Announcing POWER6

New, faster System i 570 model boasts a simpler packaging structure
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Editor’s Corner

Our cover story in this issue focuses on IBM’s POWER6 announcement for the System i platform. Introducing the new System i 570 armed with POWER6 Processors and a simpler, more flexible packaging structure. Read about how the new structure will offer a single i5/OS Edition that is fully customizable on page 18.

Following that, IBM also recently announced a split in the System i Division. The Power Systems Unit focuses on the System i 570 and 595 models, and the Business Systems Unit prioritizes IBM System i 515, 520, 525 and 550 models. Mark Shearer, former System i General Manager, now Vice President and Business Line Executive of IBM Power Systems took some time to answer questions about the two new units, and most importantly, how the change will affect System i clients in Trends on page 6.

This year’s much anticipated IBM System i Asia Pacific Strategic Planning Conference took more than 250 delegates to Macau, the first and the last European colony in China, renowned for it’s uniquely Mediterranean style. Just flip to page 16 for the SPC highlights.

Our customer testimonials and case studies in this issue are from all corners of the globe. County Bank, USA proved that a simple system upgrade equaled IT improvements across the board. Progressive Enterprises new consolidated infrastructure on IBM System i with new SAP applications reduced workload, backlog, enabling real-time processing and increased performance. IBM System i and Tango/04 achieves 24/7 availability and top performance for Cassa di Compensazione e Garanzia in Italy. The Pilgrims Fund Board (Lembaga Tabung Haji) in Malaysia improved their customer service facilities by adding a new IBM System i platform to their core system. T. JOIN Transportation Co. Ltd in Taiwan sustained 30 years of growth with pioneering IT infrastructures from IBM, sharing their journey from IBM AS/400 to today’s IBM System i.

Ending with the amazing story of how System i Servers run under 4 feet of water as discovered by Estess Express Lines, this issue is yet another complete read. Enjoy!

See you in December!
The Editor (iSeries@my.ibm.com)
We’re helping you to work outside the box!

**Revolutionizing How You Work with Data on the System i!**

**DBU...#1 Database Utility**
DBU, the “original” database utility, allows users to view and update any file instantly without using time consuming queries, DFU or programming. Instantly access information on logicals, enable security and audit logs or view and update multiple files via green-screen or graphical user interface. This is the most complete database tool available.

**DBU RDB...Remote Database Access**
Simplify tracking and reporting of changes to your data. Turn on DBU Audit! DBU Audit works by journaling all adds, changes, deletes, reactivation of deleted records and viewing of sensitive data made by users through DBU to a stand-alone journal.

**Turn on DBU Audit!**
Simplify tracking and reporting of changes to your data. Turn on DBU Audit! DBU Audit works by journaling all adds, changes, deletes, reactivation of deleted records and viewing of sensitive data made by users through DBU to a stand-alone journal.

**RSP...RPG Server Pages**
The System i is the most secure and stable server. Your web solution should not be a generic solution built for the “other” platforms. RSP is the solution. It is built specifically for the System i that leverages all the speed and security of this great platform.

**SQL/Pro**
Can’t find a cost effective SQL tool? Here it is! SQL / Pro is a superior alternative to IBM’s SQL/400 at a fraction of the cost! All users can work with a simple English-like language that provides the power to query, print and manipulate data. Select, organize and summarize your data quickly and efficiently!

Get your fully functional FREE trials at www.DoDBU.com
What new technology are you most excited about?

- The new System i* Express 515 and 525 42.5%
- PHP and MySQL 30.0%
- BladeCenter* integration 7.5%
- IP telephony 5.0%
- Capacity backup 7.5%
- Secure Perspective 2.5%
- Something else 5.0%

The above results are from the opinion poll that was part of the January issue of the magazine’s i5 EXTRA online newsletter. To subscribe to i5 EXTRA, visit www.ibmsystemsmag.com.

Note: The EXTRA Poll is not scientific and reflects the opinions of only those Internet users who have chosen to participate. The results cannot be assumed to represent the opinions of Internet users in general, nor the public as a whole. The EXTRA Poll is not responsible for content, functionality or the opinions expressed therein.

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The Critical Business Processes of the Italian Stock Exchange, Monitored by Tango/04

Cassa di Compensazione e Garanzia S.p.A. (CC&G), part of the Borsa Italiana Group (Italy’s Stock Exchange), is the clearinghouse responsible for all the Italian financial transactions involving derivatives, cash equity and government bonds.

CC&G uses Tango/04 Business Service Management solutions for monitoring their IT infrastructure, allowing them to ensure the availability of their critical processes, such as guaranteeing daily transactions, updating derivatives closing prices and communicating them to the media.

“With Tango/04 we have the ability to optimize our most critical business processes and minimize downtime, improving our Service Levels (SLA) and applications availability.”

Angelo Maurizi Fonzo
Head of Systems Management, CC&G
Borsa Italiana Group
(Italian Stock Exchange)

Tango/04 VISUAL Message Center helps the IT Department by assuring the accuracy of derivatives closing prices, controlling that the established time limits for the required operations are met. With Tango/04 Solutions, CC&G can monitor the correct operation of the infrastructure and its critical processes.
IBM recently announced a split in the System i division. Rather than going to market with all IBM System i platforms in one unit, IBM will now go to market with two new groups designed for very different purposes. The Power Systems unit focuses on enterprise businesses and includes the IBM System i 570 and 595 models as well as the IBM System p family. The Business Systems unit sets its priority at the small and mid-sized businesses (SMBs) running primarily on the IBM System i 515, 520, 525 and 550 models.

While chatter zips around cyberspace, IBM Systems Magazine went straight to the top for answers. Mark Shearer, former System i General Manager and now sporting the title of Vice President and Business Line Executive, IBM Power Systems, took some time to answer questions about the two new units and how the change will affect System i clients.
I.T. TRUTH #38
System i administrators aren't really clairvoyant...

...they just appear to be thanks to StandGuard Anti-Virus.

Bytware's StandGuard Anti-Virus, with McAfee's heuristic scanning technology, is a soothsayer that can detect and clean malicious code even before it has been identified and added to DAT files. Now that's real protection.

Stop virus outbreaks at the source.
Today's multi-platform networks have changed the rules and necessity for including System i in your corporate malware guidelines. System i can host viruses and serve as the source of outbreaks on your network. Scanning System i for malicious code adds an essential layer of protection that no other type of solution can provide. StandGuard Anti-Virus, developed in cooperation with IBM and McAfee, provides essential native level protection that no other solution can match.

StandGuard Anti-Virus features:
detection of more than 250,000 threats,
protection for i5/OS, AIX, and Linux partitions;
entirely native solution, powered by McAfee; On-Access and Object Integrity Scanning;
integrates with Scheduler and Navigator.
monitors and secures high availability;
and much more. Get full details online!

Get the truth!
bytware.com/truths/
SMB client base in STG [Systems and Technology Group]. Then we’ll look at other offerings from other technology parts of IBM designed specifically for the SMB market. I think, in the future, offers like the BladeCenter S would be other logical participants in the Business Systems unit.

**System i: Will the Business Systems products continue to run on POWER processors as the new POWER versions become available?**

**Mark Shearer:** We’ll continue to sell a full portfolio of products to the SMB. We’re not going to leave them behind—just the opposite. A couple of months ago, we previewed the BladeCenter S, which is specifically targeted to the SMB. Most clients today use x86 architecture in the BladeCenter family. System i clients use the POWER processor. We’ll continue to sell a combination of processors and operating systems to the market.

Even our System i clients spend almost three times as much on their Wintel as they do on the System i technology in their budgets today. The power of the IBM portfolio is being able to sell all the architectures that they use and not just one of them. We want to move all our System i clients forward.

**System i: Back in the early days of AS/400, there were systems and servers. How is this split different?**

**Mark Shearer:** I’m not sure that distinction quite works. In the low end, clients definitely want systems. They love the integration of storage, operating system and middleware. The new 515 and 525 models of the System i platform are a lot more than servers because they have storage-area networks, middleware, DB2, security and more—all pre-integrated. In my mind, they are truly systems but they’re systems with integration and simplicity built in.

I view the high end as systems as well, but they’re very sophisticated—they are virtualized, highly available, POWER-based systems. For me, the systems vernacular still applies to both of them but it means different things in different markets in terms of the characteristics.

**System i: Does the announcement change more than just the hardware?**

**Mark Shearer:** In addition to the two new groups, we actually did other things to mobilize IBM’s focus on the SMB marketplace. One of the biggest things is we changed our approach to sales for the SMB marketplace.

In the past we were selling our systems to SMB clients using product-based sales reps. Now we’re moving to the model of having systems sales managers responsible for the total IBM portfolio. They’ll be responsible for bringing forward the best of our systems for each client need. From a client point of view, it just makes a lot of sense for us to rally around them rather than around a transparent silo approach to the marketplace.

So we changed our SMB sales coverage model and we also integrated our business partner sales organization with our systems group. We serve so much of the SMB market through our business partners, I think having a simplified partner program better integrated with the rest of our system sales is a logical thing to do. The outcome will be to better serve the SMB market.

**System i: Can you talk more about the new business partner strategy?**

**Mark Shearer:** In the System i arena, we do more than 80 percent of our business through business partners. And a lot of the business is influenced by ISV and systems integrators as well as the resellers. In the past, we had a sales organization that was independent of the systems business that provided sales support and coverage to all of our business partners. By integrating the sales support with all of our other system sales programs, it’s possible for us to clarify and simplify programs, be more consistent and better focus our direct sales resources and our partner resources to where they’re needed. It will just be easier for us to run our business with a more aligned sales approach. And it won’t just benefit IBM but our customers as well.

**System i: What kind of feedback are you getting from the announcement?**

**Mark Shearer:** I’ve heard from a lot of the large clients and they are very excited about this. It’s really something they’ve been asking for. A lot of our large System i clients also have System p technology and they wanted more consistent pricing, more consistent terms, more consistent user interfaces across the platforms. I think they see great hope for our future POWER technology-based systems. I’ve had a lot of very positive feedback from the large clients.

I would characterize the response from the small and mid-sized clients so far as cautious. But when they see continued proof points of IBM’s investment with innovative new products and continued improvements with i5/OS, I think their confidence will increase.

We’ve made some pretty significant announcements lately. We’ve introduced the System i 570 with the POWER6 processor; we’ve announced simplified packaging of i5/OS on our large systems to provide more granular, pay as you go, price to value for our clients; and—and this is relevant to small as well as large clients—we’ve previewed version 6 of i5/OS that will be available during the first half of next year. That’s a real clear message to the industry that we’re continuing to take i5/OS forward. We’re continuing to bring our clients and their applications forward to the POWER6 hardware platform and beyond.

As we deliver on these kinds of things, clients will realize that we are continuing an almost 30-year tradition of protecting our clients’ investments in their applications and bringing them (continued on page 70)
The 'Natural Selection' for Enterprise Change Management.

In the new climate of regulatory compliance, enterprise change management has become an increasingly complex animal. If you're not taking steps to comply with Basel II and Sarbanes-Oxley, you might soon find it's a real jungle out there.

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Visit www.aldon.com/strategies for your FREE white paper: 'Strategies for Effective Change Management.' It contains authoritative guidelines for adhering to the new compliance measures, including a special new section on managing application development and IT processes. Make sure you - and your company - are fit to survive in the regulatory environment.

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Getting the most from your systems

MQTs for Business Intelligence Success

BY THERESA EULER AND JIM FLANAGAN

Today’s business intelligence (BI) and data warehousing (DW) applications are becoming more robust and varied in their use to help provide value to your business. The backbone to these applications, of course, is the data collected within your online transaction systems. A major step for these applications is getting this data massaged, grouped and summarized into useful information. Typically, the same static data set is queried repeatedly. For example, you may want to summarize yesterday’s or last week’s sales information or keep period-end summaries—like month end or year end—while the online data is still accumulating for the next period. It would be great if the database-management system offered a mechanism to do this summarizing and grouping for you—in advance. With the creation and use of materialized query tables (MQTs), this capability is available to you in IBM® DB2® for i5/OS®.

MQTs were introduced to i5/OS in V5R3 and enhanced in V5R4. An MQT can be considered a materialized view or automatic summary table and can be used to significantly improve the performance of complex queries by prerunning portions of the query and storing the results. Without requiring the end user or application to modify the SQL, the query optimizer recognizes MQTs and implicitly rewrites the query to achieve better performance by accessing the MQT instead of one or more of the specified tables. In some cases, query performance with the MQT is orders of magnitude faster.

MQTs especially benefit queries that use complex joins and aggregations, since those queries tend to access and process large volumes of data. BI and DW environments where data is loaded periodically are particularly good candidates. Daily, weekly and monthly processing provides a natural opportunity to refresh or update the MQTs. In such cases, the MQTs don’t need to be kept synchronized with the base tables, but can be refreshed as part of the existing end-of-day, end-of-week or end-of-month batch processing.

Find the Statements

To illustrate how MQTs help queries where multiple users request virtually the same information from the same set of tables, let’s examine a set of SQL statements whose performance may benefit from an MQT. For example, 10 department managers ask for their sales-trending figures by week every Monday morning. This results in 10 SQL grouping queries for the same information. Running all of these every Monday morning is time consuming and resource intensive. Taking advantage of MQTs and the optimizer’s query-rewrite capability, the response time and resource use can be drastically reduced while still solving each department’s inquiry. By creating and populating an MQT representing all of the sales figures grouped by year, week and department, then letting the optimizer use this MQT, each of the 10 queries can access the MQT’s pre-summarized data instead of reading and processing the detail data in the base table. End users or applications don’t need to change their queries; the optimizer does the rewrite for them. Also, the MQT can be updated or refreshed as part of the week-end processing—allowing the summarized data set to be ready and available for the Monday-morning requests.

To identify a potential set of statements in an application like this, we’ll turn to the SQL plan-cache viewer in iSeries® Navigator. The SQL plan cache contains all of the current query plans and associated runtime information. You can find the viewer by right-clicking on the named database folder and selecting SQL plan cache>show statements (see Figure 1, below).

In this case, the statements you’re interested in are the longest-running for your application. To get this list, use the “Queries that use or reference these objects” filter and fill in the
schema and table columns. Get the list of statements by refreshing and sort by the number of times the statement ran to find the query. You can also sort by the runtime column to get the statements sorted in longest-runtime order from most to least expensive. In the list, several queries access the same base tables, but with slightly different column-list and selection criteria. Based on these two pieces of information, you’ll have an idea which statements may be good candidates for an MQT.

The statement you’re interested in working with first is the most frequently run statement. Using our example, it’s the managers’ query.

```
SELECT YEAR, WEEK, DEPARTMENT, SUM(SALES), COUNT(DISTINCT ORDER_NO)
FROM ORDERS_TABLE
WHERE DEPARTMENT = 'ABC123'
GROUP BY YEAR, WEEK, DEPARTMENT
ORDER BY YEAR, WEEK, DEPARTMENT;
```

Having designed this application, you also know some details about this query and the underlying data: The ORDERS_TABLE contains 1 million rows with three years, 52 weeks per year and 25 departments, and grouping by YEAR, WEEK and DEPARTMENT results in a maximum of 3,900 distinct groups.

Select this query in the list and click on “Work with Statement.” This will display the SQL statement in the Run SQL Scripts window. From here you can select the Explain toolbar button to display the query optimization plan for this statement (see Figure 2, above). The implementation is showing a sorted list scan of a temporary, distinct hash table populated by a table scan of the ORDERS_TABLE.

Create the MQT

The next step is to create an MQT that you think will satisfy this query. MQTs are database objects created with the CREATE TABLE SQL statement. Navigate to the Tables folder in iSeries Navigator for the schema into which you want to create the MQT and right-click on New>Materialized Query Table. The first tab has the name and schema for the MQT. The second tab is where you specify the select statement and refresh table options. The select statement becomes a part of the MQT definition and associates a query with the MQT. After you type in the SQL statement, you can use the Check Syntax button to verify your statement is syntactically correct. The Preview button is a nice feature that displays the results from the query you entered so you can be sure of the resultant rows you’ll get in your MQT.

Figure 3 (below) shows this tab from the iSeries Navigator create MQT dialog. Based on your analysis, type in the following query:

```
SELECT YEAR, WEEK, DEPARTMENT, SUM(SALES) AS SUM_SALES,
      COUNT(DISTINCT ORDER_NO) AS ORDER_NO
FROM ORDERS_TABLE
GROUP BY YEAR, WEEK, DEPARTMENT
```

You must specify whether you want the data to be initially populated into the MQT. If you don’t check “Populate table with select statement results,” the MQT will be empty until you manually refresh it. This checkbox corresponds to the DATA INITIALLY IMMEDIATE and DATA INITIALLY DEFERRED clauses on the CREATE statement and indicates whether the MQT should be populated at create time or deferred until the MQT is refreshed. When DATA INITIALLY DEFERRED is specified, it’s a good idea to create the MQT with query optimization disabled until after it’s been refreshed to ensure that the MQT contains data before it’s used by a query.

Next, you can choose whether to enable or disable the query optimization. If you want the optimizer to consider MQTs during the optimization phase, check “Enable for query optimization.” This checkbox corresponds to the ENABLE/DISABLE QUERY OPTIMIZATION clauses on the CREATE statement and specifies whether the MQT can be used for optimization. Note: Going to the definition of the table in iSeries Navigator or using the ALTER TABLE statement can enable or disable query optimization and convert existing SQL tables into MQTs.

(continued on page 66)
How should an organization collect, adopt and share practices for developing software? Many organizations use heterogeneous collections of information such as articles, written procedures, binders, books, previous experience and informal but enforced procedures. Some organizations use proprietary processes that may be difficult to extend and reuse. The cost of using proprietary processes can be prohibitive for some organizations, particularly if there’s a desire to experiment with new ways of developing software.

This article introduces another option: the open-source OpenUP/Basic software-development process and the Eclipse Process Framework (EPF) Composer tool. OpenUP/Basic is a Unified process that makes use of proven agile practices.

For the past year and a half, many organizations have contributed to creating OpenUP/Basic, one of a family of open-source processes from EPF. This family shares a common tool and metamodel to ease development, customization and sharing of intellectual capital. Organizations that have contributed to creating OpenUP/Basic include APG, BearingPoint, Capgemini, Covansys, European Software Institute, IBM, Ivar Jacobson International, Method Park, Number Six, ObjectMentor, Softeam, Telelogic, the University of British Columbia, the University of Southern California and Xansa.

OpenUP/Basic has four fundamental principles, describing advice rather than trade-offs, which the EPF team believes makes them easier to adopt. These principles map to similar ones found in the Agile Manifesto (www.agilemanifesto.org), as shown in Table 1 (page 68).

Open, Unified and Agile

Unified processes (most notably the Rational Unified Process) have a long track record of improving how organizations satisfy customer expectations and track project progress objectively. Agile techniques incorporated into OpenUP/Basic have been used extensively to reduce process and management overhead, improve software quality and enhance the ability of teams to meet customer expectations. A wide range of stakeholders with overlapping and unique perspectives build open-source products collaboratively. OpenUP/Basic combines the best of all these worlds by:

- Defining a small, self-organizing, collaborative team that includes the stakeholders
- Tracking overall progress through objective milestones in each phase
- Realizing a four-phase iterative process
- Focusing on defining the architecture and reducing risk in early iterations
- Producing a deliverable release every iteration
- Leveraging test-driven development (TDD) to improve quality
- Utilizing a product backlog in the form of a Work Items List (WIL)
- Promoting continuous integration
- Taking a project-management approach similar to the agile software development called Scrum, with daily stand-up meetings and self-organizing teams
- Leveraging use cases to increase collaboration and stakeholder value
• Describing evolutionary design and architecture to reduce up-front analysis
• Allowing anyone to contribute, extend and comment on OpenUP/Basic

**Minimal, Complete and Extensible**
An objective of OpenUP/Basic is to deliver a process teams can use out of the box, but also tailor and significantly enhance. The process includes only the minimum of what a small team must do to produce quality software, so the barriers to adopting the process are low. Users can add or change content, but removing anything will increase the risk of failing to deliver quality software on time.

The EPF Composer tool makes it relatively easy to add simple customizations, such as templates, examples, guidelines and extra steps. Composer lets you create plug-ins and entire processes from scratch, such as the plug-ins for agile database techniques, deployment and model-driven development currently under way. They’ll extend OpenUP/Basic by incorporating their techniques into the process.

Finally, OpenUP/Basic has six roles, 17 tasks, 18 work products and plenty of supporting guidance. It’s comprehensive without being overwhelming.

**Can OpenUP/Basic Help Your Team?**
OpenUP/Basic is designed for small teams interested in leveraging agile and Unified software-development techniques. Small teams that desire low-ceremony interactions will get the most benefit by using OpenUP/Basic, but many different types and sizes of projects can harvest powerful content from the process. For instance, if a large organization is struggling to manage and understand its requirements, it can leverage OpenUP/Basic’s content on use cases and requirements management.

OpenUP/Basic is also useful when trying to change the nature of the process. Perhaps you have a high-ceremony process with formal external customer reviews at specific milestones. OpenUP/Basic describes how to make customers part of your team, reducing the need for formal reviews and increasing the amount and frequency of feedback. Larger teams who want to adopt use cases, a Scrum-like management approach, TDD or evolutionary design and architecture techniques can glean useful content from OpenUP/Basic in those areas.

Given the low cost of entry, it’s worthwhile to examine OpenUP/Basic regardless of your organization’s size or formality. A diverse group of contributors has refined many techniques, which almost any organization can harvest.

**Roles and Other Essentials**
Roles in the management layer may be defined differently than expected. OpenUP/Basic project managers are not managers in the traditional sense. Though they coordinate, mentor, support and guide, it’s the self-organizing team that leads and makes important decisions about the project’s priorities and objectives. Another of the six major roles, stakeholder, is on par with the project manager or developer roles. Stakeholders are full team members and are essential to the successful delivery of the software. The project management discipline also includes guidance on agile estimation and self-organizing teams.

(continued on page 68)
IBM Hong Kong announced the launch of SMB Combo, a new, open-standards-based and secure platform that integrates business applications with IP Telephony, email and messaging applications on IBM System i 515. SMB Combo is the first local market solution with the flexibility, scalability and an attractive price point that specifically addresses the needs of HK SMBs.

It comes with applications that improve business efficiency, simplify network management and reduce operational costs. IBM is currently working with eleven leading Hong Kong Independent Software Vendors to offer a wide range of optional infrastructure applications for HK SMBs that span CRM, SCM, security, data management, workflow management, document management. IBM Business Partners provide system integration expertise and support, making implementation and management of the system hassle-free for SMBs who generally lack internal IT expertise and support.

John Tam, Business Manager of System i, STG HK, introduced the SMB Combo.

John and all the 11 Independent Software Vendors at the launch ceremony.
Company Name: IT Channel (Asia) Limited  
Solution Name: BOCD (Business Objects Crystal Decision)  
Brief: BOCD enables SMBs to track, understand, and manage information effectively.  
Website: http://www.itchannel.com.hk/home.html

Company Name: NetMon Information Systems Limited  
Solution Name: The Proofpoint Messaging Security GatewayTM Virtual Edition  
Website: http://www.netmon.com.hk

Company Name: Acise Technology Limited  
Solution Name: ReCome  
Brief: ReCome is a comprehensive loyalty program which improves customer retention and helps establish long-term customer relationships by keeping track of customer profiles and purchase records, enabling companies to formulate strategic and targeted marketing campaigns.  

Company Name: DMA Solutions  
Solution Name: Sugar Suite  
Website: http://www.dmahk.com/product_sugarsuite.html

Company Name: ASTA Systems Limited  
Solution Name: ASTA Document and Workflow Management Solution  
Brief: ASTA Document and Workflow Management Solution is a Web 2.0 DMS solution that provides powerful search, audit trial, version control and multilevel access control.  
Website: http://www.astasys.com

Company Name: Coworkshop Solutions Limited  
Solution Name: Curtain DocNet  
Brief: Curtain DocNet is a Web-based Document Imaging System, which allows users to access the valued information from anywhere at anytime.  
Website: http://www.coworkshop.com/

Company Name: NetAGE Development Limited  
Solution Name: J.Comm Remote Data Management Solutions  
Brief: J.Comm Remote Data Management Solution provide a robust data exchange and sharing across different remote devices.  
Website: http://www.netage.com.hk

Company Name: Kinetix Systems Limited  
Solution Name: PowerDoc2  
Brief: PowerDoc2 is an Electronic Document Management Solution (EDMS) for SME that combines the benefit of centralized document repository, zero deployment web access, advanced security access control, full featured document management functions and extremely competitive Total Cost of Ownership.  
Website: http://www.kinetix.com.hk

Company Name: Webforce Network Technology Limited  
Solution Name: WebForce Linux in-a-box Solutions  
Brief: WebForce Linux in-a-box Solutions provide ready-to-use, secure and module-based powerful Linux solutions on IBM Power platform for your enterprise environment.  
Website: http://www.webforce.com.hk

Company Name: BeansLink International Limited  
Solution Name: BeansLink Supply Chain Management (SCM) Solution  
Brief: BeansLink Supply Chain Management (SCM) Solution assists enterprises in purchasing and receiving materials, managing inventories, processing customer orders and production.  
Website: http://www.beanslink.com

Company Name: Core Solutions Limited  
Solution Name: Core Business eXchange (CBX)  
Brief: Core Business eXchange (CBX) is a full-function suite of software applications for managing the global trade process.  
Website: http://www.coresolutions.com/
MACAU, AUG 14TH–16TH 2007: This year’s IBM System i Asia Pacific Strategic Planning Conference held in Macau brought together a total of 272 delegates from all over Asia Pacific – the largest and most significant gathering of the year for System i!

Held at the prestigious Macau Tower, conference sessions conducted by IBM Worldwide speakers as well as external leading industry specialists shared the differentiation and competitiveness of the technology race expounding on the theme of this year’s conference - Innovation Intelligence.

Enthralling iCustomer speakers from Heatcraft Australia and SITA Environmental Solutions from Australia, Export and Industry Bank from the Philippines, Hindustan Petroleum Corp, India, Sunway Shared Services Center, Malaysia and Seino Information Service from Japan expressed real-world perspectives on System i.

It was a dynamic session held on the China coast amongst historical Chinese and Portuguese world-heritage relics. We look forward to topping this incredible event next year!
IBM Users Conference & Expo
The Premier Educational Event for IBM Users
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IBM announces the POWER6 System i 570 with enhanced performance and a simpler packaging structure

A New, Flexible POWER

By Tami Deedrick

IBM* customers running IBM i5/OS* have been anxiously anticipating a POWER6* announcement for the System i* platform. Now the wait is over. IBM revealed its plans for the next evolution of POWER* technology July 24. The announcement introduced new System i 570 servers armed with POWER6 processors and previewed the next release of i5/OS.

The new 570 is the first installment of the System i POWER6 lineup, which boasts impressive processing speeds for significant performance enhancements along with the simple packaging structure users requested.

Ian Jarman, IBM System i product manager, believes customers won’t be disappointed.

“It’s a significant new generation of systems,” Jarman says, “and we’ve made some changes that will be very popular with customers.” Customers can order the new System i 570 with POWER6 technology now, and it will be generally available Sept. 14.

While the 570 is the first System i server to receive the POWER6 technology, the rest of the System i family is expected to follow suit in 2008, Jarman says. IBM announced POWER6 technology a few months ago for its IBM System p* family, also starting with the 570. Customers anticipating the rollout can expect the System i offerings to follow the System p releases fairly closely, Jarman speculates.

The new POWER6 technology will support the current release of i5/OS—V5R4—but the announcement also featured a sneak peek at the next generation of i5/OS. By offering POWER6 technology on the 570 and keeping i5/OS, IBM is making a statement about its naming conventions.

“We’ve had clear feedback from our community that they don’t want a name change. So it’s still the 570 model and it’s still i5/OS. They just happen to use POWER6 technology,” Jarman says.
The POWER6 570 uses 4.7 GHz processors, which are the fastest POWER6 processors now available. The processor bandwidth of the POWER6 chip—300 GB per second—could download the entire iTunes catalog in about 60 seconds. “Customers will be delighted with their 570 performance when they upgrade their systems with POWER6 processors. An enterprise running a typical i5/OS application could expect about a 70-percent improvement versus the original POWER5* technology,” says George Gaylord, System i enterprise product manager. “For more CPU-intensive applications, the lab has measured a performance increase of well over two times the performance of POWER5 systems and a 50-percent increase over POWER5+* systems.”

The 570 offers up to 16-way processors in a four-node system. Each node has four processors. Customers will have the option to buy an initial 1/4-, 2/8- or 4/16-way configuration, and will be able to grow by adding 1/4-way nodes (see Figure 1, left).

POWER6 technology is delivering better power consumption by giving customers more power per kilowatt of energy. It’s built for power efficiency and can deliver tremendous performance at affordable power-consumption rates. It also optimizes energy consumption and generates less heat by dynamically turning off power to unused parts.

Perhaps one of the biggest benefits of the POWER6 technology announcement is the simplicity, flexibility and scalability IBM has built into the new packaging structure. The POWER5 structure offered a Standard Edition and an Enterprise Edition. The Standard Edition didn’t include support for 5250 online transaction processing and required customers who wanted to use 5250 to purchase the Enterprise Edition. The new structure will offer a single, i5/OS Edition that’s fully customizable. “When we had Standard and Enterprise Edition, you had to decide whether to run applications in Web-based mode or traditional 5250 applications,” Jarman explains. “And now we’ve brought these together on one single system configuration where you can decide how to deploy them, by processor.”

Gaylord concurs: “Under the previous structure, customers had variety but less flexibility when acquiring their system. It was more complicated. The 570 with POWER6 processors will be offered simply as an i5/OS Edition, or a Capacity BackUp Edition, that customers may easily tailor to address their needs as their business grows or their requirements change.”

Under the new structure, customers buy a base i5/OS Edition and any additional processor activations they need.
Introducing Robot/SECURITY—
The i5/OS Security Management Software

Protect Your IBM® System i™ With Robot/SECURITY®

You know eveLogic as the company you rely on for all your automated operations and business intelligence needs. Now, eveLogic brings security to your System i: Robot/SECURITY, the i5/OS security monitoring and auditing software. Robot/SECURITY helps you protect your System i by providing the information you need to develop a complete security strategy. In today’s world, government regulations such as Sarbanes-Oxley and privacy laws such as HIPAA and PCI make security a vital issue for every business. Robot/SECURITY is the key to protecting your System i.

Experience True System i Security

Robot/SECURITY is the first comprehensive security package for your System i. Its five modules let you set up and maintain an integrated set of policies and procedures. Profile Exchange authorizes users to assume the authority of a more powerful user profile temporarily. Exit Point Monitoring defines who is allowed to access your System i through server exit points. Security Audit checks your system security settings and compares them to industry best practices. QM UJRN Monitoring provides real-time monitoring of the security audit journal. Forensics Analysis extracts security-related events from multiple sources on your system.

Learn More About Securing Your System i

Make Robot/SECURITY the foundation of your security strategy. Call +61 3 9558 6366 today and ask for a FREE Robot/SECURITY Information Kit. Or e-mail at info@evelogic.com.au

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They then can add any Enterprise Enablement option for 5250 processor capacity. Finally, customers choose an operating system for each active processor and license any additional software they want (see Figure 2, page 20). Rather than requiring a bundled software package that may include unnecessary functions, customers can choose exactly what they need. Everything is optional. "This is an exciting new change," Gaylord says. "System i structure continues to get more granular and open, and the feedback from our enterprise clients is that we are more effectively aligning our prices to where they see value."

Ten years ago, customers didn't need this kind of flexibility, according to Jarman. Most customers were deploying similar workloads, running i5/OS and 5250-style applications. Now customers need support for different operating systems, varied environments, application serving and a plethora of applications. "This breakthrough technology gives the customer a solution that they value with all of these different components integrated at the right level. It reflects a multitude of different solutions that people are running today but offers them the simplicity of one system," Jarman says.

Another benefit, according to Gaylord, is the flexibility to activate additional processors and add i5/OS, Linux* or AIX* applications to the POWER6 570 while remaining in the same P30 software tier. "When our clients add applications to their existing System i infrastructure, they get a lot of economies of scale," Gaylord says. "And they can take advantage of existing operations and business processes, such as performing a single, consolidated backup. We wanted to implement a structure that makes it easier for them to realize these benefits."

**Customer Input**

Some aspects of this next evolution of the POWER6 technology were driven heavily by customer requirements and feedback. "Our team meets regularly with the COMMON Advisory Councils, the System i Large User Group (LUG) and obviously, many specific clients as we travel the globe. They have resoundingly told us the things they value and need," Gaylord says. What makes that list is the granularity to add capacity as needed without going through significant upgrades, improved price/performance for i5/OS applications and access to the latest technology.

For example, customers were the driving force behind the new packaging structure. "This is a formal requirement directly from the LUG," Gaylord explains. "They requested to buy the initial Enterprise Enablement by processor without software being bundled with it. They also wanted a single software tier. If they add processors for Linux or AIX, they didn't want a tier jump in their i5/OS application software. Adding applications to this system should be very easy and affordable without ancillary effects."

Part of that ease of use is a built-in license for iSeries* Access. This provides integration of workstations with the System i platform. Where pricing for this product was once user based, an unlimited-user version is packaged in the 570 i5/OS Edition.

For the introduction of the i5/OS Edition, IBM evaluated its software packages and decided to offer two bundled value packs of the related software in the Enterprise Edition that customers use most (see Figure 3, page 20). Customers will be able to purchase a DB2* Value Pack and/or an Operations Value Pack for less than buying the components individually, Gaylord says.

**Upgrade Paths**

Customers have several upgrade paths to the new 570. First, they can upgrade from a POWER5 or POWER5+ 570 system to a POWER6 570 system. Second, they can upgrade from a POWER5 or POWER5+ 550 system. Third, they can upgrade to a 570 with POWER6 processors directly from an 825, 870 or 890 server. Those in the latter group need to make the move soon, as IBM is withdrawing the 825 upgrade paths effective Dec. 1, 2007, and the 870 and 890 effective April 1, 2008.

Another upgrade customers may want to consider is a software upgrade from i5/OS V5R3 to V5R4. Gaylord thinks this is a great business decision right now. "If you have V5R3, you can buy upgrades in POWER5 and POWER5+ technology, but with V5R4, you now have new upgrade options," he says. "You can immediately take advantage of the wealth of the new i5/OS release capabilities, but you're also in the prime position to exercise your choice of upgrade paths—and POWER6 technology is likely to be a very attractive financial option."

**Next i5/OS Release Preview**

Along with the new POWER6 technology, IBM also announced a preview of the next i5/OS release, scheduled for 2008. "i5/OS delivers amazing value and efficiency for our customers, and we want to make sure we're giving them the best features and options as they grow," Gaylord says. "This includes previewing the future of i5/OS so they know what's coming and they can plan for it." You'll find more on the i5/OS preview in "A Sneak Peek at the New i5/OS" (page 24).

It's important to note that moving to the previewed i5/OS release isn't required to take advantage of POWER6 technology. "You can run with POWER6 technology on i5/OS V5R4," Jarman says. "But there will be a major new i5/OS
When I was designing the SkyView Risk Assessor and Policy Minder products, I asked some people to summarize the impact of the laws, standards and regulations on their security strategy. This is what they said:

“Help me determine what’s wrong with my system, help me clean up the mess and then help me keep it clean.”

This, in a nutshell, is what SkyView Risk Assessor and SkyView Policy Minder do for our customers. If you’d like to see for yourself, visit our website and request a trial copy.

Carol Woodbury, system security expert, noted author, award winning presenter and President of SkyView Partners Inc.
A Sneak Peek at the New i5/OS

IBM previewed the next release of IBM* i5/OS* when it announced the new POWER6* servers. When it’s introduced in 2008, the new release is expected to offer unparalleled capabilities for systems management and virtualization. Some key features include:

• **Optimized Java** performance—Customers can expect better Java performance because IBM is improving the data access and memory use of Java applications in the new release.

• **New 64-bit JVM**—V5R4 introduced a new 32-bit JVM, but the new release will offer a 64-bit JVM that’s compatible with AIX* and other IBM JVMs across other platforms. This is good for scalability, high-performance Java applications and IBM WebSphere® users.

• **Extended virtualization capability**—In the next release, one i5/OS partition can host storage for another. Customers don’t have to dedicate physical storage for that second partition, so if they want to create something quickly or test an application, they’ll be able to run, use or delete it and not have to change the actual server.

• **New Systems Director**—Welcome to the new interface into the system. As IBM strives toward a consistent set of interfaces across all its platforms, the new Systems Director is Web enabled and supersedes today’s iSeries® Navigator and IBM Director.

• **Security enhancements**—The new release of i5/OS is planned to include several security enhancements including encryption of data stored on the system, as well as the option to encrypt any backup to any tape device. Built-in software encryption extends the range of options customers have and helps the many customers who are being asked to ensure their backup tapes are encrypted. Also, look for new intrusion-detection capability that extends the intrusion-detection enhancements in V5R4.

• **High-availability enhancements**—i5/OS will extend the existing cross-site mirroring capability used for clustering, storage between two systems and several other resiliency techniques.

• **New Web services capabilities**—IBM plans to provide a new integrated Web application server with i5/OS to simplify the deployment of Java applications. The integrated Web application server will support applications written to use JavaServer Faces, JavaServer Pages and servlets and will require minimal system resources and administration. The new release also includes plans to provide an integrated Web services environment with i5/OS for Integrated Language Environment programs.

• **Graphical performance tools**—i5/OS will provide a new graphical, Web-based performance data viewer with the new release to offer enhanced viewing and analysis of i5/OS performance data.

—T.D.

release coming in 2008, and it will deliver substantial value to our customers’ business applications.”

**More POWER for Your Investment**

When you do the math, IBM’s fastest processor plus granular, non-disruptive growth and a simplified structure that’s easily customized can equal significant improvements in price-to-value ratio. “In a nutshell, we’re delivering better price/performance and the latest POWER6 technology that will help customers’ applications run better and faster. The performance of the POWER6 processors will help customers get more value for their i5/OS investment,” Gaylord says. “And we’re delivering breakthrough simplicity and flexibility in how we’re packaging the 570.”

For more information on POWER6 technology, visit the System i Web site (www.ibm.com/systems/i/enterprise).

Tami Deedrick is the managing editor of IBM Systems Magazine, i5 Business Systems edition. She can be reached at tdeedrick@msptechmedia.com.

**POWER6 Specs at a Glance**

• i5/OS* Edition, in 1/4-, 2/8- or 4/16-way configurations

• Capacity BackUp Edition, in 1/4-, 1/8- or 2/16-way configurations

• Single i5/OS processor entitlement

• IBM* Director and iSeries* Access included

• Enterprise Enablement optional

• Modular, four-way nodes and Capacity on Demand processor and memory options

• i5/OS V5R4, Linux® and AIX® support

• P30 software tier

• Optimum Care offers from IBM Systems and Technology Group Lab Services

—T.D.
When modernizing your green screen applications
it can be tempting to reach for the quick solution – refacing.

But an application that looks better is not always the same as one that performs better. Improved navigation, extra functionality and a graphical user interface are all key parts of a modern application.

LANSA has combined its unique experience with refacing and development tools to revolutionise System i application modernization. RAMP from LANSA is a staged approach that delivers immediate results while also providing the foundation for stepwise enhancements. **Unique. Simple. Smart.**

To find out more about RAMP, visit [www.lansaramp.com](http://www.lansaramp.com) or email us at info@lansa.com.au
“So, what does this really cost?” Astute clients investing in IT solutions often ask this question. Such clients know that the purchase price of a single solution component represents only a fraction of a solution’s total acquisition cost (TAC) and that the TAC represents only a portion of a solution’s total annual operating costs (AOC). Beyond examining TAC and AOC, other useful considerations include acquisition costs for incremental server capacity and the associated AOC impact. Understanding these financial facts might provide valuable insight into choosing IT solutions. But how does a client answer these questions?

**Options for IT Financial Analysis**

Clients’ IT financial-analysis options include when and how to conduct analysis. Optimally, a client develops an IT strategy aligning near-term to long-range IT plans with business goals. This is the best time to conduct IT financial analysis. Such analysis provides substantive data points to help make fact-based IT decisions. Also, performing IT financial analysis simultaneously with building IT strategy usually allows time for more comprehensive analysis. Ideally, that translates into sounder IT financial decisions.
How might a client conduct IT financial analysis? The answer depends on what insight the client hopes to gain. Clients commonly seek to address the following questions:

- What do our solutions cost now?
- How much do our costs vary by platform?
- How much bang for our buck do we get from each IT platform?
- What will incremental capacity cost on each platform?
- Are there more cost-effective ways to run or grow our solutions?
- Are there more cost-effective platforms to host our solutions?
- Can we avoid expanding our datacenter?

To answer these questions, a typical methodology includes three phases: data collection, analysis/outlining possible future solutions and modeling business cases to assess possible future options’ financial impact (see Figure 1, right). Flow variations usually occur as available financial detail varies. Such financial details include systems and storage hardware costs, systems and storage hardware maintenance costs, software costs, software maintenance costs, people costs and other IT costs.

Clients also have financial data-gathering options. They may use industry averages, client estimates, client actual data or some combination of the three. Actual data provides the most accurate analysis and projections, but it’s not always available. Client estimates are the next best representation of the client’s environment. Finally, a client can use industry averages when unable to secure actual financial details or accurate estimates.

**Elements of IT Hardware and Software Costs**

Effective IT financial analysis begins with an accurate technical inventory of systems and storage hardware. Accurate inventory yields accurate total costs and averages by platform and by hardware unit. Clients should examine financial details for each inventory item. When this detail is unavailable, clients can use details from a representative inventory sample. However, the greater the technical detail tied to financial detail, the greater the analysis granularity. This provides deeper current-cost insights and helps to more accurately project costs in possible target solutions.

Useful hardware-cost details include purchase price, depreciation, lease payments, lease terms, purchase date, projected refresh date and book value. Additionally, the analysis should include costs to network, rack and monitor equipment and for equipment maintenance. Analysis examines all these aspects in light of high-availability and disaster-recovery needs.
For each hardware inventory item, the analysis also should include software costs for operating systems, databases, systems management, middleware, tools and applications. Software-related costs might include one-time, monthly or annual license charges, and subscription, support and maintenance charges.

People Costs
People costs often constitute a significant portion of IT AOC. The analysis only considers user and user application support-staff costs if application staff efforts vary by platform. The analysis typically focuses on staff caring for, administering and maintaining the servers, storage, operating systems, databases and middleware applications. Sometimes staffing varies greatly by platform so the analysis categorizes staff costs by supported platforms. People-cost analysis examines full-time equivalent (FTE) fully burdened rates as well as applicable contractor rates. Fully burdened FTE rates include salary and benefits plus other costs such as payroll taxes, education and travel.

Other IT-Cost Considerations
Beyond hardware, software and people-related costs, IT solutions carry other costs. These costs generally fall into two categories: FTE-based costs and hardware-based costs. IT staff telephone charges offer an FTE-based cost example. These costs rise as IT FTE numbers increase. Hardware-based cost examples include floor space, power and cooling. These costs increase in proportion to the number of systems and storage units.

Analyzing Costs
Once clients assemble IT technical and financial details, they must normalize data across disparate computing platforms. One normalization approach assigns relative performance units (RPUs) to each system. This simplifies cross-platform comparisons by providing a uniform metric of each system’s ability to perform work. RPUs allow comparison of each platform’s work performed against costs.

This level of analysis usually answers the questions:
• What do our solutions cost now?
• How much do our costs vary by platform?
• How much bang for our buck do we get from each IT platform?
• What will incremental capacity cost on each platform?

Figure 2 (opposite page) shows typical information resulting from this level of analysis. “Total Spend” reflects all costs previously discussed. Total spend by platform alone doesn’t fully reflect a platform’s cost-effectiveness. Rather, the analysis should consider each platform’s total available RPUs and use rates to arrive at each platform’s total utilized RPUs. Dividing total spend by total utilized RPUs yields each platform’s cost per utilized RPU. This provides a platform-efficiency metric, i.e., the bang-for-the-buck metric by platform.

The figure’s final row indicates projected incremental costs by platform for additional capacity. This number often differs from cost per utilized RPU because many platforms have non-recurring initial costs. Activating a reserve IBM* System i* processor for 100 additional RPUs carries a different cost than purchasing a 100-RPU system, because a client pays once for the initial system unit, cards and cables. However, added capacity at acquisition costs that differ from initial acquisition costs affect overall cost per RPU. Typically that impact analysis occurs in the next phase.

IBM Systems and Technology Group (STG) employs a Laboratory Services team that sits apart from IBM’s Global Business Services division. STG Lab Services performs IT financial analysis via IT optimization and rationalization studies. This worldwide group of approximately 20 practitioners has conducted hundreds of studies over the past seven years. Though individual IT financial analysis study results remain confidential, in its 2006 whitepaper “Comparing IBM System i Annual Operating Costs in Large Enterprises,” (ftp://ftp.software.ibm.com/common/ssi/rep_wh/n/ISW03001USEN/ISW03001USEN.PDF), IBM summarized results from the 11 IT optimization and rationalization studies that included System i products. Figure 3 (above) and Figure 4 (page 30) illustrate some of the whitepaper’s findings.

Figure 3 compares the average AOC per installed RPU and per utilized RPU for clients with less than $10 billion in annual revenue and fewer than 1,000 servers. As the figure indicates, System i clients in these studies averaged a lower AOC per used RPU. This means clients spent less annually on their System i products than on their Intel* processor-based and UNIX* servers for the same relative amount of processor work.

Figure 4 compares each platform’s average AOC per server. This analysis reflects studies conducted for clients with more
than 400 servers and decentralized System i topologies. It indicates that per-server AOC for System i products was more than 70 percent lower than the per-server AOC for Intel processor-based servers in these studies.

**Projecting Possible Future Costs**

Along with analyzing current costs, clients often need answers to future-cost questions as well, including:

- Are there more cost-effective ways to run or grow our solutions?
- Are there more cost-effective platforms to host our solutions?
- Can we avoid expanding our datacenter?

For answers, clients must identify potential optimization islands by grouping systems and storage units along various boundaries suitable for their organizations. A potential island for optimization varies by client based on application topology, infrastructure topology, infrastructure constraints, organizational realities, business processes, geographic location, accounting practices and politics.

Once the client identifies possible optimization islands, the client formulates ideas of possible alternate solutions, also called target solutions. Optimization techniques include server consolidation, workload consolidation, operating-system image reductions, virtualization and replatforming. To appropriately compare costs between current and potential scenarios, clients must skeletonally design target solutions, gather costs for target-solution components and model projections for cost impact. Clients concerned about space, power and cooling must gather that data as well.

**Analysis Time Investments**

For an experienced team completing a 100-server study, analysis might require approximately 160 person-hours of effort. For an inexperienced team the time investment might easily double, triple or quadruple. Installations with thousands of servers might require 1,000 person-hours of effort by an experienced analysis team.

Many clients desire client-specific, detailed analysis but can’t spare staff time to perform it. Thus, some clients rely on industry averages or consultant reports in lieu of analyzing their own data. There’s another way.

**IBM IT Optimization and Rationalization Methodology**

Hundreds of clients have enlisted IBM’s assistance to conduct IT financial analysis using IT optimization and rationalization studies. These studies analyze IT business processes and technical feasibility in addition to IT financials. Studies begin by understanding the current state, then examine various “what if” scenarios. In this way, study recommendations try to closely reflect possible impacts specific to the organization versus presenting industry-average statistics in a vacuum.

Studies occur in the previously described three phases: data collection, analysis/solution design and business-case development. In the data-collection phase, clients provide detailed technical and financial data via supplied templates. Where data isn’t readily available, IT optimization and rationalization practitioners guide clients toward reasonable estimates. In the absence of actual or estimated data, practitioners draw from the team’s seven years of experience performing hundreds of studies across dozens of industries to provide valid industry and application-based averages appropriately adjusted for each client’s environment.

Objectives of an IBM IT optimization and rationalization study typically include:
The AOC savings associated with IT optimization and rationalization study recommendations can be as high as hundreds of thousands to millions of dollars per study. ... Our client feedback indicates it’s well worth the effort.

- Establishing a financial baseline, cost profile and staff-productivity rate for the current state
- Reviewing current server inventory data to understand strengths of architectures, topologies and platforms according to major server functions and applications supported
- Identifying high-value/priority solution areas that could reduce complexity and ongoing costs
- Projecting future volumes and costs based on current-state costs and acquisition costs to establish business cases for targeted solution areas

Much of this is similar to the current-state analysis presented in Figure 2. Figure 5 (opposite page) highlights typical business-case data derived for target solution scenarios. This provides “what if” analyses to help weigh options.

In addition, Figure 6 (below) summarizes other quantitative and qualitative assessments resulting from an IT optimization and rationalization study. These assessments offer clients further insight and an industry comparison point.

IT optimization and rationalization studies don’t attempt to declare the “best” platform. Rather, they aim to help customers determine the optimal platform for each of their various workloads. This usually leads to recommendations for solutions on a variety of platforms.

Is it Worth the Effort?

With all of the work involved in performing IT financial analysis, clients wonder whether the analysis benefits merit the effort. IBM IT optimization and rationalization studies typically offer clients several potential saving areas. The AOC savings associated with IT optimization and rationalization study recommendations can be as high as hundreds of thousands to millions of dollars per study. The projected savings vary based on many factors, including client size, number of installed systems and storage devices and current IT efficiency. Our client feedback indicates it’s well worth the effort.

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Business intelligence (BI) has become an increasingly popular topic as companies attempt to make monetary sense of vast amounts of data. Timely processing of that data requires a sophisticated, powerful and scalable database management system running on a powerful, reliable, easy-to-manage and secure system. Numerous database vendors work to woo customers with cool-sounding technologies—most recently, for example, in a concept called a BI appliance. But IBM System i customers don’t need to go anywhere else. Their database and BI capabilities are built right into their systems.

In this article, we’ll detail key characteristics of System i architecture, i5/OS V5R4 and its DB2 database-management system. And we’ll discuss the innovative solutions available on (and patented by) DB2 that show the System i platform is serious about serious amounts of data.

Business Performance
BI, more recently known as business performance management, can help improve business if the right data can be harvested timely and reliably. Of course, generating information without using it to invoke some action isn’t business intelligence; it’s just a waste of time and money.
Data is a valuable asset, but data alone is not information. Many companies have a lot of data but can’t always get at it or don’t realize it could spawn important insights. Often, they know what actions they might take if only they could get the insight they want ahead of time. But that knowledge may depend on data from many different sources that aren’t easily coordinated. BI brings all of the data together to drive powerful insights and prompt actions that improve business performance.

**What is Business Intelligence?**

BI started out as reporting what happened. It evolved to understanding why things happened and then predicting what might happen. Now we see real-time business actions taken by monitoring things as they occur. This most recent stage is business performance management.

Bringing data together to derive valuable insight is called data warehousing. Processing different sets of data in different places at different times just doesn’t allow the same relationships and timeliness of information. This is a key principle of any warehouse—a large collection of auto parts in a warehouse exists to fill diverse orders quickly. The data warehouse acts the same way.

**What Makes System i good for BI?**

The System i platform is great for accumulating large quantities of data in an easy-to-manage fashion. The system can scale up to support a big warehouse under one roof. Many systems require data to be partitioned and managed across multiple systems to get significant processing volumes. Administrators can spend considerable time and energy managing where data is located. One System i platform can have up to 64 CPUs, 2 TB of main memory and as many as 2,000 disk drives. If an administrator puts 2,000 70-GB drives on a system, that provides up to 140 TB of information on one system. Companies can grow a data warehouse without major architectural or data-management headaches. The operating system (OS) automatically spreads the database objects across all disk drives on the system, reducing management and allowing for maximum throughput.

The logical-partitioning support provided by System i architectures allows additional flexibility to run different applications in different i5/OS, Linux* or AIX* partitions. One use of this configuration is to allow consolidation of a business application and a data warehouse onto one system. Using the virtual LAN connection between these partitions, along with remote journaling support and the right extract/transform/load tool (to propagate data from the remote journal to the data warehouse) can provide near real-time data in the warehouse. This configuration, shown in Figure 1 (below), allows resources to be shared dynamically across these partitions and provides ultimate flexibility with maximum resource sharing.

This setup can even be combined with a high-availability (HA) environment. Many companies today have a failover server and use HA software to replicate data to it on a near real-time basis. In many cases, the failover server is underused, since it’s only mirroring the set of production data, not processing it. This server can be a desirable environment for building the data warehouse.

**What Makes i5/OS good for BI?**

i5/OS provides a great infrastructure for BI. This state-of-the-art, secure, robust and highly reliable OS is perfect for a data warehouse. Its object-based architecture helps ensure the integrity of the data. Only OS code is allowed to manipulate the data. The single-level storage architecture allows maximum data sharing and improved performance by keeping highly referenced data resident. As the processor architecture changes, the i5/OS insulates applications from change with its technology-independent machine interface layer.

The best part of i5/OS is its capability to automatically utilize the available hardware resources. In Figure 2 (opposite page), we see the system view. Users submit query requests to the system without knowing or caring whether the data is in memory or on disk. The system can fully employ the I/O processors to perform the processing.
subsystem, main memory and symmetric multiprocessing capabilities of this architecture.

**What Makes DB2 for i5/OS good for BI?**

There are several reasons DB2 for i5/OS is the best BI solution. DB2 offers cutting-edge integration, strong security, SQL standards, multiple additional tools and an easy-to-use GUI. The state-of-the-art integrated database lets users extract great value from data. Its integration into i5/OS lets it take direct advantage of the OS architecture. Its query optimizer knows the configuration (seen in Figure 2) and builds plans to implement queries that can use the system’s disk, memory and processor resources efficiently.

Security is always a concern with data and information. Since it’s an integrated database, DB2 for i5/OS lets the OS handle the security and authority to access the data, preventing any ability to bypass the database security through other OS functions. This differs dramatically from other databases, which sit as an application layer on top of a given OS. The database also supports column-level encryption using Triple Data Encryption Standard to prevent any unwanted peeking at sensitive information.

DB2 for i5/OS is a deliberate leader in compliance with the SQL standards. In V5R4, DB2 for i5/OS became 100-percent compliant with the 2003 SQL Standard Core, and is the first database known to do so. IBM realizes that compliance is critical to making a strategic platform and to aid in porting applications, and takes it seriously.

Fortunately, many different business solutions work with the System i platform. For a list of those products, see the System i Tools Innovation Web site (www-304.ibm.com/jct09002c/partnerworld/wps/pub/systems/i/technical/iii/tools_roadmap).

The iSeries* Navigator GUI (Figure 3, right) provides an easy-to-use front end for the system. As with the OS, DB2 integrates nicely to provide a powerful yet simple interface.

With the New DB2 Web Query product, users now have even more options for generating BI reports. See a product preview at our DB2 for System i Web site (www.ibm.com/servers/eserver/iseries/db2/).

**To BI Appliance or Not to BI Appliance?**

Vendors advertise their BI appliances as being much easier to use than traditional data-management systems. They even claim to require no database administrator. But many of these characteristics are already built into the System i platform and DB2 for i5/OS. See chart on page 36 for a features comparison. If System i users compare what’s at their disposal with i5/OS to the offerings of an appliance, they’ll see they already have the perfect BI environment. And, unlike an appliance, the System i platform can do all the traditional database functions, such as online transaction processing, too. Why limit yourself to an appliance?

**Core Capabilities in Complex Environments**

Simplicity and ease of use are nice, but most important in making BI work are the core capabilities of the database. DB2 for i5/OS provides these vital capabilities. In fact, since V5R2, IBM has focused intently on enhancing SQL Query Engine (SQE) to handle complex environments like BI.

**Star schema**—The most common design for a data warehouse is a star schema, one or more large fact tables supported by multiple dimension tables. A peculiarity of this arrangement, and one that frustrates traditional database processing, is that selection gets applied to the “wrong” place (i.e., on the dimension tables rather than the fact table). However, DB2 readily solves this problem using look-ahead predicate generation (LPG). With LPG, the local selection on the dimension tables is transformed into local selection on the fact table. This allows all the powerful techniques of query processing to be brought to bear on the fact table. But that’s not all. Unlike other databases, which use specific pattern recognition to determine when to do this processing, the DB2 i5/OS optimizer uses costing to determine LPG use. This means LPG isn’t limited to star schemas (like other databases), but
can potentially apply to any type of database design. So there’s less worry on i5/OS about getting the perfect warehouse design.

**Indexing**—DB2 i5/OS provides two types of indexes for performance tuning: the default radix index and the encoded vector index (EVI). See “Indexing Strategies” (opposite page) for more.

Radix indexes provide great general-purpose capabilities for searching and ordering; they work for a wide range of applications. They’re similar to a standard binary index, but their unique common-key-text data sharing improves their memory footprint and paging characteristics.

Most robust databases have in their back pockets a specific type of index that provides that little extra boost to make complex queries like those in BI perform well. DB2 for i5/OS is no exception. EVI, an IBM research initiative brought to fruition on the System i platform, is easily one of the most powerful indexing techniques in the industry. An EVI’s capabilities align ideally with BI processing. An EVI is constructed of two components—a symbol table containing the unique values of the join column, and a compressed vector (list) that maps the rows of the table to the unique values. These indexes, combined with LPG, produce a powerful technique for mining critical data from the vast repository stored in the tables. Additionally, since the symbol table of the EVI is a pre-computed aggregate form of the data in the table, EVIs are often used directly to answer grouping queries. The best news is that users don’t have to know when or how to create an EVI. Through the On Demand Performance Center, EVI indexes are automatically advised.

To leverage index use, the database engine doesn’t limit itself to a single index for a given table in a query. The optimizer will consider using multiple indexes per table using index AND/OR techniques. This maximizes the performance capabilities of the existing set of indexes, including any optimizer-created maintained temporary indexes. Multiple index use also lowers the stress of trying to create the perfect index, lessening IT complexity.

**MQTs**—For more complex queries, materialized query tables (MQTs) are an excellent way to provide quick answers to complex queries. MQTs are precomputed, generic answer sets usable for a wide array of queries that can be posed against the data warehouse. The query optimizer substitutes an MQT into a query’s implementation and compensates for those pieces that may be missing from the MQT. The DB2 optimizer does this substitution using industry-leading, patented technology. See “MQTs for Business Intelligence Success” (June 2007 or www.ibmsystemsmag.com/i5/june07/administrator/15376p1.aspx) for an in-depth discussion of this powerful technique.

**Partitioning**—Another technique used with larger databases is to segregate common data within a table into separate partitions. A popular example is to partition the data by date so each partition holds one month.

To create a partitioned table, the table is defined with a partition key. As records are subsequently written into it, they’re routed automatically to the correct partition. Table partitioning can allow for faster data deletion and record searching. It also allows a single table to hold a TB of records. (Multiply that times the number of bytes per record and—well, you get the idea.)

**Parallelism**—BI appliance vendors claim their products run queries quickly using parallel processing, splitting the query request into pieces that can be run in parallel in multiple processes. DB2 for i5/OS provides that same capability using symmetric multiprocessing (SMP). By spreading the work of a query across the resources of the machine, the system’s capabilities are fully utilized and the query completes more quickly. This technique is
great for complex queries that must process a lot of data. It also works well in combination with a good indexing technique to provide an extra boost to an already well-designed data warehouse.

A common misconception for database designers is that parallel processing requires table partitioning. While this is true for other databases, it isn’t necessary for DB2 for i5/OS. DB2’s SMP capability was built to work against nonpartitioned tables. The query engine will dynamically decide how to split up access to the table’s data to get the best parallel processing without partitioning. The embedded nature of DB2 lets it maximize the unique single-level storage model of i5/OS, making this parallel processing (and many other techniques) possible.

**Behind the scenes**—All these techniques don’t come easily. As the complexities of queries increase, the best implementation for those queries varies. The key to a database’s success is its ability to bring to bear many different techniques and to choose wisely among them.

The DB2 for i5/OS query engine provides not only robust index and scanning technologies, but also impressive hashing, sorting, distinct and parallel processing techniques that provide a well-rounded solution to most any query. Deciding which of these techniques to use requires a robust query optimizer with considerable query-rewrite technology and cost model-based decision capabilities. The modeling decisions, in turn, require good modeling information, called statistics.

Modeling information comes primarily from two areas. The optimizer can extract information about the hardware capabilities—such as CPU speed, memory size, fair share of memory and storage capabilities—from the OS itself. The other main source of information regards the data. In traditional cost-based optimization, the onus of gathering this statistical information sat squarely on the database administrator. DB2 for i5/OS gathers statistics automatically. The GUI provides an easy-to-use interface for users to manually gather and control these statistics. But other than to satisfy dyed-in-the-wool database administrators, users don’t need to deal with them.

**Your Machine of Choice**

The System i platform, with its i5/OS and DB2 for i5/OS, has long proven to be a strong, capable system for storing and managing data. And with its built-in capabilities to handle large, complex data-processing environments, combined with its many ease-of-use features, it makes sense to use it as your data warehouse and BI-processing machine of choice.

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**Indexing Strategies**

Indexes are the most important factor for good performance. A good indexing strategy provides maximum query performance – better even than what a comparable business-intelligence appliance could provide on its own. Yet they’re traditionally one of the most mysterious and difficult concepts to master. Why? It normally comes down to two issues:

1. Administrators don’t know what indexes to create.
2. Administrators don’t want to worry about them once they exist.

DB2 for i5/OS tackles both of these issues head-on. With the On Demand Performance Center’s index advisor, users can do one-stop shopping anytime to find out what indexes they should have. The database continually provides up-to-date information on what indexes are being advised by the query optimizer. The GUI provides a simple way to create a permanent index from the advice. Once created, the indexes are automatically maintained and balanced by the database as data is added and removed from the underlying table.

Additionally, the indexes are automatically protected from any unexpected failures with system-managed access path protection. Finally, the query engine will create its own index, called a maintained temporary index (MTI), based on its own index advice. MTIs do a great job of covering that middle ground of table sizes where an index can provide real value without demanding the considerable investment in processing time necessary to create an index. The index advisor indicates which advised indexes have been created as MTIs. This information helps users further zero in on the most useful indexes. Users can decide whether to continue to let the optimizer maintain the existence of these indexes as MTIs or, if they prefer, take ownership of them by creating a permanent index based on the advice. Additionally, the GUI shows which indexes already exist over the table to simplify the decision on which—if any—additional indexes to create.

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—R.B. and T.M.
System i: Who is the new Lawson?

David Hope: Lawson Software was born in 2006 as a result of Lawson Software’s acquisition of and merger with Intentia International AB Ltd. We bring over 30 years of experience in providing Enterprise Resource Planning (ERP) solutions to our target markets. Our two distinct flagship product lines, Lawson M3 Enterprise Management System and S3 Enterprise Management System are targeted at meeting industry specific needs in two broad sectors: manufacturing/trade sector and service providers. Lawson M3 caters to organizations that Make, Move, or Maintain processes and products, and S3 is for service industries that need to Staff teams, Source materials and Serve their customers respectively. In Asia Pacific, the market focus is on fashion, food and beverage, process and discrete manufacturing, distribution, building products and retail. We have more than 400 customers in this region which include customers like TAL Apparel, BlueScope Steel, Nippon Paint, Tat Hong, The Hour Glass Group and Sumitomo Bakelite.

System i: Tell us about the Global Strategic Alliance between IBM and Lawson.

Harry Debes: IBM and Lawson have been strategic business partners for 28 years. Since the days of the System/36 in the 1980s to today’s System i5 solution, Lawson has partnered with IBM to provide innovation to the enterprise software market. Lawson and IBM have been delivering excellence to our global customers on this platform for a quarter of a century.

Today, Lawson is an IBM Premier Business Partner, which means we are certified under the Built on IBM Express, IBM ServerProven and IBM System Storage Proven programs as well as in the SOA Specialty program. The new Lawson is truly global, with 3800 employees in 40 countries, some 200 partners, and 4000 customers around the world. There is no better time for IBM and Lawson to forge a Global Strategic Alliance partnership. The value that our customers can derive from this relationship is tremendous. Key areas of our businesses are increasingly aligned around the world; jointly we have increased geographic and industry coverage and made our joint services and solutions even more accessible than before.

Lawson applications are tested and optimized on IBM eServer platforms – including System i5 – and both companies have developed an expertise in IBM/Lawson implementations. In terms of technology, Lawson is the only major mid-market ERP alliance partner to standardize on the IBM middleware stack. Our System Foundation offering for both our M3 and S3 product lines includes OEM licenses of IBM’s WebSphere Application Server ND. Our S3 System Foundation also includes OEM licenses for IBM WebSphere Enterprise Service Bus, WebSphere MQ, the IBM DB2 database and the IBM Tivoli Directory Server. Lawson provides all of the support for these IBM solutions directly so our customers can simplify their technology investments and relationships. We plan to make these expanded IBM solutions available with our M3 System Foundation as well.

Most recently, we expanded our relationship with IBM to include On-Demand offerings. Known as the Lawson Total Care Platinum offering, this service includes application hosting, application management and infrastructure management services through the IBM data center in Nebraska. It’s a great service and we have several customers that have already signed up for it.

Harry Debes, CEO and David Hope, Regional Managing Director, Asia & Japan, Lawson Software

Harry Debes, Lawson Software's CEO, was in this part of the world with his executive team for its annual What's Next seminar where Lawson met with customers and partners to update them on the company's strategies and product roadmaps. Debes and David Hope, Lawson’s Regional Managing Director, Asia and Japan talk to System I magazine about the new Lawson, Lawson’s Global Strategic Alliance with IBM in Asia Pacific, winning IBM’s IMPACT SOA Business Partner Award and, the latest Aberdeen study that ranks Lawson number one in lowest total cost of ownership among ERP competitors for the mid-size manufacturers.
**System i: What can IBM’s customers’ expect from this partnership?**

**Harry Debes:** Our customers benefit the most out of this strategic alignment to deliver next-generation, industry-specific products and services to Lawson and IBM customers at the industry’s lowest TCO and highest possible ROI. IBM and Lawson are both focused on verticals and the mid-market. “The Total Cost of ERP Ownership in Mid-size Companies” by Aberdeen Group, July 2007, a survey of 645 mid-size companies regarding their ERP solutions in June and July of 2007, concluded that Lawson Software delivers the greatest benefits per customer dollar invested for mid-sized manufacturers. The results of this research validate Lawson’s TCO advantage over key ERP competitors and ranks Lawson number one in cost per percentage point of performance improvement gains. Our solutions, coupled with the System i platform, enable the deployment of excellent technology solutions at a cost effective price. Another development in the partnership is that in select markets in the Americas, IBM will now resell Lawson applications, bundled with IBM technology and services. We continue to investigate opportunities to develop these types of relationships with IBM in the rest of our operational regions.  

**David Hope:** Earlier this year in May 2007, Lawson Software was recognized by IBM with two prestigious awards. First, we were a finalist for the IBM PartnerWorld Beacon Award. Most notably, Lawson was named the recipient of the inaugural IBM IMPACT Business Partner Solution Award that recognizes IBM Business Partner solutions, such as Lawson System Foundation, that show the strength of successfully incorporating IBM WebSphere technology to solve customer challenges, while delivering proven impact in the marketplace. We’re making it easier for Lawson customers to deploy a service-oriented architecture (SOA) that can deliver business flexibility and automation. This award marks another milestone in Lawson’s relationship with IBM. In Asia Pacific, IBM and Lawson demonstrate our commitment by investing in sales and services teams to support our customers. For example, in almost every of our customer centric events, IBM shows relentless support and dedication with their presence. And in almost every country Lawson operates in Asia and Japan, IBM and Lawson work closely together.

**System i: What does the future hold for the IBM and Lawson partnership?**

**Harry Debes:** We have had a good 28 years together. I see many more years of productive collaboration to bring unprecedented value to customers from two industry leaders, one focused on business applications and software for the mid-tiered market, and one on technology and hardware. Future Lawson applications will be built with the Landmark Application Designer, which is Lawson’s breakthrough technology and business application model, and will feature our new Smart Client – a revolutionary new user interface. IBM’s WebSphere is the middleware foundation for Landmark that helps our clients move to a J2EE-standard SOA and utilize an open standards-based framework for automating business interactions between employees, customers, partners and suppliers. Just as Lawson partnered with IBM to become the first major ERP solution provider to enable our applications for the web in 1996, we also partnered with IBM to deliver our first native SOA-based solutions to the market in 2006 – well ahead of our major competitors. The combination of Landmark and IBM technologies will continue to allow Lawson to deliver market-leading SOA solutions to our joint customers.

**David Hope:** There are many areas where the Lawson-IBM alliance can address top business challenges and emerging trends. Lawson Business Intelligence and IBM DB2 provide the foundation for dynamic warehousing to effectively leverage information for manufacturers. And Lawson also offers integrated solutions built on IBM technology, enabling enterprises to easily integrate with other applications and with other locations harnessing the power of SOA. Lawson and IBM customers get the best ROI and lowest TCO, and well as ease of mind from the System i5, one of the most secure, reliable mid-market systems in the world.

**System i: So what is the message for your installed customers in AP?**

**David Hope:** We have built a solid foundation with System i and Movex (now known as Lawson M3) with our customers. Lawson M3 was the first ERP application developed ground up on Java on IBM System i. Today we have a global initiative under the umbrella “STEPPING UP” campaign to help our customers move to the Java version of Lawson M3 on IBM System i. We have made this as a seamless process and at the same time minimizing the cost of using our latest technology offerings. We are expecting to see more of our customers take up this great opportunity.
No Muss, No Fuss

A painless system upgrade transformed County Bank from overworked to poised for growth

BY JIM UTSLER

Who thinks about banking, really? Especially today, when you can step or drive up to an ATM and make a deposit, get cash, check your balance—even purchase postage stamps. Check writing has become similarly simple, in large part because there are now so many ways to approach it, whether you’re paying your water bill online or buying your groceries with a debit card.

Technology and improved processes have made banking nearly invisible to the average customer, which is why I don’t give it much thought. But perhaps I should, because behind the curtain are complex transactions among banks and other organizations that ensure everything runs as it should, with payments and credits applied to the correct accounts no matter the method customers choose to interface with their banks.
Keith Gaudsmith, vice president and information technology manager at County Bank, says the company’s recent upgrade alleviated the long hours of overtime its computer operators were working.
Of course, none of this would be possible without sophisticated technologies. In the case of Merced, Calif.-based County Bank, that includes IBM* System i* architecture, the appropriate banking software and a host of IBM System x* servers. As with all technology, however, this type of infrastructure often must be upgraded to keep up with increasing user demand and company growth. That’s why County Bank upgraded an older iSeries platform to a newer System i5* 520 platform, a move that, according to Keith Gaudsmith, County Bank vice president and information technology manager, has reduced the company’s backup times from three to four hours on the older system to one hour and 15 minutes on the newer one. “Now we don’t have to pay for overtime,” Gaudsmith says. “It’s amazing what a simple system upgrade can do.”

A Shiver up the Spine

In business since 1977, County Bank, which is part of the holding company Capital Corp. of the West, has grown tremendously. It has 25 full-service branches, including eight commercial-lending centers, spread throughout much of central California. It has a presence in eight counties. Since reaching $1 billion in assets in 2002, the bank has continued to expand and plans to have 30 branches this year and another five to seven next year, Gaudsmith says.

This growth is enviable, but it doesn’t come without a cost, including significant IT demands. Prior to upgrading to the 520, the bank had been using an older iSeries* 820 model running a heavily modified version of the Jack Henry suite of banking software. (The bank is also supporting 70 System x servers running Novel NetWare, as well as Microsoft* Windows* 2003 server software and Microsoft XP, to support local branches and other internal IT functions.) Because of its extended presence, the 820 was becoming quickly outmoded, with disk capacity reaching 80-plus percent and, Gaudsmith says, CPU use at “pretty much 100 percent most of the day.”

Although use would drop after office hours, the organization still had to deal with backups—and those were beginning to bump into the next day’s working hours. Although this happened rarely, the thought alone sent shivers up Gaudsmith’s spine. “We can’t have systems down when the branches are ready to start taking customer transactions,” he says.

More significantly, County Bank was having problems with what in the banking industry are called “cash letters.” As Gaudsmith explains, “Cash letters involve checks that we receive over the counter or from other sources. We have to encode them and run them through a sorter and then apply them to an account if they’re ‘on-us’ checks. If the checks are not on us—meaning, they’re not from our bank—we have to box them up and send them to the issuing bank. In accordance with that, we have to send a cash letter to reflect those transactions to the Federal Reserve by midnight our time or face monetary penalties.”

County Bank was struggling to meet that deadline because it was processing until 1 or 2 a.m. As a result, the cash letters weren’t being applied in keeping with Federal Reserve guidelines and the bank was being socked with fines, which would increase sharply at 5 a.m. As Gaudsmith simply puts it, “We couldn’t afford to have that happen every day.” Indeed, the ideal time to submit the cash letters is 5 p.m. Pacific time, when, Gaudsmith says, you get the best per-item fee. After 5 p.m., the Federal Reserve begins charging additional per-item fees, which can become substantial.

No Time for Overtime

To compound matters, the company had to pay its two afternoon computer operators overtime because of all of the late-night delays, including issues related to both the cash letters and backups. So instead of wrapping up business at, say, midnight, in keeping with the Federal Reserve or self-imposed backup deadline, they would have to work into the wee hours of the morning, racking up as much as 15 hours of time-and-a-half per operator each week. “We were beginning to overshoot our nightly schedules, because once we finished processing at 3 or 4 in the morning, we would still have to do our backups. So now we’re looking at 6 in the morning and

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| CUSTOMER: County Bank |
| HEADQUARTERS: Merced, Calif. |
| BUSINESS: Consumer and commercial banking |
| HARDWARE: An IBM System i5 520 and 70 System x servers |
| SOFTWARE: Jack Henry banking applications |
| CHALLENGE: Meeting critical deadlines while reducing IT costs |
| SOLUTION: Purchasing and deploying the 520 to replace an aging and overtaxed iSeries 820 |

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people were coming into work at 8:30,” Gaudsmith recalls. “And we of course had to pay our computer operators for all that extra time.”

Additionally, the bank has those lofty expansion plans, wanting to add at least 10 branch offices by 2008. Its former 820 simply wasn’t capable of handling any additional work, especially because its CPU use had already peaked at 100 percent during work hours, its onboard storage was filling up and it was struggling to process the day’s work every night. “We needed to do something,” Gaudsmith says.

That something was to bring in a new System i platform. So late last year, County Bank approached IBM about purchasing a new 520 with a P10 processor class to replace its 820 with a P30 processor class. The switch took a mere two weeks, with the company bringing in an IBM technical wizard to make the necessary adjustments. These included removing the disks from the new system, installing them in the old system, copying the data to the disks and then reinstalling them in the new system. The company also conducted a complete backup of the old system in case of problems during the upgrade. “The backup took longer than the actual disk-swapping upgrade,” Gaudsmith notes.

As one might expect, everything concerning IT changed once the upgrade was done. For example, disk use is now down to 45 percent from 80 percent pre-upgrade, and CPU use is down to 19 percent from nearly 100 percent previously, making County Bank’s core business processes run much faster than before. Backups, which once took three to four hours to run, now take less than two hours, and cash-letter processing is no longer an issue. This means the two afternoon computer operators no longer have to work overtime.

The company realized another benefit from the upgrade due to changes in software pricing, which was largely tier-based. Instead of running under a P30 processor class, it’s now running within a P10 processor class, cutting software-licensing fees in some cases by a third. “We went from a P30 to a P10 and saved $100,000,” Gaudsmith says. “And on top of that, we gained five times more processing power. That’s a pretty good deal no matter how you slice it.”

**New Opportunities**

A simple upgrade may not sound like it would amount to much, but it can mean a world of difference to any computing environment based on older equipment, as County Bank proved. This is a simple story—system upgrade equals IT improvements across the board—but it’s instructional nonetheless.

This is especially true in today’s increasingly competitive marketplace, where a more nimble IT environment lets companies like County Bank rapidly expand with little effort. “We wouldn’t be able to grow as we plan without this new system,” Gaudsmith says. “Now, we don’t have to increase hardware except to maybe add a CPU to handle our expected growth. We simply wouldn’t have been able to do that with our older system.”

And looking further into the future, County Bank is considering adding to its System x infrastructure by introducing an IBM BladeCenter® using virtualization. As Gaudsmith explains, “Virtualization will allow us to add fewer servers and lessen our datacenter power requirements. And if something goes down, it will be much easier to recover. Right now, that’s not so easy.”

And easy is the key word here. As far as banking customers are concerned, that’s the way things should be. I want to be able to simply drive up to an ATM, put my card in and take my money out, without having to worry about what’s happening behind the scenes. Thanks to innovations in technology, this is how things work now—no muss, no fuss.

**Jim Utsler,** IBM Systems Magazine senior writer, has been covering technology for more than a decade. Jim can be reached at jutsler@msptechmedia.com.
The Challenge
New Zealand supermarket operator Progressive Enterprises looked to build its business organically and by acquisition. The company wanted to introduce new SAP applications and a new enterprise-wide warehouse management system (WMS), but the existing infrastructure, made up of numerous ‘islands’ of storage and processing, was incapable of supporting these plans.

The Solution
Progressive consulted IBM Global Technology Services, which provided a one-stop shop solution to build an IT infrastructure capable of supporting new SAP applications, meet demands for scalable storage, and grow in exact step with the business. Starting with a new IBM-based storage area network (SAN), IBM Global Technology Services helped Progressive upgrade business-critical SAP financial software to SAP R/3 Enterprise with SAP ERP Financials and implement a new WMS on the IBM System i5 570 platform. Progressive is also replacing individual servers with virtual servers running under VMware on IBM BladeCenter and IBM System x platforms.

The Benefits
New consolidated infrastructure easier to manage, reducing workload for IT staff; seven-day backlog on SAP software-based electronic invoicing system eliminated, enabling real-time processing for improved supplier relationship management; increased performance cuts daily backup times from eight hours to two and a half; SAP software responds 50 per cent faster; IT function matches business demands more rapidly and cost-effectively.

With around 45 per cent market share, Progressive Enterprises Limited is the biggest player in the New Zealand grocery store sector, employing some 18,000 people nationwide in more than 170 supermarkets and convenience stores. In addition to operating the Foodtown, Woolworths and Countdown supermarket chains, Progressive is the franchise coordinator for the FreshChoice and SuperValue groups.

The Progressive business had grown both organically and through corporate acquisitions. As a result, its IT infrastructure was fragmented into numerous point solutions running on separate sets of servers and storage. At the corporate level, collecting, analysing and acting on group-wide data was difficult, slow and expensive, and was becoming a brake on continued growth.

To provide management information and respond to a need to reduce operational costs, managers wanted to implement a new warehouse management system (WMS) and upgrade to newer versions of SAP software to take advantage of enhanced reporting and control capabilities. This required a complete overhaul of the existing server architecture, which in turn depended on providing an integrated storage solution.

Graham Spencer, IT Infrastructure Manager, comments: “The existing infrastructure was relatively inflexible and difficult to manage. Storage capacity was locked into discrete groups of servers, so that while some systems were running out of space, others were over-provisioned, making it hard to respond to business demands and management requests.

“Our priority was to create a storage area network, which would support the deployment of the new WMS and enable improved performance for our business-critical SAP financial applications. With the SAN in place, we would then be in a position to introduce more powerful systems in readiness for the SAP software, and deploy virtualization techniques to give us the ability to meet changing business requirements more easily.”

One-stop-shop for more efficient storage Progressive had more than 100 stand-alone Intel-processor based servers from a number of different vendors, with several IBM System i platforms and some UNIX-based servers. With a number of separate backup and recovery solutions, it was hard to ensure that all enterprise data was adequately protected, and recovering individual files mistakenly deleted by business users was both difficult and time-consuming.

“We reviewed the market for enterprise-class storage, and we selected IBM as the best vendor for our requirements,” says Graham Spencer. “With all data held on the IBM SAN, storage is much easier to manage and we make more efficient use of our disk capacity.”

Progressive worked with IBM Global Technology Services to deploy two McDATA Fibre Channel Switches to manage traffic across the new SAN, linked to its existing IBM TotalStorage Enterprise Storage Server 850 system and a new IBM TotalStorage 3584 Tape Library with LTO3 media. IBM Global Technology Services also implemented an IBM System p5 510 server running IBM Tivoli Storage Manager under IBM AIX 5L.
Progressive was all set for the next phase: upgrading its SAP systems. With the new SAN in place, solution implementation services concurrently with the client with knowledge transfer experience. IBM also provided the ability to have a one-stop shop solution, Progressive Enterprise was able to have a one-stop shop experience. IBM also provided the client with knowledge transfer services concurrently with the solution implementation.

One platform, two operating systems With the new SAN in place, Progressive was all set for the next phase: upgrading its SAP software and deploying a new WMS solution.

Progressive Enterprises has used SAP R/3 software to run its finances – including general ledger, fixed assets, accounts payable and accounts receivable applications – for a number of years. The company had also introduced an electronic invoicing system, enabling trusted suppliers to submit their invoices directly into SAP software. Around 100 employees were using the SAP software environment every day, and Progressive’s existing AS/400 platform could no longer cope with the volume of transactions. A processing backlog of about seven days had built up.

The company decided to attack the problem from two fronts, by introducing both a new hardware platform – the IBM System i5 570 – and more advanced software – SAP R/3 Enterprise with SAP ERP Financials.

Progressive also wanted to move away from its existing in-house WMS solution and deploy a standard package from a specialist vendor, which would support voice recognition for picking, and support for RFID technology.

Rather than buying separate hardware platforms for the new SAP and WMS software, Progressive simply created a number of AIX and i5/OS partitions on a new IBM System i5 570 platform. The AIX partitions run one instance of Oracle for each of the three main distribution centres, and Progressive uses Tivoli Storage Manager agents to back up the Oracle databases inflight. The i5/OS partitions run the SAP R/3 Enterprise and SAP ERP Financials software.

“The AIX and i5/OS partitions share the same physical resources and connections to the SAN, and we can share computing power between them as required,” says Graham Spencer.

He adds, “Our distribution centres see seasonal peaks at Christmas and Easter, at which times we can borrow capacity from the i5/OS partitions for the AIX partitions, to improve performance for the WMS. Likewise, at month-end and year-end we can reassign resources from the AIX partitions to the i5/OS partitions, giving a boost to our financial systems.”

Fully virtualized infrastructure The IBM POWER5 architecture of the i570 enables processor resources to be virtualized and shared dynamically between different operating systems in different logical partitions.

“We saw virtualization as the key to enabling better utilization of our hardware resources, and better flexibility in dealing with peaks in demand,” says Graham Spencer. “We can now move power from interactive systems to assist overnight batch runs, then move the resources back ready for the next working day.”

Progressive Enterprises is also making use of virtualization to improve the efficiency of its Intel-based systems. As its existing Windows servers come to the end of their useful lives, rather than replacing them like-for-like Progressive is consolidating them to virtual servers running under VMware on IBM System x and BladeCenter hardware.

By consolidating its server architecture to IBM hardware, with all servers booting from the IBM SAN, Progressive has rationalized its IT infrastructure, improving manageability and reducing long-term cost of ownership. The company has released significant amounts of floorspace in its data centre, while reducing heat output and cooling requirements, and has simplified the physical cabling infrastructure.

“The new IBM infrastructure has given us a great deal of flexibility,” says Graham Spencer. “With centralized storage, we no longer run out of capacity on individual servers, and server virtualization has enabled more efficient use of the available computing power.”

Accelerated invoicing The combination of new SAP R/3 Enterprise and SAP ERP Financials software with the IBM System i platform has seen a significant acceleration in Progressive Enterprises’ ability to process accounting information, eliminating the seven-day backlogs which had built up, and providing real-time information about the company’s finances.

“By upgrading to SAP R/3 Enterprise on the i570, we achieved a dramatic improvement in performance,” says Graham Spencer. “Invoices are now processed in real-time, so we can pay our suppliers more promptly and we have a better picture of our cash-flow.

We worked with both SAP and IBM on the upgrade, and received excellent support. As the business continues to grow, the new i570 will provide ample power for our business-critical SAP systems.”
Cassa di Compensazione e Garanzia, the clearing and guarantee agency that regulates the trade of equities and Government bonds in Italian markets, uses Tango/04 Business Service Management solutions to assess operational risk in real time (no time gap between trade execution and novation) for transactions involving derivatives, cash equity and bonds, and also to ensure the accuracy of derivatives closing prices at the end of every day.

All transactions involving derivatives, cash equity and government bonds (only for CC&G members) that are conducted in the Italian Stock Exchange depend on CC&G’s clearing and guarantee services.

CC&G manages the Central Counterparty Guarantee System (CCP) for the MTA, Trading After Hours, MTAX, TAHX and IDEM markets, regulated and managed by Borsa Italiana (Italy’s Stock Exchange), and for the markets that are regulated and managed by MTSS.p.A, with exclusive reference to Italian Government Bonds.

CC&G’s presence eliminates counterparty risk, becoming the guarantor of the final settlement of the contracts, acting as buyer towards each seller and as seller towards each buyer. In order to have these transactions guaranteed by CC&G in case of any trader’s default (e.g. bankruptcy or insolvency), all traders must become members of CC&G and deposit a certain amount of money as a guarantee. This amount, also known as risk margin, is calculated by a risk assessment system according to each trader’s overall risk exposure. The amount of the required guarantee must be updated daily to prevent sharp variations in the market prices of a trader’s portfolio from increasing its risk exposure.

Cassa di Compensazione e Garanzia S.p.A. (CC&G) is a vital player in the Italian Stock Exchange system and in the Italian economy, too. CC&G is the clearinghouse that keeps a detailed track of all trades, approves and guarantees exchanges, ensures that all obligations are met and eliminates any counterparty risks.

http://www.ccg.it
development tasks are performed on a 270 system located in Milan. Several Windows servers interoperate with the System i systems in order to allow traders to access the company’s services using the Internet, VPNs and dedicated communication lines. The IBM Websphere application server supports several System i applications.

“Our IT department consists of few people, so we had a strong need to automate some of their tasks in order to focus the available resources at activities that are more strategic, like developing our own internal applications,” “At the same time, we must meet SLAs as strict as the 2-second maximum response time that brokers expect from our novation execution in the derivatives market.” says Mr. Fonzo.

CC&G asked Tango/04 Italy to help them monitor the most critical processes that are performed on a daily basis, with the goal of minimizing downtime and ensuring the operating health of the company’s business services. These are real-time transaction clearing, creation and upload of the daily trading report, and distribution of the day’s closing prices.

**Real-time Transaction Clearing**

In order to authorize and guarantee transactions, CC&G must receive notification of every trader. Downtime or a poor response time could delay transactions indefinitely, with the consequent loss of time, money and confidence from the market.

VISUAL Message Center alerts the ITCT department every time that the process exceeds the expected 2-second limit. VISUAL Message Center’s enriched events and SMS/email alerts with escalation capabilities provide the operational risk manager and the IT operators with detailed information to accurately identify the cause of the problem and to accelerate its solution.

**Distribution of Day Closing Prices**

Every day the press must be informed about the closing prices of exchanged equities and derivatives products. If any problem arises in the process, the delay must be communicated along with a new delivery deadline.

VISUAL Message Center monitors that all the jobs and processes involved in producing this information are correctly completed and sends an email to the risk management office.

“This is why we chose VISUAL Message Center,” says Mr. Fonzo. “Now that the monitoring and optimization of all our IT-related business processes rely securely on VISUAL Message Center, our IT team can focus most of their energies at developing new applications for traders and investors alike. We were expecting from a Business Service Management solution the ability to optimize out most business critical processes, to minimize downtime, and to help us improve our Service Levels and our applications availability.”

After using VISUAL Message Center for one year, CC&G can demonstrate to the management the increased stability of all its business processes. This has been achieved taking advantage of VISUAL Message Center’s great ease of use, based on its simple, intuitive and customizable graphical interface, the SmartConsole, which does not require any complex training.

The business processes of CC&G have a vital impact on the Italian Stock Exchange and on the whole Italian financial community. VISUAL Message Center makes sure that these processes are constantly and proactively monitored and optimized, saving precious time, costs and making Italian investors sleep peacefully.

“When we chose VISUAL Message Center, our guess was that if it worked as promised, it could be a powerful tool in order to prevent operational risks and to meet Authorities requirements” explains Fulvio Fabi, CC&G’s ITCT manager.
The Pilgrims Fund Board, or better known in Malaysia as Lembaga Tabung Haji, was established in 1962 to enable Muslims in Malaysia to gradually save towards their pilgrimage expenditure to the Holy City of Mecca in Saudi Arabia. Whilst putting together a savings plan, the Board also looks after its members' interests with premium quality services and good returns on investments and has played a pivotal role for hundreds of thousands of Malaysian Muslims to making this Holy pilgrimage.

Aside from ensuring that its member’s are financially secure to make this travel, the Board is also responsible for all matters pertaining to handling of pilgrims including registration, allocation of passports, coordinating of visas, flights scheduling and lodging arrangements for their pilgrims.

With such important responsibilities at hand, and with a constant grow in members wanting to make the pilgrimage, Tabung Haji is continuously driving to provide excellent and comprehensive services to satisfy the pilgrims’ needs prior, during and after their pilgrimage.

Search for Innovative Technology

In 2005, due to overwhelming international interest in the pilgrimage, the maximum number of pilgrims Tabung Haji could send to Mecca during the holy month each year was 26,000. To ensure that it reached its annual goal, the company relied on its core applications to provide accurate and responsive customer service. Realizing the need to drive better customer service, Tabung Haji worked with IBM Malaysia to heighten the accuracy of its captured customer information and streamline its data-processing methods using IBM WebSphere software and the powerful IBM System i hardware.

In the middle of 2006, Tabung Haji began looking to innovate their Financial Management System to comply with the latest industry standard application. The current service was unable to provide the new functionalities required by Tabung Haji’s users. Along side that, the board was also looking to streamline processes to have a more controlled and centralized management of the financial view as efficiency in reporting is a top priority to their business. That is when Tabung Haji once again collaborated with IBM Malaysia to determine which system would be able to achieve all the new requirements while being a supporting tool for the core system that was implemented in 2005.

Working with IBM Malaysia again to deliver an effective solution, Tabung Haji put in place a System i platform for the new Financial Management System as its flexibility allows it to handle various applications running at any one time. With this solution in place, Tabung Haji was able to leverage on the System i skills that already existed within their staff to manage their new System i platform and avoided further training or cost incurred. This indirectly resulted in the company’s IT camp being more focused on the

Synopsis: The Pilgrims Fund Board in Malaysia realized the need to drive better customer service, Lembaga Tabung Haji worked with IBM Malaysia to heighten their accuracy of capturing customer information and streamline their data processing methods using IBM WebSphere software and the powerful IBM System i hardware.

Location: Malaysia

Industry: Investment

URL: http://www.tabunghaji.gov.my

Customer’s Testimonial

A look at customers’ successes and achievements

The Pilgrims Fund Board (Lembaga Tabung Haji), Malaysia

Serving Malaysian Pilgrims Better Thanks to IBM Technology
technology compared to having a split camps of IT professionals managing different platforms.

Along with running their applications in a timely and efficient manner, this also encouraged consolidation and efficient management allowing Tabung Haji to concentrate on other parts of the business and deliver excellent service to their customers. Realizing the fast-paced business world requires one to change with the times and keep up with the advancing technological changes, Tabung Haji continuous to embrace innovation in terms of the way they run their business as well as the products they use to achieve success.

**Becoming an On Demand Organization**

Tabung Haji views the IBM solution as the ideal platform for developing its applications to deliver improved services to its millions of customers. For example, the enhancement of its deposit application is expected to improve response time at its counter service, says Hajjah Rozaida, Chief Financial Officer at Tabung Haji.

The deployment of the System i platform means that Tabung Haji’s crucial banking-type operations can be carried out without any glitches, Rozaida adds.

The IBM upgrade and on demand capabilities will greatly improve the management of Tabung Haji’s IT infrastructure and enable it to respond speedily to rapidly changing conditions.

According to Rozaida, one of the criteria specified by Tabung Haji for the new server platform was that it must allow for dynamic reallocation of resources across multiple application environments and this translates to easy administration. It provides the ability to adjust quickly to changing priorities and the freedom to run mixed workloads without the costs and complexity often associated with managing multiple servers.

“With this technology, you don’t need to maintain a server farm and this makes administration easier. Instead, our IT staff can focus on enhancing existing applications as well as developing new ones to improve productivity, efficiency and customer service,” says Rozaida.

The IBM solutions reassure Tabung Haji that the new solution can speedily and easily scale up to meet its fast growing customer base. This is vital as Tabung Haji, with 5.2m million deposit accounts, is projecting an increase of between 5 and 10 per cent in new accounts annually. The upgraded application will also help Tabung Haji improve the management and operations of haj for its customers while the enhanced HR application will facilitate better management of its 1,900 employees.
About T. JOIN Transportation Co., Ltd.

As Taiwan’s leading logistics solution supplier, T. JOIN provides ground freight service, express service, ambient-temperature logistics service and temperature-controlled logistics service. It has 12 large freezer warehouses and storehouses across the island.

Listed on the Taiwan Stock Exchange in 1990, T. JOIN was selected among the top 165 companies in CommonWealth Magazine’s special edition in April 2002 and the top 300 companies in Business Weekly’s ranking of the 1000 listed companies in February 2003. The company currently has 3,600 vehicles, 210 major operational terminals and sales offices, 36,000-ping of warehouse space, 4,812 employees and revenues of NT$4.97 billion.

A long-term relationship with IBM System i

T. JOIN started computerization in 1977, a period when transportation was regarded as labor-intensive and most enterprises in Taiwan had not even heard of the novel concept of informatization, let alone knew that e-business would be vital to their businesses’ growth one day. Fortified by its early start and strong support of IT infrastructure, T. JOIN made a smooth transformation into the new operational model and has reigned in the delivery and transportation sector in Taiwan since.

Along the way, IBM System i has been T. JOIN’s favored server for its e-business infrastructure. From the IBM AS/400, precursor of IBM System i, IBM4361, IBM System/36, IBM System/34, to today’s IBM System i, IBM platforms are the cores that have powered the company’s IT structures.

“Our top priority was stability. Any system disruption will have serious impacts on the delivery chain,” said Chi-Wen Yang, IT department manager for T. JOIN, recalling the reason behind the company’s decision of adopting IBM AS/400. “Then in 1996, when Y2K was the biggest challenge for us, we evaluated the feasibility of other platforms. In the end, we decided to stick with IBM to continue to leverage our previous investments and IBM’s established solutions for Y2K compliance.”

IBM System i is built with RPG/400-coded command tools, so there is no need for specialized development tools, said Yang. In addition, the platform’s outstanding strength in workload consolidation allows users to put together their enterprise infrastructures without having to adding layer on layer of systems in the way houses are constructed. Most importantly, System i provides a complete set of operating and software systems, including OS/400, DB2 database and WebSphere Application Server (WAS) Express, thus helping to simply IT management tasks to a great degree.

Tajung Freight Firms, predecessor of T. JOIN Transportation Co., Ltd., was established in 1954. Since its inception more than half a century ago, Tajung has evolved and matured with the change of time. Today’s T. JOIN building on its delivery and transportation expertise becomes an integrated service provider that offers clients with professional warehousing management and all-round logistics solutions. Computerization has played an essential role in the company’s development, and it has been using IBM System i as the IT infrastructure platform throughout the years. Besides developing it’s own applications on System i, T. JOIN has consolidated the servers to meet the demand of business expansion and trained System i technical experts on its own.
From distributed to centralized management
Prior to 1988, T. JOIN had 38 operation sites in Taiwan, each equipped with IBM System 36 server. None of the sites had IT maintenance staff, so the company provided educational manual for the machines, which were still un-networked then. The manuals were loaded with illustrations and step-by-step directions to ensure staff in each location, who were not IT professionals, would know how to run the systems by following the instructions. “We designed a lot of ‘tips and tricks’ including operation procedures, and used our own vehicles to transport application updates to each location.” Yang laughingly recalled. “We had 6 crews of people especially assigned for the task. They had traveled around the country for so many times that we lost count.”

T. JOIN started networking its operation terminals in 1989. The company rolled out a series of products and services, including chiller and freezer logistics and domestic and international express services, and established the temperature-controlled logistics business unit. In 1999, T. JOIN launched the web-based parcel tracing system. In the meantime, T. JOIN installed many e-business solutions and began to experience less than ideal server performance. After delving into the possibility of server consolidation, it implemented IBM eServer i890 in 2003, becoming the first company in Taiwan, 3rd in Greater China, and 5th in Asia that had adopted the server at that time.

T. JOIN migrated its global logistics system in collaboration with Asgard Corporation, Peace System Integration’s sister company, and consolidated a total of 52 AS/400 servers across all the locations onto IBM eServer i890 in 2003, becoming the first company in Taiwan, 3rd in Greater China, and 5th in Asia that had adopted the server at that time.

T. JOIN managed in a centralized fashion 205 depots across Taiwan, Penghu and Kinmen, 2800 ambient-temperature and temperature-controlled vehicles, 7 operation sites in China and 60 million items of goods weighing approximately 2 million tons.

Advantages of management centralization for logistics business
T. JOIN’s IT department manager Chi-Wen Yang elaborates the advantages they have seen from centralized management:

1. Faster branch office deployment
Server consolidation facilitates the build-up of IT platforms in offsite locations, allowing T. JOIN to meet its schedule for deploying new operation sites. Such maneuvers, however, would require months of evaluation and search for appropriate servers and involved many complications on the distributed environment on which the company previously ran its applications.

2. Enablement of smaller-scale locations
T. JOIN needs to spend no more than NT$1 million to have a smaller operational depot up and running, while the same undertaking would require over NT$1 million of investment before.

3. Further decrease in downtime
With more mature fixed-line facilities, which make server consolidation possible, and back-up servers in place, T. JOIN now guarantees no-downtime service. In the old days, once a system failure or networking malfunction occurred in a location, the staff would have to spend more than 3 times the time they usually would to process a delivery. The inventory checking team would not be able to process their stock data for fear that insufficient information would lead to inaccurate results. Such instances have completely disappeared after the consolidation.

4. More comprehensive service capabilities
Real time parcel checking and tracing services are necessary for competing effectively in the transportation industry. This is one of the advantages that server centralization has brought. What used to require 3 days to track a delivery now takes merely no more than a minute after truck drivers on the road send back the information to the system by scanning the barcodes on the parcels with the equipments in the car and clients enter the serial numbers of their items on T.JOIN’s web portal.

System i continues to be industry’s best choice
How, then, has IBM System i helped T. JOIN in its server consolidation undertaking? Some used to criticize IBM servers for being based on closed infrastructures, but IBM has in fact made a lot of improvements, said Yang, particularly in the area of web application development, which now can be done using ASP instead of DB2 database procedures. In addition, IBM system i supports the conversion of Chinese characters.

Over the years, a lot of major ERP providers have approached T.JOIN with various alternatives, “but their solutions were not tailored-made for the transportation and delivery sector. We would still have to develop and design our own environment if our top priority was stability” Chi-Wen Yang, IT department manager for T.JOIN, recalled the reason behind the company’s decision of adopting BM AS/400.
大榮汽車貨運股份有限公司

以前瞻性IT架構支撐企業前進動力
大榮貨運與System i共同成長三十年

腦化，當時台灣大多數的產業都還不知資訊化為何物，更不知e化後來會成為企業成長的關鍵。也正因為起步得早，有了強力的IT建設支撐，讓大榮貨運在業務轉型的過程中如虎添翼，稱霸台灣貨運產業。

大榮汽車貨運在E化架構的伺服器採用上，對於System i的青睞始終如一。從System 34、System 36到IBM 4361、AS/400等主機均在其架構上擔任過重要的角色，等於從AS/400（System i的前身）的第一代便已經開始使用。

大榮汽車貨運股份有限公司資訊中心經理楊志文回顧當年採用AS/400的原因，指出：「當初考量的主要是穩定度的需求，因為行業特有的考量，一旦當機整個貨運流程都會受到影響。」

在1996年時，大家很關心的焦點便是“Y2K”的問題，在當時，也的確評估過採用其他系統的可能性，最後，一方面為了保護先期的投資，加上對“Y2K”的問題IBM也已經有了解決之道，所以並沒有更換系統。」

楊志文表示，System i採用RPG/400的命令列工具，不需要特殊的開發工具。另外，IBM的System i最大的特色是整合性極高，使用者並不需要像一般伺服器一樣，必須用類似蓋房子的方式將企業系統架構起來，更重要的，System i本身除了OS/400的作業環境以外，已經提供了DB2資料庫軟體、WAS(WebSphere Application Server)、Express中介軟體等，完成的作業系統及軟體無形間也簡化了IT管理的工作。

由分散邁向集中管理
在1988年以前，大榮汽車貨運在全省一共有38個營運據點，每個點各採用IBM System 36主機。在當時，貨運的工作在一般人的眼裡是勞力密集產業，但大榮汽車貨運早在民國六十六年即已啟動電化，於1990年股票掛牌上市後，大榮貨運曾在天下雜誌1000特評中評比為服務業前165大企業（2002年4月）以及在商業週刊上市櫃1000大中評選為前300大企業（2003年2月）。

根據2006年12月的統計資料顯示，大榮汽車貨運現有的營運據點共為210處、車輛數達到3,600輛、倉儲面積則達到36,000坪，員工人數為4,812人，營業額為49.7億新台幣。

客戶背景
目前大榮貨運主要經營的範圍包括快遞宅配、路線貨運以及常溫、低溫物流等，在台灣貨運業排名數一數二，在全省自有12大低溫冷凍庫以及大面積的倉儲空間。

大榮貨運使用System i的歷史

在過去，貨運的工作在一般人的眼裡是勞力密集產業，但大榮汽車貨運早在民國六十六年即已啟動電化，從民國四十三年起，當年還是「大榮汽車貨運行」的貨車便已穿梭在街巷中進行路線貨運工作。五十多年來，大榮貨運隨著時代的演進不斷追求進步與成長，如今的「大榮汽車貨運股份有限公司」除了運送以外，更演變為專業倉儲與全方位輸配送管理並重的企業。其間，電腦化的作業方式在其成長的過程中，扮演了十分重要的角色。更值得一提的是，大榮貨運貨運长期以来都選擇IBM System i伺服器作為其資訊化的最佳夥伴，除了自行開發在System i伺服器上的應用程式，並隨著業績成長進行伺服器集中的調整，甚至於他們還自己培訓自己所需要的System i技術人才。
RAMP全名是Rapid Application Modernization Process，RAMP from Lansa提供了快速變型設計工具，提升System i應用系統功能，使之具備現今市場上必備的功能，並運用穩定進步的作業模式，以實現長期性的應用系統再造工程。

RAMP內建了一Application Framework，外觀類似微軟的Outlook，讓使用者可以即時感受系統的作業模式。您可將現有的System i 5250畫面及批次程式，結合新的程式元件，混合匹配使用，新產生的系統可運行在瀏覽器或Windows上。

RAMP不只是一個單純的畫面轉換工具，還讓您提升畫面的外觀；同時，它可產生新的瀏覽方式及作業模式，將原有應用程式重構成一完整的系統，以提昇使用者的生產力。

僅需數月，從異質邁入整合
時並沒有連線，由於各營業點並未配置資訊人員維護機器，所以要在各點準備操作手冊，而且考慮各貨運站同仁並非電腦專業，操作手冊的設計必須讓不懂電腦的人可以按圖索驥。楊志文笑著回想，「我們設計了很多『密笈』，包含操作的步驟，用自己貨運方式將更新程式送到各營業點去。當時有六組人在全省待命，全省都不知跑了幾圈！」

1989年以後，各點之間已經可以相互連線，公司業務與服務幅員廣闊，像是物流及低溫運送業務、國內快遞業務、集送國際快遞貨件服務、低溫物流事業部成立，到了1999年，大榮貨運已經可以提供網路查詢的功能。

這段時間除了業務的展開以外，也因為市場因素也導致了許多的差異，而原有主機的效能也隨著業務不斷拓展逐漸出現效能不敢使用的狀況。這就讓大榮貨運開始對既有設備進行升級和更新，進一步強化了整個公司的實力。

最終在2003年導入了IBM eServer i890大型主機，這樣整合後的大榮貨運在這一年便有了更進一步的發展。

2003年，大榮貨運啟用IBM eServer i890大型主機

作為伺服器集中的主要設備，其整合了各營業據點的52台AS/400主機，並與宏遠資訊（現與整合資訊同一集團）合作將大榮貨運的全球物流系統成功整合。藉由i890，大榮可以在單一地點集中管理物流、客戶、金庫等部門的資料中心，簡便服務效率。而擴展式資料庫的任意需求，也能因應大幅改進的業務需求。

在過去分散式的環境，除了要好幾個月的主機採購的評估時間以外，即使已經正式下單，但受限供貨商作業流程，主機到貨的時間困難百分百掌握，都會增加擴點的變數。

2. 小據點也能營運：

營業據點最多，大小點的差異越來越明顯，現在一個小的營業據點可能做到幾百萬，但以前一個營業點的建置可能就要花費百萬以上的成本。

3. 停機時間再降低：

現在網絡的網絡技術，給當地沒有問題，同時配合備援主機的運作可以讓工作不停頓。早期的網絡由於品質不穩、斷斷續續，或是一旦營業據點的系統故障，就會造成一連串的問題。現在的技術可以讓一體化作業，甚至於對點貨員來說，有些同一收件者不同大小的四件貨必須一次配送，如果沒有足夠的資金，點貨人員甚至會不敢點貨，而讓工作完全停滯。但集中化之後，已經不再有這種情況。

4. 更完整的服務：

貨運行業競爭激烈，提供即時查詢的服務是必要的，這也是結合集中化所带来的最大好處，以前要三天才可以追蹤到貨物的狀況，現在司機有機車跟掃描器可以將條碼送回系統上追蹤，消費者也可以透過號碼進行諮詢，一分鐘內便可以查詢結果，這些好處都是過去沒有集中化時所做不到的！

貨運行業集中化的優點

楊志文經理說明了改採集中化管理後帶來的最大好處：

1. 擴點速度快：

由於擴點時間越來越長、速度越來越快，服務器集中化有終端建置速度快的優點，可以應付擴點時間的需求。而過去分散式的環境，除了要好幾個月的主機採購的評估時間以外，即使已經正式下單，但受限於供貨作業流程，主機到貨的時間困難百分百掌握，都會增加擴點的變數。

考量行業特性，System i仍為首選

那麼，IBM的System i伺服器在集中化的角色扮演上，有何助益呢？楊志文認為，過去IBM的主機有人認為它太封閉，但事實上IBM已經做過多次改進，尤其在網站程式開發的部分，使用者可以逐步進入系統查詢，一分鐘內便可以查詢結果，這些好處都是過去沒有集中化時所做不到的！

其實，在資訊化的過程中，大榮貨運也曾考慮過是否要選用System i，但由於其解決方案並非特別針對貨運業量身訂做，所以依舊得自己規劃發展，這也是System i一直以來的優點。

IT技術與企業營運的結合

綜觀台灣貨運公司的市場，其實已經相當成熟，如何從有限的成長率中依舊保持市場的佔有或排名，是貨運行業努力的目標。而大榮貨運三十年來能在此產業保持領先，細究其成功因素，主要當然是經由團隊的遠見奠定了企業長遠經營的策略規劃，此外，宏遠貨運在IBM System i上的系統規劃能力，充分利用System i高穩定性、高整合性的特性，打造企業核心業務可靠的作業基礎，也是支撐大榮貨運發展的成其原因之一。「工欲善其事，必先利其器」，大榮貨運為資訊基礎建設與業務營運相輔相成下絕佳典範，而在未來，IT技術與企業營運將會更進一步的結合，相信System i亦將助一臂之力！

大榮貨運資訊中心經理楊志文指出當初採用AS/400的主要重點，便是穩定度的需求。
『IBM System i CIO 菁英會
- 體驗 POWER6 魅力』邀請函

親愛的System i客戶，您好：

我們在去年年初承諾將持續舉辦「iSociety - System i CIO 聚會」活動，以確保即時的雙向交流。感謝您的參與及鼓勵，「System i CIO 聚會」將於九月五日再度舉辦，也期待您一如以往鼎力支持。

此次「System i CIO 聚會」將首次向台灣客戶介紹“System i POWER6 570”，POWER6以高達 4.7GHz 的時脈 (clockrate) 及兩倍於前代處理器的效能表現，已贏得全球注目。配合“System i POWER6 570”正式登場，我們請到素有「System i之父」稱號的 IBM 首席科學家 (Chief Scientist) Dr. Frank Solits 來台，與各位分享第一手的 POWER6 先進技術及 System i產品未來規劃。另外，System i的首席資訊技術執行長 Pony Ma 亦將再度與台灣客戶暢談如何運用System i進行server consolidation及相關成功案例，精彩可期。最特別的，此次盛會更難得邀請到第一銀行資訊中心副總經理柯明川先生專題演講，以 CIO 觀點分享國內企業如何佈局全球。

「成就客戶」是 IBM 不變的宗旨，誠摯請您參加「IBM System i CIO 菁英會」，體驗 POWER6 全新魅力！謹此，順頌

商祺

台灣IBM公司系統暨科技事業處
System i業務經理 吳正木 敬邀

活動議程表：

<table>
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<td>Frank Solits IBM System i首席科學家</td>
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<td>Pony Ma IBM System i首席資訊技術執行長</td>
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附注：台灣IBM公司保留更改議程安排的權利
Overlaying the Ugly with Beauty

BY DON RIMA

You’ve heard the saying before: “Beauty is only skin deep—but ugly goes clear to the bone.”

Not too long ago, we functioned in terms of reports on green bar. There was a lot of green bar. We lived and breathed the stuff. Green bar was part of our vocabulary. However, to impress management these days and keep a competitive edge, we need to present reports and forms from our IBM* System i* platforms that have the look and feel of professional desktop publishing. The days of the ugly-to-the-bone green bar are coming to an end.

One way to smarten up your output presentation format is with overlays. Overlays help format your reports with graphics, nice borders and more. Now, we all know that overlays have been around for a while, but sometimes they can be a bit tedious to put together from scratch. Some vendors provide tools that might make your life easier. This month I look at KeyesOverlay from Computer Keyes (www.ckeyes.com).

**Installation**

Installing the product was rather simple and painless. I just did a download from the Web, expanded the ZIP file and followed the read-me file instructions to FTP it to my System i platform. From there, it’s a Restore Library (RSTLIB) command and some minor setup configuration steps and you’re in.

Because I needed to view the overlays and reports being generated, I also downloaded and installed the KeyesPDF utility, which turned out to be a fairly nice little piece of software in its own right.

If you’re loading more than one Computer Keyes product at once and using its Web site download, keep in mind that each time you unzip one of Computer Keyes’ files, you overwrite the previous read-me file with the current one. So if you think you’re going to download several products (KeyesPDF and KeyesOverlay in my case), unzip and then upload them all, and make sure you rename the read-me files between each unzip. I hope in the future Computer Keyes will rename each read-me to be product specific. This would save customers from erroneous overwrites.

There are some post-install setup steps you should run through with tech support the first time you use the product. They’re painless and more for making sure you understand where things go once they’re created. Also, Computer Keyes includes some nice, simple samples to use as examples in a short walkthrough. I recommend you take them up on that.

**Ease of Use**

This product isn’t overly complex in either its delivery or methods. After a walkthrough tutorial you should be able to pick things up fairly quickly.

**Documentation**

The manual covers the product fairly well. But it does so without any pictures to show you what you’re working with. If you’re a visual person, you’re going to find yourself looking for pictures to compare with what’s on your screen at any given time and not finding them.

**Certifiability**

Everything I tried worked as I expected it to.

**Functionality/Usefulness**

KeyesOverlay and KeyesPDF are two of a suite of products offered by Computer Keyes. The overlay product is just that. It helps you reformat your spool-
file data stream into something that looks a whole lot nicer than the stuff that would normally come off the line or the laser printer. Once the overlay is complete, just ship it off to the PDF creator and in short order, you’ll have a PDF sitting on the IFS. The samples I played with really turned out nice and clean without a lot of overhead.

The overlay product matches an SNA character string spool print stream with an overlay mat. It optionally maps your spool-file content to produce a new, reformatted spool report. This overlay can contain graphics, bar codes and even magnetic ink character recognition (MICR) technology, if you have that need.

From there, you can distribute via e-mail or whatever internal routing mechanisms you use. Your users will open up reports that look like they came from something a lot nicer than ugly green bar.

This product doesn’t have report-routing capabilities, but then, it’s not designed to. Remember I said it was one part of a suite of products, and if you need routing, there are other parts of the suite that can handle that. Or you can roll your own.

Support
The tech support people I talked to were very knowledgeable about the product and the run environments.

What I’d Like to See in the Next Release
• Uniquely named read-me files
• Pictorial examples in the documentation

Summary
This is a simple product that lets you make things nicer for your users by adding cosmetic value and some functional value with graphics, bar codes and MICR. It’s easy to learn and have productive results quickly. In this case, beauty is only paper-thin, but that’s exactly what you want.

It’s not an end-all in terms of spool-file management functions, such as store and forward or routing. That’s another product in the suite.

Use of overlays and PDF files can add a lot of state-of-the-art perception to your operations and users’ as well. Obviously, no new information will appear in the new and improved reports that’s not already on the green-bar reports. But users make the rules, and they increasingly like things pretty as well as functional and accurate. And if you want to make things look nicer, you may want to take a look at KeyesOverlay as part of your planning schema.

Don Rima has more than 20 years of experience with IBM midrange systems. He can be reached at dr2@dlr2.net.
Tactical solutions for System i customers

Ruby on Rails in i5/OS PASE

BY ANDREA RIBUOLI

The IBM System i platform has always been a business computing platform. This strong identity has been a fortune and a downfall at the same time. While the technology is advanced, sometimes the tasks performed are very common. Applications have always been the big attraction to customers and business partners.

Today, I see new excitement building among developers about an open-source Web framework called Ruby on Rails (RoR or Rails). The midrange community has been silently monitoring the scene and, realizing that Rails is here to stay, wants a better understanding of these agile development techniques. This article introduces Rails, describes the background of the IBM i5/OS Portable Application Solutions Environment (i5/OS PASE) and gives step-by-step instructions on using Rails in i5/OS PASE. Additionally, I’ll mention a new IBM DB2 adapter to extend DB2 on Rails capabilities (see “DB2 on Rails,” page 60).

Rails

Rails is an open-source Web-development framework in the object-oriented programming language Ruby. Rails creates database-backed Web applications according to the model-view-controller pattern of separation and requires only a database and a Web server to make Web applications ready to go live. Rails developers praise its speed and ease of use, calling it the wave of the near future. The IBM Redbooks publication “DB2 Express-C: The Developer Handbook for XML, PHP, C/C++, Java, and .NET” (www.redbooks.ibm.com/redbooks/sg247301) describes these Ruby benefits:

• Ruby employs a clean syntax. You aren’t required to put a semicolon at the end of the statement. The downside to this is programmers must manage code layout independently.
• Ruby has regular expressions built in. They’re also treated as objects and manipulated in the program (e.g., pattern matching, etc.).
• Ruby is a single inheritance only, which means a Ruby class can have only one parent. However, Ruby provides multiple-inheritance-type functionality by letting classes include the functionalities from a partial class definition.
• Ruby provides a hierarchy of exception classes that’s easy-to-use.
• Ruby implements threads in the language interpreter code itself, so it’s independent of the operating system. But Ruby threads don’t utilize more than one CPU.
• Ruby comes with a built-in debugger. You can run it by invoking the debugger with -r option.
• Ruby features its own shell, called “interactive Ruby.” You can simply invoke interactive Ruby by typing the irb command on your system. This lets you play with Ruby in case you’re new to the language.
• The Ruby language comes with a code profiler. You can invoke it at command line or in the program.

i5/OS PASE

In 1999, IBM System i Chief Scientist Frank Soltis posed the idea of running UNIX applications natively on the AS/400 without a UNIX operating system. The idea for a portable server application solutions environment was there. The IBM Redbooks publication “Porting UNIX Applications Using AS/400 PASE” (www.redbooks.ibm.com/abstracts/sg245970.html) was a milestone that opened new worlds to the AS/400 mindset before Linux and IBM AIX partitions became viable options.

Even when Option 33 (i5/OS PASE) wasn’t free of charge, no compiler was provided with it. That meant that to compile something for i5/OS PASE, you had to buy an IBM System p* platform, buy the VisualAge C++ for AIX, compile on that platform and transfer binaries to i5/OS PASE. What a process! With OS/400 V5R2, you can install VisualAge C++ for AIX within i5/OS PASE.

i5/OS PASE doesn’t support applications that are statically bound with AIX-shared libraries, but i5/OS PASE programs still work the same as AIX programs. That’s right—you can really download the same binary and it’ll run on both platforms. Many AIX binaries can now run unaltered on the System i platform.
GNU/Linux

Originally, AIX wasn’t interoperable with Linux. In 2001, IBM crafted a new strategy: AIX Affinity With Linux. As AIX has added more compatibility and interoperability with Linux, becoming AIX 5L*, i5/OS PASE has gained those same capabilities. For example, early versions of i5/OS PASE required purchasing a VisualAge C++ license to compile programs. Later versions support the open-source GNU compiler GCC.

Application interoperability with Linux was completed with AIX 5L Version 5.1. i5/OS PASE was aligned with AIX 5.1 inside OS/400 V5R2 (and later, AIX 5.2 within V5R3 and AIX 5.3 within i5/OS V5R4).

The IBM publication “Using the GNU C/C++ compiler on AIX” (www.ibm.com/developerworks/aix/library/au-gnu.html) describes why developers may want to use the GCC compiler on AIX instead of the XL C/C++ Compiler. Besides being free, it includes easier GNU ports, multiple language support, portability, cross-compiling and the freedom to enhance. IBM provides binary compatibility so there’s no need to recompile i5/OS PASE applications from V5R2 to V5R4.

Rails on i5/OS PASE

Maintaining a Web site has become tedious—it’s time to consider Rails on i5/OS. I was looking for a new way to integrate a traditional green-screen business application with an e-commerce Web site based on Rails and hosted remotely. I wondered how the design would be cleaner if I used the same technology inside. I was surprised to find no information referencing an i5/OS PASE port. It was incredibly simple.

I assume you’re ready to compile an open-source package in i5/OS PASE and that /usr/local is a symbolic link to a real directory in the QOpenSys file system (/QOpenSys/usr/local). This way, tape archive (TAR) files exploding under /usr/local will create directories in a file system that preserves case-sensitive naming. (Note: To allow for installation of Zend Core for i5/OS, you must replace the symbolic link /usr/local with a hard link).

First, download the Ruby source code (ftp://ftp.ruby-lang.org/pub/ruby/1.8/ruby-1.8.6.tar.gz). Then transfer it to /QOpenSys. Access i5/OS PASE by calling QP2TERM, change directory to /QOpenSys and unzip the archive. With a list directory (ls), you’ll see a ruby-1.8.6.tar file. Extract files from the archive issuing the command tar xvf ruby-1.8.6.tar. Change the current directory to the newly created ruby-1.8.6 (it’s under /QOpenSys) and issue:

```
```

So as long as IBM continues to support i5/OS PASE and GCC on AIX, we’ll benefit from using GCC within i5/OS PASE and upgrading GCC itself.

Maintaining a Web site has become tedious—

it’s time to consider Rails on i5/OS.
The build option qualifies the machine we’re building on as an AIX platform.

Now download rubygems-x.y.z.tar.gz (currently x.y.z is 0.9.2):

```
cd /QOpenSys
gunzip rubygems-0.9.2.tar.gz
tar xvf rubygems-0.9.2.tar
cd rubygems-0.9.2
ruby setup.rb
```

Now let RubyGems install Rails:

```
gem install rails include-dependencies
```

If you don’t have direct Internet access from i5/OS, you may prefer to download the required gems, transfer to a newly created directory (/QopenSys/xfergems), cd to that directory and issue the gem install following this order: activesupport, activerecord, actionwebsevice, actionpack, actionmailer, rails. From i5/OS PASE (CALL QP2TERM), issue:

```
gem_server &
```

Then, from a browser, access http://<hostname>:8808. It’s possible to browse the documentation installed with each gem by following the hyperlinks in Figure 1 (page 59).

Now it’s time to create a new application:

```
cd /QOpenSys
rails rails_demo
cd rails_demo
ruby script/server -p 3010
```

From a browser, access http://<hostname>:3010. Note the -p option used to specify a port number other than default (3000) that’s already in use on i5/OS (see Figure 2, page 59).

To help you from this point, I recommend the book “Agile Web Development with Rails” by Dave Thomas, et al.

Here to Stay

You may only know about Ruby because of the building buzz over Ruby on Rails. But the language itself is gaining popularity, as the TIOBE Programming Community Index shows (www.tiobe.com/tpci.htm). In January, Ruby broke into the top 10 on the index, which measures popularity based on worldwide availability of skilled engineers, courses and third-party vendors.

Ruby continues to evolve. Version 2.0 will introduce a virtual-machine approach and support native threads and multilingualization. Ruby on Rails—the Web framework—is proving to attract developers and justify investments by speeding applications. Ruby is here to stay.

Andrea Ribuoli is a freelance IT consultant in Italy specializing in integrating open-source Web technologies in business-application development. Andrea can be reached at andrea.ribuoli@ngi.it.
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Intrusion Detection on System i

BY JIM COON AND YESSONG JOHNG

Hackers, crackers, intruders, oh my!
And each with their pride at stake,
But rest assured with a System i,
You’ll have a host that they can’t break.

Though the term hacker is used with pride by relative old-timers who remember the glory days of self-modifying code, patched binary code and jury-rigged wire connectors, it’s since taken on more negative connotations, referring to someone who breaks into computers to disrupt service or “own the machine.” Traditional hackers call these scurrilous creatures “crackers.” We prefer the term hackers to describe both the malicious cracker and the ethical interloper. The malicious hacker is out to steal information, drive your business to its knees or take over your machine. The ethical hacker exposes the vulnerabilities in your system defenses so you can plug the holes.

The Intrusion Detection System (IDS) in IBM* i5/OS* notifies you of attempts to hack into, disrupt or deny service to the system. Prior to IDS, i5/OS took some protective measures against these types of intrusions. However, with the new IDS support, the i5/OS system can now tell you about the intrusions.

The types of intrusions on an i5/OS system that are caught, audited and, in many cases, discarded before they become a threat are multiple kinds of attacks, scans and traffic-regulation anomalies for TCP and User Datagram Protocol (UDP). In this article, we’ll explain these different intrusions and provide an example of IDS in action.

Attacks

Types of attacks include IP fragments, malformed packets, synchronization (SYN) floods, Internet Control Message Protocol (ICMP)-redirect messages, perpetual echo, restricted IP options and restricted IP protocols. These attacks may or may not be malicious. IDS is notified of various events, and some notifications may be false alarms. Let’s take a closer look at each type of attack.

IP fragments—Datagrams too big to be transmitted over a network are broken down into fragments. The fragmentation process involves tacking on an IP header to each piece of the fragmented datagram, setting the More Fragments (MF) flag in each IP header except the last and providing the offset of where this fragment lies within the original datagram. The target uses this information, along with a fragment identification number and the length of data in the fragment itself, when reassembling the original datagram.

On i5/OS, fragments that IDS is notified about fall into three categories:
• Fragments that, when reassembled, would measure more than 64K and therefore be too large (see Malformed Packets)
• Fragments less than 576 bytes long
• Fragments with an offset of less than 256 bytes (This doesn’t mean the fragment itself is less than 576. This may be an attempt to overlay data in the first fragment.)

In the case of a fragment that’s too large, the intent may be to crash or hang a system. In the other two cases where the fragments are smaller, the intent may be a malicious attempt to slip through a firewall; then again, it could just be a normal case of packet retransmission.

Malformed packets—Attackers probe by sending packets. Malformed packets may be designed to cause a system to crash or hang. The TCP/IP stack detects them in the following instances:
• When a checksum is wrong
• For a destination port of 0
• When a packet size (including fragments) is greater than 64K
• When both SYN and FIN are set—indicating that a client is attempting to establish a connection but has no more data to send, a possible “Christmas tree attack” (see “TCP Control Flags,” page 64).

Attackers may seek information about ports (e.g., closed ports will send an RST). When flags such as SYN and FIN or all flags are set, the packet is called a Christmas tree packet. Some network devices actually show the flags with LEDs, lighting up the whole array like a Christmas tree. Christmas tree packets have been known to crash or disable a host.

SYN floods—SYN floods are an attempt to tie up system resources and prompt a denial of service (DoS). They occur when the TCP/IP three-part handshake doesn’t complete. An attacker will initiate a connection attempt to a host (first part of the handshake: SYN) and provide a spoofed source address for the host to acknowledge (second part of the handshake: SYN/ACK), and then leave the host waiting on an acknowledgment (third part of the handshake: ACK) that will never come from the spoofed address. This ties up system resources.

ICMP-redirect messages—The ICMP is used for sending out-of-band messages concerning network operations. Many types of ICMP messages exist (www.ietf.org/rfc/rfc0792.txt). An ICMP type five message is a redirect message. A router may send this message to a host on the same subnet to indicate a better route for packets sent by that host to some other target host in another network. The message will indicate another gateway (i.e., router) on the same subnet to which the packets may be sent and forwarded more efficiently. The original packet from the host that precipitated the ICMP-redirect message from the router is forwarded anyway, and the host doesn’t have to honor the ICMP-redirect message from the router (i.e., it can choose to ignore ICMP-redirect messages).

A hacker can use ICMP-redirect messages maliciously for man-in-the-middle (MITM) attacks. In an MITM attack, the hacker, posing as a router, sends an ICMP-redirect message to a host indicating that all future traffic should be directed to the hacker as the optimal route to the intended destination.

Perpetual echo—The UDP “fraggle” attack is an annoying DoS attack involving UDP echo port seven. An attacker sends a UDP echo request to an IP broadcast or multicast address and provides a spoofed source address for all targets to echo back responses. The spoofed source address, which isn’t the hacker’s address, becomes the victim of a potentially large amount of network traffic. If the source port is also port seven, a perpetual echo results.

Restricted IP options—An IP header may contain the Loose Source and Record Route (LSRR) option traditionally used by traceroute to map out a network’s topology. Network administrators use this option to find out why two hosts on a network aren’t communicating or to specify alternate routes to relieve network congestion. A hacker may try to use LSRR to get through firewalls. By specifying LSRR and a hop that’s reachable both by the hacker and private IP addresses, the hacker may reach what was thought to be a protected IP address.

Restricted IP protocols—The IP protocols most often used are ICMP, TCP and UDP. Other protocols listed as part of the
Internet Assigned Numbers Authority may be used in an attempt to gain backdoor entry into a system.

**Scans**
Scanning entails sending a datagram to a system to determine the listening ports. A hacker will try to use this information to discover weaknesses and gain access to the system.

With i5/OS, the TCP/IP stack signals IDS when connection attempts to nonlistening ports are made or when a connection attempt is made in which the source address is the same as the target address, which could be a spoofing attempt.

Scans may be innocent attempts at connections to a server that may be down, making the resulting attention event a false alarm.

However, they may also be suspicious if they come in at a very high or very slow rate. The high-rate variety may be attempts to deny service. The slow, stealthy variety are of more interest. A perpetrator may be seeking information on what ports to probe, what operating system is running, etc. Hackers may scan from a disposable source such as an Internet cafe or a library. If tracked down in a log, the source IP address will no longer be valid. Also, by the time a suspicious IP address is noticed in a log, the hacker may have already sneaked under the radar, gained access to the system and stolen valuable information.

**Traffic-Regulation Anomalies**
Traffic-regulation anomalies are events that cover TCP-established connections or UDP transmissions. Their purpose is to single out an inordinate number of connections to a certain range of addresses, ports or applications. The UDP variety, being connectionless, is tougher to monitor than the TCP variety. These anomalies may indicate a DoS attack or be used to monitor certain connections and use of certain applications on a system.

**Example of an Intrusion**
Let’s take a look at the power of i5/OS IDS by considering the detection of a possible stealthy scan.

First, we’ll start by enabling IDS. To do this, change the TCP attributes so Quality of Service (QoS) is enabled. From an i5/OS command line, enter the following command:

```
CHGTCPA IPQSENB(*YES)
```

Next, make sure you have a security-audit journal (QSYS/QAUDJRN) by entering the following command:

```
DSPJRN QAUDJRN
```

If one doesn’t exist, either because you have a new system or the operating system has been scratch-installed, enter the following command to create one:

```
CHGSECAUD
```

or

```
CHGSECAUD QAUDCTL(*AUDLVL)
```

The second form of the command also enables auditing, which is our next step anyway.

Next, be sure to enable the auditing of Intrusion Monitor (IM) events in the audit journal by entering the following command:

```
CHGSECAUD QAUDCTL(*AUDLVL)
```

Note: This command could also be executed on the system value, QAUDLVL2, provided that the value, *AUDLVL2, is already set in QAUDLVL.

Before starting IDS, create a policy. For example:

```
ibm-idsConditionAuxClass Scan_Policy
{ ibm-idsConditionType SCAN_EVENT
  ibm-idsLocalPortRange 1-65535
  ibm-idsRemotePortRange 1-65535
  ibm-idsLocalHostIPAddress 1
  ibm-idsRemoteHostIPAddress 1
  ibm-policyIdsActionName Scan_Action
}
ibm-idsActionAuxClass Scan_Action
{ ibm-idsActionType SCAN_EVENT
  ibm-idsMaxEventMessage 25
  ibm-idsFSInterval 1
}
```
ibm-idsFSThreshold 25
ibm-idsSSInterval 50
ibm-idsSSThreshold 10
}

This is a policy for a scan event and has been named “Scan_Policy.” The policy specifies to look for a scan event on all local ports (1 to 65535) from all remote ports, to all local IP addresses (within IDS, this is known as format one for IP address designation; other valid formats include 2-ip_address-prefix_length and 3-ip_address_start-ip_address_end) and from all remote IP addresses. If a SYN is received for a non-listening port or from a spoofed IP address, the action Scan_Action is executed. This action specifies that if more than 25 SYNs are received over the course of one minute or if more than 50 SYNs are received over 10 minutes, an IM record will be cut in the system security-audit journal.

This policy can be copied and pasted into the IDS policy file using the i5/OS edit file command:

edtf '/qibm/userdata/os400/qos/etc/idspolicy.conf'

Once this policy is created in the IDS policy file, start IDS by starting the QoS server:

STRTCPSVR SERVER(*QOS)

Note: If changes are made to the policy, IDS must be ended and restarted to effect those changes. To end the QoS server, enter the following command:

ENDTCPSVR SERVER(*QOS)

Now we’ll generate a scan to an IBM System i* platform and show how the System i IDS detects it. We’ll use LanSpy, which is a freely downloadable tool (http://lantricks.com/lanspy/).

Figure 1 (page 62) shows the LanSpy screen with the IP address of a System i platform in the search window. You can see that LanSpy was able to discover certain aspects (e.g., the DNS name, the media access control address, the listening TCP ports, the listening UDP ports, etc.) of our System i platform.

Now look in the System i security-audit journal for IM records by entering the following command:

DSPJRN QAUDJRN ENTTYP(IM)

Figures 2 and 3 (page 63) show the results of entering the above command and selecting one of the IM records to display it.

Sometimes it’s more convenient to see all of the IM records at once to look for patterns. By issuing the following two commands, you can copy all the IM records to a temporary file and view them together:

CPYAUDJRNE IM
RUNQRY *NONE QAUDITIM

Figure 4 (left) shows the IM records in their entirety. After analysis, you might be able to determine the remote IP address of your attacker as long as it’s not a spoofed address. You could even use LanSpy to find out more about your attacker provided the remote IP address is valid.

Greater Security and Peace of Mind
IDS on i5/OS is an integrated, host-based, highly secure yet flexible notification system. Potential intrusions are presented as events in the system security-audit journal. These potential intrusions may signify that a firewall isn’t doing its job and may need reprogramming by a network administrator. Alternatively, the intrusions may signify that the firewall is doing its job, within its limitations, and that the host-based IDS is catching intrusions that have sneaked through the firewall. At any rate, i5/OS IDS can stand alone as an intrusion-detection system or be used in conjunction with a firewall for even greater security and peace of mind.

Additional information can be found in our IBM Redbooks* publication “IBM i5/OS Intrusion Detection System” (www.redbooks.ibm.com/redpapers/pdfs/redp4226.pdf).

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A Show SQL button will show the syntax of the SQL CREATE TABLE statement being built for you:

```sql
CREATE SUMMARY TABLE ORDERS.YEAR_WEEK_DEPARTMENT_MQT
AS (SELECT YEAR, WEEK, DEPARTMENT, SUM(SALES) SUM_SALES,
    COUNT(DISTINCT ORDER_NO) ORDER_NO
FROM ORDERS.ORDERS_TABLE
GROUP BY YEAR, WEEK, DEPARTMENT)
DATA INITIALLY DEFERRED
REFRESH DEFERRED
MAINTAINED BY USER
ENABLE QUERY OPTIMIZATION;
```

Notice that the REFRESH DEFERRED and MAINTAINED BY USER clauses are shown as required, but iSeries Navigator will fill these in for you. They indicate that it’s the user’s responsibility to refresh or maintain the MQT data. MAINTAINED BY USER is currently the only option for MQTs. Press “OK” to create the MQT. This YEAR_WEEK DEPARTMENT_MQT should now contain 3,900 rows.

**Optimiser’s use of MQTs**

The next step is to see if the optimiser will use this new MQT. For the optimiser to do so, the select statement associated with the MQT definition must include all of the columns used in the query. The optimiser can also compensate for other differences between the query and the MQT definition. For example, it may still apply the MQT if it contains a join over fewer tables, uses different aggregation, or if the query has more selection predicates than the MQT.

Also, the optimiser may substitute multiple MQTs in the same query if the query references multiple tables that have MQTs created over them. This is the optimiser rewriting your query.

Go back to the Run SQL Scripts in Figure 2. This is one of the application’s most frequently run queries. Now that the MQT is created, see if the optimiser is going to use it. Since users must maintain MQTs, the optimiser doesn’t use them unless it’s explicitly told to consider them. To enable the optimiser to consider using MQTs, the following QAQQINI options must be specified:

- **MATERIALIZED_QUERY_TABLE_USAGE**—This should be set to *USER or *ALL.
- **MATERIALIZED_QUERY_TABLE_REFRESH_AGE**—A timestamp duration that indicates the age of data in an MQT that is allowed to be used. This should be set to *ANY if MQTs aren’t being maintained with the REFRESH TABLE statement.

To test the query with these QAQQINI options, go to the Edit pull-down menu and select “Change Query Attributes” (see Figure 4, right).

The Run SQL Scripts job you’re running in is already selected. To change the INI options, select which schema you want to put your test INI file into—in our case it’s ORDERS. Then press the Edit Options button. Note: The default INI file for the entire system is in QUSR SYS. Be sure not to change that one. The edit window lets you change the MQT default values to *USER and *ANY. Also note that the changes made to this INI are automatically saved when you switch to another row or close the dialog. Exit the Edit Options dialog and select “OK” on the Change Query Attributes dialog.

Now that you have the INI file setup for your query, you can use the Explain only toolbar button to run the statement and see if the optimiser will consider using the MQT you’ve created. Figure 5 (below) shows the new Visual Explain dialog with the new optimiser implementation. You can see that MQT has been used and that the time has been reduced. If this were a larger picture, you could see the option to go to the View pull-down menu and select “Highlight Materialized Query Tables” to highlight the MQTs in the picture.
**How Useful Is It?**

Now that you know this MQT has potential for your application, and you’ve created it in your production schema, another tool shows you how much the MQT is being used over time. To do this, start from one of the underlying tables that the MQT is based over. Find the table in the Tables folder for the application schema, right-click on it and select “Show MQTs.” Figure 6 (below) shows the MQT for this table and, more importantly, the use information for this MQT. You can see by the Last Query Use and Last Query Use Count that this MQT is being used. This looks like a successful implementation of an MQT. Using the MQT, the DB2 engine can now select one row by key. Using just the base table, the DB2 for i5/OS engine had to select thousands of rows for a given department and perform the aggregation.

Because MQTs by nature contain static data until they refresh, it’s the user’s responsibility to refresh or maintain the MQT data when the underlying base tables are changed by insert, update or delete activity. This can be done by right-clicking on the MQT in the Tables folder and selecting the Data Context menu and then “Refresh Table,” or by using the REFRESH TABLE SQL statement. The refresh clears and repopulates the MQT data by running the MQT query. Alternately, you could run insert, update or delete statements to alter the MQT data directly. The refresh strategy must be carefully chosen by considering the acceptable amount of difference in the MQT and base table data, the amount of data that has changed and the length of time required to run the MQT query.

Another consideration during the MQT refresh is refresh performance. Since the refresh is running the query you’ve defined as part of it, the query is subject to the same query-optimization considerations as when you query the base table directly. To address this, create appropriate indexes on the base tables that the MQT is defined over. You can use the new Index Advisor in V5R4 to help you define indexes beneficial to this refresh action. Launch the Index Advisor by right-clicking on the schema or a specific table and selecting “Index Advisor” (see Figure 7, right).

There’s another performance aspect to consider regarding MQTs: creating indexes on the MQT itself. This will give the optimizer even more information on improving the performance of application’s statements by taking advantage of the same indexing strategies it uses for regular tables. This is vital in an environment where the MQTs are larger and/or joined to other tables. Notice that in Figure 5 the Visual Explain diagram shows a table scan is being used. This is an example of where you might consider creating an index over the base table to help improve the refresh performance of the MQT. There’s no difference when defining indexes on an MQT table, as it uses the same CREATE INDEX syntax.

This is an example of the index:

```sql
CREATE INDEX YEAR_WEEK_DEPARTMENT_MQT_IX ON YEAR_WEEK_DEPARTMENT_MQT (DEPARTMENT);
```

To help you determine if an index is valuable to create, use the Index Advisor feature for the MQT. Find the MQT table in your application’s schema, right-click and select “Index Advisor.” This will show you any recommended indexes that the optimizer would like you to create to help performance even more.

**The Key to Your Success**

The example showed how defining an MQT over one table can improve performance. Since the core of an MQT is the query you define, you could also use MQTs with much more complex queries that include joins of two or more underlying tables. With the right MQT and indexing strategy, you can make a real difference with your response time and, more importantly, users’ adoption of these applications. For details on MQTs, read “Creating and using materialized query tables in IBM DB2 for i5/OS” (www.ibm.com/servers/enable/site/education/abstracts/438a_abs.html).

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OpenUP/Basic itself contains tasks, guidelines (see Figure 1, page 12), concepts, roles, work products and other content, which all help cover iterative development across requirements, testing, project management, design, implementation, architecture and change management. There are three major areas, or layers, of OpenUP/Basic to help you identify where you can leverage the process: management, intent and solution (see Figure 2, page 13). Collaboration is an additional, core layer of the process that includes elements the whole team shares.

**Management**

The management layer of OpenUP/Basic describes how a project is coordinated and tracked. The essential project-management artifact is the WIL, which is a list of change requests, bugs, requirements, stakeholder requests and similar items. All team members—including stakeholders—use the WIL. It’s the one place to go to determine necessary tasks, priorities and job roles. OpenUP/Basic teams are self-organizing agile entities, so they work together to prioritize the WIL and assign work items.

Work items can be large or small, but all of them need to be broken down into pieces of work that can be completed in a few hours to a few days. Breaking down larger, feature-level work items makes them more manageable.

The WIL contains several requirements, but it can also reference requirements (or other work products) in separate documents. It’s common to add a use case to the WIL when it’s identified and then reference the details of the use case in a document after it’s been outlined or detailed. The goal is to reduce the overhead of maintaining more artifacts than absolutely necessary.

Addressing risk early is another critical goal. Teams focus intently in early iterations on reducing risk to increase the predictability of the remainder of the project.

**Intent**

The intent layer describes how a project determines what must be built and how to manage the changing nature of the solution to a problem. OpenUP/Basic’s requirements-management discipline uses a classic but lightweight approach to use cases. Change management is straightforward, using the WIL to track and prioritize all bugs and change requests.

A critical aspect of this layer’s testing strategy is the identification of test cases as soon as requirements are accepted. Test cases assure that each requirement has clear acceptance criteria. Test scripts and test cases are detailed incrementally as requirements, design and implementation evolve. This assures that quality is woven into the team’s collaborative efforts.

Use-case-driven testing techniques are described to assure requirements have been addressed. Other agile testing techniques are leveraged so the system can also be tested from other perspectives, such as the WIL.

**Solution**

The solution layer describes how a team builds the software. OpenUP/Basic takes an evolutionary approach to developing a system and determining its architecture. Architecture, design and implementation artifacts are evolved after prioritizing and considering the development issues for the iteration.

Figure 3 (page 13) shows the general flow of implementation and design. Teams select and implement a work item in bite-sized portions. Generally, they should perform some up-front design work to consider issues, approaches and architectural consistency. Experience shows that thinking about a problem before implementing it, even for a few minutes, means a better solution. After outlining potential solutions, teams create and execute developer tests until the implementation successfully passes. Teams follow TDD to assure the utility of the initial design ideas and maintain high-quality code.

Evolutionary design happens when the working software is refactored from fine-grained and coarse-grained perspectives. Good object-oriented techniques are applied, turning classes with low cohesion into high-cohesion classes, reducing coupling and allowing good design patterns to emerge. If significant code changes are required to pass the test after the design task, teams examine and again refactor the design if necessary. Once the change works and is realized by a robust design, they address the remainder of the work item (requirement or bug).

This cycle can go quickly when teams implement small parts of a work item. Pausing at defined points during the implementation allows design to be conducted just in time by designing only what’s needed immediately and refactoring when new capabilities demand more complexity.

| Table 1 |
| OpenUP/Basic Key Principle | Agile Manifesto |
| Collaborate to align interests and share understanding. | Individuals and interactions over process and tools. |
| Evolve to continuously obtain feedback and improve. | Responding to change over following a plan. |
| Balance competing priorities to maximize stakeholder value. | Customer collaboration over contract negotiation. |
| Focus on the architecture early to minimize risks and organize development. | Working software over comprehensive documentation. |

(from page 13)
The architecture is created and validated in early iterations—in the elaboration phase—to significantly reduce technical risks and the potential of reworking major system areas. In OpenUP/Basic, the architecture isn’t complete until the code that implements it is validated. Teams do this by developing the solution for the architecturally significant part of the system. Architectural decisions and objectives can change based on what’s uncovered as the solution is being developed (see Figure 4, below).

Teams develop the architecture by identifying system-wide architectural mechanisms, such as persistence and security; considering significant elements, such as layers and components; and defining the initial analysis classes that will evolve into collaborating design elements. Developers refine these architecturally significant elements into the design and implementation with architects’ support. They enforce and change constraints and decisions collaboratively in parallel with the software development.

There’s only one architecture artifact, the architecture notebook. Its contents are flexible and lightweight, intended as a critical communication mechanism to use without burdening other team members.

The robustness and completeness of the system architecture is measured by validating builds that contain a subset of the architecture. Once the architecture is complete— all architecturally significant risks and requirements have been addressed in validated builds—the elaboration phase is complete.

**EPF Composer**
The EPF Composer is the free Eclipse-based tool for creating, modifying, extending and publishing processes like OpenUP/Basic. The tool breaks a process into two distinct portions: method content, such as work products, guidance and tasks, and process information that organizes method content into full-fledged processes. That information is published into a process Web site the team can browse.

Figure 5 (below) shows how EPF Composer displays forms for editing process content, in this case a guideline for analyzing the architecture. Method content can also be extended in a variety of ways that extend or replace existing content. Most users will likely make simple modifications, such as adding organizational templates or modifying the text of a guideline. EPF Composer also supports incremental adoption of OpenUP/Basic with the ability to suppress unneeded method content, so only the desired portions of the process are published.

Processes can also be built from scratch using EPF Composer. For example, stand-alone Scrum and XP processes are available at the EPF Web site, with DSDM coming soon. For more, you may want to peruse a wiki on OpenUP/Basic (http://openup.epfwiki.net).

**Free to Download**
OpenUP/Basic is a comprehensive but lightweight process. It gives small teams an easy way to adopt a Unified and agile process and gives other organizations intellectual capital to solve their process issues. EPF Composer is the tool to use to customize and enhance process content for your organization. Both are freely downloadable at the EPF Web site (www.eclipse.org/epf), where you can also find links to recordings, tutorials, the EPF newsgroup and ways to participate with developing EPF processes.

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(from page 8)

forward generation by generation with the industry. I think it's a great story of commitment to our client base.

System i: Will POWER6 and i5/OS version 6 mean a name change?
Mark Shearer: We haven’t changed the name of the product as we’ve created the Business Systems unit and Power Systems unit. We’ve just announced i5/OS V6R1. POWER6 technology was introduced on the System i 570. We will introduce a BladeCenter server that runs i5/OS in the future. We just released the new 515 and 525 models. There’s no automatic name change with these new products. POWER6 technology was introduced on both the System i and the System p platforms. I think that’s more of a statement about the underlying technology than about the actual product name.

System i: How does the announcement change your position and duties?
Mark Shearer: I am going to stay heavily involved in System i community. And I’ll continue to be the senior IBM executive sponsor for i5/OS and our products that support System i. I’m going to focus on the products themselves and the future product strategy.

That includes responsibility for the product line management and planning for all of our POWER hardware, both high and low end. It also entails responsibility for all POWER processor-based operating systems including i5/OS, AIX and Linux on POWER.

Now that I have access to whole product line, my goal is to help our clients bring i5/OS application forward to the hot platforms of the day. I’ll be working to drive a little more synergy and simplicity across the System i product line. For example, in the future when we introduce our first POWER6 processor-based blade you’ll see that hardware platform will support i5/OS, AIX or Linux. It’s an example of how we might simplify the products and provide new options for System i product base.

System i: How do Ross Mauri and Marc Dupaquier fit in?
Mark Shearer: Ross Mauri is the general manager for the Power Systems unit. He’s been running the System p business. Ross and I have worked together for seven years. I was running marketing when he was running development. We both came from the mainframe group. We’ve got an outstanding working relationship.

Marc Dupaquier is running the Business Systems team. He and I spent years together working in marketing. Marc joined the STG in January, working on SMB systems strategy. Prior to that he was the VP of marketing for the IBM Software Group. He’s has a longstanding familiarly with the brand. In fact, he started out as an AS/400 sales rep in France.

Marc will be very engaged with our SMB clients and Ross will be very engaged with high-end clients. We’ll be a great team over the System i segment.

System i: Are you excited about these changes?
Mark Shearer: Four or five years ago, a small group of people—including me—entertained this concept. Now I think the marketplace is ready for this. What I feel good about and why I think some pockets of feedback have been very positive, is that these organizational alignments are in synch with the reality of the market. Our large clients just want different things than our medium-size clients want. And I think by focusing on the total power of IBM and the synergies of cross-brand capabilities for these distinct client segments, we’re going to do a better job. So I’m very excited about it. I think it’s the right thing and I’ll be working hard to make this come to life for our clients.

(from page 51)
migrating to theirs, which is why IBM System i has remained our top choice,” explained Yang. “Logistics and transportation are already two different things. There are in fact a plethora of industry-specific know-hows in logistics, regarding things like automatic warehouses, computerized systems and stock locations, which most of the ERP systems are unable to deliver, as they are basically designed for the manufacturing sector. Besides, vehicle assignment is another issue that can hardly be totally computerized!”

A fusion of technology and business
In a highly competitive and mature market such as Taiwan, transportation and logistics providers all strive to maintain their market shares while continuing to grow businesses. The reasons behind T. JOIN’s dominance in the market for 3 decades are first of all its management team’s vision on which the company lays a sound foundation of long-term strategic development. Secondly, the reliable operation platform built by Asgard Corporation that runs T. JOIN’s core businesses on IBM System i leveraging its excellence of stability and economics of consolidation also provides unwavering support to the company in its pursuit of growth. As the old saying goes “a workman must first sharpen his tools if he is to do his work well,” T. JOIN has set an example of using IT infrastructure to bolster business operation. IBM System i will continue to be a steadfast partner that teams with T. JOIN to advance the integration of technologies and business in the future!
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An eclectic take on the i5 world

Stormy Weather

Estes Express Lines discovers System i servers run under 4 feet of water

BY JIM UTSLER

When Hurricane Gaston made landfall in South Carolina in 2004, the people of Richmond, Va., expected the storm to “cruise through,” says Dick Cosby, system administrator with Estes Express Lines. “Instead, it just kind of stalled over us for most of the day.”

That day was Aug. 30, and Richmond received 14 inches of rain in just a few hours, pushing the James River to more than 10 feet above flood stage. Because of the deluge, the city turned off some outlying storm drains to keep the downtown area from flooding more than it already had. The result? “We were flooded,” Cosby recalls.

“Flooded” might be an understatement. Estes’ ground-floor datacenter ended up with 4 1/2 feet of water in it, as well as storm-sewer backup and acid from the uninterruptible-power-system batteries in the room. But that wasn’t the worst of it, as Cosby explains: “Every piece of hardware, including our seven IBM* System i* servers, all of the SAN [storage-area network] storage, the fabric switches, routers, network equipment, phone system, was flooded.”

Thankfully, staff at the company—a family-owned transportation business with a network of 185 transportation terminals in 46 states and a fleet of more than 29,000 tractors and trailers—mitigated some of the damage by powering off its systems as soon as they saw water pouring into the room. “We had everything turned off within a half-hour, but it was just too late to move anything by then,” Cosby says.

As a matter of day-to-day business, Estes had already made backups of the data on its production iSeries 870, and the tapes had left that morning. They were off-site and dry. In a best-case scenario, this meant it would have to re-create only one day’s work.

Unfortunately, the seven servers weren’t offsite and dry, but were standing with their drives completely submerged in storm and sewer water. Rather than panic, the company took a measured approach to cleaning up the mess, with the cross-fingered goal that it might be able to IPL some of the servers.

“We brought in a company to drain the room—it took most of the day—and then used a fax machine from a local service station to fax IBM with a request for immediate equipment replacement,” Cosby says.

After the 870 was taken apart and dried out, staff from IBM Rochester put it back together to see if would power back up. Amazingly, it did.

“We lost some drives and things like that, but because the internal drives are mirrored, it did IPL.” This was a blessing because it let Estes complete a full backup of SYSBASE to a replacement system, which came the following weekend. “The flooded production system, with disk drives that had been underwater for 12 hours, continued to operate until we shut it down three months later,” Cosby says.

As a result of this disaster, Estes has put new disaster-recovery processes and systems in place, including the IBM System Storage* Global Mirror product and two off-site System i servers that mirror the Richmond production box to a disaster-recovery site in Arizona. “To some degree we got lucky, but I think our quick recovery—which only took a week to complete—owes a lot to the help we received from IBM and our business partner, DP Systems, not to mention the resiliency of the IBM hardware itself,” Cosby says. “It sure seems like the stars were aligned.”

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_INFRASTRUCTURE LOG_

_DAY 84:_ Feeling really disconnected. We’re not getting the most out of our existing assets. Service and application integration is a nightmare. We’ve got to stop working on these islands.

_Please rescue me from this lack of connectivity._

_DAY 87:_ We’re saved! With IBM WebSphere solutions we can service-enable and connect our existing assets for mission-critical goals. Now we can reuse existing applications and save money by eliminating redundant systems. We’re ready for any SOA integration project.

_Plus, no more jellyfish stings._
you can try and dress up

OR

change from the inside out

Just because you are an RPG shop doesn’t mean you have to stay legacy

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Introducing Strategi SOA™, a revolutionary way to extend and evolve legacy applications into a pure service-oriented architecture using your existing language skills and tools.

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It breaks down the walls that traditionally exist between legacy and contemporary development teams. Imagine RPG and Java or .NET development teams working together as one, using each other’s components, dragging and dropping RPG routines into Visual Studio .NET or Eclipse.

Get our free educational paper “Why SOA is crucial for System i RPG Shops” now at:

www.businesslink.com/welcome/soa