Research Report

The Mainframe Stop-Gap Brick Wall

Executive Summary

Last month we published this report that described how mainframe customers are looking to control their mainframe spend. In short, the report states that most mainframe customers are seeking to reduce their mainframe computing costs by optimizing workloads run on mainframes – and by so doing information technology (IT) executives are able to reduce their Monthly License Charge (MLC).

Typically, these cost-conscious mainframe executives focus on:

- Making sure that the right mix of workloads run on the more expensive z processor/z/OS environment; running other workloads on less expensive zIIP processors; and running still other workloads on even less expensive Integrated Facility for Linux (IFL) processors;
- Moving select workloads off of their mainframe to free-up capacity (provided the other platforms can meet the same Quality of Service requirements);
- Finding tools that allow for million service unit (MSU) optimization.

It is "stop gap" because it restricts mainframe spending to software updates on aging hardware; it is "brick wall" because executives ultimately become unable to take advantage of software advances and new hardware efficiencies because their aging systems hold them back.

There is, however, another approach being used by some IT executives to reducing mainframe computing costs. It involves limiting spending on mainframe hardware, software and maintenance – keeping their mainframe in stasis. What this group of mainframe users typically does is:

- Maintain the currency levels of their software, upgrading only to take advantage of enhancements that make it possible to use their mainframes more efficiently (or to keep up with the latest security updates);
- Purchase used mainframes in order to add capacity – thereby saving money on acquisition costs; and,
- Turn to third party maintenance organizations to save money on service and support.

We consider this "stasis" approach to be a "stop-gap brick wall". It is "stop gap" because it restricts mainframe spending to software updates on aging hardware; it is "brick wall" because executives

ultimately become unable to take advantage of software advances and new hardware efficiencies because their aging systems hold them back. This approach backs the enterprise into a corner – a corner that will someday force the enterprise to spend Big Money for an upgrade (and leaving the enterprise with little to no residual value on its older equipment). This approach might also force an enterprise to migrate away from mainframe architecture completely rather than pay upgrade fees (which ultimately results in driving computing costs upward by running former mainframe applications on less efficient servers).

We advocate that this group of "stasis executives" consider using a different approach to mainframe funding: an approach that we call "tactical investment". These executives need to focus on application/workload efficiency and make funding decisions based upon which workloads run best on which server environments. Funding and investment decisions should be made accordingly.

What is Going On?

For decades IT buyers have heard that mainframes are old technology – and that mainframes are "going away". Quite the opposite is happening. In Q4, 2017, mainframe revenue increased 71% year-to-year; and fourteen net-new customers joined the mainframe fold. New applications such as blockchain are becoming popular on the mainframe. Buyers are discovering the advantages that mainframe processor/system design has for Linux server consolidation. Demand for mainframe capacity is continuing to increase.

The way that most mainframe executives pay for the use of their mainframe is via a pricing scheme known as Monthly License Charge (MLC) pricing. There are various MLC pricing metrics designed to serve varying customer requirements – but regardless of the metric chosen, mainframe managers are well aware that they will be billed for million service unit (MSU) usage based upon a four hour rolling average of the number of operations that have taken place as well as to the cost of software being used within a logical partition (LPAR) at the time that average is determined. Inefficiently using processors and LPARs can greatly inflate the cost of operating a mainframe.

Running a Mainframe Efficiently

The goal of mainframe executives should be to run their mainframes in the most cost-effective manner possible. This can be accomplished by:

- Spreading jobs out evenly during the work day and thus running at balanced capacity (such that MSU usage doesn't skyrocket);

- Recognizing that mainframes aren't for every computing task. Businesses opt for mainframes and mainframe operating systems when they have large volumes of data, large transaction volumes, large data transfer requirements, a need for an extremely reliable system or many differing types of workloads that would operate best if they were located on the same computer.

- Looking for ways to leverage IBM's Container Pricing. (Container Pricing for IBM Z provides simplified software pricing for qualified solutions, combining flexible deployment options with competitive economics that are directly relevant to those solutions). This approach allows IBM-approved solution workloads running on z13 and z14 to scale from collocated solutions within existing LPARs, through to separate LPARs, up to multiple LPAR solutions, without directly impacting the cost of unrelated workloads.

The mistake that stasis spending mainframe executives are making is that they back themselves into a "no upgrade" corner. Yes, these executives are able to contain costs by restricting software spend to upgrades only, by running on older hardware and by relying on third party maintenance organizations for support – but eventually these executives find themselves in a position where they can no longer upgrade their software because the new revisions require some feature or function not supported by their aging hardware.

As an example, consider moving from z/OS 2.2 to z/OS 2.3. To make the mainframe more efficient in dealing with increasingly larger data sets, z/OS 2.3 requires 8 Gigabytes of real storage per logical partition (LPAR). So, to keep up-to-date with the latest software updates, subsistence spenders must upgrade their older hardware to more recent models as the ability to add additional memory to their current server is no longer possible. If they chose to upgrade, these executives must purchase all prior capacity, must upgrade their software, must strike new support and maintenance agreements – and must undergo a cut-over migration – all combining to result in an expensive upgrade. And this situation begs the question: "Wouldn't it be better to tactically invest in mainframe architecture and software as part of a strategic growth plan – rather than subsistence invest knowing that ultimately this strategy will result in a very expensive upgrade and migration?"

A Closer Look at Stasis Investing

There are several examples of how mainframe executives have now found themselves in a "no upgrade corner". These include the following:

- A Minnesota company that uses distributed and mainframe servers that have taken their older mainframe to z/OS version 2.2. To continue on their subsistence upgrade path this company now finds that it must upgrade to z/OS 2.3 – or risk falling behind in security updates as well as getting socked with increasing support costs for the older operating system. This company is now stuck – it does not have enough physical memory on its older mainframe to initialize and test the new and future operating system upgrades. They are strongly considering an upgrade.

- Another Minnesota company is up-to-date from a hardware perspective, but is memory constrained and can't meet the 8GB of Real Storage requirement needed by the new z/OS operating environment (version 2.3). With a stasis policy in effect, they have not been able to purchase the additional memory required by the new operating system – and accordingly risk falling behind in keeping their software environment current. They too are evaluating the risks associated with subsistence investment.

How Big Is the Investment to Stay Current?

Cost to platform currency refers to how much it costs to keep a system current, both in terms of hardware and software. The actual cost to platform currency is determined by the server generation currently owned, as well as the release levels of systems software including the z/OS operating system, and key middleware, such as CICS, DB2, etc. (this software needs to be on currently supported releases). It is important to stay current in today's fast-moving digital economy because of ever changing security and compliance requirements and to ensure platform agility. Neglecting software currency on your mainframe platform not only increases platform risk but also drives up your support costs.

Looking first at hardware, software MLC and standard IBM hardware maintenance on an N-3 (three generations removed) class server, Figure 1 provides a real-world example of the costs related to migrating from N-3 to IBM's most current and recently announced mainframe: the IBM z14 Model ZR1. By studying the graph, the z114 line represents the steady state, with hardware paid for and IBM SW MLC and Maintenance paid over three years. Mainframe owners do not have the option to upgrade this machine directly to the most current ZR1 solution because the existing servers are N-3 – and IBM only allows upgrades on machines within 2 generations (N-2).

Figure 1 – The Real Cost of Platform Currency – an N-3 Example
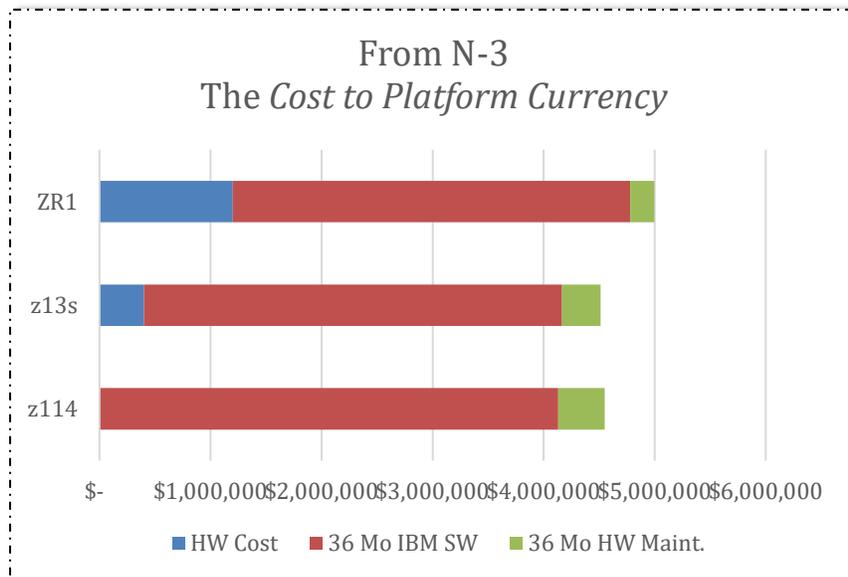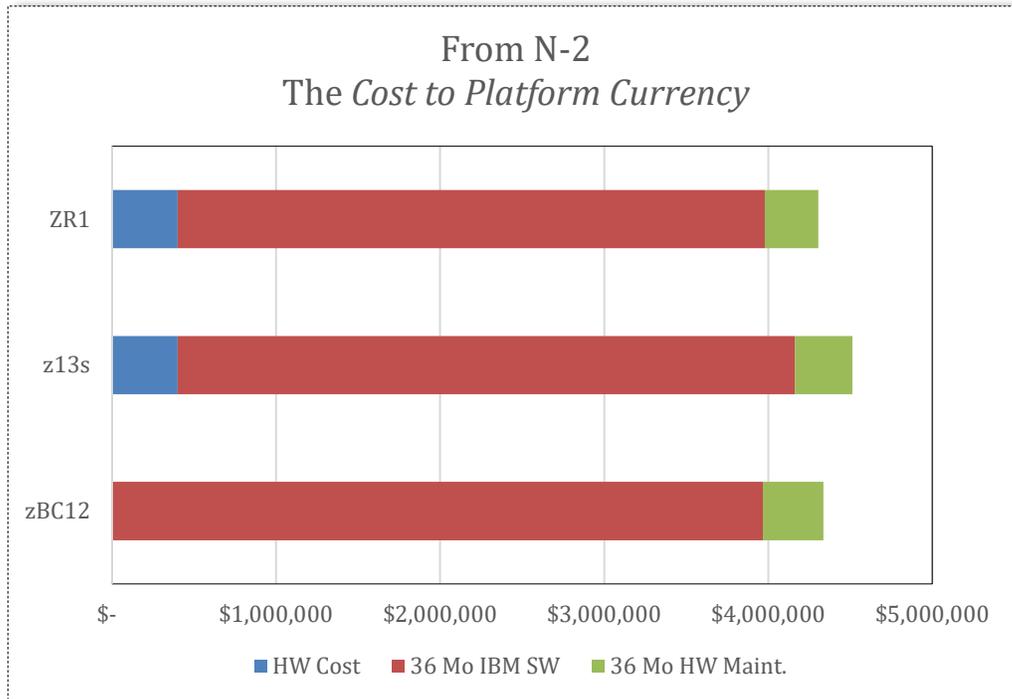

Source: Evolving Solutions – April, 2018

Once an organization is at the N-3 level, it gives-up the ability to upgrade. This means that the organization must flat out purchase the ZR1 as a net-new machine. Over three years, that cost approaches USD $5M. The fundamental message here is that when an organization is N-3 or later, it is costly to dig your way out of it. At that same time, business risk is increased and platform agility is halted.

In contrast, consider *Figure 2*, a real-world example of a client migrating from N-2 (two generations removed) to IBM's most current IBM z14 Model ZR1. This example demonstrates that when an enterprise is within two hardware generations, the cost to upgrade is much less.   At that same time, business risk is reduced and platform agility is improved.

Figure 2 – The Real Cost of Platform Currency – an N-2 example.

From N-2
The *Cost to Platform Currency*

Source: Evolving Solutions – April, 2018

Summary Observations

A big theme in mainframe computing in 2018 is to reduce computing costs.

As we stated in this report, most mainframe customers seek to reduce their mainframe computing costs by optimizing the workloads that they run on their mainframes using a variety of approaches, including:

- Moving applications to less expensive servers that can run at lower service levels (with less security, availability, reliability);
- Paying particularly close attention to workloads running on more expensive z CPUs and looking for ways to move those applications to zIIP and or IFL processors;
- Investing in tools that help manage MSU (million service unit) utilization;
- Evaluating new pricing approaches (such as container pricing); and,
- Optimizing workloads to reduce Monthly License Charge (MLC).

Some mainframe executives, however, have chosen a different path to reduce mainframe costs – a path we call "stasis investment". This path calls for minimal investment in mainframe architecture, allowing only for investment in mainframe software to add new features as well as ensuring that security patches are in place.

By taking this approach, as we have demonstrated in this report, stasis-spending mainframe executives ultimately find themselves in a position where they have to repurchase their previous MIPS capacity (an expensive proposition); upgrade their hardware (an expensive proposition); upgrade their software (an expensive proposition) – and go through a major migration (a difficult and expensive process). Alternatively, they have the option to migrate their applications to another platform (one that may not run their workloads as efficiently nor meet their quality of service levels).

So, the big question on the table is "Is stasis spending wise – or should the enterprise be more tactical in its mainframe investments in order to save money in the long run?" We suggest that the more cost-effective approach is to tactically plan for and invest in mainframe upgrades, keeping mainframes within two generations of the most current model (N-2), rather than taking a hit-the-brick-wall stasis approach to mainframe spending.

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