Meeting of Members –
Venue: Woodbine, May 18
Topics: “HATS” & “WAS” on iSeries
Speakers: Adeline Chun & Stephen Quan

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May 2005

TORONTO USERS GROUP
for Midrange Systems

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This was our first meeting at the Meridian Banquet Hall, and we were not disappointed with the facilities. Our speakers were Kushal Munir (on JSF and EGL), and George Farr (on IBM's investment in RPG).

10 THE AGENDA

Our May 18 Meeting of Members (featuring Stephen Quan and Adeline Chun) will see us back at the ever-popular Woodbine Racetrack. Book your slot early. There is limited room space.

11 eSERVER EVOLUTION – UNFOLDING THE BEAUTY OF IT

Δ *Glenn Gundermann*

Well, it's all over but the thanking... TUG held its 12th annual i5 / iSeries / AS/400 Technical Education Conference (TEC) on April 19 – April 20 at the Sheraton Parkway, and what a fantastic conference it was!

16 DETOUR TO WEBSHERE DEVELOPMENT STUDIO CLIENT 5.1

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Here, we take a small detour from the Roadmap in order to talk a bit about the 5.1 release of WSDc, which contains most of the tools described in the roadmap.

21 PRIVACY AND GOVERNANCE: ADAPTING ISERIES SECURITY

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Question: What is the best method to minimize access to a file, for the user profiles that have *ALLOBJ authority? How do we get started on upgrading security?

24 JACKIE'S FORUM Δ *Jackie Jansen*

Do You Qualify?

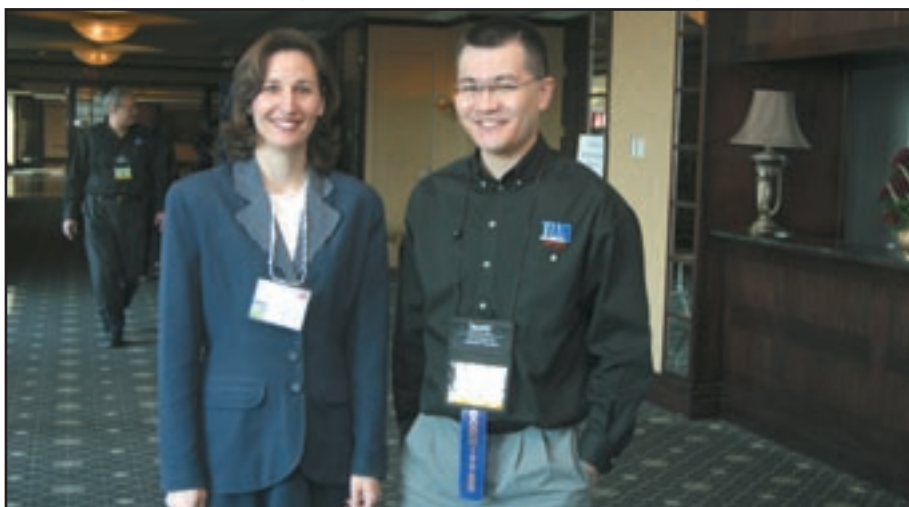
Service Voucher and Education Vouchers from IBM

The column this month will concentrate on the excellent opportunities afforded by the service and education vouchers that come with the Enterprise Edition. The concepts are the same for the 800, 810, 825, 870 and 890.

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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.



At TEC 2005 in Toronto: Elaine McFarlane, IBM iSeries Marketing Events Co-ordinator – with Stephen Quan, TUG's IBM Liaison



TUG eServer magazine

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President's Corner

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

TUG Volunteers

Now that we have completed our twelfth annual Technical Education Conference (aka TEC) I have time to relax a bit (not too much though – I have few more things to do!) During my break, I reviewed the last few TUG events and realized how fortunate TUG is on the volunteer side.

Of course, TUG's strength is built on the hard work and energy of its 12 directors and a couple of long time (i.e., permanent) contributors. But it is not on them I would like to draw attention. I would like to recognize the gracious contribution of few people outside of the regular TUG Board of Directors.

Our most recent TEC has been a good example of how TUG can get the support of some individuals who really care about TUG. For this TEC, we introduced some new features that were valuable for TEC attendees but also quite demanding on the volunteers. For the first time this year, TEC offered its attendees iSeries certification testing. For the two days of the conference, any attendee could walk into the testing room and write a certification test. Of course we needed volunteers to serve as "proctors" and we needed a couple of volunteer proctors at all times. Besides **Don Heller** of IBM and TUG Director **Stephen Bingham**, a few other people gave their time for the benefit of the TEC attendees. **Ken Davis** (Canadian Tire), **Harry Hashtilow** (Mother Parkers). Without their help it would have been quite difficult to accommodate all of those who wanted to take the tests. I also have to mention the good help of our TUG/IBM liaison **Stephen Quan**.

Staying with TEC, another area where we received lots of help from "occasional" volunteers was at the registration desk. **Angela Gonsalves** (Coca-Cola) and **Jerry Dmytrasz** (Kia Canada) were back for their fourth year!

Last year, **Ed Jowett** stepped down from the TUG board but decided to stay on the TEC organizing committee. We had many meetings to prepare this 12th TEC and Ed was present at each and every meeting. On the committee, he took care of the communication with the hotel. During the two days of the conference, Ed was session manager for three rooms at the same time! What a Trooper. Thanks Ed.




TEC keynote speaker Trevor Perry with Léo Lefebvre

Two nice ladies who must not be taken for granted are **Inass Moussa** (Smurfit-Stone) and **Loretta Dryer** (Toromont). For the longest time, Inass and Loretta have been helping at the Meeting of Members registration desk. It's been so long, I don't remember when they started. Come to our next meeting and you will see them again.

After every MoM, you will read a review of the meeting in the next issue of this magazine. The "reporting duty" is usually assigned to the TUG secretary (currently **Stephen Bingham**). Occasionally, the secretary cannot be at the meeting and we have to find someone to write the review. For this past meeting, Stephen was unable to attend, so I asked **Stephen Collins** (Park Properties Management) if he would write a review of the meeting to be published in this issue. As you may have guessed, Stephen accepted the challenge and you can read the result on page 7 of this magazine. Would you like to be a "reviewer"? Let me know. It's easy and can be quite rewarding. Who knows where it can take you? ...as **Vaughn Dragland** (the magazine editor) would say "Get Famous, Get Rich, Get Published!"

Another group of volunteers outside of the TUG Board, who are also a backbone of TUG's success are all of the speakers who, over the years, have generously given their time to educate the TUG members.

On behalf of the TUG Board, I would like to thank publicly all those volunteers, regular or occasional who help make TUG the best Users Group in the World. If you would like to give us a hand, let me know and we'll find a place where you can make a contribution to TUG. If you would like to make a presentation to the group, call me. If it is a subject of interest for the TUG members, I will find a time for you to present it. 

IBM Canada i5/iSeries April-June 2005 Calendar of Events

Topic	Event Location	Date	Time	Event Code
iSeries Navigator Webinar - French	Webinar available to all in French*	04/14/05	11:00AM EDT	ISNAVWAM-535
iSeries Navigator Webinar - English	Webinar available to all in English*	04/14/05	1:30PM EDT	ISNAVWPM-536
AIX on i5 and i5/OS on p5 Webinar - French	Webinar available to all in French*	04/20/05	11:00AM EDT	ISAIXWFR-537
Nectari Business Intelligence Seminar	Seminar at the IBM Montreal Office	04/20/05	9:00AM EDT	IBMBI-676
iSeries Access for Web	Seminar at the Toronto eServer Technology Centre	04/21/05	9:00AM EDT	ISWSAM-634
iSeries Access for Web	Webinar available to all in English*	04/21/05	1:30PM EST	ISWSPM-635
DB2 on i5 - what has changed	Session at the evening NAUG Meeting - Edmonton	04/27/05	5:00PM MDT	ISDB2ED-606
WebSphere Development Studio Client Hands On	Hands on seminar being held at the IBM London office	04/27/05	9:00AM EDT	To register send note to getsmart@ca.ibm.com
AIX on i5 and i5/OS on p5	Webinar available to all in English*	04/28/05	1:30PM EDT	ISAIXWEN-540
IBI for iSeries Hands on Seminar	Seminar at the Toronto eServer Technology Centre	05/03/05	8:30AM EDT or 1:00PM EDT	IBITOAM-685 or IBITOPM686
DB2 on i5 - what has changed	Session at the IBM Calgary Office	05/04/05	9:00AM MDT	ISDB2CAL-607
The Power of "i" Webinar	Webinar available to all in English*	05/10/05	1:30PM EDT	ISPIW-636
HATS Proof of Technology - 1.5 Day Hands on	Seminar at the IBM Markham location	05/11/05-05/12/05	9:00 AM EDT	ISHATS-682
Linux Seminar	Seminar at the IBM Burnaby Office	05/17/05	9:00AM PDT	ISLINVAN-637
Linux Seminar	Seminar at the IBM Winnipeg Office	05/17/05	9:00AM CDT	ISLINWIN-638
WebSphere Appl. Server Seminar	Seminar at the Toronto eServer Technology Centre	05/19/05	9:00AM EDT	ISWSATOR-639
WebSphere Appl. Server Webinar	Webinar available to all in English*	05/19/05	1:30PM EDT	ISWSAW-640
High Availability Webinar - English	Webinar available to all in English*	05/26/05	1:30PM EDT	ISHAW-641
HATS Proof of Technology - 1.5 Day Hands on	Seminar in Cambridge, Ontario	06/01/05-06/02/05	9:00 AM EDT	IHATSCAM-684
Linux Seminar	Seminar at IBM Markham office	06/02/05	9:00AM EDT	ISLINTOR-642
Linux Webinar - French	Webinar available to all in French*	06/09/05	11:00AM EDT	ISLINW1-643
Linux Webinar - English	Webinar available to all in English*	06/09/05	1:30PM EDT	ISLINW2-644
AIX on i5 and i5/OS on p5 Seminar	Seminar at the IBM Burnaby Office	06/14/05	9:00AM PDT	ISAIXVAN-645
AIX on i5 and i5/OS on p5 Seminar	Seminar at the IBM Winnipeg Office	06/14/05	9:00AM PDT	ISAIXWIN-646
Windows Integration Webinar - French	Webinar available to all in French*	06/16/05	11:00AM EDT	ISWNW1FR-647
Windows Integration Webinar - English	Webinar available to all in English*	06/16/05	1:30PM EDT	ISWNW2EN-648

To register call Toll-free 1-877-463-5440 or Toll 1-450-655-5705 and give Event Code with the exception of the WebSphere Development Studio Client Seminar which will take registration via an email to getsmart@ca.ibm.com

Please note that all webinars have a 2 week replay available. Please send a note to IBMi5@ca.ibm.com for replay information or to request more information on any of the listed sessions.

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– TUG MoM Review –

The March 2005 Meeting of Members

By Stephen Collins

The March meeting was an adventure – try finding a new venue in the dark AND in the middle of a snowstorm! Still it was worth the effort once again.

The 5 o'clock meeting was entitled “Developing Web Applications using JavaServer Faces and Enterprise Generation Language” – a typical IBM mouth full...Our presenter was **Kushal Munir** from the IBM Toronto Lab, who gave us a one-hour overview of this new package developed by IBM. IBM have bundled this (free) package within the WebSphere Development Studio Client for iSeries. The package is a 4th Generation Language and is split between JavaServer Faces (JSF) and Enterprise Generation Language (EGL).



Matinee MoM speaker Kushal Munir

JavaServer Faces & Struts

To standardize web development, Apache developed a framework called Struts. This has become a very popular Open Source web application framework. Struts provides the following key benefits:

- Simplifies web development
- Promotes development of well structured Web Applications (MVC)
- Helps build internationalized web applications

JavaServer Faces (JSF) has only been standardised within the last year, and is itself an add-on to the Struts framework. It provides:

- Emerging Standards based Web Application Framework

Photos by Léo Lefebvre



Stephen Collins

- Event driven architecture
- UI components are decoupled from its rendering (allows desktops and handheld devices to be used – pushed down from the server).

JSF and Struts do overlap in the User interface and form processing area and, although JSF will not replace Struts immediately (both are supported in WebSphere Studio.) Eventually JSF will become the primary technology used in Web application development.

Enterprise Generation Language (EGL)

EGL allows rapid development using a platform-neutral high level 4th GL specification language. This type of procedural language removes the need to worry about database I/O; as the package, once directed, handles all the Get/Put/Update to the databases (or data queues) for you by the use of wizards. This could also be expressed as CRUD! (Create/Read/Update/Delete.)

With the nuts and bolts of coding concealed, both Programmers and System Analysts can use the product without having to learn a lot of Java. The syntax used is similar to RPG in style. The package currently generates both CICS and iSeries Cobol and WAS (Java) – sorry no RPG as yet but a 3rd party company is looking into this.



EGL is developed in Websphere with target platforms of:

- MVS CICS or Batch
- Windows
- Linux
- iSeries
- z/OS USS (Java)

and can be used to write:

- Batch Server programs
- Interactive 5250 applications
- Web applications

These can be either Program Driven or Event Driven Models. Since EGL is written within Websphere Studio all the normal tools apply such as:

- Perspectives
- Projects
- Wizards
- Source Editor
- Debugger
- Help

For a more detailed explanation of JSF & EGL check the TUG Conference CD for the full session handout.

Intermission

This was our first time at the Meridian so we didn't know what to expect in the way of food. We were not disappointed however. Everyone was pleased with the excellent buffet. Then after the usual TUG business, announcements and door prize giveaways, we carried on with our second speaker.

IBM's Investment in RPG

The 7 o'clock speaker, **George Farr**, took us on a tour of RPG – its past (before V5), present (V5 R1-3), and future... The future? Does RPG have a future? George says YES – definitely! He said that many people get the wrong impression from the Websphere Development Roadmap – that IBM is trying to push everyone into Java – but this is not the case. Many programmers will make the journey to Java, but many more will stay with RPG (which is a different track on the same roadmap) and IBM is committed to supporting those who do.

RPG was born in 1965 on the main-frame and became RPGII in 1971 when it was adopted by IBM's first mini-computer, the System/3. RPGII moved to the System/34 in 1977 and later to the System/36. Then in 1980 RPGIII was created for the System/38, and 1988 AS/400 was launched with RPG/400. RPGIV and VARPG came along in 1994.

The modern RPGIV language really hit its stride in V5R1 on the iSeries platform, and saw significant enhancements in V5R2 and V5R3. Some examples of what's new in V5R3 are:

- RPG preprocessing for SQL Preprocessor
- 63 Digit support (Packed and Zoned)
- Second parameter on %TRIMx - char to trim
- Allow dynamic resizing of arrays, %SUBARR
- Option to pass trimmed string as parameter.
- Conversion of date/time/tstamp to numeric using %DEC.
- Relax rules for result data structure
- New environment variable for Java method calls

The 5th Wave


By Rich Tennant



"We found where the security breach in the WLAN was originating. It was coming in through another rogue robot-vac. This is the third one this month. Must have gotten away from it's owner, like all the rest."



Evening MoM speaker George Farr

Although they were not allowed to be documented (for proprietary reasons) there are many exciting future enhancements for RPG in the pipeline! George treated us to some hints verbally, which were truly amazing. It was obvious from his presentation that RPG is alive and kicking, and will be for a long time to come... If you would like to keep up-to-date with current developments in the RPG language, you may subscribe to the WDSC-L Dist list. To subscribe, unsubscribe or change list options, visit: <http://lists.midrange.com/mailman/listinfo/wdsci-l> 

Stephen Collins works for Park Property Management Inc. as a Senior Analyst. He can be reached at 905-940-8725 Ex 251 or scollins@parkprop.com



Photos by Léo Lefebvre

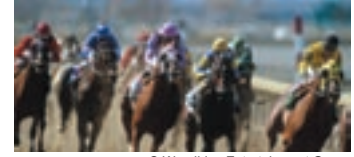
Wende Boddy at the TUG Meeting of Members, March 23, 2005, Meridian Banquet Hall, Toronto



THE AGENDA

 for our next Meeting of Members
Wednesday, May 18, 2005

**LOCATION: Woodbine Racetrack
International Room - 2nd Floor**



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5:00pm: Session 1 – Websphere Application Server (WAS) V6 Speaker: Stephen Quan

Abstract: This session will discuss exciting new developments included with WebSphere Application Server V6 for i5/OS and OS/400. WAS V6 offers performance and Java processing advantages over WAS V5.1 that make it the premier choice for your customer's Web application serving needs today. Particularly notable is the introduction of J2EE 1.4 compatibility with JDK 1.4.2. In addition, improvements to the management of the EJB container and enhanced caching functions introduce new efficiencies to the application processing environment. A new in-process java messaging engine also allows for faster messaging. If you want to know about the advantages of using WebSphere Application Server Version 6 and how it can maximize the value of your i5 or iSeries Server, this session is for you.



Biography: Stephen Quan is an Accredited IT Specialist in the iSeries Techline at IBM Canada. He is responsible for both hardware and software pre-sales technical sales support for the iSeries platform, as well as that for WebSphere/iSeries environments. Stephen is one of the authors of the AS/400e e-Business Handbook. He holds a Bachelor of Applied Science in Mechanical Engineering from The University of Toronto and an MBA from McMaster University.

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



• Mingle and network with professional colleagues. • **Enjoy our complimentary buffet dinner.** • Limited seating • Register with the TUG office of your intention to participate, to be guaranteed a seat. • You can call, fax, or use the TUG web-site to register, (stating: name, company, phone number, and number attending). www.tug.ca • Do we have your current e-mail address?

7:00pm: Session 2 – Websphere Host Access Transformation Services (HATS) V6, Speaker: Adeline Chun



Abstract: Modernization of green screen applications is a critical focus point for today's iSeries customer. WebSphere Host Access Transformation Services (HATS) for iSeries V6 is the premier choice for your host to web transformation needs. Offering real time, "on the fly" 5250 to HTML conversion, HATS is an easy to use package that can web enable your legacy applications in as little as one day. If you are interested in a powerful and effective host transformation software product that is easy to use and does not require you to modify your source code, come to the TUG MoM for an exciting and dynamic presentation, including a live demo.

Biography: Adeline Chun received her Computer Science degree with Honors from University of Manitoba in 1993 and is a certified IT Specialist, with 15 years of IT experience. Her experience includes performing as solution architect role and supporting world wide banks to implement banking solutions, while working in the IBM Toronto lab services group. Currently, she works in the software sales and distribution organization as a Technical Sales Specialist with responsibility to provide pre-sales technical support to IBM WebSphere products, specializing in Enterprise Modernization and WebSphere Tools & Foundation portfolio. In her current role, she is also the lead technical resource supporting HATS (Host Access Transformation Services) customers across Canada.

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



eServer Evolution

Unfolding the beauty of IT

TEC 2005 Wrap-up

By Glenn Gundermann, TEC Chair

It's hard to believe another TEC is over. This was TUG's 12th annual Technical Education Conference (TEC) and I feel very fortunate for being chair for the past 6 of them.

TEC 2005, held Tuesday, April 19th and Wednesday, April 20th at the Sheraton Parkway in Richmond Hill, was a very successful event with over 200 people in attendance. They enjoyed great speakers at the over 65 education sessions, 30 booths in the Vendor Expo area, a well-attended Executive Breakfast, and an inspiring Keynote Speaker at Wednesday's sit-down lunch.

This all would not have been possible if it weren't for the thirteen very dedicated TEC Committee members: **Alkarim**

Sachedina, Bob Lesiw, Ed Jowett, Eveline Gaede, Jay Burford, Ken Sadler, Leo Lefebvre, Richard Dolewski, Stephen Bingham, Stephen Quan, Vaughn Dragland, and Wende Boddy. They are all hard working and very special people with hearts of gold.

It's been a privilege for me to be a part of this team. TEC 2005 started for us on June 1st of 2004. What each of our attendees experienced over the two-day conference took many long meetings over the past almost 11 months.

It's obvious this hard work was not in vain. We had a great turnout of attendees and some busy sessions. There was



TEC 2005



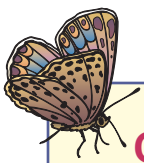
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TEC 2005 Committee

Photos by Léo Lefebvre



Certification Round-Up

By Stephen Bingham

Once again TEC is over with for another year and with it the first of what I hope is many opportunities to provide IBM Certification testing to our attendees. Each attendee was entitled to write one free exam ranging in topics from Console Operations to System administration to the new ILE exam. Other exams included various Technical Solutions and Sales related topics. Additional exams were offered at a discounted price.

There are three main ingredients to make something like the testing lab work. The first is the individuals who chose to write an exam. This included our TEC attendees, Showcase vendors and even some of our speakers.

The second is the group of volunteers who gave up their time to work in the lab and make sure everyone who wanted to write an exam was registered properly and given any needed guidance on how to proceed. A special thanks to **Ken Davis**, **Harry Hastilow** and the newest member of the TUG board, **Aziz Saleh**.

Our third ingredient is the equipment, all of which was donated. Our lab consisted of 11 laptops, a single hub and a printer. Thanks to the folks (listed in Glenn's article) who secured all of these for us.

I would also like to take this opportunity to thank **Don Heller** of IBM, for his assistance in organizing the availability of the exams and coming to Toronto to run the testing lab. Thanks again to everyone who wrote an exam and congratulations to all of those who passed.



Photos by Léo Lefebvre

Lunch time is a busy time at TEC Showcase

something for everyone. There was a lot to learn about Security, WDS, RPG ILE, and a whole lot more. There were more than sixty sessions in total. If there was one message I got, it was: "Stop using PDM!"

Thank you to the extra volunteers who came out to help: **Angela Gonsalves**, **Aziz Saleh**, **Jerry Dmytrasz**, **Ken Davis**, **Rajendra Kumar**, **Harry Hastilow**, and **Lindsay Sutherland**. Although there are many integral parts to a technical conference, a big part is the speakers. With about 25 speakers covering many different topics, it was tough for our attendees to decide which sessions to attend because they all sounded so good.

Last year we introduced the hands-on labs at the IBM Toronto Lab and after being such a great success, we brought it back this year and improved it by making it an open lab (where you get to choose your lab topic from four when you get there.)

With all of the long hours of preparation, it's nice to see things work out. New this year was the IBM Certification, which was a great success. **Stephen Bingham** worked hard on this and we are very fortunate for the great partnership we have with IBM. **Don Heller** from IBM is the person responsible for IBM Certification at user conferences and he flew up from Rochester Minnesota to be here. Over forty attendees took advantage of the great deal being offered. You can't beat a free first test, saving \$195 USD, and \$75 USD subsequent tests, saving \$120 USD each! We are also very fortunate that various parts of IBM worked well with one another to help make TEC 2005 a success. We would like to thank:

- 1.) **Tom Birchall**, manager of IBM eServer Techline, for authorizing the loan of the six ThinkPads for IBM Certification Testing
- 2.) **Kevin Simon**, Printing Systems Division for the generous loan of two Infoprint printers.



Attendees writing their certification exams

- 3.) **Kathy Taylor** and **Elaine McFarlane** for kindly arranging the IBM eServer i5 sponsorship at TEC.
- 4.) **Gwen Spencer** for her technical skill and for organizing IBM's presence at the Vendor Showcase.
- 5.) **Steven Stronach**, National ThinkPad Brand Specialist, for the loan of two ThinkPads for registration.

We owe **Stephen Quan** a huge thank you for arranging all of this terrific IBM support. **Rajendra Kumar** was kind enough to provide additional laptops plus a switch from his employer (Aon Re). **Glen Gautreau** supplied a switch plus cables from CGI, and **Stephen Bingham** brought a printer from home.

Everything at TEC was meticulously put together with a lot of planning and hard work. One example of this is our CD. I worked hard arranging the outside design



Over 40 IT Executives attended the TEC Executive Breakfast on day one.

and duplication of it while Léo worked hard on the content. The latter was better than ever. Not only does it contain all the session abstracts and handouts, speaker and volunteer pictures and bios, and daily schedule; it also contains several IBM video commercials on a secret link. (See *TUG Notes* on page 26 for more info on

this.) Registration worked very smoothly again this year thanks to a lot of people with the man in charge being **Bob Lesiw**. If you attended TEC 2005 and have not yet filled out your conference feedback form, please do so and fax it to our office. If you would like us to e-mail you a form, let us know. Of course, we could

Sponsors are Special – Thank You from TUG TEC 2005



By Jay Burford

As Glenn mentioned, the attendees, speakers, vendors, volunteers, and the organizing committee members all deserve a “round of applause” for all of their contributions to this winning event...

There is another group that deserves a big “thank you” for their assistance to the success of TUG TEC 2005. They are our sponsors – companies that provided some of the funding for the education sessions, coffee breaks, the executive breakfast and the morning continental breakfast. They understand the value of on-going education for the IT community and they support TUG TEC in helping to provide that education.

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Finally we must thank **IBM Canada**, the source of the eServer iSeries technology, for their continued contributions to the success of TUG and in particular TUG TEC. (<http://www.ibm.com/us/>)

Thank You ALL for Your Support!



TEC speakers: Alison Butterill and Trevor Perry



Wende Boddy presenting the TEC Showcase Passport door prize (Coca-Cola golf bag) to Kim Barnes

not have done it without our Showcase Exhibitors. (See sidebar list.) **Richard Dolewski** and **Wende Boddy** put this together with all the right touches. The interesting information about each product/service kept many an attendee glued to the booth to learn more. Thank you vendors for a great showing and for your generous prizes. The main “passport” door prize (a golf bag donated by Coca-Cola Beverages) was won by **Kim Barnes** from Contrans Corporation. We are also grateful to i3 and Maxium for the Executive Breakfast, and Coca-Cola, Challenger Motor Freight, and *sofCast* for sponsorship and prizes. Thanks also to COMMON – A Users Group for donating the registration bags.

For a second time, TEC offered an Executive Breakfast, giving a chance for IT executives to attend a high level session geared just for them. **Trevor Perry** provided the insight this year, talking about Architecting Modernization. Trevor’s enthusiasm on this topic was felt around the room and was well enjoyed.

Trevor Perry also presented this year’s keynote address, entitled “Get A Life.” He told us in no uncertain terms that we need to get a life, and gave us many good examples on how to do this. He gave us insight into what he has done himself and what he still plans to do. Not only did we come out of this session thinking about what we might do to get a life, but we were also feeling very good about ourselves. We created posters with I M X O on them, which stands for “I aM eXtraOrdinary”. Feel free to visit his web site www.urxo.com for more words of encouragement.

It’s amazing how fast these two days have passed. Before you know it, it will be next year and another TEC! I would suggest you register now for TEC 2006.



Glenn Gundermann is an independent iSeries consultant and Chairman of TUG’s Technical Education Conference committee. He can be reached at ggundermann@tug.ca or (647) 272-3295.



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Detour to WebSphere Development Studio Client 5.1

By Phil Coulthard and George Farr

In our ongoing series of Roadmap articles we've been introducing each of the steps in a possible roadmap for those looking to modernize their skills and applications. Here, we take a small detour from the Roadmap in order to talk a bit about the 5.1 release of WebSphere Development Studio Client (WSDc), which contains most of the tools described in the roadmap.

The 5.1 release of WSDc was generally available on October 17, 2003 for both the standard and advanced editions. Remember, these clients tools are numbered to be consistent with WebSphere Application Server (WAS), not OS/400, so they actually support all active releases of OS/400. This means they can connect and work with source on any iSeries at V5R1 or higher. The 5.1 number of this release is actually slightly out of character as it is designed to support the 5.02 release of WAS, recently made available on all platforms, including iSeries. The reason for this numbering scheme is that this release of the tools is proactive and will also support later releases of WAS. [Note: Version 6.0 of WAS is now available.]

The 5.1 release is relatively small for the tools, however, it is still an important release! The main focus of the release is quality, performance, and high-request items from users.

Remote System Explorer

The enhancements to the Remote System Explorer (RSE), which is for RPG and Cobol development (and C, C++, CL, and DDS, of course) include the following:

- Traditional function keys have been enabled, such as F5 for refresh and F4 to prompt in the editor.
- Jobs are now listed in the tree, partitioned by OS/400 subsystem, making it easier to work with long lists of jobs.
- CL command prompting, such as from the command line or when editing CL, now uses a native Eclipse graphical user interface (and not a Java Swing user interface). Numerous fixes and enhancements have also been made to the prompter, including support to prompt within prompts (e.g., for the SBMJOB (Submit Job) command) and more effective caching in disconnected mode (**Figure 1**).



Figure 1.

- New actions let you quickly create a filter from a selected library or file, so that the contents of the library or file are shown when the new filter is expanded. You can also drag and drop individual items to an existing filter.
- You can now select multiple members for compile. The error list view



shows a separate page for each member. You can also set your preferences to affect the

order in which the compiles happen, by member type.

- There is more robust monitoring of communications sessions and handling of orphaned jobs and leftover member locks when connections are lost.
- The verifier caching support is more robust and intuitive, automatically using the cached information when it is available. There is a new "Refresh cache" option on the prompt dialog for the verify action (e.g., to force an update of the cached information for F-specs and copy members).
- The new right-click action on the iSeries Objects subsystem directly opens a member for edit or browse or creates a new one, saving the effort of drilling down to the member. The shortcut is Ctrl+Shift+N.
- Just as in CODE/400, a wizard creates RPG IV subprocedures when you're editing RPG IV members. After prompting for parameter information, the wizard generates a subprocedure stub and a prototype for you. The former goes to the bottom, and the latter goes to the top, after the last D-spec.
- The outline view for RPG IV has been enhanced to honor case, show prototypes, and does a better job positioning when a subprocedure is selected.
- Very robust code-assist support is provided for ILE Cobol. For example, use Ctrl+Space after typing FUNCTION to see a list of intrinsic functions.

- Enhanced code-assist support is provided in the editor for RPG IV. This includes parameter help for D-, H-, and F-spec keywords; free-form opcodes; built-in functions; and subprocedure calls. It also includes support for compiler directives, reserved words, I-specs, D-spec keywords, and a number of other areas of the language. Also, the inserted code now honors the case of the immediately surrounding text.
- You can now open a member for editing by dragging it to an open editor.
- Template support for free-format RPG, ILE Cobol, and C++ lets you define a code snippet called a “pattern” and give it a name. When editing, if you enter one or more characters of the name and press Ctrl+Space, you’ll see all templates whose name matches what’s been typed, and when one is selected, the code for that template is inserted. There are a several supplied tem-

- plates. Templates are extremely handy for often-used code constructs.
- A new “link to editor” action in the local toolbar for the Remote Systems view causes the edited member to be selected in the tree view when an edit pane is given focus.
- New actions on the iSeries Objects subsystem start and stop the Agent Controller server on the iSeries. This new server enables a number of interesting capabilities of the tools, such as profiling Java applications running on an iSeries system, analyzing iSeries WebSphere and Apache log files (see the “problem determination” section of the documentation), and publishing Web projects directly to WAS on an iSeries and subsequently debugging those applications. The Agent Controller server is now available for V5R2 and V5R1 by way of PTFs.
- Programs and service programs can now be expanded to see their modules, and modules in turn can

be expanded to see their publicly exported ILE procedures.

- You can specify generic library, file and member names when searching remote members for a given string, making it easier to quickly search many members.
- Numerous enhancements for non-iSeries support include new content assistance in the Unix, Microsoft Windows and Linux command console for executable commands found on your server path.

iSeries Projects

In a previous article, “Better Tools: iSeries Projects”, we introduced iSeries Projects. **Figure 2** shows the new iSeries Projects perspective. The enhancements to iSeries Projects include the following:

- The initial layout of the iSeries Projects perspective is more intuitive.
- A new right-click action replaces the selected members with the version in the library associated with this project.

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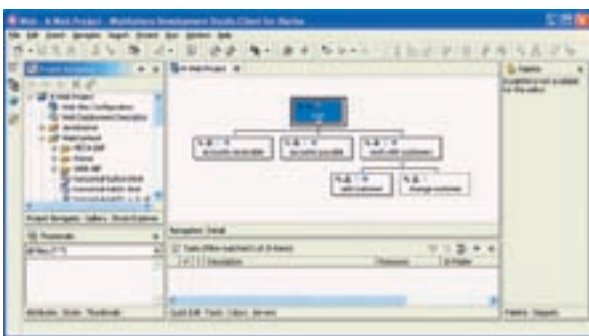


Figure 2.

- A new prompt saves pending changes when pushing members to the associated library.
- The build action now compiles members in the correct order according to member type, and you can affect this with command execution preferences. The build issues a warning before overriding an edited CL compile member (COMPILE.CCLE). The build also supports two new right-click actions for members to let you define your own compile commands by member type, and to select which compile command is used in the generated CL compile member, again by member type.
- A new “link to editor” action in the local toolbar for the iSeries Projects Navigator view causes the edited member to be selected in the tree view when the edit pane has focus.
- New actions for adding tasks and bookmarks to selected members allow you to associate them with a member so that double-clicking in the task view or bookmarks view opens the associated member in the editor. Other new actions launch CODE Designer for DPSF, PRPF, and PF members.
- The Eclipse 2.1 development environment provides the ability to create projects that link to existing local folders and files, so that you can access these resources directly through workbench perspectives such as the iSeries Projects perspective, without having to import them first.

IBM WebFacing Tool

Here are the key enhancements to WebFacing for 5.1:

- A new preference setting specifies whether the generated XML files

should be archived in a JAR file. Not archiving makes team support easier. The preference setting can be overridden for particular projects with a property setting.

- Better error handling for the user ID and password prompt includes support to alert users when their passwords have expired.
- New property settings provide more control of the process. You can now position function key buttons within windowed records while keeping them at the side for non-windowed records. Another setting enables compression of the Web pages when running in an environment with slow communication speed. Yet another property setting maps a key to the field exit key in 5250. Web settings on an output field provide support for dynamic function key label fields, whether they contain the translated description for a particular function key or they contain the function key descriptions that are determined at runtime.
- Significantly reduced WebSphere resources are now needed for subfiles, so that applications with large numbers of concurrent users do not exhaust memory. Similar improvements are provided for the processing of the SLF-NXTCHG keyword.
- The new IBM Web Site Designer lets the WebFacing-generated Web pages be used within a larger Web site, sharing the same style as the other pages. The Web Site Designer lets you design Web page templates that reserve areas for the actual page content. A Web-enabled application can run inside one of these reserved areas of a Web site page. See the documentation for details on this powerful new capability, which can be enabled in the WebFacing project wizard.
- In the advanced edition, support for Struts development has been updated to the 1.1 release of Struts.

Struts is an open-source framework that vastly simplifies Web application development. The 1.1 release of Struts is a major enhancement over the 1.0 release, and you can now use either release

Programming in Java with iSeries Java Tools

Enhancements improve the iSeries Java tools in Version 5.1. Ease-of-use enhancements to the Program Call wizard provide new right-click actions for deleting parameters and defining externally described parameters, just as in the Web Interaction wizard.

Enhancements Inherited from the Base Products

Although the enhancements to the iSeries extensions in WSDc are the most interesting to most users, there are also many great enhancements to the general functions in the base Studio products that it's based on: WebSphere Studio Site Developer for the standard edition, and WebSphere Studio Application Developer for the advanced edition. Of the numerous enhancements, here are some of the highlights:

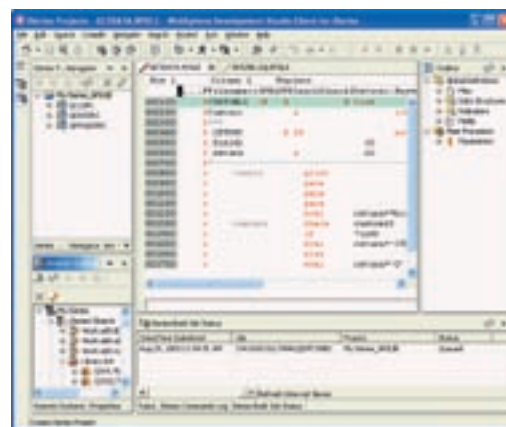



Figure 3.

- The new Eclipse 2.1 workbench has major enhancements, especially for the Java development tools. For example, it supports hot replacement of Java code while debugging. You can find a full list of Eclipse 2.1 enhancements at <http://www.eclipse.org>.
- The J9 Java Virtual Machine offers significant performance enhancements for all activities done in the workbench.

- Specific enhancements reduce startup time, memory footprint and performance for debugging, the WebSphere unit test environment, EJB deployment (advanced), Web service tools, and Web tools.
- The latest standards are supported, including Application Server 5.0.2, Struts 1.1, Web Markup Language (WML), Compact Hyper-Text Markup Language (CHTML), Apache Axis 1.0, Web Services Description Language (WSDL) 1.1, Web Services Interoperability (WS-I) basic profile 1.0 (the work by IBM and Microsoft to ensure Web services interoperability), and IBM DB2 UDB Version 8.1.
- The new Web Site Designer (mentioned earlier and shown in **Figure 3**) helps you create, import, and manage whole Web sites. While the Page Designer is, like SDA, a visual editor for an individual Web page, Site Designer is a visual tool for the whole Web site, where you can easily add, delete, and move pages. It visualizes the page hierarchy, which affects the site navigator and map. You can easily apply page templates to the pages in the site; changing the template changes all the pages using it. Page Designer supplies a palette of Web site parts that you can drag and drop to individual pages, such as the Web site navigator and Web site map.
- The enhanced Web perspective includes a significantly improved set of palettes for Web page development and a vastly simplified Web project wizard.
- A new WSDL editor and enhancements to the Web Services Explorer help you create and validate that Web services comply with WS-I.
- The Advanced product inherits wonderful support for visual editing of Java and EJBs using integrated Universal Modeling Language (UML). Not only is the UML model of your code visualized on fly, but the visualization stays in synch as you edit. This ability, one of the first fruits of IBM's acquisition of Rational Software Corporation, is a tremendous boost to understanding your code.

There are many more enhancements across the wide range of tools in WSDc, both standard and advanced.

Just a Taste

This is but a small taste of the enhancements in this new release, most of which are the direct results of user feedback and industry evolution. We hope and trust you'll agree this is an exciting and dynamic product, whose development team listens and reacts. Be sure to continue following along with the Roadmap series as we continue our enumeration of the steps in the RPG-to-J2EE Roadmap. 

This article was first published in *iSeries News* magazine.

George Farr works at the IBM Toronto lab, where he is the technical development manager for the RPG and VisualAge for RPG languages, as well as the new RPG and Cobol tools in WSDc.

Phil Coulthard works at the IBM Toronto lab, where he is the lead architect for application development tools and languages on iSeries. Phil and George are frequent speakers at many conferences and user groups worldwide, and their books *Java for RPG Programmers, 2nd Edition* and *Java for S/390 and AS/400 COBOL Programmers*, are available from Penton and MC Press.

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COMMUNICATING WITH SAM

Privacy and Governance: Adapting iSeries Security

Question:

Our management is becoming increasingly concerned about security of our company data from misuse by internal resources and our compliance with corporate and government regulations. They feel that our iSeries may not have or be capable of the appropriate level of security to ensure the privacy of confidential data. Our current security method is built around menu option limitations that functioned very well since the days of fixed function terminals. What is the best method to minimize access to a file, for the user profiles that have *ALLOBJ authority? How do we get started on upgrading security?



Sam Johnston

Answer:

Organizations spend a significant amount of resource effort in protecting themselves from hackers that may want to access confidential data through the Internet. While these security risks are real, you have pinpointed what is potentially a greater threat – employees, some of which inadvertently gain access to trusted information, or worse rogue employees that take advantage of trusted relationships to access company data. The security danger associated with employee breaches is magnified by the fact that, unlike outsiders, employees have insider knowledge that enables them to rapidly hone in on key information.

Ultimately, organizations need to protect production business data on the OS/400(i5/OS) properly by using the correct security methods that IBM have provided in the operating system. OS/400 (i5/OS) provides the tools to create what is referred to as the “least privilege” security model and this needs to be implemented into the production environment. Menu driver security when objects have all object authority will not meet the compliance standards in today’s business environment.

External auditors are becoming much more critical on this issue as a result of their efforts becoming increasingly dependent on thoroughly performed IT audits. Shareholders, and agencies that protect their interests, are holding corporations to a higher standard when

it comes to the integrity of financial information that is produced by ERP systems. Your security efforts need to evolve and respond to these changes

Before we have an external auditor knocking on our door we had better address this legacy security issue on the production data and solve it with the “least privilege” industry standard. Microsoft, Linux and AIX use this standard as well. Imagine the repercussions if an external auditor logs on to your OS/400 (i5/OS) and uses FTP, JDBC, ODBC, DDM, DRDA, OLE DB, ADO/OLE DB or some other newly created technology to access data and downloads, deletes and/or modifies the payroll file or accesses an output queue that shows them social insurance or credit card numbers of clients or employees.

The theory of Network Administrators controlling ports for data access is a good one for controlling access, but once access is obtained; the security protection is based on the controls on the object container and data object itself. Network Administrators control access to the system; and NOT access to the object once access to the system has been approved. Therefore, if the Network Administrator allows access for a trusted

third party or a contract employee, that person may have access to privileged information that could severely impact your business. This access risk needs to be eliminated by security controlling authorized users from a system level and restricting them to ‘must have’ information.

A number of people have “quick fix answers” to solve the issue but the only real business solution for OS/400 (i5OS) is to get your system to object level security.



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Many organizations resist making this change due to the view that it will take forever to get all of your production objects to the “least privilege” security needed to meet compliance. While it will take a considerable amount of time and effort, delaying the decision to get started will only increase the challenge and risk. The decision is complicated by the fact that most production OS/400(i5/OS) environments have taken a very long time to evolve to the state they are in today and most are managed without the large staff of people it takes to manage other environments. One of the first decisions should be to assess whether you have the internal skills and resources to complete this task in house or should you bring in outside assistance. Once this project is

complete and new processes, policies and controls are in place, the management of these processes on the OS/400 (i5/OS) can be done with minimal time and effort by your staff, but without the right resources you will never get to the maintenance state.

Now that we know we should implement the industry standard of “least privileged” in the OS/400 (i5/OS) environment, how do we do it?

In order to get to this new world model of security you must remove the *ALL OBJECT authority from all production business objects. By clear definition “ALL” means everyone, everything and everywhere on your system. Achieving the goal will require a detailed project

plan just like most other IT projects. At a high level, you will need to divide the project into a few key phases.

Phase 1 - Gaining Commitment and Control

1. If your company has a Chief Security Officer then you have a champion to sponsor a project like this. Gaining the support of key stakeholders and other senior executives is going to be a major factor in the success of the project. Security is everyone’s issue; make sure you involve the areas outside IT in the process.
2. Incorporate the new security model into the change management process to ensure that the development and production teams don’t inadvertently undo your security with other projects and changes.

Phase 2 - Information Gathering and Design

1. Review any production objects that are owned by QDFTOWN and assign the correct owner. (OS/400 available commands and programs automate this process).
2. Review the public authority of each production object and all explicit authority to production objects. (OS/400 available commands and programs automate this process).
3. Review the production programs on the system to see the authority required to run the program. (OS/400 available commands and programs automate this process).
4. Review the production system job descriptions to see library lists and authority. (OS/400 available commands and programs automate this process).
5. Obtain a list from your Network administrator of all User profiles that have access to ports on the OS/400 (I5/OS) system through the network for the purpose of accessing data. These are the first User profiles you need to be concerned about.
6. Gain approval to apply audit functions to any User profile that can promote to the production system or remove data from the production OS/400 (i5/OS). Remember adding Audit functions may impact system performance so people need to

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be aware of this; but adding audit functions are needed to ensure compliance.

7. Identify Production objects and then categorize each object by level of security needed. For example, Classified, Non – Classified, Top Secret, etc...
8. Identify production data Owners by business function. For example, accounting, receiver, shipping, inventory etc...
9. Review the personnel job descriptions with the department manager to determine if employees perform functions outside of their job descriptions. (These functions need to be known before changing security on objects).
10. Map all system users in your organization to production applications and data required to complete their business function.


Phase 3 - Deployment / Testing

1. Apply audit functions to the required User profiles.
2. Divide your categorized data by business function application and implement NEW Group Profiles for each application. As a rule Group Profiles should not own objects.
3. Add the new group profile to each required production object. (OS/400 available commands and programs automate this process).
4. Request one persons User profile from the department head that you can change and test changes made. This way you are assured this person can perform all required business functions. Once the testing is complete and the department head signs off; obtain a list from the department head of all User profiles that perform the same task and then make the required changes for the rest of the people the perform the same function.
5. Once all User profiles are attached to the correct new group profiles you can change the old group profiles to not have a password and start removing the old group files from your OS/400 system after they no longer are the owner of objects.
6. You may need to add a few special explicit authorities to a few User

profiles to allow for certain functions to be performed for cross application Users.

Having gone through this process, it is essential that you monitor and maintain the security model. A regular external audit is required to ensure the new standards are still in effect. This doesn't have to be a manual process by expensive external audit companies. For example, Skyview's Risk Assessor is an inexpensive application you can use to compare your security configuration to best practices as noted in the OS/400 Security Reference manual. The application produces a complete independent analysis that would normally take days to produce through other methods. By automating the audit function and third party expert review you can focus your resources on improving your security based on the outcomes of the automated review.

These steps will help you get started on the "least privileged" industry standard

security design. Just remember that security is about creating layers and always staying one step ahead. While adopting the "least privileged" model is a good start, resist the temptation to remain static. Up the ante and advance your iSeries security to the next level. Once you have the object level security implemented, investigate the more advanced record (field) level security on objects to add depth and layers to your security model. 

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 e-mail at 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 June 10, 2005.

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Jackie Jansen

Many of you that have purchased the iSeries Enterprise Edition recently have purchased a great deal more than just a lot of 5250 cycles available to use.

The column this month will concentrate on the excellent opportunities afforded by the service and education vouchers that come with the Enterprise Edition. The concepts are the same for the 800, 810, 825, 870 and 890. This article will concentrate specifically on the vouchers and some of the other surprises you get when you purchase a new i5 with i5/OS V5R3 and the Enterprise Edition.

Every i5 Enterprise Edition starting with the model 550 and up comes with an extra processor activated at no additional charge. This processor is then available for you to run i5/OS, Linux or AIX on. In most cases you will have to purchase the additional operating system license. The exception to this is with the Domino Edition which comes with two licenses for i5/OS. The other exception involves AIX.

Before I discuss AIX I want to start with the vouchers included with the Enterprise Edition. On the i5 the Enterprise Edition always includes one service voucher and may include education vouchers.

On the i5 520 the service voucher covers a one day service engagement by a qualified business partner to install, configure and get you started with one of: Windows integration, Domino for iSeries, WAS Express or Linux with SAMBA and WebServing. IBM pays the qualified Business Partner to perform this service on your behalf.

On the 550/570/595 the service voucher covers a slightly different set of options. The service voucher on these models covers a 2-day on-site "Getting Started" engagement delivered by IBM profes-

sionals. Even their travel and living for this engagement is covered. How can you lose? IBM will help you get started with Linux on iSeries, Domino, WAS Express, AIX, Windows Integration or WebSphere Portal Express Plus. Just think, you may have always wanted to try Linux. With the larger models and the Enterprise Edition you provide the Linux operating system and the Enterprise Edition provides the activation for one extra processor and the actual on-site services to help you install and get started running Linux on iSeries.

If you want to work with AIX there is an even better incentive. If you choose the AIX Getting Started service voucher with the Enterprise Edition, not only do you get the extra processor activated but you also get a single processor license for AIX 5L to run on that processor. What a super offer! But don't forget, when you are evaluating which server voucher offering to take advantage of, every 550, 570, 595 Enterprise Edition includes an integrated xSeries server. This might just put Windows Integration high on your list.

As noted earlier, in addition to service vouchers, the Enterprise Edition may also entitle you to education vouchers from IBM. These vouchers are valid at a series of classes that cover the new workloads such as Windows Integration, Linux, WebSphere and also the iSeries Technical Conferences and some COMMON conferences. The complete and up-to-date list of courses covered can be found at the URL at the end of this article. The education vouchers vary from zero on the 520 to five on the 595.

The bad news: You are supposed to register for these vouchers within 120 days of server installation. The good news: Since IBM realizes that a lot of customers have really not understood what they were entitled to, you can contact **Michael**

Prochaska in Rochester, to request an extension of that deadline. Michael can be reached at mikejp@us.ibm.com.

I really encourage all of you to take full advantage of the education and on-site services offerings that you may already be entitled to at no additional charge.

There are lots of other highlights with the Enterprise Edition. For example, many of you with the 550, 570 or 595 will be running on systems with multiple processors. IBM has chosen to package the DB2 Symmetric Multiprocessing feature or SMP with your Enterprise Edition. This feature allows the database to take full advantage of the multiple processors and to run specific requests in parallel. You only need to turn it on. To do this you can go to the Performance section of the System Values in iSeries Navigator or you can use the command "CHG-SYSVAL QQRVDEGREE". If you are running a heavy query environment or creating lots of indexes or reorganizing tables this can be extremely helpful.

There are a lot more features included in the Enterprise Edition that we don't have the time or space to cover today. For complete details on the iSeries Editions please see <http://www.ibm.com/iseries/hardware/editions>. 

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TUG NOTES

✓ TUG Election 2005

The nomination period for the TUG Elections 2005 has ended and the results are already in. We had as many nominees as we had seats to be filled, no more, no less. Therefore, all of the incumbents – **Alkarim Sachedina**, **Bob Lesiw**, **Dan Duffy**, and **Stephen Bingham**, as well as the new nominee – **Aziz Saleh** have been elected by acclamation. The incumbents will continue uninterrupted for another two-year term, and Aziz will join the board on July 1, 2005 (replacing retiring board member **Eveline Gaede** who's term ends on June 30.) "Congratulations to all the elected people and, welcome Aziz! You finally made it," announced TUG President, **Léo Lefebvre**. "Your perseverance has finally paid off!"

✓ TUG's Calendar of Upcoming Events

✗ May 18 – MoM

(At Woodbine Racetrack)

▶ 5:00 Session: "WAS 6.0"

Speaker: Stephen Quan

▶ 7:00 Session: "HATS 6.0"

Speaker: Adeline Chun

✗ June 22, 2005 – 17th Annual TUG Golf Tournament

(At Nobleton Lakes)

▶ 1:00 Shotgun start at

▶ 6:00 Awards Banquet (Steaks!)

✗ August 17 – TUG's 20th Anniversary Cruise

(Onboard The Kajama)

▶ 6:30 Sailing

✓ Easter Egg

Congratulations Jean!

You're the first one to e-mail me the correct answer! I hope you'll enjoy the videos on that page and show them to as many people as you can! We will have the TUG T-shirt sent to you shortly. Thank you for your participation in our 12th TEC and I hope you were able to bring back tons of information to help you in your work. – Léo

[Jean Stewart-Burgoynne wrote:]

Hi Leo:

I was just wondering if someone has emailed you regarding the hidden link? I've found one of them and it is on the butterflyto**Singi5/iSeriesChoirSing!** (And if you can't sing at least download and distribute) by Dan Duffy. – Regards, Jean



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✓ Thanks

I just wanted to send a note of appreciation for giving me the opportunity to volunteer at the TEC conference last week. This has been a rather chaotic year for me so far, and it allowed me an island of peace and at the same time a chance to be of some assistance. The whole event really made me realize how much I miss the IT industry and the people in it. Please pass my appreciation on to the rest of the crew as well. I met some really nice and interesting people! I will make a point of coming to the next MoM. I hope to see you all there. – Aloha, Ken Davis

✓ Lucky Winners

Here are the official prize winners at the March 23rd MoM: **Luice Yu** (Global Total Office), **Marly Campbell** (The John Forsyth Company), **Joseph Tam** (BPA), **Craig Donnachie** (Encon), **Cheryl Aspros** (Fuji Photo Film), **Miles Jenkins** (INTEC), **Larry Liu** (Scotia Bank). Draw prizes provided by TUG. A special thanks to IBM iSeries for sponsoring the wonderful desserts. Also thanks to Meridian Banquet Hall & Conference Centre for very good service on such short notice. – Wende Boddy

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