



HRG Assessment IT Consolidation at a Major Financial Institution

Introduction

This HRG Assessment is based on interviews and obtaining detailed reports from an actual customer of IBM's in the financial sector. The case represents work performed by the IBM customer from 2001 through mid-year 2005. The customer is continuing on the track of driving up server utilization while holding costs constant even though the specific server consolidation project has been officially completed. IBM can provide access to the customer behind this case upon written request assuming the customer grants permission to share information.

Background

Historically IT procurement at the customer had been triggered by major projects which resulted in dedicating people to design, engineering, procurement, and installation for each project. Coupling this with the approach of replacing systems on a four year depreciation cycle resulted in numerous and sizable operational and financial spikes.

The driving force behind consolidation and virtualization initiatives by the customer was the desire to reduce the capital outlay required for new computer hardware. It was about providing the same or more actual capacity with a lower run rate, which equates to lower depreciation and lower maintenance costs.

To reduce, if not eliminate, spikes in capital outlay, it was decided to develop a plan that pooled computational resources. This approach was adopted so that new projects had a much smaller impact on operations, and that the depreciation cycle would not be the only element driving new investment in technology.

The end goal is to have a computational resource in the AIX space that will meet the demands for more applications and capacity with planned incremental growth rather than the traditional spikes in staff resources and capital investment.

The customer was running Oracle on 38 separate p650s that cost approximately \$9.5 Million in 2001. Today, these 38 Oracle instances run on 2 p690s at a purchase cost of \$5 to \$6 million resulting in a real savings of \$3.5 to \$4.5 million.

When the client completes a planned re-hosting of their SAS applications they will have reduced the number of processors by as much as 50% thanks to the increased functionality available through the combination of AIX 5.3, Power5 technology, and IBM's Virtualization offerings.

The customer currently has 232 CPUs (IBM p690 class hardware) for an original purchase cost in 2001 of about \$15 million. These servers are planned to be re-hosted on new Power5 hardware in early 2006 yielding a net reduction of CPUs by 180. The new environment is planned to run at near 75% utilization rate for an estimated procurement capital outlay of \$7MM to \$8MM.

The customer has been actively involved in Data Center and server consolidation since 2001. They see this as a core element of their IT Infrastructure evolution. Currently, they have 4 data center locations enterprise-wide two that they manage internally and two that are managed by IBM Global Services.

The customer built their newest data center a few years ago and started to populate it with servers relocated and consolidated from their field locations.

Consolidation

The first task was to take stock of the existing IT infrastructure to determine where consolidation was possible, and would have a positive impact. At the outset their IT operations were located in two core centers and twelve remote

In 2003 they had 407 UNIX servers: 19% running a transaction manager; 9% running Oracle; 6% call center and voice solutions; 11% web sphere; 5% web servers; 4% mainframe gateways; and 7% Tivoli.

locations, which collectively housed 407 UNIX servers (210 core, 197 remote) and 567 Intel servers (236 core, 340 remote). There were four different types of UNIX operating systems and hundreds of applications that could be categorized into ten different types. Today (July 2005) they are 85% centralized and 15% decentralized. For the customer, centralized means that those servers are in two hub locations instead of spread across their 10 other locations. With the plan to centralize as much as possible into the two core centers it was necessary to review all of the applications at the remote sites to determine if the users required local servers or could be supported on a WAN

from a centralized site. The 15% of their servers that are decentralized will remain because these servers need to be co-located with other equipment that runs call center applications. However, it was determined that 338 UNIX servers could be centralized leaving 69 in the remote locations.

Windows

“We were able to consolidate 200 windows servers into approximately 50 by eliminating old and unused applications (there were development servers for the most part), as well as consolidating many Oracle Databases onto Logically partitioned pSeries servers. We had to leave other Windows servers where they were in our field locations because the applications there were used across a LAN. We are not sure we can run these applications over the WAN.”

“We are actively converging windows servers some of which run in virtual machines onto IBM Blade technology. We expect to get even more savings by reducing stand-alone or rack-mounted servers and driving up overall usage per blade server in 2006.”

The next step was to determine how to meet their computational resource requirements with more cost-effective hardware.

Oracle Server Consolidation

In 2003 Oracle was running on 38 separate mid-sized pSeries 650 Power4 machines. Since 2003 the customer has consolidated these servers onto 2 p690 logically partitioned servers. They placed one of these p690s in each of their 2 hubs in order to provide Disaster Recovery capability. Each of these p690s runs 38 instances of Oracle. There was no productivity impact, either positive or negative, on their staff because to date, they have only re-hosted and not reengineered these solutions. The original purchase price of each of the p650s was in the \$200,000 to \$300,000 range when fully configured for SAN attachments and memory. Each new 32 CPU p690 purchased in 2004, cost approximately \$1,000,000 when fully configured. The net result of converging the 38 servers into two servers was a savings of \$3.5 to \$4.5 million.

Support staff reduction or major productivity improvement were not goals in the consolidation effort. At the outset the customer's server to full time employee or systems administrator (FTE) ratio was 17 to 1. This being near the top of the industry range of 10 to 20 servers per support person left little room for improvement. In fact, as might be expected, they required four additional staff during the consolidation implementation transition.

Planned SAS Consolidation

Their SAS applications are currently being hosted by IBM Global Service's (IGS) on two Power4 class pSeries: one pSeries has 24 processors and the other pSeries has 32 processors. When the customer has completed re-hosting the SAS environments they will have reduced the number of processors by as much as 50% by using Power5 hardware running AIX 5.3.

pSeries Partitioning

Many of the Power4 servers are configured with static partitions on their IBM pSeries Servers, as they are running AIX version 5.2, which only supports static logical partitions. When they complete migration to AIX 5.3 and Power5 they will have a much more dynamic environment that will allow them to realize the benefits of load balance processing cycles across their IBM equipment. Right now the equipment is dedicated to each application through static LPARs.

Thus far the customer has not had any significant staff reductions as a result of these changes to their infrastructure. Their expectation is that as they complete some of their server consolidation activities and start to implement a virtualized pooled compute environment, they will see a measurable increase in employee productivity for both IT and non IT personnel.

Virtualization

The challenge with virtualization is that according to the customer, their engineering staff is not yet comfortable automating processes and procedures which they feel they should control and so they are reluctant to buy into the full capabilities and benefits of virtualization offering excuse like they are too busy doing their day-to-day tactical work to get involved in longer term strategic initiatives like virtualization.

The end goal for the customer is to have a computing resource in the AIX space that they can manage as a pooled resource and add to on an incremental basis through virtualization. However, because they are not there yet large new projects require new physical servers and the dedicated staff to implement them. For example; the staff is responsible for doing the engineering design, procurement, installation, and implementation for each project, one-by-one. The customer is experiencing a steady stream of these types of projects and the department that is most affected is the engineering group within I/T. The net result is that engineering is actually increasing human resources rather than reducing it. The good news is that when customer completes the planned migration to AIX 5.3 and Power5 they will be able to realize some of the benefits of virtualization using machine and human resource pooling to improve time-to-deliver at a lower total cost.

The clear answer to the problem that the customer is experiencing is to move to a pooled or virtualized enterprise-wide compute resource and to then use the tools available from IBM to manage across the technology pool. This solution in combination with an ongoing consolidation strategy will smooth out the capital investment spikes that have traditionally occurred every four years as old equipment becomes fully depreciated.

"There is a large opportunity to reduce costs through the use of virtualization tools. However, there are cultural and political barriers that need to be overcome. These barriers are different in different companies and depend on the history of how business users purchased and used the equipment that was previously assigned to their departments."

For server consolidation and virtualization to take hold and truly become part of the ingrained IT culture at the customer management will have to convince the skeptics who say "I don't

have time for it, I don't understand it, or I can't guarantee SLA's to my user community in a pooled resource concept" that Virtualization is the best solution.

First step: convince the skeptics that virtualization is real and that companies can benefit from it.

Second step: work to demonstrate the cost benefit of virtualization vs. no virtualization. The difference in capital requirements should sell them, then the discussion is all about "I need my own box, I don't trust virtualization, and how will I meet my SLA commitments." This needs to be a long-term commitment on the part of I/T and business management in a collaborative style of communication.

Recommendation for IBM

IBM needs to be actively involved with and help its customers with big concepts like consolidation and virtualization. According to the customer there is a lot of skepticism regarding virtualization from some of the more tactically focused people. This skepticism stems in part from the fact that today in order to do provisioning these individuals have to deal with VARs, negotiate with vendors, and much more in order to get new systems into production in the Data Center. From this perspective they see virtualization as yet another project rather than a solution. This is where IBM needs to stand by their customer through out the process bringing established best practices and a team of hands-on experts with them.

IBM has created some tremendous technology and still IBM's customers are faced with cultural political change management issues that tend to make the technology only part of the answer. One solution is for IBM experts to work side by side a client's staff in a teamed manner in-order to create the required momentum. The challenge is in many ways, becomes more of a people oriented challenge related to changing organizational habits and daily practices. This type of change management, in most cases, will require varying degrees of the IBM. Consensus building and education are crucial factors in the success of getting organizational changes of this magnitude adopted.

Conclusions

A fall out of the consolidation implementation was the understanding that planning and co-ordination are key. Early in the transition period it became clear that cultural and political concerns were more pressing than any technical tasks. Working these concerns was critical as success depended upon the co-operation and co-ordination of the architectural group, engineering, operations, and users. However, the customer actually found real savings from server consolidations made possible through IBM's Power5 and Blade Center technologies along with new versions of the AIX operating systems.

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