



**The Association of System
Performance Professionals**

The **Computer Measurement Group**, commonly called **CMG**, is a not for profit, worldwide organization of data processing professionals committed to the measurement and management of computer systems. CMG members are primarily concerned with performance evaluation of existing systems to maximize performance (eg. response time, throughput, etc.) and with capacity management where planned enhancements to existing systems or the design of new systems are evaluated to find the necessary resources required to provide adequate performance at a reasonable cost.

This paper was originally published in the Proceedings of the Computer Measurement Group's 2004 International Conference.

For more information on CMG please visit www.cmg.org

Copyright 2004 by The Computer Measurement Group, Inc. All Rights Reserved

Published by The Computer Measurement Group, Inc., a non-profit Illinois membership corporation. Permission to reprint in whole or in any part may be granted for educational and scientific purposes upon written application to the Editor, CMG Headquarters, 151 Fries Mill Road, Suite 104, Turnersville, NJ 08012. Permission is hereby granted to CMG members to reproduce this publication in whole or in part solely for internal distribution with the member's organization provided the copyright notice above is set forth in full text on the title page of each item reproduced. The ideas and concepts set forth in this publication are solely those of the respective authors, and not of CMG, and CMG does not endorse, guarantee or otherwise certify any such ideas or concepts in any application or usage. Printed in the United States of America.

Software Licensing Cost Reduction Strategies for Large Mainframe Environments

Mp Welch and Chris Schreck, Sprint Corporation

30th Annual International Conference of The Computer Measurement Group, Inc.
December 5 - 10, 2004
Las Vegas, Nevada USA

In large complex IBM Mainframe environments Software Licensing Costs are the fastest growing yet most controllable costs associated with the mainframe. If this trend continues, the large systems platform we know (and love) will be unable to compete for limited enterprise expenditures in the future. Product replacements, Sub-Capacity Pricing, Per Seat, and Usage-based pricing all may reduce cost. This paper shares the implementation of the Penalty Box concept used to control ISV software costs. Its advantages, disadvantages and implementation challenges will be explored.

BACKGROUND

In April 2004, the IBM mainframe's IBM/360 operating system turned 40. Many of the same programs written that year will still run on today's powerful IBM/390 mainframes. This is technically impressive given the technological advances over the last forty years. Even more impressive is the ability of today's IBM mainframes to compete with the advanced functionality of today's alternative hardware platforms and powerful operating systems. The mainframe's ability to provide reduced Total Cost of Ownership (TCO) to business enterprises seeking on-demand computing, security, recoverability, reliability, and performance is the cornerstone of why it can continue to compete for today's computing business dollar.

The mainframe hardware is being priced more attractively than ever by IBM and packaged in ways which make upgrades and Capacity Planning easier than ever before. Unfortunately, one important aspect of mainframe TCO is that it is not being reduced at a rate which allows the mainframe environment to keep pace with today's alternative computing solutions; third-party mainframe software costs. For many companies, the cost of third-party software products is an inhibitor to the growth of their mainframe hardware. These additional expenses are often unrelated to the business value received. A number of different ways of licensing software exist such as Enterprise, Site, CPU, Sub-Capacity, Per Seat, and others. However, many companies have contractual obligations, such that the licensing terms do not reflect the business value

received from the software. For example, a software product licensed for a specific machine's current MIPS (Millions of Instruction per Second— a relative system power and capacity measure) is being used on only one LPAR (Logical Partition), representing only a fraction of the total MIPS. Thus, in actuality, the software product is limited to a small portion of the total capacity, but is licensed for the total machine capacity. If the machine is upgraded due to increased business requirements of another LPAR on that machine, then increased payments must be made to the unrelated software vendor, even though no additional business value from their product is enjoyed by the business. Likewise, if this machine is consolidated with another machine, many third-party products may require additional payments, some substantial. When the business value received is not commensurate with the payment obligations, it causes otherwise advantageous technical reconfigurations to increase the mainframe's TCO, a bad thing.

This undesirable result of increased TCO, without corresponding increased business value can happen for a number of reasons:

1. Inappropriate Licensing Model

If the software is used only on a small LPAR on a large machine, licensing the software for the entire MIPS capacity of the machine is overkill and every upgrade and consolidation will increase, sometimes dramatically, the cost of the product.

2. Inadequate Negotiating

Convincing your ISVs (Independent Software Vendors) to appropriately license their software to you based on your business requirements and benefits received may be difficult but is in the best interests of everyone who believes in the mainframe.

3. Over Licensing

Without a Capacity Planning Process which understands and incorporates the importance of ISV software costs into the planning model, there is a tendency to increase negotiated ISV software MIPS caps, thereby increasing expense. Software Negotiators seek to reduce the risk of exceeding vendor MIPS caps. This perceived risk reduction can be expensive and painful when it happens (via penalties paid to the ISV) and expensive when it doesn't (over licensing). Thus, environments where ISV costs are not part of the Capacity Planning Model and/or Process result in higher TCO.

4. Lack of technical participation in the licensing process

In many companies, the mainframe technicians and the Contracts, Finance, Software Assets or Supply Chain (or whatever you call your financial management function) does not have effective or even minimally adequate communications processes in place. The result is the costly licensing of products because they are either not being used or being used minimally. Effective monitoring of the costs and contractual obligations of each agreement by technical staff allows for the most efficient and cost effective use of software.

POTENTIAL SOLUTIONS

Reevaluate and Renegotiate

It may be possible to review each contract, your current utilization, perceived business value, and ask your ISV partners if they are willing to provide relief within your current contractual obligations. Many will not.

Remove and Replace

This is IBM's approach to helping its corporate mainframe customers reduce ISV TCO. By using the leverage of competition, contracts may be able to be renegotiated more in line with the actual business value received. Unfortunately, without sufficient competitors, you may be forced to move to the new / alternative solution that typically involves retraining, duplicate costs during transition, or some loss of current capabilities, all of which may be worthwhile and even necessary in the long run to keep the mainframe platform cost competitive.

Move to an alternative Platform

Today, the midrange environment is providing an effective alternative to the mainframe in many enterprises. The Authors believe the mainframe is still the best computing platform for large enterprises especially if a large infrastructural investment already exists. Ignoring the unprecedented potential value of today's mainframe for the flavor of the month technology may be much more costly than aligning the current costs with the business requirements. In actuality, those moving to a large enterprise UNIX or Windows or Linux environment will face the same ISV issues as they partition their workloads across large (up to 128-way) systems. Thus, trying to escape this TCO issue by leaving the mainframe will just result in a requirement to solve it in the new environment.

Reconfigure

It's estimated that most ISV software is licensed by MIPS of the machine where the code runs. This makes consolidations to and upgrades on, say, large Z990 machines, financially problematic. The Authors found that due to exceeding MIPS caps and moving to higher model groups, a situation was created where it was cost prohibitive to move from Z900 to Z990 technologies using the existing capacity planning methodology. By combining an understanding of the financial impact of the CEC (Central Electronic Complex) -based ISV licenses with a technical understanding of how these solutions were being used, the Authors determined that an alternative approach was required to reduce our TCO (while moving forward with our technology plan).

THE PENALTY BOX

The concept of the Penalty Box is to not put all LPARS on a single machine. Instead, two or more machines need to be available, such that LPARS having ISV software that is cost sensitive to changes in a machine's capacity can be isolated to a smaller machine.

At Sprint, the Authors ran into a situation where vendors of multiple software products, when presented with the Technical Migration Plan for moving from 2064 to 2084 machines, provided prohibitively high software fee cost estimates to move to the configuration with larger but fewer machines (even though overall MIPS were kept flat). The original plan was based on Sprint's traditional Capacity Planning approach where the Capacity Planning group configures the environment, which is then priced out for hardware and software by the financial team.

Advantages

As the Authors began to review alternatives to the original configuration plan focusing on the pricing implications determined by the contracts group, it

became obvious that by keeping one or two of the 2064's the Authors could isolate the CEC-based licenses to these smaller machines, thus avoiding the financial crisis. Each product identified as requiring additional monies (with no increase in business benefit) was targeted to be moved to the smaller machines. We asked ourselves, "Is there a way to allow our IT clients to use the software in the new configuration for the same ROI we receive today?" The Authors didn't like the alternatives of either not moving forward with our technology plan or replacing the products and vendors. There had to be an alternative allowing the partnerships with these vendors to continue while moving forward technologically; and the Penalty Box strategy was the answer.

Disadvantages

Analyzing alternatives to the original configuration plan based on the pricing implications, it was obvious we needed to provide the same seamless or near-seamless access to the ISV products in the new environment, as existed in the then current environment. In some cases, this required the creation of additional LPARS on the smallest boxes and placing them in the same MAS (JES2 Multi-Access Spool complex) as LPARS on the new large Z990 machines. This resulted in additional complexity for the installation of the new machines, but the benefits to the users more than offset the complexity. The users would now have access to the same datasets whether they are on the penalty box or the Z990 and continue to use the existing production scheduling processes to route to the machine where the unique software was licensed. Some jobs used multiple software resources that were previously on one machine and now are split between machines. This required, for example, a job to be split so the steps required to run on the Z990 are run there as job one and then trigger the steps needed to be run on the penalty box as a second job. In a few rare cases, steps needed simultaneous access to resources on both machines and were required to be rewritten.

Implementation Challenges

Additional WLM (Workload Manager) Scheduling Environments were created allowing the routing of batch work to the machine with the required software resource. In some cases, a job did not have an appropriate scheduling environment specified in the JCL (Job Control Language) and was routed to the wrong machine. Some users require resources that were not identified until post-implementation, which required immediate intervention to route their processing to the appropriate machine. The Authors immediately analyzed SMF to identify similar users which kept additional processes from failing similarly. Compliance monitoring and enforcement was required to be enhanced to ensure processing only occurred where the software was

licensed.

Summary

It's working for us. In a year when our IT motto is: "Run IT like a business", our software costs were projected to increase over budget for current year, even if our MIPS base stayed flat. Now, eight months into our strategy and increasing our total MIPS base in the four digit range, the software budget is on target to come in under budget for current year. Additional cost containment benefits are projected for future years as additional software contracts come up for renewal.

A recent informal survey [IBM2004] of mainframe users found a minority have implemented Penalty Boxes, however, of those implementing, 90% found the strategy to be effective. The Authors found it to be very effective in reducing ISV costs. Not only did we eliminate most of the up charges associated with the Z990 roll-out, but we were also able to greatly reduce year after year expenses, as each contract came up for renewal. CPU upgrades driven by database and online activity have already proven to be more affordable after having segregated much of the container based software to the penalty boxes. We have done an upgrade on one of our Z990 machines since implementing the Penalty Box concept, and it has been, by far, our least expensive upgrade in terms of ISV software costs to-date.

CONCLUSION

Forty years later, our beloved mainframe is still providing tremendous benefits, especially for those willing visionaries who continually seek out methods to exploit new features of this hardware platform and operating system, as a means for controlling cost. As an example, the WLM Scheduling Environment, while not initially implemented for the purpose of reducing ISV cost, is the cornerstone enabling feature providing the ability to seamlessly direct work to where the ISV software resources are located. Understanding and managing the technical, financial, and political aspects is critical for this technology to continue to provide tremendous ROI (Return on Investment) to enterprises today and hopefully, for years to come.

REFERENCES

[IBM2004] ISV Costs Forum, "Subscriber Survey" (Spring 2004).

TRADEMARKS

CEC is a registered trademark of IBM Corp. Z990, 2064, 2084, LPAR, CEC, JES2, MAS, SMF, JCL, and WLM are registered trademarks of IBM Corp.