SUN MAINFRAME REHOSTING:
SAVE MORE THAN A FEW CENTS

"Nothing endures but change..."

-Heraclitus c.540 – c.480 B.C.

Does consolidation make sense? If the answer is yes, then does consolidation on mainframes make financial sense? The last three years of our research programs have shown that consolidation is a big item for many CIOs. We call it the "Larry Factor." Not too long ago you could not get out of an airport without seeing an advertisement with the caption "Oracle Saved a Billion Dollars." The company claims it was their software, but in reality it was the combination of the Internet and data center consolidation. Because of the Internet they were able to consolidate hundreds of sites into one site in Northern California with a back-up site in Colorado. Does consolidation make sense? It makes lots of sense and saves a lot of cents as well.

If you have a mainframe, then consolidating on to it may be the answer. One reason is that the mainframe has many applications already running on it; therefore, the distributed applications just need to be moved onto the big box. These applications can then easily take advantage of the mainframes many tools for security and administration. Another reason is that while the pricing for mainframe hardware has dropped, moving applications off the mainframe is often still hard and costly. Finally, there is existing staff in place who are dedicated to insuring the mainframe stays up and running. Still the downside is evident as years of Total Cost of Ownership (TCO) analysis demonstrate that it is this staffing, software and hardware fees which comprise the majority of a mainframe data center's hefty cost of operations.

We have seen mainframes with hundreds of people feeding and caring for them, while UNIX servers are running just as many – or even more – transactions with only a handful of people. In addition, the infrastructure software being used on mainframes costs plenty on a monthly basis. CICS alone is a billion-dollar business for IBM. In contrast, Sun has come out with an equivalent CICS product to run on Solaris – which our research shows often has under a one-year payback. All these points considered, does consolidation on mainframes make any financial sense? This issue needs careful consideration. We have spent the last 20 years surrounding the mainframe with distributed applications. We did this for cost and flexibility, so it seems like a step backward to migrate an application back onto the mainframe. In this research note we look at the cost of migrating off the mainframe and consolidating onto a UNIX platform.

Have you consolidated your servers?

30%

70%

Yes

No
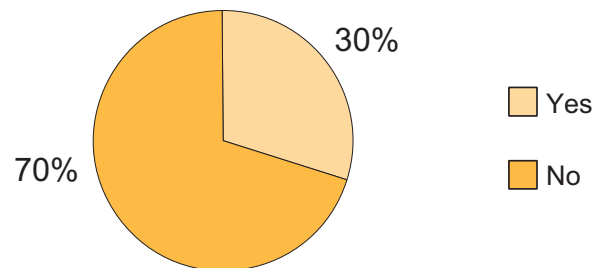
Of those respondents who said yes,
the average is from 83 systems to 54 systems.

In September 2001 Sun acquired CICS migration tools and software – formerly known as Unikix – from Critical Path. Sun now provides a CICS-compatible transaction monitor called Sun Mainframe Transaction Processing (or MTP). This software is available for Solaris platforms and has a proven track record in rehosting mainframe applications in over 600 installations. Over the last several years we have interviewed many of these users. We found that the migration process was fairly straightforward and did not have many of the risk elements associated with new development and the purchase of enterprise software.

As of this writing our VirtualADVISOR® cost assessment database has over 2,000 cases, and our risk assessment database has over 30,000 cases. These cases give us a view into the cost and risk of enterprise applications like nothing ever seen before. Using these VirtualADVISOR risk and cost assessment tools we have found that Sun's mainframe rehosting software, coupled with Sun's platform, is a very attractive alternative to mainframes. We then went beyond this and performed additional research into the cost of migrating from an IBM mainframe to the Sun platform. This research consisted of interviewing companies that went through the process, including Atlanta Blue Cross Care which is profiled in this paper. Using this data we created a front-end process to the VirtualADVISOR that will estimate the migration cost and calculate a return on investment. The model works using these two simple steps:

Step 1 - Migration Profile: As shown in the first screenshot, the inputs include the number of applications (1), lines of code (1 million), the number of online programs (2,100), off-line programs (1,500), number of files (300), number of BMS maps (500), new screens (10) and JCL scripts (1,800). The system also needs to know who will perform the migration work. In this case we show 50% of the work will be done by internal personnel, 30% by consultants and 20% by the software vendor (Sun).

Step 2 - Operational Profile: As shown in the second screenshot, the inputs include the application name (Billing), the user's database of choice (Sybase) and transactions per second at peak (5).

From these simple inputs the VirtualADVISOR System will estimate the migration cost and then add this cost to the operating costs. As shown on screenshot number 3, the annual cost to operate on the Sun platform is $1.3 to $2 million. Adding the migration cost brings the operation cost up to between $1.8 and $2.5 million. The same application is estimated to cost $2.7 to $4.1 million per year on the IBM mainframe. This screenshot also shows our estimate of the migrations ($988,000 to $1.5 million), yearly savings ($1.3 to $2 million) and the payback timeframe (7 to 11 months) of the migration investment. Screenshot 4 shows the cost breakdown.

**Atlantic Blue Cross' Mainframe Migration Project**

The business problem: Atlantic Blue Cross Care (ABCC) of Canada processes one billion claims per year. At the

time of the migration they had over 600 employees in two major locations and seven branches. Their mainframe applications were not Y2K compliant and system software was seriously out of date. Not only would it take a major effort to upgrade the mainframe software, but they also projected that their mainframe costs, which were being run by a service provider, would increase significantly. Their clients were demanding better access to applications and data. They had implemented newer applications on distributed UNIX platforms; therefore, they were supporting two entirely different infrastructures. They also had little to no in-house mainframe operations experience.

The solution: The solution was to move the mainframe applications onto a UNIX platform using standard software formerly known as UniKix (now owned by Sun). This system would offer one standard corporate infrastructure that could be operated with ABCC's current in-house technical staff. The trick was to have absolutely no negative impact to the clients with regard to their current access abilities. They also wanted to be able to have the clients access their application over the Internet in the future. While they were migrating the code, they were also correcting the Y2K issue. ABCC also re-engineered the data from VSAM-indexed sequential to a standard SQL relational database and implemented an external fibre channel storage. ABCC believes they have reduced the system operating costs by as much as $3 million per year.

Project particulars: Overall, the project took 16 months to complete. The entire migration project was contracted to outside firms using a performance-based contract.
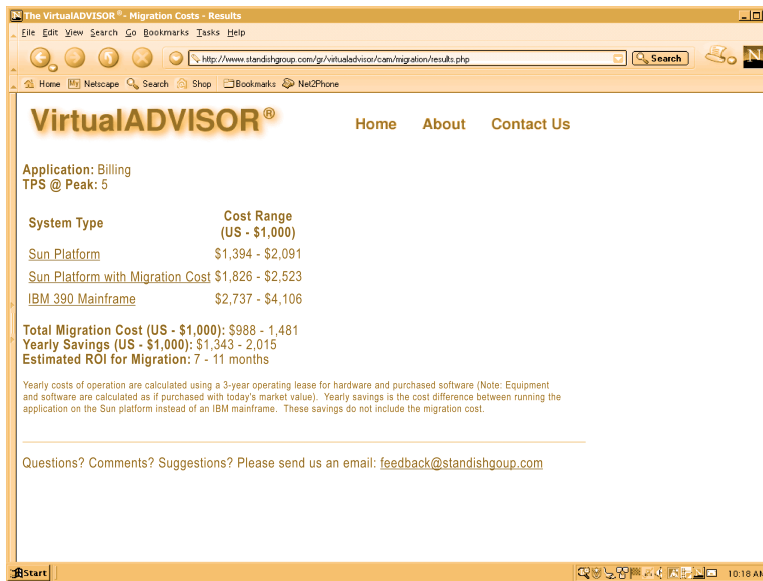
Things done right: The key to this project's success was the performance-based contract that spelled out what was expected from each party. ABCC was a strong player as well, with its staff performing testing, data conversion and architectural duties. Product selection was also a main factor in the project's outcome.

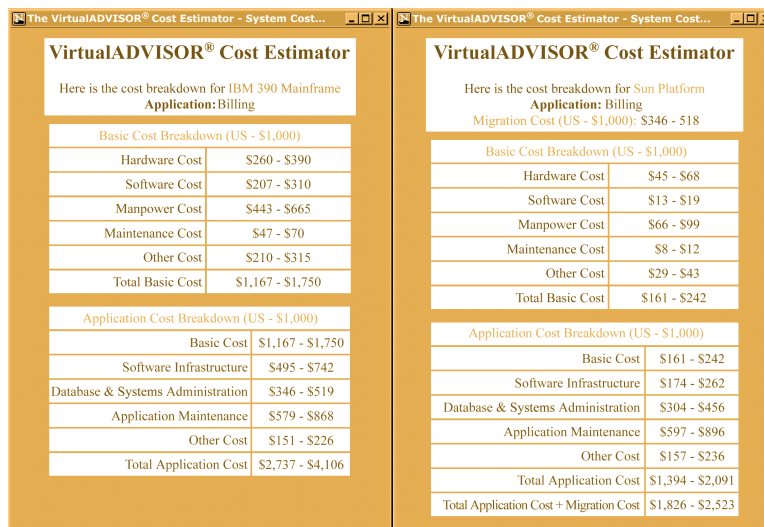Things done wrong: ABCC underestimated the hardware performance requirements by half. Part of the issue was the VSAM-to-SQL batch performance. This not only required additional hardware, but also lengthened ABCC's batch-processing window. Since the project took longer, testing was reduced, which caused some print and FTP issues. Our research with other rehosting clients has shown that most do continue to use VSAM on the Sun servers, and thus avoid the performance penalties associated with database re-engineering to SQL.

Lessons learned: ABCC credits their success to performance-based contracts and suggests making sure they are backed up by a good vendor. MIPS (millions of instructions per second) do not equal TPS (transactions per second); therefore, be careful when estimating performance. Migrating off mainframes can be a cost-effective solution, and in ABCC's case, clearly can bring a significant cost reduction.

Cases of other related rehosting projects using this software are profiled in our CHAOS Chronicles report.

Mainframe migration projects have less risk than new development projects because of several key differences.

The VirtualADVISOR® - Migration Costs - Results

VirtualADVISOR®

Home   About   Contact Us

Application: Billing
TPS @ Peak: 5

System Type	Cost Range (US - $1,000)
Sun Platform	$1,394 - $2,091
Sun Platform with Migration Cost	$1,826 - $2,523
IBM 390 Mainframe	$2,737 - $4,106

Total Migration Cost (US - $1,000): $988 - 1,481
Yearly Savings (US - $1,000): $1,343 - 2,015
Estimated ROI for Migration: 7 - 11 months

Yearly costs of operation are calculated using a 3-year operating lease for hardware and purchased software (Note: Equipment and software are calculated as if purchased with today's market value). Yearly savings is the cost difference between running the application on the Sun platform instead of an IBM mainframe. These savings do not include the migration cost.

Questions? Comments? Suggestions? Please send us an email: feedback@standishgroup.com

VirtualADVISOR® Cost Estimator

Here is the cost breakdown for IBM 390 Mainframe
Application: Billing

Basic Cost Breakdown (US - $1,000)

Hardware Cost	$260 - $390
Software Cost	$207 - $310
Manpower Cost	$443 - $665
Maintenance Cost	$47 - $70
Other Cost	$210 - $315
Total Basic Cost	$1,167 - $1,750

Application Cost Breakdown (US - $1,000)

Basic Cost	$1,167 - $1,750
Software Infrastructure	$495 - $742
Database & Systems Administration	$346 - $519
Application Maintenance	$579 - $868
Other Cost	$151 - $226
Total Application Cost	$2,737 - $4,106

VirtualADVISOR® Cost Estimator

Here is the cost breakdown for Sun Platform
Application: Billing
Migration Cost (US - $1,000): $346 - 518

Basic Cost Breakdown (US - $1,000)

Hardware Cost	$45 - $68
Software Cost	$13 - $19
Manpower Cost	$66 - $99
Maintenance Cost	$8 - $12
Other Cost	$29 - $43
Total Basic Cost	$161 - $242

Application Cost Breakdown (US - $1,000)

Basic Cost	$161 - $242
Software Infrastructure	$174 - $262
Database & Systems Administration	$304 - $456
Application Maintenance	$597 - $896
Other Cost	$157 - $236
Total Application Cost	$1,394 - $2,091
Total Application Cost + Migration Cost	$1,826 - $2,523

Using the VirtualADVISOR Risk Assessment Model, if ABCC's project was started from scratch it would have a 21% chance of being successful, a 35% chance of being over budget and time, and a 44% chance of failing. The Standish Group has identified and ranked 10 elements of project success (see "Extreme CHAOS," 2001). The two biggest factors of project failure are lack of executive support and user involvement. However, both of these elements are a minor factor in the migration process because the application is already built. The fourth CHAOS element is having clear vision and business objectives – these are built into the migration process. Remember, the objective is to migrate off the mainframe.

The seventh CHAOS element is having firm basic requirements. Since the application is already written and built, there is no need for requirements.

The fifth element, minimized scope, is where even a migration project can go bad. When migrating to another platform, there is a tendency to add new functions and features. This should be avoided. Features and funct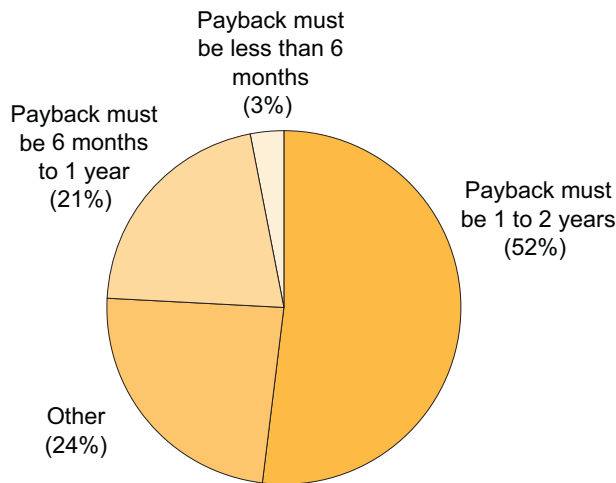ions should be added after the migration is completed. The sixth element by Standish definition is standard software infrastructure. CICS by its very nature is a standard software infrastructure. If the project has a skilled staff (element 10), a good project manager (element 3) and a formal process (element 8), then it is almost home.

Migration projects tend to be small. The average labor content for the projects we looked at was $600,000 per application. CHAOS research shows that 68% of successful projects are under $500,000. So, the odds are in favor of a successful outcome.

For the very large mainframe systems a wholesale application migration to Sun may not be the wisest approach. However, for large to medium systems (100 MIPS to 1000 MIPS) using this tool is a very attractive alternative to continuing mainframe investments. In addition, once the applications have been moved to the Sun platform the enterprise can take advantage of a more extensive array of third-party applications and services providing additional value. In summary, we found the payback is stunning and the risk extremely manageable.

What are your ROI Thresholds?

Payback must be less than 6 months (3%)

Payback must be 6 months to 1 year (21%)

Payback must be 1 to 2 years (52%)

Other (24%)