Mainframe In The Age Of Cloud, AI, And Blockchain

Old Workhorse Meets New Reality

Get started
The Workhorse Of Infrastructure Deserves Respect

Organizations don’t modernize in a vacuum. While greenfield applications are often written on cloud-native technologies, enterprises continue to rely on mainframes for systems of record and critical workflow processing. In many cases, pragmatism requires a shift in infrastructure management and embracing a hybrid approach for both new and existing applications. Organizations that envision mainframe as a key component of their hybrid IT moving forward believe evolving mainframe processes is essential. Enterprises take seven key tactics: rewriting, refactoring, expanding, doubling down, outsourcing, migrating off, and delaying. This research will explore the role of mainframe modernization in various organizations’ transformation strategies, the tactics they choose, and the benefits they expect to achieve by changing their tactics.

Key Findings

Mainframes can be a critical part of digital transformation, yet mainframe modernization can produce challenges with workload migration, security, and development.

Enterprises can address concerns with one of two strategies: 1) adopt DevOps best practices for mainframe development or 2) refactor only the relevant parts of their applications to take advantage of cloud tech.

The benefits in making these changes are evident: lower operational expenses, improved ROI, faster time-to-value, and greater competitive advantage.
Rethinking Infrastructure Modernization

Organizations that have mainframe investments are grappling with a whole host of technology initiatives in the next 12 months. More than three-quarters consider mainframe modernization a critical or high priority.

Those that are prioritizing modernizing mainframes are also prioritizing other initiatives like building out a comprehensive hybrid cloud strategy and upgrading data center compute infrastructure; 82% report that implementing DevOps is a critical or high priority.

This means you can’t execute your mainframe modernization strategy in a vacuum. It must be part of a holistic hybrid strategy that takes advantage of cloud-native technologies that enable and enhance your mainframe investment.
Surprisingly, Mainframes Run Emerging Workloads Like Blockchain And Containerized Apps

Mainframes have long hosted mission-critical business applications like finance and accounting applications and enterprise resource planning (ERP) applications. This remains a constant today with more than 40% of companies with mainframes still running these workloads from the mainframe.

However, more than a third of these companies are also running web-based applications, commerce software, sales force automation, and web content and experience management application workloads on the mainframe.

More than a quarter of firms see the mainframe as a place to run emerging workloads like blockchain and containerized applications. These benefit from integrated security and massive parallelization.

“Which of the following applications/workloads does your organization currently run on the mainframe?”

<table>
<thead>
<tr>
<th>Application/Workload</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enterprise resource planning (ERP)</td>
<td>48%</td>
</tr>
<tr>
<td>Finance and accounting</td>
<td>45%</td>
</tr>
<tr>
<td>Human resource management</td>
<td>44%</td>
</tr>
<tr>
<td>Enterprise content management (ECM)</td>
<td>43%</td>
</tr>
<tr>
<td>Sales force automation (SFA)</td>
<td>37%</td>
</tr>
<tr>
<td>Commerce software</td>
<td>35%</td>
</tr>
<tr>
<td>Blockchain</td>
<td>27%</td>
</tr>
<tr>
<td>Containerized applications</td>
<td>26%</td>
</tr>
</tbody>
</table>

Base: 153 IT decision makers in the US, the UK, Germany, and France
Note: Selected variables shown
Source: A commissioned study conducted by Forrester Consulting on behalf of Ensono, April 2019
As companies look to modernize their future mainframe strategies, 38% of firms with mainframes describe their future strategies as planning to adopt DevOps for mainframe development. More than a quarter (28%) are refactoring a portion of their apps to take advantage of nonmainframe technologies and the cloud. Three out of 10 companies adopting DevOps are also refactoring.

**Refactoring, in this context, is rewriting parts of an application to take advantage of new cloud technologies like containers or serverless, while keeping some application code on the original platform.**

### Future mainframe strategy

- **Plan to adopt DevOps for our mainframe development**: 38%
- **Refactoring a portion of our apps to take advantage of nonmainframe technologies and cloud**: 28%
- **Migrating off our mainframe**: 26%
- **Slowly expanding our mainframe usage but not changing how we develop mainframe code**: 24%

**Not changing anything for the time being**: 18%

**Completely rewriting our apps to not use mainframe code**: 16%

**Outsourcing our mainframe strategy to another company**: 12%

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FORRESTER OPPORTUNITY SNAPSHOT: A CUSTOM STUDY COMMISSIONED JOINTLY BY ENSONO AND WIPRO | JULY 2019

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Modernization Hampered By Development Issues

But as companies work to modernize, they face challenges largely focused around development issues. The transition and integration from legacy apps and other applications are hampered by lengthy deployment cycles and challenges finding and onboarding new developers. This leads to slower time-to-market and worse customer experience.

For those that are using or considering hybrid IT environment, the top three challenges are security, costs, and finding and retaining skilled talent.

### Challenges with current mainframe strategy
- Difficulty integrating with other applications/platforms: 29%
- Lengthy deployment cycles: 29%
- Difficulty onboarding new developers: 29%

### Challenges with hybrid IT environments
- Security: 65%
- Costs: 56%
- Finding and retaining skilled talent: 53%
Note To All: The Mainframe Workhorse Still Carries Major Workloads

Companies are embracing a hybrid IT infrastructure by moving partial or entire workloads to the cloud. But not all workloads will move to the cloud, indicating opportunities for refactoring.

Of those specifically shifting entire workloads, only about 20% are currently migrating ERP, containerized applications, and commerce software to the cloud with approximately 25% more planning to in the future. Companies are not as likely to migrate finance and accounting workloads, preferring to migrate only a portion of the workload.

Those not considering migrating to the cloud cite substantial costs, potential business disruption during migration, and security and compliance concerns. Refactoring enables them to move parts of workloads to the cloud — the most appropriate ones.

Cloud migration plans

- Currently migrating/using cloud for the entire workload
- Planning to migrate/use cloud for the entire workload

MOST LIKELY TO MIGRATE ENTIRE WORKLOAD

<table>
<thead>
<tr>
<th>Category</th>
<th>Currently Migrating</th>
<th>Planning to Migrate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Containerized applications</td>
<td>21%</td>
<td>28%</td>
</tr>
<tr>
<td>Commerce software</td>
<td>21%</td>
<td>26%</td>
</tr>
<tr>
<td>Enterprise resource planning (ERP)</td>
<td>22%</td>
<td>24%</td>
</tr>
<tr>
<td>Sales force automation (SFA)</td>
<td>21%</td>
<td>25%</td>
</tr>
</tbody>
</table>

LEAST LIKELY TO MIGRATE ENTIRE WORKLOAD

<table>
<thead>
<tr>
<th>Category</th>
<th>Currently Migrating</th>
<th>Planning to Migrate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Web content/experience management</td>
<td>15%</td>
<td>25%</td>
</tr>
<tr>
<td>Enterprise content management (ECM)</td>
<td>13%</td>
<td>27%</td>
</tr>
<tr>
<td>Finance and accounting</td>
<td>13%</td>
<td>25%</td>
</tr>
</tbody>
</table>
Lower Opex And Increase ROI By Modernizing

As organizations plan and work toward mainframe modernization, 37% of respondents believe that refactoring a portion of their apps to take advantage of nonmainframe technologies and the cloud will deliver the highest ROI. Adopting DevOps is also expected to drive increased ROI in 35% of companies. Specifically regarding technical and business benefits, firms expect their future mainframe strategies to improve reliability, speed processing, and lower dependency on legacy infrastructure. Nearly half of respondents expect to lower operating expenses and increase ROI.

**Expected technical benefits**

- Improved reliability and redundancy: 44%
- Faster real-time processing: 39%
- Lowered dependency on legacy infrastructure: 35%
- Lowered software costs: 35%

**Business benefits**

- Greater ROI: 48%
- Reduced operational costs: 48%
- Faster time-to-value: 39%
- Gained competitive advantage: 35%

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Conclusion

There’s a common misconception that mainframes are legacy technology. In fact, 47% of enterprises are planning to increase their mainframe usage in the next two years.¹ You must consider the following for your modernization journey.

- Refactoring yields the best results. Instead of completely rewriting mainframe applications, rework only the portions of workloads that will best take advantage of cloud-native technology.
- Don’t ignore DevOps on your mainframe. There’s a common misconception that DevOps only applies to newer infrastructure-as-code technologies, but DevOps can apply to mainframes, containers, and everything in between.
- This isn’t just about technical benefits. An evolved, hybrid approach to mainframe yields significant business benefits. Use this as a selling point for your modernization initiatives.

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Contributing Research:
Forrester’s Infrastructure & Operations research group
Methodology

This Opportunity Snapshot was jointly commissioned by Ensono and Wipro. To create this profile Forrester Consulting supplemented this research with custom survey questions asked of 153 IT directors in enterprises in the US and Europe. The custom survey began and was completed in April 2019.

ENDNOTES

Demographics

<table>
<thead>
<tr>
<th>GEOGRAPHY</th>
<th>RESPONDENT LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>49% US</td>
<td>45% Director</td>
</tr>
<tr>
<td>18% United Kingdom</td>
<td>35% C-level executive</td>
</tr>
<tr>
<td>17% Germany</td>
<td>17% Vice president</td>
</tr>
<tr>
<td>16% France</td>
<td>3% Managing director</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INDUSTRY</th>
<th>COMPANY SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>20% Technology</td>
<td>23% Less than 1,000 employees</td>
</tr>
<tr>
<td>18% Manufacturing</td>
<td>42% 1,000 to 4,999 employees</td>
</tr>
<tr>
<td>16% Financial services/insurance</td>
<td>36% 5,000+ employees</td>
</tr>
</tbody>
</table>

Note: Percentages may not total 100 because of rounding.