HOST BUSTERS! - A VISIT TO PACIFIC IBM EMPLOYEES FEDERAL CREDIT UNION

by George Schussel, President of DCI, Inc. and chairman of the Downsizing Expo

March 28, 2005

On my way to deliver the keynote at August's Downsizing Expo, I visited Pacific IBM Employees Federal Credit Union (PACIBM) in San Jose. This fascinating visit to PACIBM, a mid sized, full service bank, allowed me to see a wildly successful example of downsizing that violated most of the rules offered by the leading downsizing consultants today. The violated rules at PACIBM were:

- Don't downsize your toughest application first. Pick a simpler pilot to learn on.
- Downsize decision support and development functions first. Leave the OLTP applications until later.
- Don't downsize tough, complex performance sensitive OLTP applications at all.

My visit was arranged by Prologic Computer Corp of Richmond, British Columbia, whose Probe DBMS and 4GL was the essential enabling technology and was hosted by Daryl Tanner, President and CEO of PACIBM. Tanner was unlike any bank president I had ever met. He was just as comfortable talking about bus architectures and improved schemes for disk caching as he was discussing new ways to provide banking services to PACIBM's customers.

A credit union is a bank that is owned by its depositors, the members of the credit union. In PACIBM's case any IBM employee or family in 7 Western states may be a member. In total PACIBM has 49,000 members with 54,000 savings and 20,000 checking accounts. The bank has issued 20,000 ATM cards and runs 8 branches in California and Arizona. On the loan side of their business, PACIBM manages about 25,000 loans and 14,000 VISA accounts.

The final result of PACIBM's downsizing has been a PC and LAN client/server system that processes about 100,000 production and decision support database transactions per day. The bank is totally dependent on the non stop operation of this system. The IBM 4381 it replaced was still In the PACIBM computer room during my visit, but its sole job was to support 2 older ATM machines. The plug on the 4381 was scheduled to be pulled about the time this is published. The difference in size between the IBM PS/2 model 95 and its inboard SCSI disk was hilarious when compared to the multiple large cabinets of the 4381 and its 3880 disk subsystems. The tape backup system for the model 95 was also only about 1/100 the size of the tape drives supporting the 4381.

The story

In 1990, Tanner, with the approval of the PACIBM board of directors prepared a plan for replacing and upgrading the existing PACIBM computer technology base. PACIBM's

systems were being run on an IBM 4381 mainframe with 16GB of 3880 disk supporting 151 terminals. Much of the PACIBM board consists of IBM employees from advanced IBM research and development labs such as Almaden and Santa Theresa. Tanner's desire to move PACIBM's data processing out of the '70s age and into the modern era was echoed by the feelings of the board.

The bank's systems were written in COBOL and RPG and were difficult to maintain. And as is typical in systems with older software, the MIS department was only able to respond to maintenance requests slowly. The 4381 systems didn't support new types of applications such as those using ATM software.

After surveying available packaged and development software, the finally selected alternative was presented to PACIBM's board. As Tanner explained, "I told the board that I wanted to recommend a rather radical proposal for the new system. The general reaction was of serious apprehension as the member's imaginations ran away with different ideas on what I might be proposing. When the idea of developing our own systems using an SQL based DBMS and 4GL that ran on PC's and LAN's was presented, the look of relief from the board was very visible. One of the members commented 'We were afraid you were going to recommend a DEC system!'"

The configuration of the new system was to utilize the IBM model 95 as the base for various servers such as database, file, and print (reports). Model 55s were to be used as clients. The software would be a custom application built with the PROBE software system from Prologic Computer Systems of Richmond, British Columbia. PROBE, while not generally well known has accomplished a lot in banking circles. The product has received a "Most Outstanding Product of the Year" award from the MicroBanker Association. But more importantly, it had been used at the Richmond credit union to completely automate that Canadian bank, an operation about 3 times the size of PACIBM.

Prologic initially bid on the the PACIBM job with the Richmond application as the basis for customization that would alter the Canadian package to meet US banking regulations. Once the development team looked closely at the the requirements, however, it was decided that it would be easier to write a completely new application for PACIBM. As Tanner explained to me, American banking regulations are very different (and much more complex and numerous) than Canadian. For example, American laws require the reporting of any deposit of cash of over $10,000 in a 24 hour period. If that requirement were for a single deposit, then it would be an easy task to implement. The regulation, however, must be applied to *all* deposits at *all* branchs during a 24 hour period, and that 24 hours must be interpreted as a *rolling ongoing* 24 hours, not just any single day.

The final contract approach was to award the software development to a Prologic VAR and the systems integration and hardware contracts to IBM, of course. Efforts began in January, 1991 and the system went live on February 29, 1992.

The goals

I asked Tanner what the goals for the new system had been as a prelude to asking him how well the new system had met those goals. He responded with the following list:

1. Seamless movement to the new system. Any trauma of movement to a new system must be minimized for the tellers and other system users.

2. The quality of support and system services must be improved. This would include features like better and more timely access to information and improved financial controls.

3. Maintenance of the application software must be improved. In particular, the ability to maintain the system must be enormously easier than implementing change under the COBOL/RPG environment that had been the norm.

4. The resulting application should be easily and modularly expandable, in both hardware and software - for new, added services, and/or for additional members or business.

5. Finally, the system must be seen as an "empowerment" of the staff and employees.

Since so many downsizing projects are motivated by a desire for cost savings, I asked Tanner about this point. Cost savings had not been a principal goal of the conversion project, but PACIBM had, in fact, achieved important cost savings in normal operations. Tanner's estimate was that those savings were probably on the order of 20%. The added, more easily implemented functionality was more important, however. As an example I was showed the micro based voice response system that PACIBM had implemented. This system, which interacts closely with the PROBE database, was built on PC and DOS hardware technology, boards acquired on cost bases that typically ran in the $100's of dollars. Comparable mini-computer based technology typically runs in the $10,000's of dollars.

The good and the bad

We then talked about the surprises and results achieved by the new system. In particular, I was interested in what results were better (and worse) than expected. Tanner explained that the good news was four-fold:

Customized Systems - The fact that PACIBM's systems were custom built meant that automated support was available for the way PACIBM staffers wanted to work. Procedures didn't have to be changed to meet the demands of a software package. The improved development environment of PC's and 4GL's greatly improved PACIBM's ability to implement system changes. Tanner mentioned that business conditions currently result in an average of 3 -4 production system changes a day. This kind of flexibility was totally unachievable on the mainframe system.

Integration with the Desktop - The use of PC's with PC software as the basis for PACIBM's operational system allows for tight integration with office automation packages such as word processors and presentation graphics. Using the Windows clipboard means that PACIBM staffers can move data and text between data processing applications and office applications. Also a single piece of hardware, a 386 PC acts as the office automation support tool and the data processing terminal.

Better access to Data - The old system and its rigid file structure had limited access to data to predetermined and programmed paths. Evolving business practices, however, continually means that a bank has needs for improved access to data. Tanner pointed to an example in the new system which hadn't been available before - background referencing. In this new application, a teller can call up credit history and loan information for on-line review while a customer is waiting to have a check cashed. This way the bank staffer has more and better data to support a decision to cash, for example, a large check that otherwise might not be cashable until additional funds had cleared.

Open Systems - While not wanting to get into a debate about what constitutes "open systems", Tanner clearly was enjoying the ability to acquire new capabilities for PACIBM's system by scanning catalog pages in journals such as PC World. Another advantage of PACIBM's new environment was illustrated by clone computer on Tanner's desk. Even though IBM had been chosen as the hardware supplier, IBM's backordered position at certain times in the project's evolution had meant that PACIBM had had to order some other equipment to fill holes in delivery schedules - no problem!

The Bad - After reviewing the pleasures of the new system, I asked Tanner what the worst problems had been. His response was that their new downsized system wasn't in any way disappointing, but that the biggest implementation surprise PACIBM had could have been handled better. The Novell NetWare 3.11 LAN operating system supporting the database server had been sourced from and installed by IBM. When PACIBM's new system was first turned on, response was slow and the problem was immediately ascribed to performance of NetWare. The IBM engineers on the support team were not familiar enough with the product to figure out how to improve the operation. After about 6 weeks of effort, PACIBM's own staffers were able to tune NetWare to satisfactory performance. A combination of telephone advice and reading manuals was used to develop the necessary solution techniques.

The future

As I asked Tanner about future directions for PACIBM's systems, his technical background came out again in his wish list.

First of all we spoke about database performance. Even though the PROBE relational database is highly optimized to take advantage of the DOS and NetWare environments, Tanner wanted even more performance. Since the model 95 server and it's 486/33 processor are pretty near the top in what one can get out of a single processor box, Tanner had some ideas about improving performance. First of all, he mentioned,

PACIBM was already using other model 95's for non-database services such as file and report management or generation. So he wanted to achieve added performance by being able to use multi-servers against a single database.

Prologic will supply this capability with its NetWare redirector file sharing capability, due this fall. As Greg Hope, Prologic's founder and VP of development explained, this new architecture will replace the proprietary DOS based Profile file system with a NetWare redirector from multiple servers to a single NetWare based file system containing the actual database. In other words multiple servers will run the PROBE DBMS against a single NetWare file server housing the data.

Tanner went on with a description of more powerful hardware as a way of increasing PACIBM service. He indicated his desire in the new model 290 (the Parallan designed machine) that IBM should be manufacturing this fall. Tanner indicated that this new model should solve what he felt were limitations in the current IBM model 95 in its bus architecture and disk caching.

Improvements in disk subsystems were also high on Tanner's wish list. He is looking to RAID technology, but he wanted the combination of security, mirroring, striping and performance without making the kind of tradeoffs between these parameters that are now required.

In the the software arena, Tanner's two main wishes were in the operating system arena and imaging area. For operating systems, he is looking at the possibility of using more OS/2. Since running under OS/2 isn't a current objective of Prologic's, however, that objective may not be reachable in the short. term. We talked about Windows NT as an alternative since PROBE is currently be tested in that environment. Given the end of year forecast for NT's delivery, however, any migration in that direction is still a while off.

As soon as imaging software and hardware can be implemented, however, PACIBM is likely to travel that road. Tanner talked about the service and storage advantages of allowing document retrieval of items such as mortgage and loan documents.

The Conclusion

When I asked Tanner if he would undertake the project all over again, he said "Absolutely, but if we could we would do a couple of things differently." Tanner commented on the fact that PACIBM could have used better support with NetWare. When the bank needed NetWare support, IBM had only recently acquired distribution rights to the product, and the IBM engineers supporting it at PACIBM were freshly trained, and not really adequately knowledgable.

Another area of additional attention during the development would be the "stress test". Just testing the software for currect operation is not adequate in a database application. Tanner would have liked a reasonable way to test the system performance at full load, so

that actual performance could have been closely simulated. That capability wasn't available and it took the live system to really apply the stress.

This visit to PACIBM was convincing evidence that downsized solutions are a good idea today for almost all development projects. If you don't believe that mission critical, high up time, OLTP applications are appropriate for PC's, then just visit Pacific IBM Employees Federal Credit Union.

AUTHOR - George Schussel is the President and founder of DCI of Andover Massachusetts. He serves as the Chairman of two large national conferences and trade shows that focus on downsizing issues - CLIENT/SERVER WORLD and DOWNSIZING EXPO. He consultants and writes extensively on database oriented client/server computing. He is also the editor of a newsletter on downsizing, Schussel's Downsizing Journal.