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Performance Boost

Keeping up with DB2's latest features can really pay off.

By David Beulke

Walking down the street the other day, I found a \$20 bill. Finding money (and, more commonly, finding ways to save it) never fails to please.

Recently, I performed a DB2 performance health check for a client that identified \$16 million of potential CPU savings spread over 38 different areas in the company's systems, databases, applications, and SQL coding techniques. By leveraging DB2 best practices and the latest features in DB2 Version 8, you can improve the performance of your environment.

This client had just finished installing DB2 V8 for z/OS, but hadn't had time to really use its new capabilities. A number of DB2 tables had indexes with VARCHAR columns; with DB2 V8, these index columns can either be stored in DB2 unpadded or padded to their full VARCHAR limit size. Analysis showed that the unpadded indexes would achieve significant savings by cutting the index size. By reducing the required number of index pages and overall index levels, the SQL performance improved through fewer index page I/Os while still providing index-only SQL access. Unpadding indexes on multiple tables saved this client significant SQL and utility index rebuild CPU costs.

Another area of savings came from the company's DB2/WebSphere/Java environment. The research showed that 22 percent of CPU costs resulted from DB2/WebSphere/Java transactions that are ideal for IBM's new specialized System z9 Integrated Information Processor (zIIP) and System z Application Assist Processor (zAAP). zIIP and zAAP processors are available for a one-time charge and can run the software stack. The zIIP processor is designed for ERP and CRM applications, data warehousing applications, and some DB2 utilities, and zAAP is designed for Java workloads. Offloading your costs to these specialized processors can dramatically reduce your total million service units (MSU) pricing. According to IBM, the average large customer using zAAP/zIIP

processors can reduce annual software charges by 37 percent and OTC charges (hardware and software) by 43 percent — big CPU savings for my client and for any enterprise that has large DB2/WebSphere/Java applications.

Next, I examined the table design and SQL access paths used in their DB2 Unix systems supporting the client's Java applications. These robust Java applications consumed a lot of CPU and I/O per transaction. Using monitors and SQL traces, I found SQL statements doing large index scans in an application that was looking for large ranges of values by using greater than (>) and BETWEEN predicates in its SQL WHERE clauses. Unfortunately this SQL caused DB2 to choose an index scan access path that retrieved many database pages.

Analyzing these index scans and all of the table's SQL access paths using the DB2 Design Advisor, I determined that the SQL query range was reasonable (not too big), but that processing could benefit from partitioning the table. DB2 9 for LUW has partitioning that provides tremendous benefits for table and index scans, bypassing access to a number of partitions based on the key range desired in the SQL. Partitioning the data helped separate old data from the current data that was desired by the SQL application. Partitioning improved performance so much that the client was able to rethink and possibly postpone their Unix hardware upgrade.

I've only mentioned a few of the 38 different money-saving categories uncovered during the DB2 performance review. Suggesting ideas like these to your management can help you and your company save a lot of money in CPU processing expenses — which might help you convince management that you deserve a few more bucks more in your paycheck. Your chances of earning more for a good idea are probably better than your chances of finding cash on the street.

[David Beulke](#), a past president of IDUG, is a DB2 consultant, author, and lecturer who specializes in database performance, data warehouses, and Internet applications.

Run, Cheetah, Run

IDS's next release speeds ahead with security upgrades.

By Stuart Litel

The fastest animal on the planet is lending its name to the next version of Informix Dynamic Server. Due out in 2007, IDS's next release, code-named "Cheetah," is one of the fastest OLTP data servers in the world.

IDS is a key database for OLTP on Linux, Unix, and Windows platforms. Cheetah will offer significant improvements in performance, availability, security, and manageability over previous versions, including patent-pending technology that virtually eliminates

downtime and automates many of the tasks associated with deploying mission-critical enterprise systems. In my previous column I gave an overview of some of the new features. I've since learned some specifics about Cheetah's security features, a major element of the next release.

IDS 10 offers column-level encryption, role-based access control, auditing of connections, set sessions, and the ability to create or drop objects and grant or revoke privileges. In Cheetah, additional security features include

- **Encryption** for disk data at rest and for data backup and greater coverage of data encryption with encryption key management, which will help customers meet regulations in the retail industry
- **Label-based access control (LBAC)**, which makes it possible to assign data labels and grant label-based authorization to specific users
- **Common Criteria Certification** at the CACP EAL4 discretionary level, a requirement for many governments worldwide.

Partner and new IIUG gold sponsor (yes, it's a plug, but it is good stuff) Princeton Softech offers archiving management to meet Sarbanes-Oxley requirements and test data generation to mask and protect personal privacy data without changing database schemas.

Cheetah's first public technical sessions will take place at the IDUG/IIUG North America Conference next May in San Jose, Calif. For more information, see www.iiug.org/conf. Watch the [International Informix Users Group Web site](#) for updates.

Speaking of conferences, Informix users groups in Washington, D.C., and Atlanta, Ga., have organized the best mini-conferences for the past 10 years. Don't miss the two day event this December in Falls Church, Va. For more information, go to www.iiug.org/waiug/present/Forum2006/Forum2006.html.

Finally, my Informix tidbit of the month: A friend told me that the worldwide integrated security system that allows IBM employees to have their IBM badge recognized at any IBM facility runs on Informix. So, I guess all IBM employees are, indeed, Informix users.

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