The Enterprise IT Performance Maturity Model: Embracing the New Normal of Mainframe

**TODAY'S ENTERPRISE I.T. IS CLEARLY NOT YOUR FATHER'S MAINFRAME.**

For instance, did your data center team ever think they would be processing mainframe transactions from mobile phones? Or running analytic applications against unstructured social media data? Did your development team ever imagine they would be architecting compound workloads across the mainframe and multiple distributed systems running both Windows and Linux? Did your CIO ever think the mainframe would be serving up millions (or even trillions) of customer-facing transactions a day?

**WELCOME TO THE NEW NORMAL OF MAINFRAME.**

While the mainframe is still as prominent as always, it also now boasts more speed, more MIPS, more processors and richer capabilities. And z/OS and z/VM, IMS and VSAM are alive and well, too. But so are Linux, Java and WebSphere. Perhaps the most disruptive change for traditional mainframe shops is the need to accommodate distributed, open systems (systems of engagement) alongside the traditional mainframe environment (systems of record). And with that comes the need to bridge the gap that has long existed between mainframe and distributed teams.

So navigating that divide is no longer an option — it has become a business imperative.

**WHAT IS THE “NEW NORMAL” OF MAINFRAME?**

**THE NEW NORMAL ENCOMPASSES A SET OF NEW ATTRIBUTES:**

1. **Mainframe applications that once served only back-end systems are now customer-facing.**
2. **Complexity continues to rise as more compound and composite workloads span multiple platforms and operating environments.**
3. **As mainframe applications become more customer-facing and connected to the web and mobile devices, mainframe transactions and MIPS are rising.**
4. **Simultaneously, those with the most mainframe experience and knowledge are typically baby boomers who have already begun — and will continue to — retire over the next 10 years.**

**THE BUSINESS IMPACT OF THE NEW NORMAL**

Mainframe economics have definitely changed over the last few decades. On one hand, things have improved due to the steadily dropping cost per MIPS, as well as the introduction of power-packed, low-cost new mainframes like the zBC12. And though mainframe data centers have always been under pressure to rein in costs and use MIPS efficiently, these pressures are increasing exponentially as businesses rely not only on the mainframe — but on IT as a whole — to help achieve business objectives.

On the other hand, there is increasing pressure to streamline operations due to the rise in quantity and type of mainframe workload. Transaction volumes are soaring as new mobile users generate more transactions, 24/7. At the same time, overnight windows for transaction processing are shrinking or disappearing altogether.

Similarly, the demand for high quality of service (QoS) continues unabated. While the mainframe’s QoS remains at historically high levels, demand for QoS now extends to compound workloads that cross mainframe and distributed environments, creating new end-user experience (EUE) performance expectations.

Therefore, the mainframe should no longer be viewed as just a cost center to be closely monitored, but rather an integral part of the application delivery chain and a revenue generator — and must be managed as such.

**WHAT IS A MATURITY MODEL?**

Maturity models help organizations improve processes amid change. The new Enterprise IT Performance Maturity Model can help IT organizations improve processes for managing application performance and mainframe costs as distributed and mainframe systems converge.

What you want is a maturity model that recognizes the skills and culture gap and helps close it. It also incorporates new mainframe roles and workloads alongside open systems, cloud and mobile, while encompassing new tooling to address management and operations in this new environment.
WHAT ARE THE LEVELS OF MATURITY?
The new model defines five levels of maturity. This new model incorporates distributed systems together with the mainframe and recognizes the new workloads, processes and challenges that will be encountered. At each level it identifies the following maturity categories:

**Application Technology**: What core hardware and software is in place? What tools are in use for interacting with mainframe applications?

**Mainframe Attributes**: How is the mainframe viewed from outside its core group? How are mainframe MIPS managed?

**Organization**: How do the different technology disciplines interact?

**Performance Technology**: What products are in place for ensuring applications meet EUE performance expectations?

**Process**: What processes are followed to resolve application performance problems?

THE MATURITY LEVELS CONSIST OF:

1 — **Ad hoc**: The mainframe runs core systems and applications; these represent the traditional mainframe workloads and the green-screen approach to mainframe computing.

2 — **Technology-centric**: An advanced mainframe focus on ever-increasing volumes, higher capacity, and complex workload and transaction processing while monitoring MIPS usage.

3 — **Internal Services-centric**: The focus is on mainframe-based services through a service delivery approach that strives to meet internal service level agreements (SLAs).

4 — **External Services-centric**: Mainframe and non-mainframe systems operate through a services approach that encompasses end-user expectations and tracks external SLAs.

5 — **Business Revenue-centric**: Business needs and EUE are addressed through interoperability with cloud and mobile systems and real-time analytics to support revenue initiatives.

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**Enterprise IT Performance Maturity Model**

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<tr>
<th>Level 1</th>
<th>AD HOC</th>
<th>Level 2</th>
<th>TECHNOLOGY-CENTRIC</th>
<th>Level 3</th>
<th>INTERNAL SERVICES-CENTRIC</th>
<th>Level 4</th>
<th>EXTERNAL SERVICES-CENTRIC</th>
<th>Level 5</th>
<th>BUSINESS REVENUE-CENTRIC</th>
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</thead>
<tbody>
<tr>
<td><strong>Application Technology Level</strong></td>
<td>IBM Mainframe, 3270 Homegrown tools</td>
<td>IBM System z, CICS, DB2, IMS Green screen tooling</td>
<td>SOA, messaging, web servers GUI IDE tooling</td>
<td>HTTP, XML, SOAP, Java, app servers GUI IDE + web tooling</td>
<td>JSON, Android, iOS, Hadoop, REST, mobile GUI IDE + mobile tooling</td>
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<td><strong>Mainframe Attributes</strong></td>
<td>Lack of MF knowledge outside group Unpredictable MIPS growth</td>
<td>Mainframe viewed as cost center Reactive MIPS growth</td>
<td>General cross-platform awareness Predictable MIPS growth/capacity</td>
<td>MF viewed as endless bucket of resources Optimized MIPS usage</td>
<td>MF viewed as a revenue generator MIPS improvements drive better EUE</td>
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<td><strong>Organization</strong></td>
<td>Isolated tech groups with little to no interactions</td>
<td>Autonomous groups, little dependence on each other</td>
<td>MF services provided to distributed teams, but no alignment</td>
<td>Cooperation across tech disciplines</td>
<td>Symbiotic relationship across tech disciplines, LOB</td>
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<td><strong>Performance Technology</strong></td>
<td>“Gut feel” and “crisis-driven” approach to performance tuning</td>
<td>Systems management tools monitoring only critical infrastructure components</td>
<td>Performance sampling; intelligent performance analysis tools at MF application levels</td>
<td>24/7 transaction monitoring; metrics correlated across all tiers of a business transaction</td>
<td>24/7 monitoring + deep analytics; deep performance analysis across whole delivery chain</td>
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<td><strong>Process</strong></td>
<td>Informal “best effort” processes</td>
<td>Reactive problem resolution and frequent war rooms</td>
<td>Proactively identify problems but root-cause analysis takes too long Complex troubleshooting</td>
<td>Accelerated problem resolution via deep-dive diagnostics Multi-tier problem solving</td>
<td>Real-time visibility used to orchestrate service delivery Process optimization</td>
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HOW MATURE ARE MOST ORGANIZATIONS?
Most IT organizations will likely find themselves straddling different maturity levels for the various categories. For example, although many have achieved levels 4 and 5 of application technology, culture and processes remain at levels 1 or 2. These disconnects mean IT still faces many obstacles and is not reaching optimal levels of service delivery and cost management. And this doesn’t just impact IT. There can be business ramifications, such as decreased customer satisfaction and slower revenue growth.

THE MATURITY GAP — AND HOW TO DEAL WITH IT
Many organizations still approach the mainframe and distributed environments as separate worlds. Given the interrelated nature of today’s enterprise, this approach won’t work going forward. Mainframe and distributed teams need a shared view of IT and must communicate on the same level.

In addition to the issue of mainframe and distributed integration, enterprise applications continue to grow in complexity, likely to span multiple tiers, platforms and environments, while involving multiple technology silos in management and support. With that in mind, how do today’s IT organizations troubleshoot enterprise application performance problems? And how do they manage mainframe resources to ensure efficiency?

In many cases, not very well. Days, weeks, even months, are spent in war rooms trying to answer questions such as: What exactly is happening? Where did the transaction originate? Whose fault is it? Typical answers include: All my systems lights are green. The CICS transaction is functioning as designed. And possibly the answer most indicative of the problem: I don’t care what’s happening over there; my piece of the application is working fine.

A UNIFIED, SINGLE VIEW OF THE ENTERPRISE
There’s little room for effective collaboration when teams are viewing problems independently. In order to address that deficiency, organizations need a unified, single view of the enterprise — the entire enterprise. Even though today’s applications span multiple system environments, most application performance management (APM) tools focus on a single platform. So, different teams run different tools to address the same performance problems. Plus, numerous points of failure exist as information is collected, analyzed and correlated before sharing among teams.

It’s also important to see how a transaction flows and interacts. But the effectiveness of tracing compound business transactions end-to-end fades as the transaction components extend further, crossing multiple systems and management domains.

CHALLENGES TO ENTERPRISE I.T. PERFORMANCE MATURITY

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<th>CHALLENGES</th>
<th>WHAT YOU CAN DO</th>
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<td>Changing skills: Many skilled mainframe veterans are retiring and need to be replaced. At the same time, the need for SOA, cloud and mobile technology skills is growing. Developers now need a mix of traditional and new skills.</td>
<td>Start hiring and training mainframe replacements now. Cross-train developers to impart mainframe experience to your distributed teams and vice versa.</td>
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<td>Management visibility: Management visibility into the expanded IT infrastructure — involving not only the mainframe but other systems and services — is imperative; existing mainframe tools won’t see the new systems and distributed tools may not see into the mainframe.</td>
<td>Rather than acquiring multiple disparate tools, organizations need tools that can see into and help manage multiple domains.</td>
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<td>End-user engagement: For decades, mainframe shops were insulated from the external EUE by a layer of front-end systems. Now, the flattening of the IT environment and user-centric computing makes EUE a key part of the new normal.</td>
<td>Make the EUE central to every technology decision you make. Infrastructure tools are necessary, but will not give the needed perspective.</td>
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<td>Complicated troubleshooting: It’s hard enough to troubleshoot problems in familiar environments and databases. Now, problems may be in a distant mobile device or deep in the cloud or on systems the data center doesn’t know or control. As downtime costs skyrocket, troubleshooting increasingly complicated environments — and resolving issues fast — is key.</td>
<td>Invest in tools that help you see the entire application delivery chain and those that integrate with the tools used by Development for faster mean-time-to-repair. Finding and characterizing problems is only the first step, they still need to be handed off to the appropriate team for resolution.</td>
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Improving your maturity can positively impact your organization, but predictably, there are obstacles and challenges to that evolution. The first is one IT faces in everything it undertakes: resistance to change. In addition, there are a number of other challenges that must be overcome.
THE BUSINESS CONTEXT OF A TRANSACTION

Also critical is the need to understand the business context of a transaction. Similar to not having a unified view of transaction performance, not knowing the business context of a transaction greatly hinders collaboration. For example, once a CICS transaction hits the mainframe, traditional APM tools can only analyze if each individual transaction is optimized. What IT needs to see is what business transaction was initially generating the activity.

These problems hold IT organizations back from achieving higher levels of maturity and realizing the full potential of their mainframes.

Employing modern, cross-platform APM can help eliminate these inefficiencies and remove the gaps between mainframe and other non-mainframe teams. It reduces the number of resources required to resolve an issue, thus reducing MTTR and labor costs. It also reduces or eliminates the need for traditional war rooms. Modern APM takes the guesswork out of problem resolution and reduces the finger-pointing between IT teams, mainframe and distributed, when cross-platform problems crop up.

ACHIEVING ENTERPRISE I.T. PERFORMANCE MATURITY

Organizations that move up the Enterprise IT Performance Maturity Model are well-positioned to compete in the continually evolving business landscape. To start, here are four areas to focus on:

1. Address the skills gap and workforce churn by employing modern mainframe tooling.
2. Expand your APM capabilities for multi-platform, end-to-end visibility.
3. Navigate cultural divides by continuously engaging multiple organizational units.
4. Leverage technology to work toward continuous MTTR process improvement.

When implementing an APM strategy, your focus should be on the future, as well as the present. By creating a more efficient, streamlined IT operation now, you’re setting your organization on the path toward improved customer experiences and increased business value down the road.

With the Enterprise IT Performance Maturity Model as a guide, you can identify areas for improvement; successfully navigate the highly complex and ever-evolving IT landscape; and ensure that your organization is keeping pace with the demands of customers and the business. Your mainframe can be more than a legacy system; it can be an engine for driving optimal business growth and success.

CASE STUDY

The payoff from tools optimized for today’s application and systems environment can be dramatic. One bank running a multi-tiered application involving distributed and mainframe systems found using a mature APM solution saved the organization $750,000 in labor and MIPS charges alone, while greatly speeding time to resolution. Additional savings followed from the ability to postpone MIPS upgrades through proactive performance measurements and by tuning applications throughout the lifecycle.

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