

Mainframe at a crossroads:

Why application migration is the way forward

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| Executive Summary

In 2020, mainframes still play a crucial role in the daily operations of most large enterprises. Much of their core business applications and data are on this platform. At the same time, these enterprises are investing in building out their information systems to take advantage of new technology intended essentially for the distributed world. The result is a two-speed information system.

Meanwhile IBM, the undisputed mainframe leader, continues to communicate that IBM Z is the platform of the future. But “the platform of the future” isn’t what it seems given the significant events of the last five years. For example, IBM sold most of their z/OS portfolio and communicated aggressively on their RedHat acquisition. The z15 release is proof of IBM’s strategic direction of going all-in on Linux.

So isn’t this good? IBM is offering customers the agility that has previously only been attainable with open distributed systems and the cloud after all. The problem is these developments mostly appeal to those companies that are considering a new mainframe purchase or that can afford to license all the software that runs on z15. Long-time customers who have software applications that were built for z/OS and on-premises mainframe are stuck. Unless they have massive rip and replace budgets, they are losing the ability to take advantage of the benefits of their legacy applications. It’s only a matter of time.

Every CIO that has been handed the challenge of what to do with the systems running on their mainframes would be well-served to study the migration of the application assets running on z/OS. The goal is to avoid a painful exit, whereby the knowledge of how the system works and the knowledge of the business will have disappeared. This is the right time to set up a strategy and prepare the foundation for a new company information system.

The good news for CIOs is that they can move legacy mainframe applications from an IBM z/OS environment to an open Linux or Unix environment in their data centers or in the cloud with the right application migration software. This software can take legacy source code and recompile the programs in a new environment without changes to any business logic. The mainframe data moves into a new, more modern database environment.

This paper examines IBM mainframe strategy, how it affects long-term customers with legacy applications and decades-old mainframes and highlights an attractive application migration alternative to the IBM strategy.

| The slow march to operating system incompatibility

In the early days, IBM developed the mainframe platform MVS (now z), its z/OS operating system and the CICS and IMS subsystems. Later, the company began developing a software portfolio internally and through external acquisition. **This combination of software and hardware roadmaps became a new sales vehicle, driving some commercial success but throwing a monkey wrench in the works of their long-time customers.**

How did this affect long-term mainframe customers? It created issues with upgrading and maintenance that remain to this day because new software versions and features became exclusively compatible with the latest versions of System z, z/OS, or both. In addition, there were announcements about the end of support for previous software versions, which was not good news for existing customers, either. The latest example is the announcement of the end of support for COBOL V5 on April 30, 2020 and the new features of COBOL V6.3, which are only compatible with the z15 and z/OS 2.4.

These changes have a significant impact on the budget of any customer who wants to retire their current mainframe or upgrade it to a more modern platform. A new Z mainframe comes at a high price, as do the associated migration costs. This inexorable march to a strategy for wringing major investments from new customers at the expense of longtime mainframe customers really got going in 2015.

Abandonment issues: The acceleration of software disposal

Another problem that IBM has is that mainframes and their information systems cannot function without highly qualified personnel. **Despite efforts that include partnerships with universities, IBM and other enterprises interested in maintaining the mainframe's dominance, have not been able to attract and train a sufficient number of engineers.**

So, in 2015, the die was cast. **IBM ramped up its mission to win new Z customers while abandoning z/OS and other users.** In August of that year, IBM announced the launch of LinuxONE.¹ This platform uses Z architecture but executes Linux applications and the Linux environment. **The appeal to new customers was logical; they could invest in the platform's hardware capabilities rather than in its z/OS system.** The following year, IBM announced a partnership with HCL “to work together on future product roadmaps.”² In reality, IBM sold, among others, its mainframe software, including TADz, IWS, CICS IA, Fault Analyzer, File Manager and more, while keeping control of the development roadmap.

Then, in 2017, Hitachi and IBM signed an agreement to let Hitachi's operating system run on IBM's mainframe technology. Ian Murphy, a journalist for Enterprise Times had this to say about the Hitachi and IBM agreement, “IBM obtains a new sales channel, eliminates a competitor and can expect the profitability of System Z to continue. Hitachi can remove a very expensive and loss-making division from its accounts without losing customers. This appears to be a win-win situation.”³

Ostensibly, this looked like both parties would benefit, but IBM had really just created another way to modernize its platform. It sold its “old portfolio” to be able to invest in new solutions with higher added value.

At the end of 2018, a new disposal agreement was signed with HCL for \$1.8 billion, adding new software to the HCL portfolio and announcing a slowdown in IBM's investment in legacy solutions.⁴ **IBM was going all in on AI, the cloud, and blockchain and leaving its older software behind.**

The Linux compatibility and the Hitachi deal suggested a simple opening of the hardware platform. Reconciling this information with the HCL agreements, however, reveals another strategy—a potential abandonment of the z/OS stack. A historic takeover adds weight to that theory.

1 Steven J. Vaughan-Nichols, “LinuxONE: IBM's new Linux mainframes.” 2015. ZDNet. 17 Aug.

2 Marie Wieck and Darren Oberst, “A partnership for growth and innovation.” 2016. IBM Cloud Computing Blog archive. 29 Sept.2016

3 Ian Murphy, “Hitachi dumps mainframe business for IBM z Systems.” 2017. Enterprise Times. May 25.

4 “HCL Technologies to Acquire Select IBM Software Products for \$1.8B.” 2018. IBM Newsroom. 6 Dec.

Here's your Red Hat, where's your hurry?

Major mainframe software vendors have all launched development approaches for DevOps method adaptation, mainframe application APIs, containers and IT Analytics solutions. These solutions were initially developed in the distributed world and appeared later as mainframe offerings. The result has been siloed development. Whether from a technological or organizational point of view, distributed and mainframe information systems are still growing at different speeds.

The mainframe licensing model forces mainframe customers to manage their resources based on cost rather than business needs. This model still seems too costly and therefore becomes a brake on innovation. Solutions such as [zCost](#), [zTrim](#), [Intelligent Capping](#) and [AutoSoftCapping](#) have no equivalent in the distributed world.

It is in this context that IBM appears to be preparing for a future for the Z platform in the distributed world, thereby making the most of its investments made while separating itself from its z/OS software stack. **The single event that made this strategy all but certain was IBM's acquisition of Red Hat for \$34 billion, which was announced in October 2018 and was concluded in July 2019.**⁵

But how did this acquisition affect the mainframe customer? What is the connection between the most popular Linux solution in the professional market and the industry leading mainframe? It helps to remember that IBM had been trying to sell its mainframe as a Linux platform, but had not been able to gain much of a foothold because of more attractive efforts in the distributed world. So, what better way to position its mainframe as a Linux platform could there be than acquiring a real Linux protagonist with a large installed base?

Usually, consolidating two software portfolios takes time. Not this time. Just one month after the official announcement, IBM released its plans for Red Hat OpenShift and LinuxONE. Then, on September 12, 2019, z15 and LinuxONE III were released. The new mainframe has a hardware architecture that is adapted to be integrated into any data center rather than the mainframe-specific format that dates back more than 30 years with the s390 model. With this new architecture, IBM has standardized its newest mainframe to the most common format in data centers. The z15 and LinuxONE III share the same hardware, so it's safe to assume that the design was pushed by IBM's Linux strategy to the detriment of the z/OS stack.

5 "IBM Closes Landmark Acquisition of Red Hat for \$34 Billion; Defines Open, Hybrid Cloud Future." 2019. IBM Newsroom. 9 July.

In 2020, IBM has continued to make noise around LinuxONE and Red Hat, including the availability of Red Hat OpenShift on z15 and IBM Cloud Pak for Application for LinuxONE.

In total, it took only seven months from the announcement of the acquisition to the full integration of RedHat technology into the z platform. The market was impressed with how quickly two completely different technologies and business mindsets were merged into the same roadmap. Anyone analyzing the situation can now easily understand IBM's strategy. Barry Baker, vice president of IBM Z Software, admitted that OpenShift on z is part of IBM's strategic initiative to modernize the development and deployment of applications on the IBM mainframe.⁶



Representation of the LinuxOne III (3 frames)⁷

The objective is to keep offering the mainframe, which is reliable, efficient, with real differentiating elements compared to the competition, including pervasive encryption, but make it easier to develop and run business applications that are like those that run on distributed systems. That would offset a lack of interest in mainframe software engineering in universities and coding schools.

Things are not rosy for the aging z/OS market, however. There have been no new clients for more than 20 years and talent is increasingly scarce or even retired freelancers. The sale of the z/OS portfolio to HCL seems to be the nail in the legacy mainframe coffin. So, what are the options for companies with legacy applications on mainframes that want to modernize and don't have budgets for a major mainframe acquisition? With support ending for yet another version of COBOL, how can they maintain their systems?

⁶ Mike Vizard, "IBM Brings Red Hat Container Platform to Mainframes." 2020. Container Journal. 14 Feb.

⁷ IBM Linux One III - Overview. Retrieved from <https://www.ibm.com/products/linuxone-iii>

What about our legacy?

The switch to Linux appears to be a win-win. On one hand, customers only have to make small changes while keeping a large part of their mainframe teams. On the other, they reduce their TCO. IBM keeps its mainframe installed base and offers a new solution more in line with the times.

Actually, neither of these offers a satisfying answer to the overriding question for any mainframe customer: what do they do with their business applications that still run on z/OS? **Because what really matters is not the execution platform, but the added value of the legacy applications that have been developed and maintained over decades.**

IBM has two solutions. One is to keep running transactional and batch applications while increasing mainframe capacity to support business growth. The other is to switch to Linux on z or LinuxONE, which is the operating system of the future. However, neither is a real solution to the problem of the migration of its application core.

In other words, it is incumbent upon every CIO to study a migration of the application assets running on z/OS. The goal is to avoid a painful exit, whereby the knowledge of how the system works and the knowledge of the business will have disappeared. This is the right time to set up a strategy and prepare the foundation for a new company information system.

Let the right application migration software be your guide

With the end of programming and software support looming, talent retiring, and mainframe software changing direction, enterprises might feel like they are in the crosshairs. A painful, expensive solution to the pressing problem of how to keep running core business systems seems like the only way out.

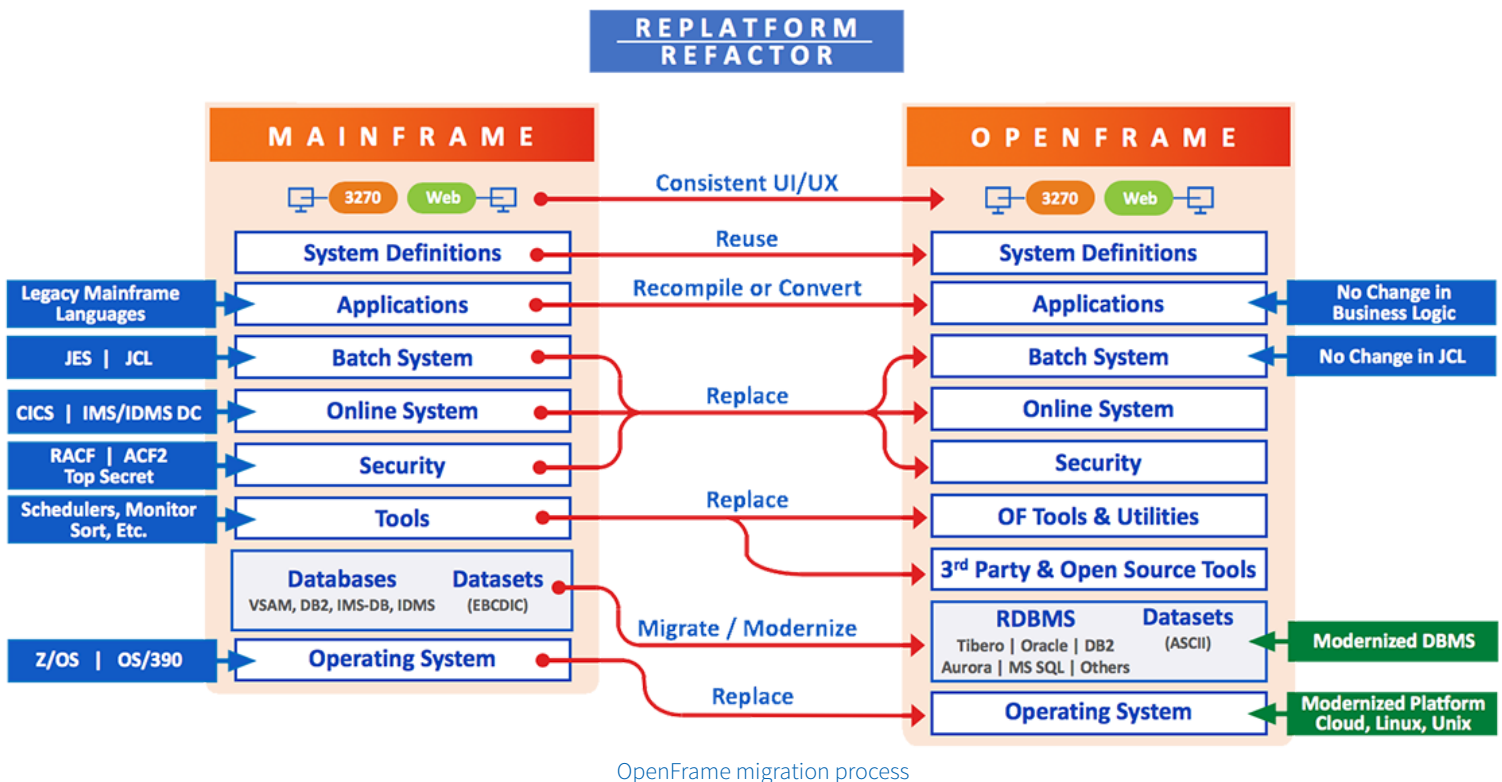
The good news is that is simply not the case. Enterprises do not have to replace their mainframes and applications with newer models and go through the headache of data and software inventory and code conversions. Nor do they have to add unnecessary mainframe capacity.

Instead, enterprises can move legacy mainframe applications from an IBM z/OS environment to an open Linux or UNIX environment in their data centers or in the cloud with the right application migration software. This software can take legacy source code and simply recompile the programs in a new environment without changes to any business logic. The enterprise then migrates the mainframe data into a new, more modern database environment. Existing security profiles, online and batch configurations and definitions, and data set system management profiles may all be reused.

Talk about a win-win: from the top down, the end user experience remains the same with a consistent user interface to maintain the look and feel of legacy applications. Companies can use their current 3270 emulator if they want or, for added savings, they can use emulation provided by the software. **With the mainframe at a crossroads, not only can the right application migration software be your guide, but it can be the center of a modernization strategy that saves costs, increases your competitive edge, and delights users.**

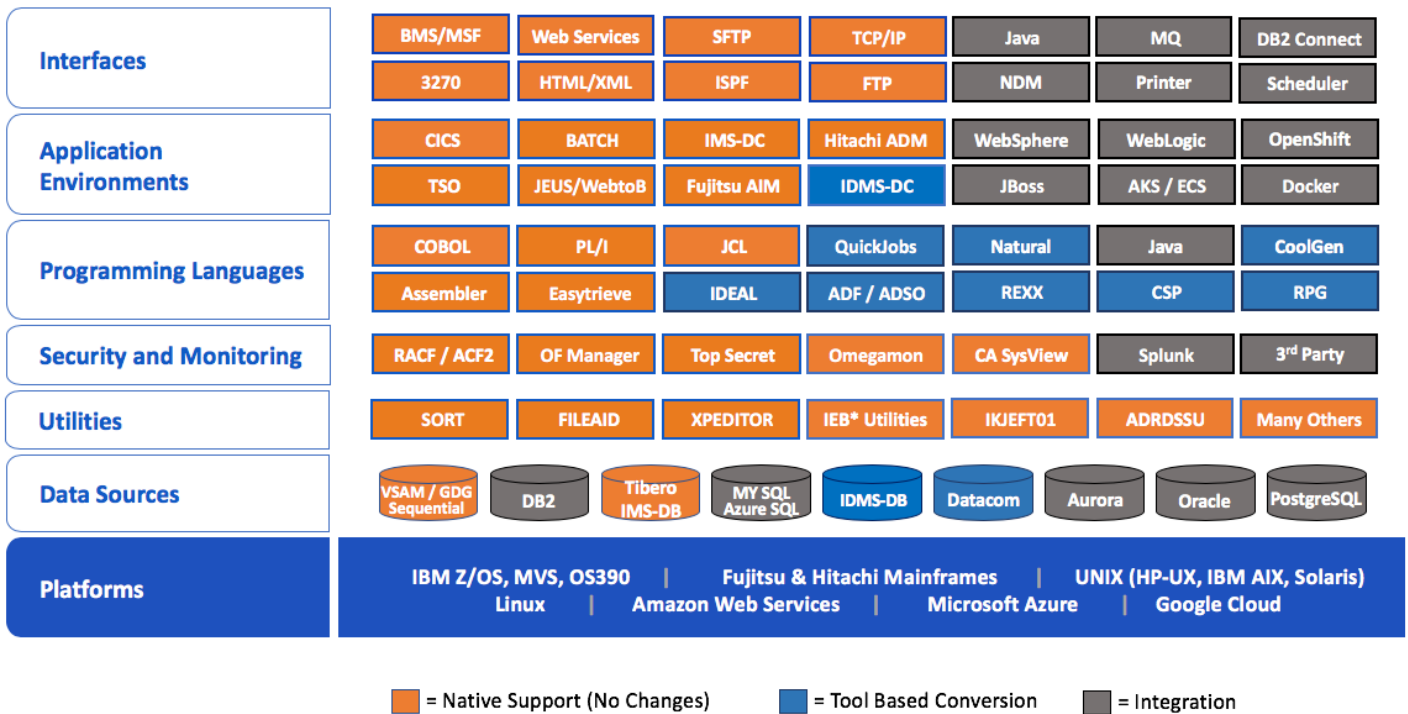
The OpenFrame way out of the cold

The right application migration software for breathing new life into your aging applications is OpenFrame by TmaxSoft. **OpenFrame runs on standard hardware on-premises or in the cloud. It supports all the major public cloud vendors, and organizations can virtualize and containerize the software. From the top down, end user experiences remain the same with a consistent user interface to maintain the look and feel of your legacy applications.**



OpenFrame also has the broadest range of native support and integrations for end-user Interfaces, application environments, programming languages, utilities, security and monitoring, and data sources. This minimizes or eliminates the need for rewriting portions of migrated mainframe applications.

Because not all application migration projects are created equal, OpenFrame fits a number of strategies to reduce or eliminate your mainframe footprint. One strategy is partial migration to reduce or re-platform peak MIPS. If you anticipate keeping your mainframe running for several years, OpenFrame can be a great solution to offload a portion of your batch or online applications to help reduce your peak MIPS and reduce your overall mainframe run costs. OpenFrame can also assist with a full mainframe replacement to move all workloads to a distributed environment. With this OpenFrame can fully support the move of all your legacy technologies to the public or private cloud. Completely eliminate your z/OS environment and take full advantage of the flexibility and benefits that an open system or cloud environment can deliver.



OpenFrame supported technologies

What really makes OpenFrame ideal for addressing the legacy applications left out in the cold by IBM’s platform for the future is a 100% project success rate. OpenFrame migrations are low risk and are driven by proven software that responds quickly to change. **Not only are they highly scalable to allow for continued growth or large deployments, but they are fast, especially when compared to modernization alternatives.** Most projects or phases are completed in 6 to 12 months.

IBM may be at a crossroads, ready to zoom off in one direction from which there is little chance of return. But, enterprises with long-term and significant investments in mainframe technology do not have to worry about being left in the dust. A better, more modern, and faster path to familiar business applications that run on a modern architecture is available through OpenFrame.

About TmaxSoft

TmaxSoft is a global software innovator focused on cloud, infrastructure and legacy modernization, with solutions that offer enterprise CIOs viable alternatives to support their global IT powerhouses and drive competitive advantage. TmaxSoft was founded in 1997 in Korea and today has over 1,700 employees in 20 strategic centers around the world.

OpenFrame from TmaxSoft is the most complete solution for migrating your legacy mainframe applications on Linux, Unix, Docker Containers or the public cloud. This is done with no changes to the business logic and allows for significant reduction in annual run costs for an increased investment in innovation. For more information, visit www.tmaxsoft.com/openframe.

About Bruno Sahinoglu

Bruno Sahinoglu is the Technical Director of Western Europe for TmaxSoft. He has more than 10 years of mainframe software experience working for global companies. Bruno joined TmaxSoft in 2017 from IBM where he worked first as a pre-sales engineer before eventually moving into an EMEA Swat Team role evangelizing the latest z/OS solutions. He received his master's degree in information technology from SUPINFO International University.



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