Rocket® software

Accelerating Business with Mainframe Modernization

A strategic guide to transforming mainframe value without migration risk

Contents

Executive summary

Mainframes remain central to the global economy. They are used by **71% of Fortune 500 companies, support 44 of the top 50 global banks** (92 of the top 100), **handle 68% of the world's production IT workloads,** and **process roughly 87% to 90% of global credit card transactions**. Modern mainframe platforms can process **more than 1 million transactions per second,** underscoring why they continue to power the world's most demanding, transaction intensive environments.

The mainframe supports mission critical workloads, powers financial transactions, and enables enterprise operations at scale. However, CIOs and IWT leaders are under increasing pressure to evolve their environments to meet new business demands, including faster innovation cycles, rising security threats, cost pressures, a shrinking skilled workforce, and now, understanding and using the risks and benefits of AI.

Traditional IT modernization approaches often force a binary choice: maintain established systems and limit innovation, or undertake complex, high risk migration efforts. Increasingly, forward-looking organizations are choosing a third path: staying on the mainframe and actively modernizing all aspects of it, focusing on measurable outcomes while preserving reliability and scale.

This approach helps enterprises enhance agility, reduce costs, strengthen security, and enable modern development practices — without disrupting critical business operations.

In a 2025 survey of **500 senior leaders** in enterprises using mainframes, **80% said their strategy reflected continued active investment and modernization, while 54% expected to increase mainframe use** over the next two years.

By understanding the top challenges CIOs face with the mainframe today we are able to explore several solutions that work to improve business outcomes. While each solution addresses a primary challenge it also has benefits in other areas. These solutions outline key focus areas for IT modernization without migration, and how organizations can drive measurable outcomes using a portfolio based strategy.

The modernization imperative

Mainframe environments continue to deliver unmatched performance, scalability, and resilience. But the context around them has changed significantly. CIOs and IT leaders are under pressure to support faster innovation and connect core systems across increasingly complex hybrid environments. At the same time, they must strengthen security and compliance, manage rising cost pressure, address a shrinking pool of experienced talent, and determine how AI can be applied responsibly to create advantage. Together, these forces are reshaping the modernization agenda. The question is no longer whether the mainframe remains valuable, but how to evolve it to meet changing business and technology demands.

At the same time, “rip and replace” strategies can introduce unacceptable risk, impacting uptime, creating operational disruption, and requiring multi year transformation investments.

The opportunity lies in modernizing how the mainframe is built, operated, and integrated, not replacing it.

The modernization journey

The most successful organizations recognize that modernization is not a single transformation event, it is a **continuous evolution.**

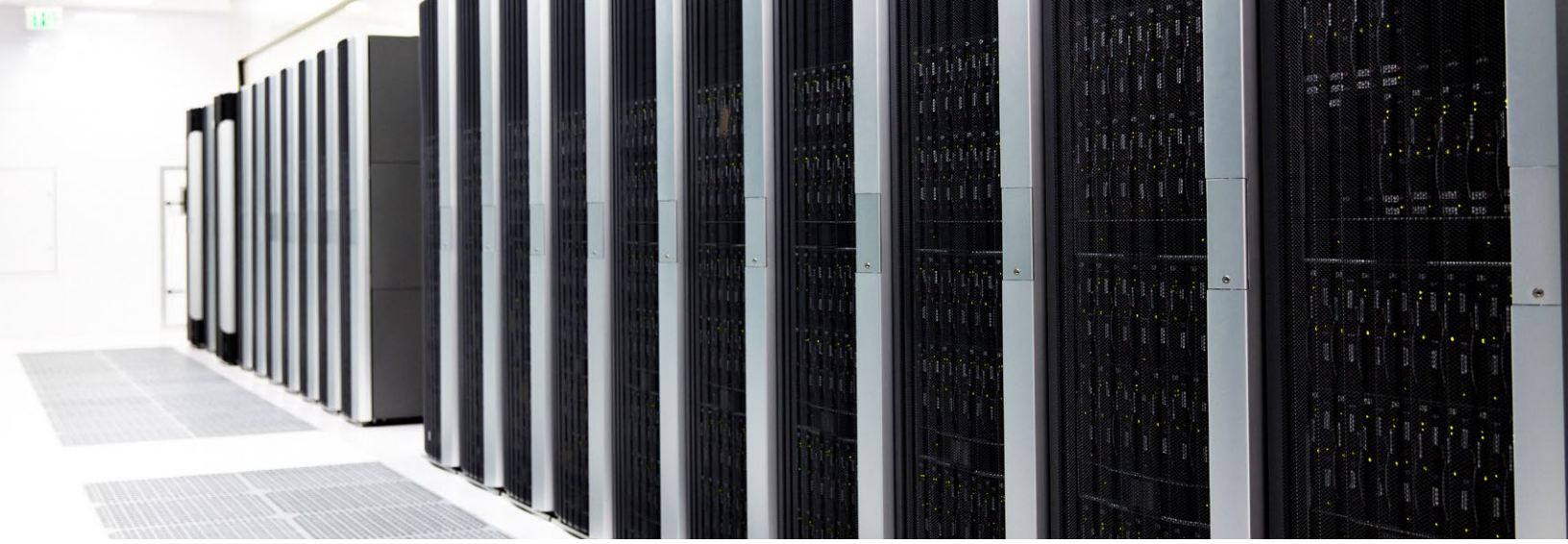
This approach is defined by:

01
Incremental implementation.

02
Prioritization of high impact areas.

03
Integration of modern tools with existing systems.

04
Preservation of business critical infrastructure.



Mainframe modernization: challenges and solutions

The mainframe has many well understood challenges, but the benefits of tackling them are not always fully recognized. Where and how to start can also be unclear. Grouping challenges and solutions by business impact can clarify scope and aid prioritization. Each challenge and solution extends beyond a single point fix, and the benefits often flow into less obvious areas. Reviewing each of these categories can help prioritize what actions to take next.

Vendor fragmentation and complexity

If you are leading IT modernization, you are likely balancing more complexity than any one team should have to manage. Many organizations are trying to move forward while relying on a patchwork of disconnected tools for operations, security, DevOps, automation, and access management. Over time, that fragmentation creates overlapping functionality, inconsistent workflows, and brittle integrations that slow progress and make change harder to scale. Instead of focusing energy on modernization outcomes, CIOs and IT leaders often find themselves managing vendor relationships, reconciling platforms, and navigating decisions that should be simpler.

Another consideration is whether current vendors are truly working for you. Many mainframe users have reported post acquisition pricing increases for mainframe renewals and significant support cost escalations. In some cases, public disputes over steep renewal terms have highlighted the risk of unpredictable pricing. The pressure these dynamics create is real: tool sprawl reduces visibility, makes costs harder to predict, and fragments support, procurement, and day to day operations. In some environments, bundled portfolios also create license lock ins that make change more difficult and expensive than it should be. This is why vendor consolidation matters — it gives CIOs and IT leaders a practical way to simplify governance, reduce integration overhead, and build a more unified foundation for modernization.

Vendor consolidation benefits

Vendor consolidation helps reduce the operational drag created by overlapping tools, disconnected workflows, and fragmented supplier relationships. By moving away from a patchwork of point solutions, organizations can create a more unified environment that is easier to govern, support, and scale. For CIOs and IT leaders, that means simpler decision making, greater consistency across teams, and more capacity to focus on strategic transformation instead of administrative complexity.

If vendor consolidation is a priority, the first step is to identify where overlapping tools are creating unnecessary cost, duplicated effort, or inconsistent ways of working. There may be capability gaps, or insufficient innovation to keep pace with new technologies, requirements, or practices. A motivator may simply be that an existing vendor relationship is no longer meeting expectations — whether due to price increases, weak support, limited product capabilities, or a lack of innovation.

Simplifying the portfolio by reducing point solutions can standardize workflows across development, operations, and security, and ease the integration burden created by disconnected products. For CIOs and IT leaders, the value is clear: lower total cost of ownership through less licensing overlap and administrative overhead, stronger visibility and governance, and faster decision making with fewer handoffs. The broader outcome is a more coordinated, scalable, and resilient modernization foundation.

Independent analyses and customer reports indicate that vendor consolidation can materially reduce operational overhead and procurement expense and improve the ability to adopt new technologies.

Choosing and consolidating with the right vendor should also result in more stable and predictable pricing and renewals, better support, and a stronger partnership dynamic.

Cost increases with limited insight

Rising mainframe costs are rarely driven by one issue alone. Cost pressure often builds across several areas at once: inefficient workloads, growing resource consumption, overlapping or underused tools, storage growth, manual processes, increasing licensing and maintenance renewals, or supplier terms that no longer reflect business value. Because these cost drivers are spread across teams and systems, it can be difficult to see what is a strategic investment and what is avoidable spending.

Better visibility is what allows leaders to act with confidence. When organizations can see where cost is accumulating, they can focus on the right levers, including workload efficiency, application and tool consolidation, automation, and vendor commitments. That creates a clear path to reduce avoidable spending, strengthen cost control, improve forecasting, and increase flexibility to invest in modernization priorities that deliver measurable business value.

Cost optimization

Cost optimization is the next step once those drivers are clear. For CIOs and IT leaders, the goal is not simply to reduce spending, but to improve how resources are used so investment aligns to business outcomes. In practice, that means targeting inefficiencies, reducing unnecessary tooling, increasing automation, and making cost decisions with better operational insight. Done well, this lowers waste while protecting performance, resilience, and continuity.

A practical starting point is to assess where spending is accumulating without delivering proportional value. That includes reviewing workload performance, resource consumption, overlapping tools, manual effort, and supplier contracts. From there, organizations can improve efficiency, simplify tooling, introduce automation, and renegotiate renewal terms that no longer align with business needs.

The benefits are both immediate and strategic: lower infrastructure and licensing costs, stronger cost transparency, more credible budgeting, and a clearer link between IT spending and business value. Identifying the right tools to provide the insight and operational levers necessary to optimize operations provides CIOs and IT leaders greater financial control and more flexibility to reinvest in modernization and innovation.

Evolving security and compliance risks

Security and compliance risk is becoming more difficult to manage as mainframe environments grow more connected. As organizations expose services through APIs, link core systems to cloud and distributed platforms, accelerate delivery pipelines, and explore AI enabled operations, the attack surface expands and regulatory expectations become more demanding. The challenge is to strengthen protection, maintain control, and support modernization at the same time.

In practice, that risk shows up in several ways: broader exposure across APIs, DevOps pipelines, and hybrid integrations; access controls that may not meet zero trust expectations; faster moving threats, including AI enabled techniques; and growing compliance requirements that demand stronger auditability and quicker response. Together, these pressures make security a central part of modernization strategy.

Improving security and risk management

The response is to strengthen four core areas: continuous visibility; ongoing vulnerability detection; modern identity and access management; and embedding security into development and operations workflows. In practice, that means extending modern identity and access management to the mainframe, continuously monitoring for vulnerabilities and policy gaps, and embedding security into release, deployment, and operations workflows. This helps organizations respond earlier, apply controls more consistently, and improve auditability across the environment.

The benefits are clear: lower cyber risk, stronger compliance and audit readiness, and greater operational resilience across critical services. Just as important, CIOs and IT leaders gain confidence that modernization can move forward with stronger control, faster response, and less regulatory or operational exposure.

Limited agility and integration

For many CIOs and IT leaders, the question is not whether the mainframe can support the business, but whether it can keep pace with it. Traditional workflows were not designed for the speed, frequency, and cross platform coordination that digital operations now demand. Manual approvals, siloed tooling, and limited integration with cloud and distributed environments can slow releases and make core systems harder to connect to new services and experiences.

When that happens, the business feels it quickly. Slow release cycles, bottlenecks in development and testing, and difficulty exposing core capabilities through APIs make it harder to respond when priorities shift. Improving agility and integration helps organizations shorten the path from ideas to execution and position the mainframe as a more active contributor to enterprise innovation.

Agility and hybrid integration

Agility and hybrid integration are central to making the mainframe a more responsive part of the enterprise technology estate. As organizations connect core systems with cloud, distributed, and customer facing applications, they need faster ways to expose services, share data, and support change across platforms without sacrificing reliability.

The practical focus is on three areas: exposing core business logic through APIs, integrating mainframe services and data more effectively with cloud and distributed systems, and improving observability so teams have real time insight into performance and dependencies. Together, these steps make it easier for trusted core systems to participate fully in digital initiatives.

The benefits are clear: shorter time to market, smoother hybrid operations, and a stronger ability to turn core systems into a source of business responsiveness. For CIOs and IT leaders, that means supporting innovation with less friction, better coordination, and greater confidence across the wider technology estate.

Skills gap and workforce transition

For many CIOs and IT leaders, the workforce challenge is no longer theoretical. Mainframe environments often depend on a small number of experienced specialists who hold years of institutional knowledge, while newer talent expects more intuitive tools, collaborative workflows, and faster ways to understand complex systems. When that gap widens, organizations become more dependent on scarce expertise and less able to scale change with confidence.

The impact shows up quickly: slower onboarding, reduced productivity, and greater delivery risk when knowledge is concentrated in too few hands. Addressing this challenge requires a more accessible and consistent operating model that supports knowledge transfer, shortens ramp up time, and makes modernization less dependent on a handful of hard to replace individuals.

DevOps & developer experience (DevEx)

DevOps and developer experience are critical to making mainframe delivery faster, more consistent, and easier to sustain. Many teams still work with manual processes, specialized interfaces, and workflows that are out of step with modern engineering practices. Strengthening tooling, automation, and development workflows helps organizations improve delivery while making the environment more accessible to both experienced specialists and newer talent.

The practical focus is on introducing CI/CD pipelines; supporting modern IDEs and Git based workflows; automating testing, deployment, and rollback; and connecting mainframe development more naturally with broader IT operations. Increasingly, it also means using AI to make interaction with complex environments simpler through natural language and to give teams quicker access to operational data, diagnostics, and analytics.

The benefits go well beyond developer productivity. Organizations can accelerate onboarding, improve delivery quality and consistency, and support faster change with better control. AI enabled, natural language access can also make data, diagnostics, and analytics easier to reach and act on, helping teams resolve issues faster and make better informed decisions. For CIOs and IT leaders, this creates a stronger foundation for workforce transition, release execution, and modernization that is not constrained by outdated tooling or scarce specialist capacity.

AI readiness and responsible adoption

AI is now part of nearly every modernization conversation, and many IT leaders are under pressure to show where it can create real value. At the same time, most organizations know they cannot simply layer AI onto complex mainframe environments without the right foundations. Effective adoption depends on trusted operational data, accessible documentation, strong governance, and clear boundaries for human oversight. Without those elements in place, it becomes difficult to apply AI in ways that are reliable, explainable, and aligned with enterprise risk expectations.

The hesitation is not about lack of interest; it is about making responsible choices. Incomplete documentation, limited application and operational context, concerns about accuracy and explainability, the need for governance and security, and uncertainty about which use cases will deliver near term value can all slow progress. Building readiness in a measured way helps organizations turn AI from a promise into a practical capability. It opens the door to faster diagnostics, more useful insight, better decision support, and automation that enhances usability and modernization — without compromising trust or control.

As CIOs evaluate where AI fits into the mainframe modernization roadmap, they should consider two distinct but connected sources of value. The first is how AI is being embedded into existing tools to make them more intelligent, intuitive, and effective — enhancing capabilities such as monitoring, diagnostics, automation, performance analysis, and decision support without requiring teams to abandon the systems they already use. The second is the value of AI tools that can integrate with or connect across existing mainframe tools and operational data. When applied this way, AI can simplify day to day operations, accelerate investigations, and improve analysis by allowing teams to use natural language to access data, assess performance, surface anomalies, explain system behavior, and recommend optimizations. For CIOs and IT leaders, the opportunity is not simply to add AI, but to use it in ways that reduce complexity, enhance existing investments, and help teams act faster with greater confidence.

Conclusion

At its core, mainframe modernization is not about walking away from the systems that already power the business so well. It is about building on that strength in a smarter, more practical way so organizations can respond faster, operate more efficiently, and get more value from the platforms they already trust.

When organizations focus their efforts in the right areas, they can modernize in a way that is both strategic and achievable. That includes:

Taken together, these efforts create meaningful business benefits, including the ability to:

01

- Vendor consolidation.
- Cost optimization.
- Improved security and resilience.
- Agility and integration.
- Modern DevOps practices.
- AI adoption.

02

- Reduce risk.
- Improve efficiency.
- Enable the workforce.
- Accelerate innovation.
- Future proof core systems.

The real benefit of modernization is that it gives organizations more options, not more disruption.

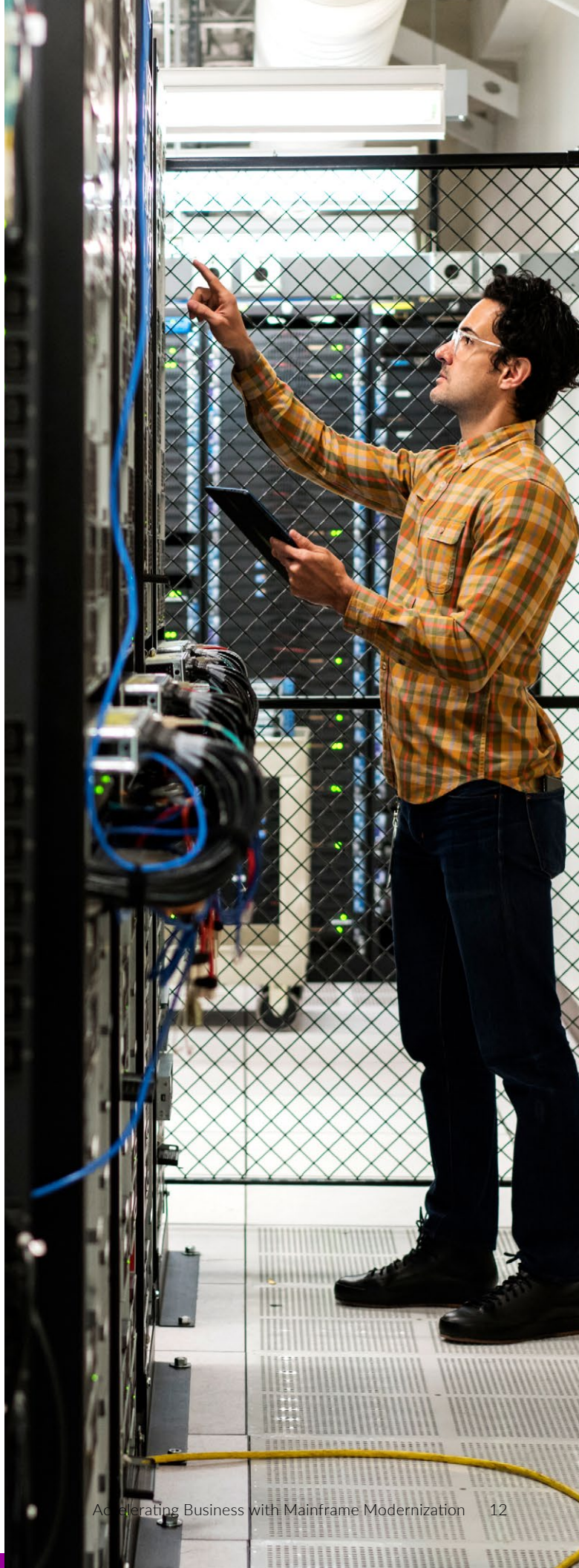
It helps reduce operational risk, improve cost control, strengthen security, accelerate delivery, and make core systems easier to integrate with the rest of the business. Just as importantly, it allows IT leaders to move forward at a pace that fits their environment, preserving the reliability and resilience of the mainframe while creating a stronger foundation for innovation, growth, and long term competitiveness.

Final summary and next steps

Mainframe modernization is most effective when it is approached as a practical business strategy rather than a disruptive replacement program. By focusing on the areas that matter most — cost, security, agility, operational resilience, and workforce enablement — organizations can improve outcomes while preserving the reliability and scale that make the mainframe so valuable.

Rocket Software brings a broad and proven mainframe portfolio shaped by decades of experience, continuous innovation, and targeted investment. While each product addresses a specific operational need, together they support broader modernization priorities across cost, resilience, agility, security, and workforce productivity.

Rocket Software can help organizations evaluate where to begin, identify the highest impact opportunities, and align the right solutions to their modernization priorities. For more information, or to review your greatest modernization challenges and where the Rocket portfolio can help reach out to your Rocket contact to continue the conversation.



About Rocket Software

Rocket Software is a global technology leader in modernization and a partner of choice that empowers the world's leading businesses on their modernization journeys, spanning core systems to the cloud. Trusted by over 12,500 customers and 750 partners, and with more than 3,200 global employees, Rocket Software enables customers to maximize their data, applications, and infrastructure to deliver critical services that power our modern world. Rocket Software is a privately held U.S. corporation headquartered in the Boston area with centers of excellence strategically located throughout North America, Europe, Asia and Australia. Rocket Software is a portfolio company of Bain Capital Private Equity.

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