Bridging Connections
Russell A. Farrow Limited reaches across international borders with the help of WebSphere and a self-service customer Web site

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WebFacing Tool Paves Direct Path for Green-Screen Applications to Portal Environments
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Jim Kiss, IT director,
Russell A. Farrow Limited

Bridging Connections
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Editor’s Corner
Jim Utsler kicks off this month’s issue with the cover story on “Bridging Connections” relating how customs brokerage company Russell A. Farrow Limited moved from a 100-percent traditional RPG environment where customers had zero online access to company systems to using WebSphere to create a self-service website for its customers. Read all about the “overwhelmingly positive” response from customers Jim Kiss the company’s IT director describes on page 10.

Going a step further, our feature article is Go Portal which goes into detail on how green-screen applications can very easily be converted into a Web application. Find out all about it on page 14.

This month’s customer testimonial hails from Bank Rakyat Indonesia (page 21). The fifth-largest bank in Indonesia cost-effectively positioned its IT environment to handle triple its current business volume when it implemented an IBM System i5 595 machine equipped with IBM Capacity On Demand technology.

This year’s much anticipated Asia Pacific IBM System i Strategic Planning Conference took more than 400 delegates to not just one of the fastest-growing cities in Southeast Asia, but one of the most exotic, Bangkok, Thailand. Just flip the page to Diary covering our SPC special.

Ending with exploring Powertech’s open-source security in Endpgm, this issue is yet another complete read. Enjoy!

The Editor
iSeries@my.ibm.com
A Look at the Recently Concluded SPC in Bangkok

This year’s Asia Pacific IBM System i Strategic Planning Conference held at the grand Royal Orchid Sheraton Hotel in Bangkok from 31st May to 3rd June brought together a total of 437 delegates from all over Asia Pacific – the largest and most significant gathering of the year for System i! Conference sessions conducted by IBM Worldwide speakers included System i innovation, strategy and technology trends. Customer perspectives from THK Japan, Bayantel from the Philippines, 7-Eleven and Transaction Solutions, Australia demonstrated real-world deployment.

It was an amazingly dynamic session and we look forward to topping that next year!

Discover why more i5 users are using Robot than ever before!
Having a good indexing strategy is imperative to achieving high query performance on any database platform. A comprehensive and efficient indexing strategy can mean the difference between queries that complete in seconds rather than minutes or hours. Implementing such a strategy is an important task. DB2 Universal Database (UDB) for i5/OS wants to lend a hand in the form of Index Advised, which is a feature that enumerates definitions for nonexistent indexes with a high potential for improving a query’s performance. Not only does Index Advised help guide the creation of permanent indexes, but it’s also the basis for creating a new flavor of temporary index in V5R4 called a Maintained Temporary Index (MTI). An understanding of how Index Advised works, how it’s used to create MTIs and which tools are available to analyze this advice is essential for anyone looking to create a highly effective indexing strategy.

**Basic Building Blocks**

Index Advised itemizes the set of index definitions that the optimizer deems necessary to achieve better query performance. Because this feature is built directly into the optimizer, all SQL queries are automatically analyzed for new indexing opportunities based on the rules outlined in the “Indexing and Statistics Strategy” whitepaper (see the “Online Tools” sidebar, page 6). In general, Index
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Advised first looks for local selection equal predicates (e.g., table.column=constant). (Note: Index Advised can advise radix indexes or encoded vector indexes, or EVIs, to handle selection.) For joining, the optimizer adds join columns to the advised column list following the columns from local selection equal predicates. If present, columns from in-list predicates or a column from a single inequality local selection predicate (e.g., >, <, != etc.) are appended to the list. These columns appear last because the number of records they select can vary widely. Also, whereas columns against equal predicates can be moved around in their position with other equal predicate columns, non-equal selection columns don’t provide this flexibility. For grouping or ordering, Index Advised may include the grouping and ordering columns after the local selection equal predicates, but this is only true when all of the columns in the “group by” or “order by” list come from the same table. Additionally, the optimizer can recommend using a multiple-key column EVI to handle star-schema-type joins or simple grouping.

Meet the MTIs
While Index Advised is a highly effective end-user tool for improving query performance, it’s also the basis for the creation of another new tool in the Structured Query Engine (SQE) optimizer’s toolbox—the MTI. An MTI is a temporary radix index that the SQE optimizer can create to improve a query plan’s performance. It has an advantage over other temporary result sets created by the optimizer: it’s maintained. Like a permanent radix index, an MTI is updated as the underlying table is updated. Therefore, the cost of maintaining an MTI is similar to the cost of maintaining a permanent radix index.

The optimizer creates an MTI for a query plan for two main reasons. One, an index is functionally necessary to implement a query when a temporary result set isn’t allowed. A query running under a sensitive cursor is one example where a non-maintained temporary result set can’t be used to implement a query. The other reason the optimizer can choose to create an MTI is that the query will perform better with an index. While the Classic Query Engine (CQE) has the ability to create a temporary index, its usage is restricted to a single job and single query only. SQE’s MTIs, on the other hand, can be shared across queries and jobs just like a permanent index. SQE automatically controls the creation, sharing and deletion of MTIs. Creation of an MTI occurs when the optimizer determines that a query’s performance can be enhanced sufficiently by using the MTI, thus justifying the MTIs create cost. An MTI is deleted when the last plan in the system plan cache referencing it is removed (e.g., IPL) or when a permanent index is created that covers the same columns as the MTI. To avoid incurring MTI create costs after an IPL, consider creating permanent indexes for regularly used MTIs. MTI usage information can be viewed using iSeries* Navigator or the Database Monitor.

Now that the SQE optimizer has the ability to create maintained, shareable indexes, it relies on feedback from Index Advised to create those MTIs. When Index Advised recommends an index that may help a query perform better, the optimizer considers the effect on the query performance of creating that index. The cost of creating the index is considered, but it’s discounted the more times a query runs. So, the first time a given query runs, creating an MTI based on information from Index Advised may not be justified. Other techniques such as hash join and table scan are typically more appropriate for a query that has only run once. If the optimizer sees that a query runs frequently, it’s more likely to create the advised MTI. The justification is based on the fact that the one-time cost of creating the MTI will be more than offset by the runtime savings in subsequent query runs of this query and others. To garner this “historical use information,” the optimizer interrogates the system plan cache.

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Customer Driven Market Leader
In the past 24 years, over 55,000 Robot products have been installed at 12,500 customer sites and we add new users every month. The users range from the largest outsourcers, banks, and industries in the world, to small sites simply looking to cope with very limited resources. This overwhelming customer acceptance has contributed to Robot’s evolution, making it the most widely used solution for the iSeries in the world.

Tailor Made—Powerful Integration
While each product is a complete solution, the modules look and act in the same way. They also integrate through the solution’s Common Component Interface, building to become a single application while remaining quick to learn and simple to use.

Many sites that have standardised on the large multi-platform solution now use Robot to integrate the iSeries with this complex environment.

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Visual Explain provides users with a Highlight Index Advised feature that highlights any icon with Index Advised information.

The QAQQINI file gives users the ability to override some of the initialization settings used by the optimizer during optimization. Two QAQQINI parameters affect MTI creation. One is the ALLOW_TEMPORARY_INDEXES parameter, which has two values: *YES and *ONLY_REQUIRED. The default value for this parameter is *YES. When *YES is specified, the optimizer is free to create MTIs as it sees fit. When the *ONLY_REQUIRED value is specified, the optimizer will create MTIs only when they’re functionally necessary for sensitive (live data) queries. By specifying *ONLY_REQUIRED, indexes recommended by Index Advised aren’t created.

The other QAQQINI parameter that affects MTIs is the CACHE_RESULTS option, which helps determine how long MTIs stay in the system. When the default value of *SYSTEM is in effect, MTIs stay in the system as long as there’s a referencing plan in the system plan cache. When the *JOB or *NONE values are in effect, an MTI is deleted when all job’s consuming it end. Note that the CACHE_RESULTS QAQQINI parameter only affects reusable MTIs. MTIs created for sensitive cursor queries are typically deleted when the job ends. For more information on QAQQINI, see the “Online Tools” sidebar.

Use Your Tools
DB2 UDB for i5/OS provides many tools to help view and analyze the indexes advised by the optimizer and the MTIs created by SQE. Prior to V5R4, the two main tools available were the Database Monitor and Visual Explain. The Database Monitor is an integrated tool used to gather database-performance-related information for SQL-based requests running in i5/OS. Data collected by the detailed monitor is dumped into a table where it can be queried to analyze query plans and potential performance problems. Previously, monitor records containing Index Advised information contained a “Y” in the QQIDXA field of the monitor file as well as the column names in the QQIDXD field. In V5R4, the monitor has been updated to produce a new 3020 record specifically for Index Advised information. A 3020 record is created for each advised index. For MTIs, a 3002 record is created (this record type is also used for CQE temporary indexes). The QQC16 field shows whether an existing MTI was reused (“Y”) or not (“N”).

Visual Explain, available through iSeries Navigator, is a database tool that graphically represents the optimizer implementation of a query request. The implementation is displayed as a tree of query plan components. The resulting tree provides a comprehensive understanding of the optimized plan. Visual Explain provides users with a Highlight Index Advised feature that highlights any icon with Index Advised information. Additionally, all of the icon’s applicable Index Advised information appears in its attribute pane (see Figure 1, this page).

In V5R4, many new tools incorporated into iSeries Navigator can be used to aggregate and analyze the Index Advised and MTI information without ever starting a database monitor. For more information, refer to the May 2006 article “DB2 for i5/OS Redefines On Demand for Indexing” (www.ibm systemsmag.com/i5/may06/administrator).

It’s a Good Thing
Index Advised is a powerful tool that should be incorporated into any reactive indexing strategy on DB2 for i5/OS. An incomplete indexing strategy can cause significant SQL query performance degradation because it limits the number of
_THE INVASION

_DAY 11: These commoditized clones have taken over. Haven't been outside in days. Living off instant coffee and a tin of breath mints. :-(

.DAY 12: They're breeding. Multiplying. Multiple apps. Multiple databases. They must have a queen.

_Help...me....
Net Worth

How customs brokerage company Russell A. Farrow Limited is using WebSphere to increase and improve its Internet presence

BY JIM UTSLER

“...it’s a competitive advantage for us,” says Jim Kiss, director, IT, with Russell A. Farrow Limited, referring to the company’s growing Internet presence.

And he should know. Just a few years ago, Russell A. Farrow Limited, Canada’s largest privately held customs brokerage firm, was operating almost exclusively in a green-screen environment, and its customers had no online access to the company’s systems. Instead, the company had to rely on its own customer-service representatives (CSRs) to gather even the simplest data for them. “This was the result of our legacy applications, which had been around for years, since the System/36* days,” Kiss remarks. “This was great in the 1980s but not today. Customers simply expect—and deserve—more.”
Jim Kiss, IT director, increases Russell A. Farrow Limited’s Internet presence with help from WebSphere.
By using WebSphere® Development Studio to create a self-service Web site for its customers, the company broke free from green-screen applications. Called TradeSmart Web, the site, which is hosted on the IBM® System i® 520, allows Russell A. Farrow Limited’s customers to, among other online activities, track their international shipments in real time, request reports and receive electronic versions of formerly paper-based documents. As Kiss notes, “This changed everything.”

Since launching the site in 2005, the company has been able to free up its CSRs to do more than just respond to typical customer queries; now, according to Kiss, they’re available to assist customers with other, more pressing issues, such as finding ways to save money and improving the clearing of shipments. “We haven’t eliminated any reps,” he says. “They’re just working on more important things.”

The Proper Information
The Windsor, Ontario, Canada-based Russell A. Farrow Limited was founded in 1911 and is now owned by the founder’s grandsons, Rick and John Farrow. Its primary business focus is customs brokerage, assisting its 4,000-plus clients as they import goods into Canada and the United States. According to Kiss, “We pay the duty and taxes to governments on behalf of the clients, then bill them for those amounts and add in a brokerage fee.” The company also runs a warehousing, parcel-logistics and freight-forwarding business.

The company is also responsible for rating the items that are imported into either country. For example, if a large hardware retailer is bringing in a freight order of light switches, raters comb through government-supplied “books containing just about every commodity imaginable,” as Kiss describes it, to determine exactly how the switches are categorized and how much duty and taxes are due for them. “Some commodities are duty free and others aren’t, and that’s on both sides of the border,” Kiss says.

The company must also be aware of when shipments (whether on truck, rail or ship) are due to cross the border. To facilitate this, the company receives faxes and, in the case of larger clients, EDI transmissions outlining the details of the shipments. Working out of local border-crossing offices, the company clears the goods at customs on behalf of the client. “Once we receive notification, we enter that data into our system and generate what’s called a release to get shipments released by customs,” Kiss explains.

This never-ending process has shipments and customs clearing occurring around the clock. To help streamline the process, the company makes the shipment details available at all of its local offices, whether they’re received at one of its regional centers via fax or EDI or at the border crossings, where, for example, truck drivers present paper-shipping documents. However the information is gathered, it’s all entered into Russell A. Farrow Limited’s legacy applications and made immediately available to its employees.

Supporting this flurry of activity is a System i platform-based IT infrastructure consisting of two System i 520s running i5/OS® V5R3 (which replaced a single iSeries® 810 in 2004). One of the 520s, located in Windsor, acts as the company’s primary production box and the other, located in Ayr, Ontario, operates as a high-availability (HA) failover box. HA is attained using Vision Solutions’ ORION software over a WAN. This was implemented with the assistance of GSS Group Inc. The 24-7 nature of the customs brokerage industry makes HA a necessity, as Kiss explains: “We must have all the proper information available when the trucker reaches the border to make sure everything clears. Otherwise, the shipment could be rejected, or if it’s not properly classified, we could potentially incur penalties by customs.”

The Windsor-based System i 520 has four LPARs, one each for the company’s Canadian and U.S. brokerage systems, a third to host WebSphere Application Server Express and Lotus® Domino®, and the fourth to house document images. The company uses an IBM System p® server for its parcel logistics division and 25 IBM System x® servers running many applications and services.

Although this sounds like a seamless IT infrastructure, the company had been lacking a crucial component: the ability for its clients to access their data over the Web. Sure, they could call CSRs with questions about, for example, a shipment having cleared customs, but this was an inefficient way for
communication to take place. If a CSR is out of the office, the resolution of client requests might take a day or two, after a CSR has returned to the office.

“Our company prides itself on customer service, and that’s how we win clients,” Kiss says. “But our old green-screen ways of doing things weren’t cutting it anymore.” And until just a few years ago, Russell A. Farrow Limited had been operating, according to Kiss, “in a 100-percent traditional RPG environment. It was all green-screen, and internally, that’s what still runs the company because it’s a very heads-down transaction-oriented business. We have a lot of people doing data entry, and green screen is actually well suited for that.”

It’s not well suited, however, for self-service-type applications, which Russell A. Farrow Limited’s clients could use to help themselves by checking the details of a shipment. And that’s where the impetus for building Web-enabled applications came from. “Our external clients were pressing us to do this, to give them visibility into their shipments,” Kiss recalls. “That and we wanted to give our internal users access to document images, providing them over the Web,” Kiss says. “This was related to internal cost savings, not having to print out every piece of paper we have to deal with.”

An Overwhelming Response
At the same time the company was considering developing a Web-based application, it decided to upgrade its iSeries 810 to its current System i platform. This was in part because its lease was up on the older box, but more so because the pricing of the two new boxes had become very competitive. As Kiss explains, “We were actually able to put in two 520s in a high-availability environment for roughly the same cost as our single model 810.” IBM and IBM business partner Able-One Systems assisted with the migration to the new 520s.

The company modernized its applications, using the boosted processing power of its new servers to help in its WebSphere development efforts. It looked at two other IBM products it thought might help with its Web efforts, including the WebFacing Tool and HATS, but decided against using them, instead building the TradeSmart Web application from scratch.

“We had a keen Java* programmer here who actually started writing queries and building code against the data and was able to put a basic track-and-trace application together very quickly,” Kiss says. “It looked and functioned much better than what had been delivered out of the box with WebFacing and HATS. If we didn’t have the Java expertise onboard, we may have invested more time into leveraging those two products.”

Russell A. Farrow Limited also briefly considered using Microsoft* IIS and .NET, but quickly dismissed that notion, not wanting to add to its already large PC-server environment or deal with the increased complexity that solution entailed. The company also wanted to keep the application as close to its data as possible, which meant running it on the System i platform, a proposition Kiss actually preferred, being well aware of the platform’s stability—especially now that he had a dual-system HA environment.

The company took a phased-in approach to its development efforts (which involved the use of Java 2 Platform, Enterprise Edition or J2EE and the Eclipse development framework), beginning in mid-2004 with the development of a track-and-trace application, which it piloted with a select number of clients that fall. “We wanted to make sure we worked out all of the bugs and that we could handle the workload before we went with a larger, production rollout,” Kiss remarks.

Following the success of that pilot program (the response to which “was overwhelmingly positive,” Kiss says), the company then went live with TradeSmart Web in early 2005. Of course, that was hardly the end of the development effort, which Kiss describes as having been pushed from the bottom up. “Once we received our marching orders to build the initial track-and-trace application, the IT team was given quite a bit of leeway to experiment with ways to deliver added functionality that was both called for and that clients felt was needed.”

One key aspect of this continued development was the addition of customer-requested reports. These reports had been around for years as part of its RPG computing environment, so it took little effort to use WebSphere to create front-end submission screens that clients could use to enter runtime parameters. As an added bonus, reports could either appear on screen or be delivered as e-mail attachments in PDFs or comma-separated format. “What’s happening in the background is that a Java program in WebSphere is calling an RPG program that generates the reports, which are then

“This goes against the grain of what many people think about WebSphere and the System i platform, but they’re both very open—and we like that.”—Jim Kiss, Director, IT, Russell A. Farrow Limited

(continued on page 23)
IBM WebFacing Tool is known for its ability to take a green-screen 5250 application and convert it into a Web application, but did you know it can also generate a portlet for that same application that can be used within an IBM WebSphere Portal environment?

By definition, a portal is a doorway or entrance. In the Web world, a portal is a Web application that runs on an application server such as WebSphere Application Server (WAS). But it’s a special Web application with the framework to allow users to access multiple other Web applications from a single Web page. Think of it as a windowing framework for Web applications.

Portals allow users to view news headlines of various categories, e-mail and stock quotes, all from one coherent-looking page. Each of these Web applications must be wrapped within a particular interface called a portlet and adhere to certain rules for them to coexist alongside one another within the portal environment. We’ll discuss these rules later. Once a portlet is defined and implemented, it’s deployed or installed onto the portal and made available to its users. So the portal is actually a container of portlets and is rightfully described as a “portal server” or “portal container.” Portal servers are commercially available and include WebSphere Portal Server, Microsoft SharePoint Portal Server, Sun Java System Portal Server and BEA WebLogic Portal.
Why Use a Portal?

Why use a portal instead of a simple Web site? Well, a simple Web site is owner-centric. Its content and how it’s organized and viewed are solely determined by the Web site’s owner. The site normally includes related information and provides links to related services from a single entry point called the home page. It’s like a table of contents or an index page. A portal, on the other hand, allows the owner to provide a collection of services and information within a common framework. Not only does it allow multiple applications and multiple instances of applications to exist on a single page, but it also lets the users define the content of their pages and personalize that content to their needs. All of your required services and information are made available to you on your own customized “user” environment.

Typically, the user can customize which portlets they see on their page, how those portlets are arranged and organized, as well as the look and feel of the portal by selecting from available themes and skins. Some portlets even allow the user to customize the content of the portal itself via the portlet’s interface. These features are all benefits to building on top of the common portal framework.

Another benefit is security. A portal supplies a centralized secure gateway to its services. Users acquire a portal profile with a user ID and password and need only sign in once to the portal to acquire access to the services provided. This profile is then used to store all of the users’ customizations for the next time they sign in. Profiles can be grouped and levels of access granted according to the needs of the profile groups. For example, in a company’s portal, the administrator can allow only profiles of executive employees access to portlets that provide business-confidential information. At the same time, the administrator can allow all employees to view internal collaborative portlets that deal with messaging and e-mail. Additionally, all profiles, including those external to the company, can be allowed to view e-commerce portlets for ordering company products or portlets containing public company information and news.

Green-Screen to WebFacing Portlet

Creating a WebFacing portlet project is easy. If you’re familiar with creating a WebFacing Web project, this task is quite similar. Let’s dig into what it takes to create, test and deploy your WebFacing portlet.

To create a WebFacing portlet project, select WebFacing Portlet Project under WebFacing node of the New Project wizard. You’ll see the WebFacing Portlet Project wizard (see Figure 1, left). Note that the Advanced section is pre-populated and hidden by default. Expand this section if you want to customize any of its values. If you create a portlet project with Servlet version 2.4, you can’t run it on a WebSphere Portal Server until the server that supports Servlet version 2.4 (or Java 2 Platform, Enterprise Edition, or J2EE, 1.4) is released. Once you’re done with the first page of the wizard, click “Next” to proceed.

The other pages in the wizard allow you to specify various components of your WebFacing project (e.g., features, DDS and UIM member lists, CL commands and style). They’re identical to the pages in the WebFacing Web project creation wizard. The steps to complete those pages are easy and self-explanatory. You can also press F1 in any page to get contextual help for that page.

Once you click “Finish” and the wizard completes its operations, you’ll see your portlet project in the WebFacing Projects view. You can run your project on a Portal unit test server within the workbench. To do this, right-click your project in the WebFacing Projects view and select Run>Run on server. The Portal unit test server included with IBM WebSphere Development Studio Client for iSeries* version 6.0.1 is a scaled-down version of a full WebSphere Portal Server 5.0.2.2, excluding such functionality as personalization. However, it’s a good starting point to perform local testing of your application. Prior to running your application in a production environment, you must test your application on the full version of WebSphere Portal Server multiplatform. One of the platforms you can run your application on is the System i* platform.

To do so, you must first install and configure WebSphere
Portal Server on your System i hardware. Export your project as a Web archive application (WAR) file. Next, install the WAR file as a portlet onto your Portal application server. After the portlet is installed, you can customize your Portal Web pages to include this portlet. (Note: Refer to http://publib.boulder.ibm.com/infocenter/wpdoc/v510/index.jsp for general information on administering portals, installing portlets, and creating or customizing portlet pages in WebSphere Portal Server Version 5.1.x. For WebFacing-specific customization tasks, refer to the next section of this article.) Figure 2 (above) shows an example of a portal page that includes a WebFacing portlet for a customer query application along with several other portlets.

WebFacing Portlet Versus WebFacing Web

Let’s review the major differences between WebFacing Web and portlet applications. The first important difference between these two types of applications is that WebFacing portlet applications must run on a portal server, and can’t be run on a stand-alone Web server. The portal server can either be the portal test environment that comes with WebSphere Development Studio Client or a stand-alone portal server such as WebSphere Portal Server for iSeries. Another difference is related to the insert/overwrite mode. The default mode for keyboard text entry is insert mode for portlet applications, whereas the default mode for keyboard text entry is overwrite mode for Web projects. For portlet and Web applications, toggle the Insert key to enable either insert mode or overwrite mode for the current page. In addition, WebFacing portlet applications don’t support Web-page compression. These differences are categorized as runtime differences. Many conversion and style differences also exist.

The output of conversion for WebFacing portlet projects is the same as WebFacing Web projects. However, the resulting HTML from the compiled Java ServerPage (JSP) content may differ to allow it to run in the portal environment. A unique ID setting has been added to WebFacing JavaScript functions to enable more than one portlet to run in the same browser. Moreover, WebFacing provides a number of predefined styles for Web and portlet applications. The styles available for a WebFacing portlet application differ from those for a WebFacing Web application. A WebFacing Web style can’t be used in a WebFacing portlet project and vice versa.

The main purpose of choosing a WebFacing portlet style is to select the style of buttons you want displayed. The style for WebFacing portlet projects is inherited from the look and feel of the theme that the portal’s administrator or user has chosen. For example, you don’t need to change the color of your buttons because they’ll have the same color as the portal buttons, no matter what WebFacing portlet style you choose. You can still change the color of windows and subfiles using the WebFacing project style properties pages. However, this isn’t the recommended way of modifying WebFacing portlet project styles. To do so, change the portal style to one of the available styles by portal server or to a user-defined portal style. By contrast, WebFacing Web projects should be modified using the project style properties pages or by editing the apparea.css for all styles.

For a comprehensive list of differences between WebFacing Web and portlet applications, refer to the topic “Creating a WebFacing portlet project” in the WebFacing help in WebSphere Development Studio Client for iSeries.

WebFacing for Collaborative Environments

As the Web becomes more pervasively the place for people to perform their everyday business, collaborative environments that make the Web’s interface more productive by integrating common applications into a single user-centric gateway will continue to gain popularity. The IBM WebFacing Tool recognizes this potential and provides a direct and equivalent path for 5250 green-screen applications to seamlessly participate in a portal environment, as it does today for the Web.

Lila Aravopoulos is a staff software engineer at the IBM Toronto Lab, where she’s currently the lead developer for WebFacing Tooling. She’s also a frequent speaker at COMMON conferences and various education engagements. Lila can be reached at lbehzadi@ca.ibm.com.

Abe Batthish is an advisory software engineer at the IBM Toronto Lab, where he’s currently a senior developer for the IBM WebFacing Tool. Abe can be reached at batthis@ca.ibm.com.
Multiple Scheduling Environments Create a Buzz

BY BRIAN YOUNGER

Over the last several years, the IT industry has coined buzzword after buzzword. While many are just that, some have changed the IT landscape. One in particular is high availability (HA), which for many is a way of life. So what does Multiple Scheduling Environments within IBM’s Advanced Job Scheduler (AJS) and HA have in common? Data. By default, all of the information that defines a scheduled job, calendar or job dependency is data stored in physical files found in the AJS product data library QUSRIJS. In an HA situation, this AJS product data should be replicated to another system or LPAR. Replicating the data is easy for HA solutions, and it isn’t a problem for AJS. It is, however, tricky when the backup system/LPAR (backup) has some of its own scheduling to perform. In this case, you wouldn’t want the data from the production system/LPAR (production) environment to be replicated into an active scheduling environment data library on the backup system; it’s possible that scheduled jobs from the production environment would inadvertently start running on the backup system.

In i5/OS® V5R3, AJS was enhanced to manage multiple scheduling environments. A scheduling environment is basically a copy of the QUSRIJS data library and its objects into another library. QUSRIJS is the data library created during the install of the AJS product. Each scheduling environment is its own scheduling entity and can be accessed and managed using AJS interfaces. When defining the scheduling environment within AJS, a monitor switch is available to designate whether the scheduling environment can be active. A scheduling environment must be active to automatically submit jobs. You probably wouldn’t want a replicated environment to become active if the source system/LPAR was also active because the same job would be submitted for each active environment (source and replicated environments). However, there are many times when you’d want multiple environments active at the same time. I’ll outline these cases later.

Creating a Scheduling Environment
Let’s examine the steps for creating a scheduling environment on the backup. This allows the original schedule of jobs for the backup and the production scheduled jobs to co-exist, and if needed, they can be initiated at the same time. Keep in mind that within AJS, a scheduling environment is a data library. iSeries® Navigator is required for creating a scheduling environment. (Note: If you don’t currently have iSeries Navigator loaded on your PC, refer to Connecting to iSeries>iSeries Navigator>Installing iSeries Navigator in the iSeries Information Center (http://publib.boulder.ibm.com/infocenter/iseries/v5r3/index.jsp). You can refer...
Each scheduling environment is its own scheduling entity and can be accessed and managed using AJS interfaces.

to Systems management>Work management>Manage daily work>Schedule jobs>Advanced Job Scheduler>Install the Advanced Job Scheduler in the iSeries Information Center for help with installing the AJS plug-in.

To create a scheduling environment based on our HA situation, take these steps:
1. Change the HA solution on the production system to replicate the QUSRJS library to QUSRJSPRD on the backup system. If the QUSRJSPRD library must exist first, save the QUSRJS library on the production system and restore on the backup system using keyword RSTLIB(QUSRJSPRD) on the Restore Library (RSTLIB) command.

2. From iSeries Navigator, expand your backup system>Work Management.

3. Right-click “Advanced Job Scheduler” and select “Properties.”

4. Select the Data Libraries tab (see Figure 1, right).

5. Click “Add.”

6. Enter “QUSRJSPRD” as the library.

7. Enter a brief description.

8. Specify “No” to monitor the data library and click “OK” to add the data library (see Figure 2, right). AJS on the backup system is now aware of the production environment.

You now have two environments on the backup system. The original data library, QUSRJS, is active, and the QUSRJSPRD isn’t active. If a disaster happened to the production system, you could change the monitor switch to “Yes” for QUSRJSPRD on your backup system. Then on a command line for your backup system, enter STRJS DTALIB (QUSRJSPRD) to start the monitor for the production environment. The backup system, which is now acting as production, is running jobs from the original backup environment (QUSRJS) as well as the production environment (QUSRJSPRD) at the same time.

For purposes of checking jobs or making adjustments to the production environment, you’ll need access to the job information. A user can only access one scheduling environment at a time. To access the job information in the production environment, perform these steps:
1. From iSeries Navigator, expand your backup system>Work Management.

2. Right-click “Advanced Job Scheduler” and select “Properties.”

3. Select the Users tab.

4. Click “Add.”

5. Enter the user profile of the user who will access the production environment.

6. Select data library QUSRJSPRD and click “OK” to add (see Figure 3, below). The data library specified for a user will be used until the user is changed to access a different data library. (Note: By default, the main data library (QUSRJS) will be used by all users that haven’t been added to this list.)
While multiple scheduling environments are great for HA situations, they’re also great for implementing production and test environments on the same system/LPAR.

Users can determine which scheduling environment they’re accessing in a number of ways. For the GUI, the data library is displayed on the General tab of the main properties for AJIS. On most dialog boxes, the data library is displayed in the heading at the very top of the box (see Figure 4, below). For 5250, the data library is displayed at the top of major displays like Work with Jobs (WRKJOBJS) and others such as DSPJOBJS, WRKHSTJS and DSPHSTJS (see Figure 5, below).

An Essential
While multiple scheduling environments are great for HA situations, they’re also great for implementing production and test environments on the same system/LPAR. You can test jobs in the test environment, then copy them to production. Disk space is the only limitation to the number of scheduling environments you can create. For a production and test situation, you probably want both environments to be active at the same time. To create a test environment, you may want to consider using the Copy Library (CPYLIB) command. To copy a job from one environment to another, you must verify that the current environment you’re accessing is the environment you want to copy from. The copy command to copy a job from a test environment to the production environment would look something like this:

```
CPYJOBJS FROMJOB(JOBA) TOJOB(*DATALIB) DTALIB(QUSRIJS) ACTION(*COPY)
```

Everyday Life
For some, multiple scheduling environments may be just another buzzword. But for others, it will become just another essential part of everyday life.

Brian Younger is product manager for Pinnacle Business Systems. His responsibilities include product development and onsite customer training for the IBM* Advanced Job Scheduler for iSeries. Brian can be reached at brian.younger@pbsnow.com.

More on the Web
FOR DETAILED INFORMATION ABOUT AJIS’s capabilities, visit IBM’s Web site (www.ibm.com/iseries/jscheduler).

For more information on multiple scheduling environments refer to Systems management>Work management>Manage daily work>Schedule jobs>Advanced Job Scheduler>Set up the Advanced Job Scheduler in the iSeries* Information Center (http://publib.boulder.ibm.com/infocenter/iseries/v5r3/index.jsp).

—B.Y.
A look at customers’ success and achievements

Bank Rakyat Indonesia Triples Business Volume with System i

CUSTOMER BACKGROUND
Established in 1895 as a savings bank for the Indonesian upper class, Bank Rakyat Indonesia (BRI) is now publicly owned and has become the fifth-largest bank, in terms of assets, in Indonesia. Its primary business is to provide financial services for small and medium-sized enterprises throughout the country. Headquartered in Jakarta, Indonesia, BRI currently operates in more than 4,000 locations throughout Indonesia, Hong Kong and the U.S.

BUSINESS VALUE SUMMARY
The fifth-largest bank in Indonesia, Bank Rakyat Indonesia (BRI) attained its competitive position through strategic expansion. To improve its market standing, the bank needed to accelerate its expansion within Indonesia and globally. But BRI’s information technology (IT) environment stymied its growth. The IT infrastructure - split between two locations to support geographically dispersed branches - lacked the capacity to accommodate the bank’s ambitious growth plan. To realize its strategic vision, BRI needed to enhance the scalability of its IT infrastructure while saving cash for new locations and related marketing initiatives.

With a cost-effective, one-time investment in IBM technology, BRI positioned itself to administer a total of 60 million accounts. A powerful IBM System i5 solution enables BRI to manage its enterprise - distributed across three time zones - from a single, centrally managed platform. IBM Capacity Upgrade On Demand technology keeps the bank from investing in resources before they are needed by allowing BRI to quickly and easily scale computing power to match business growth, while paying only for active CPUs and memory.

- Saved US$9.4 million due to infrastructure simplification and usage-based pricing
- Tripled manageable business volume

Synopsis: A large bank in Asia cost-effectively positions its IT environment to handle triple its current business volume when it implements an IBM System i5 595 machine equipped with IBM Capacity On Demand technology.

Location: Jakarta, Indonesia
Industry: Banking
URL: http://www.bri.co.id/

IBM delivered a flexible, powerful IBM System i5 595 server configured in a 32/64-way setup and featuring CPU On Demand and Memory on Demand to give BRI the capacity it needed in order to support its rollout of new branches.
- Positioned itself to improve market ranking by enabling cost-effective growth

**BUSINESS NEED**

BRI wanted to aggressively grow its business by expanding its retail coverage and rolling out new branches. The company currently has 1,300 offices that serve approximately 32 million accounts, and it planned and targeted to convert 1,000 distributed Micro Offices per year to be centralized for the next 3 years while adding another 40 million accounts. To support this growth, BRI needed the ability to quickly add capacity to its information technology (IT) environment, which was based on a dual data center setup with two 24-way IBM System i 890 machines. The company wanted to move forward with a cost-effective IT platform that could easily scale to support its future growth.

In addition to the i890 machines, the company’s legacy IT environment included:
- Brinets and Syariah core banking applications from Silver Lake
- Proswitching, running on IBM System p5 servers

**SOLUTION**

IBM delivered a flexible, powerful IBM System i5 595 server configured in a 32/64-way setup and featuring CPU On Demand and Memory on Demand to give BRI the capacity it needed in order to support its rollout of new branches. The i5 595 machine represents a one-time investment that will enable the company to handle its target of 60 million accounts while staying within its 3-hour end-of-month processing limit. BRI anticipates that the 32-way processing capabilities of one partition of the i5 595 server will provide ample computing power until mid-2006, when it will use CPU on Demand to enable 64 processor in single LPAR. In addition, Memory on Demand gives the company the ability to quickly and easily add incremental memory capacity on the i5 595 machine from 256GB up to 512GB.

The IBM solution also included an additional 20TB of mirrored disk storage and a number of services, including:
- MIMIX upgrade, implementation and maintenance services
- System health check services
- Project management services
- Delivery of Backup machine to DR Site.

**BENEFITS OF THE SOLUTION**

Through its upgrade to the IBM System i5 595 server, BRI positioned itself to continue its plan to roll out new branches, which had been on hold since August 2004, while realizing an estimated savings of US$9.4 million. A portion of the cost savings is due to the flexible investment in IBM On Demand technology, which enables BRI to add processors or memory only as necessary. The bank also realizes savings through the simplified management of the IBM solution, which gives BRI the unique ability to use a single platform with one core banking application to operate in three different time zones - a setup that typically requires at least one partition for each time zone.

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**(from page 8)**

options available to the optimizer. The optimizer can build MTIs to help cover a poor index strategy, but there are limitations. Due to the overhead of creating MTIs at query runtime, the optimizer will consider creating them for relatively small and moderately sized files only. In short, there’s still no substitute for a good indexing strategy. By understanding and utilizing the index advice, through tools like the Database Monitor and iSeries Navigator, one can develop a comprehensive and efficient indexing environment.

Rob Downer is a senior software engineer at IBM in Rochester, Minn. Since 2000, he has been a member of the SQE optimizer team. Rob can be reached at rvdowner@us.ibm.com.

Shantan Kethireddy joined IBM in 2001 and is currently a member of the IBM SQL Query Engine team in Rochester, Minn. He speaks at System i* technical conferences and acts as a subject-matter expert in developing the agenda for COMMON’s database course of study. Shantan can be reached at shantank@us.ibm.com.
converted to PDFs or comma-separated files and either delivered to the Web site or the appropriate e-mail address,” Kiss explains.

In mid-2005, the company began capturing printed documents as images by converting spooled files to PDFs. These files are stored in a DB2* Universal Database* (UDB) for i5/OS on the 520’s image LPAR and then uniquely indexed based on transaction number. TradeSmart Web was modified to link document images to corresponding transactions. Because of this, clients can access the source documents as images over the Web rather than having CSRs print and then mail them.

“This is saving us a lot of money in terms of paper and ink, as well as print monitoring, and giving our clients yet another way to help themselves,” Kiss remarks. The company then took the additional step of imaging existing documents, again making them available via TradeSmart Web. It’s now looking at ways to capture incoming faxes as images.

As a result of this imaging, the company has reduced print-related costs and effort. In fact, almost half a million documents are imaged and stored in the imaging LPAR every month, making them available for online viewing. And nearly half of those 500,000 or so images are no longer printed. The company expects to eliminate the remaining printed documents by the end of 2006. “We’re trying to get rid of paper altogether,” Kiss says, noting that the company clears around a million shipments a year and that each shipment may have five or more pieces of paper associated with it. “The numbers add up pretty quickly when figuring out how much this imaging and Web dissemination of paperwork is going to save us,” Kiss remarks.

The company is so pleased with its WebSphere solution that it’s in the process of deploying WebSphere MQ for its U.S. brokerage business. In this case, it will be sending release information to the U.S. government for U.S.-bound shipments, replacing the antiquated system currently in use.

“WebSphere MQ has checks and balances built into it that guarantee delivery, so if there’s a hiccup on either our side or theirs, it will keep trying to send the transmission until it goes through,” Kiss explains. “Once the transmission is received, an acknowledgement is automatically sent back to us. We expect it to be 99.9-percent accurate.”

An Added Dimension
When describing this WebSphere technology-developed and -hosted application, Kiss is quick to point out that Russell A. Farrow Limited built it from scratch “without the use of third-party products. There are no commercial CRM, ERP or content-management solutions involved. Everything was built by our Java and RPG programmers, all of whom used WebSphere as their development environment.”

It’s that type of flexibility the customs broker likes when using WebSphere for application development. The company can use out-of-the-box functionality such as built-in security and leverage open standards that include Java and XML to create robust systems running on a similarly robust server.

“This goes against the grain of what many people think about WebSphere and the System i platform,” Kiss says, “but they’re both very open—and we like that.”

So much so that the company is always looking for additional ways to leverage its investments in WebSphere technology and the 520s to offer increasing online functionality to its clients via TradeSmart Web. For example, if a customer is looking for a commodity-analysis report and it happens to be in RPG, the company can quickly—“in a day or two,” Kiss says—have it ready for the Web. “We already have the infrastructure in place, so it’s not a big deal to continue adding enhancements to the site.”

This flexibility has made Russell A. Farrow Limited increasingly competitive in its industry. When approaching potential clients, the company can quickly show them TradeSmart Web and all of the functionality it has to offer. And that, in many cases, is proof that Russell A. Farrow Limited is indeed as committed to its clients as it says it is. As Kiss says, “Our Web offerings give us an added dimension that we can sell.”
Opening Up a Security Roadmap

PowerTech’s open-source security policy designed to be a living document

By Neil Tardy

John Earl says that even though most System i* shops see the value in creating a security-policy document, many never find the time to do it. This reality gave Earl and the other technologists at The PowerTech Group an idea.

During the COMMON spring conference in March, PowerTech unveiled what it calls an open-source security policy. The company is encouraging System i professionals to download the policy from its Web site (www.powertech.com), review the document and return their additions and modifications. Using this input, the Kent, Wash.-based provider of System i security-software solutions, will refine the policy over time.

“We see so many people who want to do something about security, but they get hung up on step one,” explains Earl, PowerTech’s chief technology officer. “If you don’t know where to start, this helps you get going.”

He emphasizes that the policy—a dozen or so pages that outline everything from where to set your user profiles to where you should physically locate your systems—is indeed a starting point, rather than the final word on System i security.

“This is a document that’s meant to be argued over. I’m hoping that it will spark debates about a particular system value or a particular setting on a user profile,” Earl says. “That’s fine because that process will make this into a better document.”

It’s a process that borrows from the now-familiar open-source model. Similar to the way developers from far-flung locations submit code snippets to enhance open-source software, PowerTech hopes the community of System i administrators and operators will tap their experience and contribute their ideas to strengthen the existing policy.

As focused as System i professionals generally are on topics relating to system and network security, the general concept of developing and/or defining a security policy is only starting to gain traction. This is due in significant part to the wave of privacy and compliance legislation that’s requiring companies to demonstrate that they’re carefully handling their customers’ personal data.

While a well-crafted security policy is obviously important when it comes to satisfying compliance regulations and managing audits, Earl believes that it shouldn’t be viewed simply as a piece of paper that will appease a persistent auditor.

“A policy is really a direction, a roadmap of where you want to go and where you want to be,” he says. “For companies that don’t have one, it’s pretty difficult for them to even figure out what to fix because they don’t have a standard against which to measure themselves.”

Many shops find it hard to get started. Earl says he can relate, given that PowerTech’s own security-policy project was years in the making. Though his experience in the industry gave him great insight into what steps should be taken to help secure a System i environment, Earl found himself grasping at the impossible goal of trying to create the perfect policy.

“I always thought that we would publish this, but every time I started to look down the road, I’d wonder if I got this setting right, or I’d think of someone who would argue with this recommendation,” he says. “I finally realized that, even though we have a really bright team of security professionals here, there are lots of other bright folks out there as well.”

Earl points out that bright folks from throughout the System i community are indeed providing their input. He says that in the first three weeks following the announcement of the open-source security policy, about 50 people downloaded the document.

“I want this to be a working document that folks actually use rather than something that sits on a shelf,” he adds. “I think it cuts to the heart of the issue on i5/OS* security—this is a workable, dynamic document that you can use everyday. That’s what it’s intended to be anyway.”

Neil Tardy is a contributing writer to IBM Systems Magazine, i5 Business Systems edition. Neil can be reached at ntardy@msptechmedia.com.
For further information on our IBM Systems magazine ASEAN/SA, please contact the respective country representatives listed below:

**MALAYSIA AND SINGAPORE**  
Alida Abdullah  
Phone: +60 3 7711 4779  
Email: 1alida@my.ibm.com

**INDONESIA**  
Vina Kasim  
Phone: +62 21 5238480  
Email: vina@id.ibm.com

**INDIA**  
Divyashri S Dholay  
Phone: +91 22 56962041  
Email: didholay@in.ibm.com

**PHILIPPINES**  
Carmina Marquez  
Phone: +63 2 995 2109  
Email: marquez@ph.ibm.com

**SRI LANKA**  
Rukshan Almeida  
Phone: +9411 249 3500  
Email: rukshana@sg.ibm.com

**THAILAND**  
Kanyanee Sirimongkol  
Phone: +66 2 273 4905  
Email: csksam@th.ibm.com

**VIETNAM**  
Nguyen Viet Hung  
Phone: +84 8 824 1474  
Email: hungnv@vn.ibm.com
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i control complexity. The one of a kind System i5 is server, storage, software, database and security, all-in-one.

i control reliability. System i5's legendary reliability helps keep you up and running so you can focus on your business, not your I.T.

i control flexibility. It's uniquely customizable platform lets you run multiple operating systems (Windows*, Linux, AIX 5L and i5/OS) simultaneously.

i control my I.T. destiny. IBM Systems are a range of innovative servers and storage — like the System i5 — designed to make your infrastructure and your life simpler.