MAINFRAME MODERNIZATION

CHALLENGES, BENEFITS, SOLUTIONS, AND CONSIDERATIONS

YOUR ESSENTIAL GUIDE TO MAINFRAME MODERNIZATION

Create more agile and efficient systems, eliminate security and compliance vulnerabilities, and reduce operating costs by modernizing your mainframe. Enterprises looking to remain competitive must rethink their approach to IT and create a strategy for mainframe migration to cloud. Aging on-premises mainframes impede innovation and lack the flexibility of modern cloud solutions. While migration approaches and dependencies can be complex, the impact of modernizing will help your organization scale efficiently to meet modern business demands.

As you look to align your business goals with the outcomes of various migration patterns, there are many considerations. In this whitepaper, we'll cover the essentials:

- **Challenges of on-prem mainframes**
- **Benefits of modernizing**
- **Modernization approaches**
- **Top considerations**
- **The right partner**
- **An enterprise success story**

THE CHALLENGES OF MAINFRAMES

Most enterprises continue to rely on mainframes they've supported for decades, accruing technical debt that stunts growth and impedes the ability to innovate. Failure to modernize an obsolete system becomes an increasing liability over time, which puts an organization at a complete disadvantage.

Mainframes provide limited agility, making it difficult for enterprises to grow and respond to changes and the priorities of their organization and customers. This creates a swarm of challenges that block innovation and cost optimization opportunities. The organizations business strategy and goals are translated into iterative activities such as:

LEGACY / TECHNICAL DEBT	Existing debt from mainframe hardware, software, and maintenance. This leaves little investment left to pursue new technology and realize the new benefits of the cloud.
HIGH TOTAL COST OF OWNERSHIP (TCO)	Factor in all costs of maintaining your mainframe. You may be wasting precious resources maintaining obsolete technologies.
UNSUPPORTED PLATFORMS	Are you still receiving software updates, or are there vulnerabilities within your IT environment?
DATA CENTER EVACUATION	Your organization is mandated to migrate your mainframe to the cloud. How can you do this effectively and efficiently?

BENEFITS OF MAINFRAME MODERNIZATION

Organizations migrating off of mainframes into the cloud or a hybrid environment may realize a number of benefits including:

IMPROVED TIME TO VALUE

Once your application is removed from the legacy mainframe platform, you'll gain the capabilities to make rapid changes with heavily reduced cycle time, using modern tools to adopt a DevSecOps operating model.

SHIFT COSTS FROM OPS TO INNOVATION

Modernization preserves investments in legacy applications, and various approaches can increase the value of a mission-critical application. When you shift costs from managing an aging mainframe to innovating on modern cloud platforms, you remove roadblocks to continue modernizing as technology advances and new cloud features are released.

REDUCE ENTERPRISE RISK

Retire platforms that are no longer supported and receiving regular software updates to reduce security and compliance risks. Enable modern business continuity and disaster recovery options.

LEVERAGE CLOUD-NATIVE SERVICES

Tap into the many microservices, features, and capabilities that the cloud has to offer. Take advantage of emerging technologies to scale and enhance your cloud capabilities. This makes for faster and more efficient migrations, quicker deployments and release cycles, and greater efficiencies to improve business results and time to value.

IMPROVE MAINTENANCE

New age applications are less complex, more flexible, and operate in cloud-based systems that can be accessed from anywhere. Through modernization, code is often thoroughly debugged, tested, and improved for future applications, reducing risk and streamlining future updates.

REDUCE COSTS

Trim costs of an on-premise application that's no longer supported or driving business value. This can be significant as an enterprise may have mature, vigorous mainframe applications that have been making money for years, or applications that have been inflating operational costs with little or no ROI. Reduce costs of upgrades and licensing fees with a future proof cloud-based system.

ATTRACT TOP TALENT

The talent pool of skills needed to maintain on-prem hardware and solutions is dwindling. Top talent is looking to work on exciting, tip of the spear work. Recruit talented individuals through attractive, modern capabilities enabled by the cloud.

MAINFRAME MODERNIZATION APPROACHES

Our innovative approaches and technical depth have earned us the privilege of experience in designing, implementing, and modernizing some of the most complex cloud solutions. Based on your business goals or mission needs, we'll help you choose the right approach for migrating and modernizing your applications.

| **Rehost**	**Revise**	**Refactor**	**Rebuild**	**Replace**
Re-deploy existing applications in an Infrastructure as a Service (IaaS)	Lift and reshape the application using an orchestrator like Kubernetes	Rearchitect existing applications and deploy as Platform as a Service (PaaS)	Reimagine existing applications to leverage max cloud-native capabilities	Replace with COTS applications that meet business objectives

Rehost

A direct to cloud lift and shift. This is a faster, less resource-intensive migration that moves your apps to the cloud without any code modification. The rehosting approach to app modernization is capturing the on-premises environment that runs an application (the servers) and directly moving that to the cloud as virtual servers. In this approach, the environment hosting the application is modernized, but the core application itself is not significantly offered. This means you get the benefits of cloud hosting without the cloud-native app features.
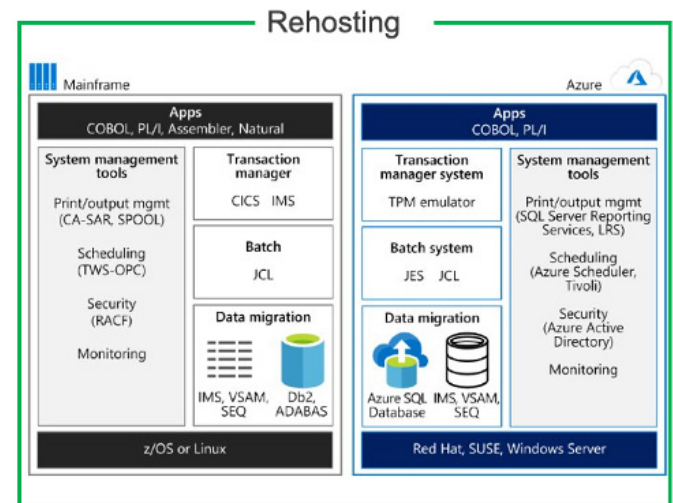
Revise

Utilize the power of lightweight, stand-alone containers to package code, runtime, system tools, system libraries, and settings to run legacy software in the cloud. This approach is about modernizing legacy applications only enough so that they can be containerized and deployed to the cloud. Minor code refactor could be required, but significant refactor can typically be avoided.
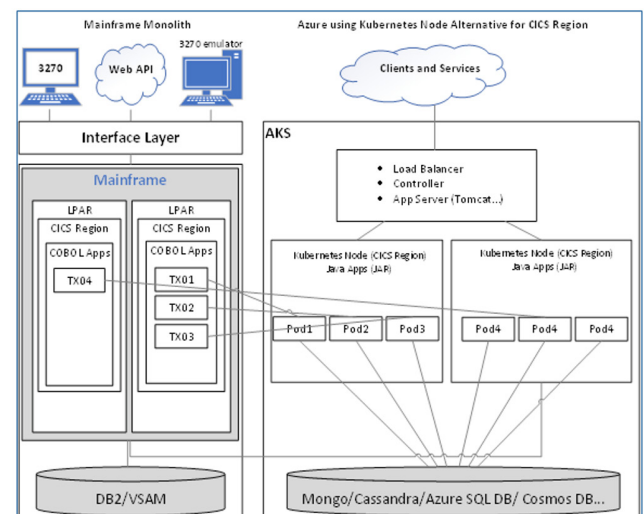
Refactor

Rearchitect cloud compatible legacy applications to fully realize the features of cloud-optimized and cloud-native applications. This approach is about modernizing legacy applications by rearchitecting to target cloud-native, "serverless" technologies wherever possible. Refactoring typically requires more significant recoding of the existing application, however, this method takes advantage of the best of what public cloud has to offer — managed offerings for all application components. While rehosting or revising will get you off of the mainframe, there is still the challenge of poor integrations and clunky batch processing. For modern applications with the best long-term agility and value for the organization, you might benefit from investing in cloud-optimized and cloud-native application architectures.

Rebuild

If you aren't ready to prioritize the update of a set of applications and there's nothing pressing the need to migrate, rebuilding may be the best option for you. In this approach, revisiting the apps or doing nothing (for now) is the best option for you. As a rule of thumb, don't migrate just to get everything in the cloud; only do or migrate what makes sense for your business.

Replace

Can you leverage an out of the box and customizable software to accomplish what you need? You may want to think about replacing the applications underlying technology. There are a number of "as a service" offerings that may be a good fit for your application, such as SharePoint Online, Dynamics CRM, or any of the thousand niche technologies out there. This is often a good solution if you need something quick, but replacements rarely deliver long-term agility.

Not sure where to begin? We'd love to start the conversation. Reach out to our team and speak to a cloud advisor about how to get started on your modernization journey.

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KEY CONSIDERATIONS

When beginning your journey to the cloud, there are sevral factors you want to consider. While there are certain risks to consider, the rewards for modernizing continue to grow. Key considerations include:

Proper Planning

Ensure there are no surprises or confusion. Proper research and planning allows leaders to make informed decisions. Take the current state of your IT landscape, assess, and collect data to map out a proper solution.

Outdated Applications

Most applications can get bogged down after years of modifications to keep platforms relevant and effective. Making further changes can come with risk, especially not knowing the effect that they may have due to hundreds of thousands or even millions of lines of code. There may even be overlap in the code that can keep the application from performing efficiently. When considering modernization approaches, factor in code complexity by running application assessments prior to committing to a migration plan.

Time & Budget

Although you can build a customized Web front end to your applications, this may not be the best approach. This can cause your enterprise unnecessary time and increase costs. There are many more affordable options available that allow for easier management software to help your enterprise operate without wasting time and money. Take time to understand the long term impact of your options and how you can take iterative steps for continuous modernization.

Complicated IT Landscape

Having a range of different mainframe flavors can cause complexity in changes made within your organization. Even making upgrades can be concerning. It is imperative to establish risks, mitigate those risks with POCs, then establish an overall architecture. Complete a sample of use cases to validate that architecture. If you are buying a COTS product, remember that integration is still your problem.

KEY CONSIDERATIONS (CONTINUED)

Making Appropriate Updates

As change always prompts a level of risk, it also changes employee and user expectations about the technology they interact with. Doing nothing is often not an option for organizations that want to stay competitive. Updates are critical in regulated industries, where security and compliance issues can be detrimental to brand image and customer trust. Assess how your enterprise is currently operating and understand the path and direction for your enterprise to stay current with updates. TL;DR; Use Agile to protect yourself.

Making Appropriate Updates

- **Developers:** It's important to get developers and their administrative teams to be more productive. By moving to the cloud, you're allowing the leverage for existing services to become more constructive. Modernization allows the next generation of IT to acquire technical skills across the board, working with all systems, including the mainframe. Make sure these teams have access to retooling and strong technical leadership to guide them to success.

- **Users:** When modernizing, you enable new services and procedures. Your business can produce new features, automate previously manual processes, and launch new service offerings to improve customers' experience.

- **Management:** Having managed services to operate a secure cloud solution ensures maximum business efficiency. This is a key capability in cloud transformation for monitoring uptime, security, governance, and costs.

WHY AIS?

As there are many benefits to modernization, there are many risks to face without a relationship with the right partner. AIS has many years of experience in migration strategies, which allows us to modernize mainframes in the most effective way possible.

MAINFRAME HERITAGE MEETS MODERN CLOUD INNOVATION

AIS has over 35 years of mainframe experience. Pair that with world-class cloud infrastructure, migration, modernization, and application development experience, and you have a partner that can take your aging mainframe investments into the future.

AIS also develop a tool called UniAccess, a product that provides client and server applications access to mainframe data. Hundreds of customers have used this product, and we have maintained it for over 3 decades.

A TRUSTED STRATEGIC PARTNER FOR YOUR ENTIRE MODERNIZATION JOURNEY

As a Microsoft Partner with 10 gold competencies, we have deep expertise in helping enterprise organizations achieve cloud transformation on Azure, Microsoft 365, and Power Platform. We began working with Microsoft Azure in 2008 and have been working closely with the Microsoft product teams ever since. AIS has pioneered many Azure firsts, from DevSecOps and Azure Blueprints to building our own Service Catalog and Delivery Framework for better automation, speed, and quality of delivery. Our innovative approaches and technical depth have earned us the privilege of experience in designing, implementing, and modernizing some of the most complex and highly regulated cloud environments. On top of this, we have global 24/7/365 cloud operations and maintenance support services, managed security, and governance solutions to make your transition to the cloud seamless. We aren't just cloud vendors – our approach to enabling cloud transformation earns us the role of a trusted and strategic partner for our clients. Take your next step into the cloud with confidence and reach out to AIS today.

AIS HELPS GEICO IN A SEAMLESS MODERNIZATION EFFORT

CUSTOMER:

As the number two automobile insurer in North America, GEICO has 10,000 employees and holds more than 17 million policies.

CHALLENGE:

The company had years of data on its Sales department mainframe, which helped the major insurer support its complex data and application needs. It needed agility to continue competing successfully, and it identified multiple advantages in the cloud.

SOLUTION:

AIS helped GEICO modernize a million lines of COBOL code and migrate 16 subsystems used by Sales to track sold policies, rejects, and quotes and to produce letters and reports for its Underwriting, Data Warehouse, Marketing, and Corporate Compliance. With GEICO's long, successful history with Microsoft products, we used Azure, harnessing cloud-native services and DevOps practices. GEICO reduced sales application release cycles from 6 to 3 weeks, can accommodate changes more easily, has access to a bigger talent pool, and has much faster disaster recovery.

WHERE TO START?

AIS will help you assess your existing on-premises applications to create a modernization strategy and roadmap. Contact us today to get started.

With almost 40 years of experience and 12+ in the cloud, AIS can help your organization modernize your application portfolio. We look forward to speaking with you.

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