A Perspective on Mainframe Re-hosting

Abstract

Mainframes form the backbone of many core business processes in organizations worldwide.

However, the total cost of ownership, platform flexibility, and administration and programming skills associated with them have been critical areas of concern in recent times. Banking solely on unsupported legacy systems might not just create reliability and performance issues, it could also lead to more revenue leakage due to the high cost of maintenance. To leverage existing investments, CIOs and solution architects are increasingly looking at re-hosting mainframe applications on distributed platforms. Over the years, re-hosting tools and technologies have matured significantly, and re-hosting has emerged as a legitimate alternative to traditional modernization methods.
The Growing Need for Technology Simplification

Cloud, commodity hardware, and pay-as-you-go models have taken over the modern business landscape—and early adopters are already reaping the benefits. However, many enterprises have not been able to fully leverage digital technologies, as their mainframes have not been upgraded. This problem is further compounded by the fact that skills and resources required to maintain the mainframe platform are on the wane. Many organizations are looking to move the data and business logic—embedded in their legacy mainframe applications—to industry standard platforms. The ‘rip and replace’ approaches of the past do not prove viable in a scenario of this kind, and moving to a COTS product is not always feasible. Therefore, mainframe re-hosting has emerged as an attractive alternative, since it offers a relatively simple and quick mainframe exit path. It also suits the needs of organizations that are not willing to eliminate their mainframes and lose their existing investments, but need to re-host them and reduce workloads that run on them—thereby, plugging revenue leakage. Our experience with clients indicates that mainframe re-hosting has gained traction in recent years.

Demystifying Mainframe Re-hosting

Mainframe re-hosting refers to the ‘lift and shift’ of mainframe applications and data to an alternate hardware platform. The alternate platform runs specialized re-hosting software that provides the development and execution environment required by traditional mainframe programming technologies. Once the mainframe application is re-hosted, it can continue to function with minimal code changes and the end user remains

Re-hosting in a Nutshell
unaffected. This paper focuses specifically on IBM mainframes, since they are the most common.

The Case for Re-hosting

Re-hosting may not always be the best option for exiting the IBM mainframe and the business case for this must be carefully considered:

- The use of standard IBM technologies (COBOL, CICS, JCL, PL1, DB2, IMS, and MQ) strengthen the business case, whereas non-IBM technologies such as Natural, Adabas, Ideal, Datacom, and Mantis weaken it.

- Peak workloads below 5000 MIPS are more suited to re-hosting, while those above 5000 MIPS are less so.

- Availability of complete source code is a plus, while missing or unavailable proprietary source code makes re-hosting challenging.

If re-hosting is difficult, partial mainframe exit is a viable option—where a well-defined portion of the mainframe landscape meets the requirements, and can easily be moved. The remaining elements can continue to reside on the original mainframe. Adopting this approach provides incremental benefits related to mainframe MIPS cost avoidance. Mainframe re-hosting can provide a new degree of flexibility to traditional IBM mainframe-based applications. This applies to off-mainframe development, mainframe in the cloud, and DevOps.

Steps for bringing agility to mainframe application development

1. Offload development and unit testing to Windows/Linux platforms
2. Create stubs for the runtime interfacing applications/processes
3. Create virtual images of mainframe replica environment
4. Have virtual images available for ‘DevOps-like’ models of enterprise-wide IT projects
An Overview of Re-hosting Vendors and Products

While the basic functions of re-hosting technology solutions are similar, they can be differentiated based on one or more parameters:

- The level of support offered for various mainframe technologies
- The level of integration with third-party solutions like schedulers, output management, and RDBMS
- Case studies of similar workloads and transaction profiles successfully re-hosted
- Alignment to customer strategic directions on hardware, operating system, and technologies

Most of the product vendors partner with third-party system integrators to deliver comprehensive re-hosting solutions. Typically, the system integrator provides analysis, design, migration, and assurance services, while the product vendor offers implementation, configuration, and training. Often, the system integrators also provide various tools and frameworks that accelerate project delivery.

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### An Overview of Leading Re-hosting Vendors and Their Products

<table>
<thead>
<tr>
<th>Product Vendor</th>
<th>Micro Focus</th>
<th>Dell</th>
<th>Oracle</th>
<th>IBM</th>
<th>TmaxSoft</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product name</strong></td>
<td>Micro Focus Enterprise Server (MFES)</td>
<td>Transaction Processing Environment (TPE) &amp; Batch Processing Environment (BPE)</td>
<td>Tuxedo - Application Runtime (ART) for CICS and Batch</td>
<td>Tx Series for Multiplatforms</td>
<td>Openframe</td>
</tr>
<tr>
<td><strong>Transaction processors supported</strong></td>
<td>CICS and IMS DC</td>
<td>CICS and IMS DC</td>
<td>CICS and IMS DC</td>
<td>CICS</td>
<td>CICS and IMS DC</td>
</tr>
<tr>
<td><strong>Batch support</strong></td>
<td>Supports standard IBM features – sort, IDCAMS, and so on</td>
<td>Supports standard IBM features – sort, IDCAMS, and so on</td>
<td>Supports standard IBM features – sort, IDCAMS, and so on</td>
<td>Not supported</td>
<td>Supports standard IBM features – sort, IDCAMS, and so on</td>
</tr>
<tr>
<td><strong>IMS DB support</strong></td>
<td>Supported</td>
<td>Not supported</td>
<td>Not supported</td>
<td>Not supported</td>
<td>Supported</td>
</tr>
<tr>
<td><strong>Language support – C, C++, COBOL, PL/I, Java</strong></td>
<td>Supported</td>
<td>Supported; also supports Natural</td>
<td>Supported</td>
<td>Supported</td>
<td>Supported; limited support for Assembler</td>
</tr>
<tr>
<td><strong>File system support – VSAM, GDG, PS, PDS</strong></td>
<td>Supported</td>
<td>Supported</td>
<td>Supported</td>
<td>Only VSAM and PS supported</td>
<td>Supported</td>
</tr>
<tr>
<td><strong>Emulation of supporting products – Scheduler, RACF, version control...</strong></td>
<td>Not available, use third party products</td>
<td>Not available, use third party products</td>
<td>Not available, use third party products</td>
<td>Not available, use third party products</td>
<td>RACF/ACF2 emulation supported</td>
</tr>
<tr>
<td><strong>Tooling – for easy code and data re-hosting</strong></td>
<td>Available</td>
<td>Available</td>
<td>Available</td>
<td>Not available</td>
<td>Available</td>
</tr>
</tbody>
</table>

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Key vendors that provide re-hosting products are Micro Focus and Dell (Clerity), while Oracle and other vendors also have competing solutions. IBM's Tx Series can enable a full-fledged mainframe implementation, though it is not exclusively a re-hosting solution.
Key Reasons for Re-hosting Reluctance
- The organization is still in the research phase
- Project put on hold or abandoned because it is low priority or due to high upfront costs
- Solution considered non-strategic
- Non-standard workloads in landscape, which weaken the business case
- Re-hosting leveraged only to reduce existing mainframe hosting costs

TCS’ Observations Based on Client Engagements

As a leading provider of mainframe re-hosting services, TCS has worked with leading re-hosting product vendors for several years, revealing key patterns:

A Shift from Exploration to Experimentation
TCS analyzed 122 customer and prospect engagements and classified them into four buckets:
1. Presales: RFQs, RFIs, RFPs, and capability presentations, including demos
2. Assessment: Customer mainframe analysis and reports, re-hosting proposals, and business case or RoI projection
3. PoC: Code and data from applications gathered to work in a re-hosted environment
4. Delivery: Exiting mainframes entirely, and re-hosting applications

The last few years have seen a higher number of PoCs and assessments, signifying that businesses have moved beyond exploration of re-hosting concepts to look at the feasibility and suitability of re-hosting for their unique application landscapes.

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Distribution of Requests by Industry, Geography and MIPS
- Engagements with customers in North America and from the banking, financial services, and insurance industries far outnumber those from other industries and geographies.
- The manufacturing industry has also shown an interest, followed by telecom. This trend is not surprising, since these industries have traditionally been leading users of IBM mainframes, and are also mature outsourcing customers.
- In terms of geographic distribution, the majority of clients that have shown an interest are based in North America, with Europe and the UK being a close second. Customers from other geographies together constitute less than 10%.
- Requests for re-hosting workloads that are above 1000 MIPS have been steadily increasing. However, not all of these customers are looking for a complete mainframe exit. Several customers are only interested in reducing their overall MIPS consumption by offloading smaller workloads or by offloading development and unit test activities.
Conclusion

It is apparent that many critical workloads will continue to run on mainframes, since migration can be expensive and complex. Many installations still run on obsolete technologies, which require additional migration effort, and not all workloads are suitable for re-hosting. Service providers are therefore looking at bolstering existing mainframes through additional automation and re-hosting product capabilities.

However, even though some organizations are reluctant, re-hosting is here to stay. Customers are more aware and specific about their re-hosting requirements—and with advances in R&D and technology, the demand for mainframe re-hosting solutions will rapidly increase over time. For the near future, it is safe to say that large mainframe installations will remain and hybrid approaches to managing MIPS will become the norm.

References


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