isG Provider Lens™

Mainframes – Services and Solutions

A research report comparing vendors and service providers strengths, challenges and competitive differentiators

Customized report courtesy of:

kyndryl

Table of Contents ⌂

Report Author: Pedro L Bicudo Maschio

Enterprises are eager to unleash their mainframe data.

The mainframe service market continues to grow as per ISG's expectations for both conventional mainframe outsourcing and consulting services to migrate mainframes to the cloud. With clients under pressure to reduce their mainframe costs, several service providers are addressing the increasing demand to free business data that resides in mainframe systems.

From a high-level perspective, all companies are moving their data from on-premises to the cloud for leveraging advanced analytics, AI, machine learning and data lakes. However, when their data sits on a mainframe, *companies find that the need for* **data access drives** *modernization*.

Data access, business agility and cost reduction are the main reasons for mainframe modernization. In a client case study, a company had critical business information on the mainframe, which was not accessible to cloud-based AI tools. It decided to migrate more than 150 terabytes of data to a new, globally accessible cloud platform. With the increase in cloud innovations, service providers that master mainframe migration had experienced more than 20 percent revenue growth for this service line as of 2021.

Mainframe cost pressure: Mainframe costs continue to rise, driven by independent software vendors (ISVs). After Broadcom acquired CA Technologies in 2018, it changed the product pricing strategy. Faced with elevated software maintenance fees, clients are now asking how to replace tools from CA Technologies. Mainframe license

Companies find that the need for data access drives modernization

optimization requires expert consulting that most study participants can provide. From a hardware perspective, IBM has been pushing clients to upgrade their mainframes to the IBM z15 system without much success. In its annual report, the company cited "an elongated z15 adoption cycle as a result of the challenging environment."

Slow adoption of new mainframe tools: Clients are skeptical about the benefits of investing to modernize COBOL. From a small survey sample representing nine providers and approximately 1,000 enterprise clients, only 7 percent use Java on z/OS, 12 percent have adopted mainframe DevOps, and 15 percent use COBOL APIs.

Cloud providers showing increased interest in mainframes: AWS is investing in partners' training and acquired Blu Age in 2021. Google had acquired Cornerstone Technology in 2020. Both acquired vendors offer automated mainframe application modernization to reengineer and rewrite COBOL (and other legacy languages) to Java, .Net or C#, while automating the delivery of cloud-native applications. AWS established the AWS Competency Program to help customers identify AWS partners with deep industry experience and expertise. Microsoft also offers mainframe migration to Azure with partner companies.

Slow growth of mainframe migration capacity: This study identifies 26 companies that offer mainframe migration to the cloud and 17 vendors of mainframe migration tools. These services grew more than 20 percent in revenue last year, but they may not be adequate to cover mainframe MIPS growth. Each provider reports 15 to 30 projects per year, with average project length of more than

Mainframe to cloud migrations will need 10 years to complete

18 months and large transformations taking five years. The market is slow in project execution and small in the number of projects. At the current pace, *mainframe to **cloud migrations** will need 10 years to complete*.

Competing modernization methods to continue to co-exist: Although the market refers to 7Rs (rehost, refactor, reengineer, rearchitect, rewrite, replace or retire), clients use three modernization methods to run their legacy mainframe applications in the cloud – rehost, compile and rewrite. Rehost platforms emulate mainframes in the cloud without any changes to application code, with the option to migrate mainframe data to other databases. Compile methods interpret the legacy code to generate runtime code to run the application in the cloud without application logic changes. In these two methods, clients continue to develop and maintain COBOL applications. Rewriting applications involves reverse engineering to create specifications and write new applications with the same logic or with innovations. In these three methods, all processes are automated and involve several testing cycles to ensure equal functionality and performance. Some vendors mix these methods, but they all enable clients to decommission their mainframes.

Rehosting fits well for legacy applications that are stable, not requiring updates and changes. It is fast, secure and helps lower cost. Compiling can be more suitable for stable applications that can be decomposed into microservices to facilitate data access. In both methods, companies retain their COBOL expertise. Rewriting can fix applications that require constant bug fixes, improvements and support. Clients should evaluate the best mix of vendor technologies case by case.

Numerous partners for leading modernization providers: The top providers can migrate mainframes to the cloud partner with many tool vendors and can deliver consulting, planning and project management to ensure project success. They also partner with public cloud providers and can run proof of concepts (PoCs).

Scaling mainframes – not as fast as cloud: Many clients believe that their mainframes are scalable. However, most mainframes run at 90 percent CPU utilization and more than 70 percent of disk capacity. For rapid changes in demand, mainframes do not have available resources. This requires negotiating with IBM to release more computing power, which is called vertical scaling. The public cloud offers instant scaling by replicating the applications on more virtual machines, which is called horizontal scaling. In the cloud, scaling is automatic and infinite.

The modernization and transformation market is mature in terms of knowledge and capacity to deliver robust mainframe migrations. At the current pace, these migrations would need many years to impact mainframe hosting services. ISG expects that the number and size of migration projects will grow exponentially in the next three years, funded by AWS, Google and Microsoft – the most interested in migrating mainframes to the cloud.

Executive Summary

The new trend is to include containers and Kubernetes to automate and accelerate horizontal scaling even further.

In 2020 and 2021 the limits of mainframes became evident for government agencies that were not able to scale and respond to citizens' demand. The increase in mainframe utilization has caused small system disruptions in the U.S. and some European countries. These events also contributed to the growing interest in migrating mainframe applications to the cloud.

Provider Positioning

	Mainframe Modernization Services	Mainframe Application Modernization and Transformation Services	Mainframe as a Service (MFaaS)	Mainframe Operations	Mainframe Application Modernization Software
Accenture	Not In	Leader	Not In	Not In	Not In
Adaptigent (GT Software)	Not In	Not In	Not In	Not In	Contender
Advanced	Not In	Product Challenger	Not In	Not In	Leader
Astadia	Not In	Not In	Not In	Not In	Leader
Asysco	Not In	Product Challenger	Not In	Not In	Rising Star ★
Atos	Leader	Leader	Leader	Leader	Not In
AveriSource	Not In	Not In	Not In	Not In	Product Challenger
AWS (Blu Age)	Not In	Not In	Not In	Not In	Leader
BMC	Contender	Not In	Not In	Not In	Not In

Provider Positioning

	Mainframe Modernization Services	Mainframe Application Modernization and Transformation Services	Mainframe as a Service (MFaaS)	Mainframe Operations	Mainframe Application Modernization Software
Capgemini	Leader	Leader	Not In	Leader	Not In
CloudFrame	Not In	Not In	Not In	Not In	Rising Star ★
Cognizant	Market Challenger	Product Challenger	Leader	Product Challenger	Not In
CPT Global	Contender	Contender	Not In	Not In	Not In
Deloitte	Not In	Product Challenger	Not In	Not In	Not In
DXC	Product Challenger	Product Challenger	Product Challenger	Product Challenger	Not In
Ensono	Leader	Contender	Leader	Leader	Not In
FNTS	Contender	Not In	Contender	Contender	Not In
Fujitsu	Not In	Product Challenger	Not In	Not In	Not In

Provider Positioning

Page 3 of 5

	Mainframe Modernization Services	Mainframe Application Modernization and Transformation Services	Mainframe as a Service (MFaaS)	Mainframe Operations	Mainframe Application Modernization Software
GFT	Contender	Product Challenger	Not In	Not In	Not In
Google	Not In	Not In	Not In	Not In	Leader
HCL	Rising Star ★	Leader	Product Challenger	Leader	Not In
Heirloom Computing	Not In	Not In	Not In	Not In	Leader
IBM	Not In	Not In	Not In	Not In	Market Challenger
Infosys	Leader	Leader	Not In	Leader	Not In
INNOVA	Not In	Contender	Not In	Not In	Not In
Keyhole	Not In	Contender	Not In	Not In	Not In
Kyndryl	Leader	Contender	Leader	Leader	Not In

Provider Positioning

Page 4 of 5

	Mainframe Modernization Services	Mainframe Application Modernization and Transformation Services	Mainframe as a Service (MFaaS)	Mainframe Operations	Mainframe Application Modernization Software
Maintec	Not In	Not In	Contender	Contender	Not In
Micro Focus	Contender	Not In	Not In	Not In	Market Challenger
Mindtree	Product Challenger	Leader	Product Challenger	Product Challenger	Not In
mLogica	Not In	Not In	Not In	Not In	Contender
MOST	Not In	Contender	Not In	Not In	Contender
Mphasis	Product Challenger	Leader	Not In	Contender	Not In
NTT DATA	Not In	Contender	Not In	Not In	Contender
PSR	Not In	Not In	Contender	Contender	Not In
Raincode	Not In	Not In	Not In	Not In	Contender

Provider Positioning

Page 5 of 5

	Mainframe Modernization Services	Mainframe Application Modernization and Transformation Services	Mainframe as a Service (MFaaS)	Mainframe Operations	Mainframe Application Modernization Software
Software AG	Contender	Not In	Not In	Not In	Not In
TCS	Leader	Leader	Not In	Leader	Not In
Tech Mahindra	Not In	Leader	Not In	Not In	Not In
TmaxSoft	Not In	Not In	Not In	Not In	Leader
TSRI	Not In	Not In	Not In	Not In	Leader
Unisys	Product Challenger	Not In	Not In	Product Challenger	Not In
UST	Product Challenger	Rising Star ★	Not In	Contender	Not In
ViON	Not In	Not In	Contender	Not In	Not In
Wipro	Leader	Leader	Product Challenger	Rising Star ★	Not In

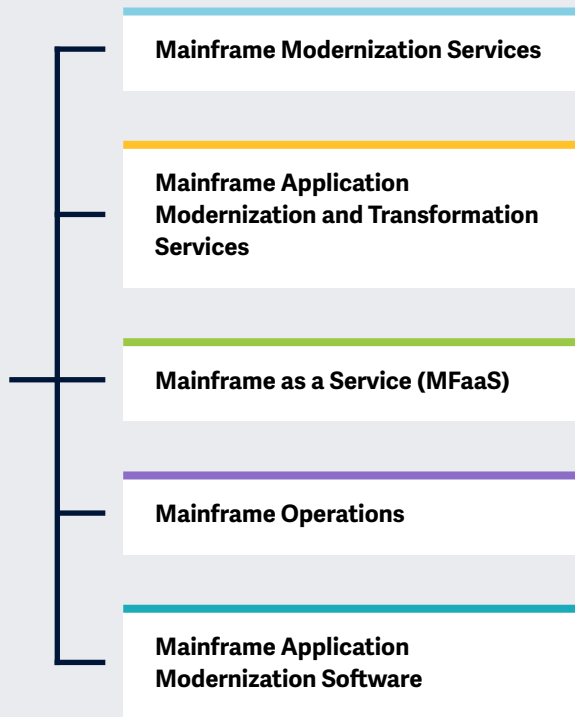# A guide to find the partners to **modernize and integrate** digital businesses

Mainframe Modernization Services

Mainframe Application Modernization and Transformation Services

Mainframe as a Service (MFaaS)

Mainframe Operations

Mainframe Application Modernization Software

Definition

Enterprises across the globe are increasingly seeking digital business transformation to modernize their traditional IT environment and move applications to the cloud. Mainframe systems have been supporting business applications for approximately 60 years. Such resilient platforms leverage high-performance hardware and software tools for continuous modernization, enabling mainframe applications to integrate with new technologies and computing platforms. This study focuses on clients' options to align mainframe applications to their digital business strategy.

Enterprises that focus on cloud-native applications are increasingly relying on automated tools to modernize their mainframes and transform legacy applications into new applications. Such solutions enable the standardization of application languages and databases, including open source, using advanced tools to successfully convert mainframe applications to run in the cloud.

Enterprises that prefer keeping legacy applications on mainframe platforms can introduce agile methods, DevOps, APIs and microservices to improve agility and integrate mainframes with private and public clouds. Service providers have added pay-as-you-go (PAYG) models to enable the mainframe-as-a-service (MFaaS) model.

This study assesses service providers that modernize applications to run on the cloud by using automation and advanced AI tools to ensure quality outcomes. It evaluates service providers that can modernize mainframe applications and offer mainframe outsourcing and MFaaS. Software vendors that offer automation tools for refactoring, rehosting, replatforming, rewriting and reengineering applications are also assessed in this study. Legacy platforms can include IBM Z®, AS/400, HP, Cray, Fujitsu and Unisys mainframes.

Scope of the Report

In this ISG Provider Lens™ quadrant study, ISG includes five quadrants on Mainframe Application Modernization and Transformation, Mainframe as a Service (MFaaS), Mainframe Operations, and Mainframe Application and Modernization Software.

This ISG Provider Lens™ study offers IT-decision makers:

- Transparency on the strengths and weaknesses of relevant service providers and software vendors

- A differentiated positioning of providers by segments

- Focus on regional market

Our study serves as the basis for important decision-making in terms of positioning, key relationships and go-to-market considerations. ISG advisors and enterprise clients also use information from these reports to evaluate their existing vendor relationships and potential engagements.

Provider Classifications

The provider position reflects the suitability of IT providers and software vendors for a defined market segment (quadrant). Without further additions, the position always applies to all company sizes classes and industries. In case the IT service requirements from enterprise customers differ and the spectrum of IT providers operating in the local market is sufficiently wide, a further differentiation of the IT providers by performance is made according to the target group for products and services. In doing so, ISG either considers the industry requirements or the number of employees, as well as the corporate structures of customers and positions IT providers according to their focus area. As a result, ISG differentiates them, if necessary, into two client target groups that are defined as follows:

- **Midmarket:** Companies with 100 to 4,999 employees or revenues between $20 million and $999 million with central headquarters in the respective country, usually privately owned.

- **Large Accounts:** Multinational companies with more than 5,000 employees or revenue above $1 billion, with activities worldwide and globally distributed decision-making structures.

The ISG Provider Lens™ quadrants are created using an evaluation matrix containing four segments (Leader, Product Challenger, Market Challenger and Contender), and the providers are positioned accordingly. Each ISG Provider Lens quadrant may include a service provider(s) which ISG believes has strong potential to move into the Leader quadrant. This type of provider can be classified as a Rising Star.

Number of providers in each quadrant: ISG rates and positions the most relevant providers according to the scope of the report for each quadrant and limits the maximum of providers per quadrant to 25 (exceptions are possible).

Provider Classifications: Quadrant Key

Product Challengers offer a product and service portfolio that reflect excellent service and technology stacks. These providers and vendors deliver an unmatched broad and deep range of capabilities. They show evidence of investing to enhance their market presence and competitive strengths.

Leaders have a comprehensive product and service offering, a strong market presence and established competitive position. The product portfolios and competitive strategies of Leaders are strongly positioned to win business in the markets covered by the study. The Leaders also represent innovative strength and competitive stability.

★ **Rising Stars** have promising portfolios or the market experience to become a Leader, including the required roadmap and adequate focus on key market trends and customer requirements. Rising Stars also have excellent management and understanding of the local market in the studied region. These vendors and service providers give evidence of significant progress toward their goals in the last 12 months. ISG expects Rising Stars to reach the Leader quadrant within the next 12 to 24 months if they continue their delivery of above-average market impact and strength of innovation.

Not in means the service provider or vendor was not included in this quadrant. Among the possible reasons for this designation: ISG could not obtain enough information to position the company; the company does not provide the relevant service or solution as defined for each quadrant of a study; or the company did not meet the eligibility criteria for the study quadrant. Omission from the quadrant does not imply that the service provider or vendor does not offer or plan to offer this service or solution.

Contenders offer services and products meeting the evaluation criteria that qualifies them to be included in the IPL quadrant. These promising service providers or vendors show evidence of rapidly investing in products/services and a follow sensible market approach with a goal of becoming a Product or Market Challenger within 12 to 18 months.

Market Challengers have a strong presence in the market and offer a significant edge over other vendors and providers based on competitive strength. Often, Market Challengers are the established and well-known vendors in the regions or vertical markets covered in the study.

Mainframe
Modernization Services

Mainframe Modernization Services

Who Should Read This

This report is relevant to enterprises in the U.S. for evaluating providers of mainframe modernization within mainframe environments.

In this quadrant report, ISG assesses providers of legacy application modernization. It also looks into those that offer code repositories such as GitHub or equivalents, DevOps integration and testing automation, as well as security testing.

Given the increase in digital transformation and innovation, organizations are modernizing their

investments in core mainframe and other existing systems for a competitive differentiation. Innovation is vital across applications, process strategies and infrastructures. Providers investing in mainframe modernization should have a thorough understanding of an enterprise's exact business requirements and what stage of modernization they are in. Mainframe service providers offer a full-fledged modernization strategy to best suit the business, including the resources to be terminated and the applications that should be kept in the mainframe.

Banking and finance leaders should read this report to understand how mainframes allow banks and other financial services providers to process data on a scale that commodity servers can't handle.
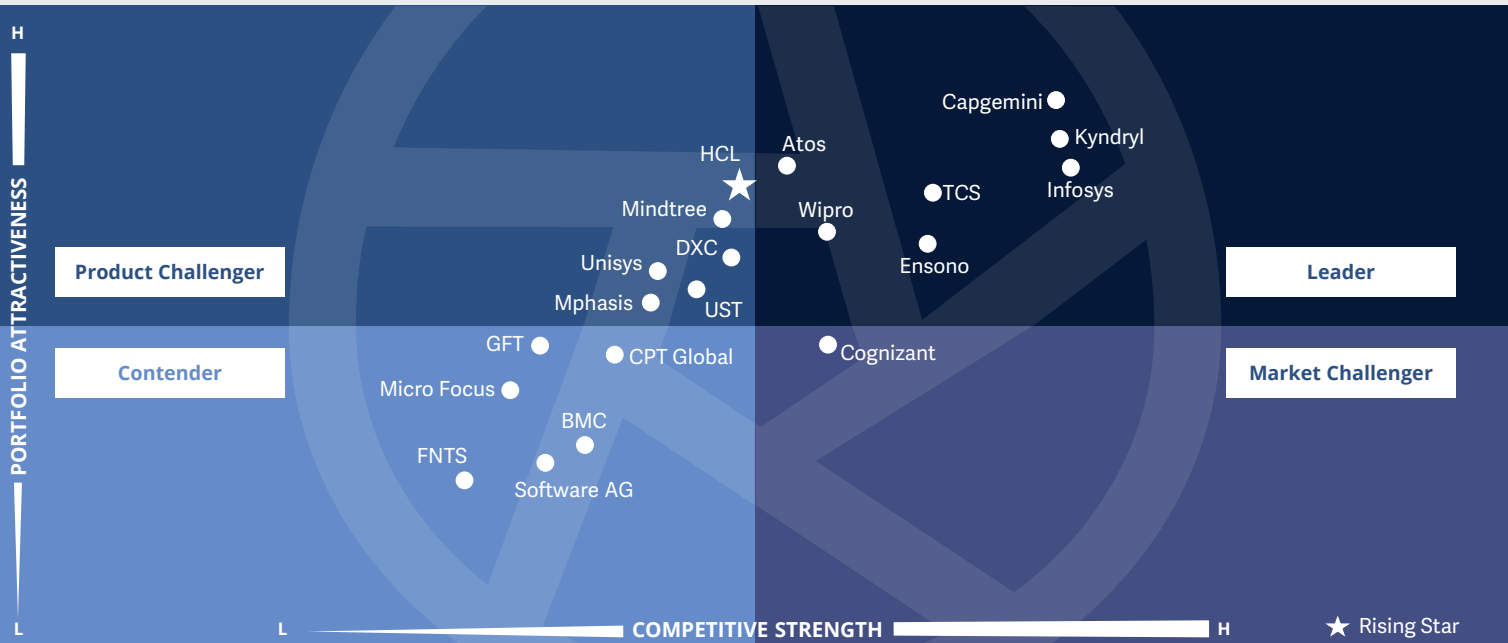
Insurance leaders should read this report to understand the vast potential of insurers to differentiate by better meeting evolving customer demands, particularly in the mobile realm. As mobile transactional applications connect through mainframes, these systems play a key role in supporting cutting-edge innovation.

IT and technology leaders should read this report to understand the strengths and weaknesses of mainframe services providers, including their offerings, capabilities, market presence, strengths, relationships with other mainframe service providers. They can also assess how providers employ the latest technologies and capabilities to deliver reliable offerings in line with the enterprise business and market change.

ISG Provider Lens™

Mainframes - Services and Solutions
Mainframe Modernization Services

U.S. 2022

PORTFOLIO ATTRACTIVENESS

H

Product Challenger

Contender

L

COMPETITIVE STRENGTH

L — H

Capgemini

Kyndryl

Atos

HCL ★

Mindtree

TCS

Infosys

Wipro

DXC

Ensono

Unisys

Mphasis

UST

GFT

CPT Global

Cognizant

Leader

Market Challenger

Micro Focus

BMC

FNTS

Software AG

★ Rising Star

This quadrant assesses providers of consulting and professional services that specialize in optimizing and modernizing mainframe systems. They modernize application code and deploy DevOps and testing automation, enabling **agility on legacy mainframe applications**.

Pedro L Bicudo Maschio

Mainframe Modernization Services

Definition

Service providers in this quadrant offer legacy application modernization and introduce code repositories such as GitHub or equivalents, DevOps integration and testing automation, as well as security testing. Modernization retains the original programing language such as COBOL, adding architecture optimization and documentation to enable agility. After the modernization is complete, clients can embrace agile methodologies in the development and maintenance

of applications running on mainframe systems, including code repositories, quality assurance and DevOps.

These providers can assess a client's application portfolio to deliver a modernization plan with guidance on what applications should be retained on the mainframe platform. They also help enterprises decide on the type of applications that can be transformed and migrated to other platforms, thus enabling cost and performance optimization.

Eligibility Criteria

1. The participant should provide case studies around mainframe modernization of either IBM Z®, IBM AS/400, IBM iSeries, HP, Cray, Fujitsu or Unisys mainframe applications.

2. Case studies must include DevOps tools integration, including code repository.

3. Modernization must enable legacy programming languages, such as COBOL, to build and deploy in line with modern continuous integration and deployment best practices (for example, implementation of COBOL CI/CD pipelines).

4. Services must include application assessment, phased modernization with robust testing and quality assurance, application decoupling, system architecture, API development and future-state application governance.

Observations

Many companies are not ready to replace or refactor their applications to run in the cloud. However, market dynamics, including the COVID-19 pandemic, have been pushing enterprises to be more agile in response to market changes. In this year's study, ISG observed that more companies refer to improving data access as the main reason to modernize their mainframes. As we move to an era when AI and machine learning will influence most business decisions, more companies are realizing that mainframes hide valuable information that should be available to other applications.

For enterprises that will continue to run applications on mainframes, it has become necessary to update their legacy applications to include agile development practices, APIs and microservices and connect these applications to cloud-based technologies and AI services.

IBM and other vendors offer such modernization tools. IBM also sponsors and promotes Zowe™, an integrated and extensible open source framework for z/OS. The Zowe trademark belongs to the Linux Foundation.

All participants in this quadrant have some Zowe capabilities, and those contributing to the Zowe community have received additional recognition. Zowe comes with a set of APIs and OS capabilities to build applications. it also includes some out-of-the-box applications for easy connection to cloud resources.

From the 45 companies assessed for this study, 20 have qualified for this quadrant with seven being identified as Leaders and one as a Rising Star.

Atos

Atos has long experience in the mainframe space and offers hosting, managed services and modernization services. With a full-service scope, it supports clients in all stages of their mainframe applications lifecycle. In the application modernization area, it innovates with APIs, microservices, DevOps, security tools and data access.

Capgemini

Capgemini has one of the largest mainframe resource pools at a global level. It offers offshoring with deep expertise in mainframe modernization. It collaborates with IBM and Micro Focus to stay on top of all mainframe innovations, including the use of Zowe solutions in the U.S.

Ensono

Ensono is a nimble, mainframe expert that partners with leading vendors, including IBM and Micro Focus. The company offers a complete mainframe services portfolio, with clear expertise in mainframe modernization to optimize performance, reduce MIPS consumption and introduce DevOps, encryption, APIs and microservices.

Infosys

Infosys has a large pool of mainframe experts that can eliminate any client's concern with the COBOL skills shortage. It ensures a constant inflow of new talent by offering training and career path opportunities. The company leverages A.R.T. – a framework that makes mainframes agile and integrates them with cloud resources.

kyndryl

Kyndryl leverages its long experience with mainframe optimizations. It participates in the Zowe open-source project and can help clients accelerate the openness of their mainframe applications with APIs, microservices and DevOps. The company

has a talent acquisition strategy to ensure skill availability and maintain thought leadership in the future of mainframe.

TCS

TCS serves large enterprises at a global scale. Its U.S.-based clients have large mainframe operations that demand constant modernizations. TCS offers the MasterCraft™ toolset for automated application portfolio assessments and to identify performance and cost-savings opportunities. It trains clients' staff and has extensive expertise in modernizing mainframe DevOps.

Wipro focuses on integrating application portfolios. It proposes cross-technology automation, DevOps and continuous delivery, providing mainframe applications with the same level of automation and

agility as other apps. Wipro leverages its ModerniZ framework that integrates proprietary and vendor solutions to accelerate a client's modernization journey.

HCL

HCL, a Rising Star in this quadrant, has a robust toolset to optimize mainframes and implement strong CI/CD pipelines. It leverages the IBM partnership to co-develop mainframe tools, thus constantly improving its portfolio. It has a growing footprint in the U.S. mainframe market and is well positioned to enter the Leaders' quadrant.

Kyndryl

"Kyndryl leverages the experience acquired over the years to offer innovations to clients."

Pedro L Bicudo Maschio

Overview

Kyndryl is headquartered in New York, NY, U.S., with more than 88,000 employees, serving over 4,000 customers in 63 countries. The company was established in 2021 as a spin-off from IBM's Global Technology Services organization. Kyndryl's Core Enterprise and zCloud Practice portfolio of mainframe services includes managed infrastructure services, application operations (AppOps), MFaaS, hyperscaler integration, and advisory and implementation services that transform the environment to utilize the modern capabilities of the mainframe. In 2021, the company acquired Oy Samlink to expand its capabilities in consulting and modernization and in the financial services industry.

Strengths

Mainframe DevOps expertise: Kyndryl can transform the way clients think about mainframe development. It integrates infrastructure and development services into a single model that can be orchestrated across an enterprise to enable DevOps. By co-executing the modernization in joint development squads, Kyndryl introduces new tools, skills and ways-of-working to transform a client's team to adopt modern, agile delivery practices.

Investing in innovation: Kyndryl's investments are directed toward improving its autonomic self-healing, cross-enterprise ecosystem. It also invests in AI and is currently improving its batch optimization with the technology. Kyndryl has been using open solutions like Zowe or graphical user interface (GUI)-based tools to enhance user productivity and reduce the need for clients' knowledge specific to IBM Z®.

Building a future for mainframes: Kyndryl supports many university programs and promotes government partnerships to develop mainframe skills. It has a continuous stream of young and talented professionals joining the company. With its investments and a strong IBM partnership, clients that opt to modernize their mainframes with Kyndryl have constant access to the best skills.

Caution

Kyndryl has retained mainframe expertise and is expanding its service portfolio. However, the company specializes in infrastructure services. It is early to estimate how Kyndryl will develop its consulting services capacity. Clients should clearly define the contractual terms for their modernization projects with a smooth transition to operations. This will help them avoid any uncertainties regarding the scope and responsibilities of the modernization project.

Mainframe Application Modernization and Transformation Services

Mainframe Application Modernization and Transformation Services

Who Should Read This

The report is for U.S.-based enterprises to evaluate providers of mainframe application modernization transformation services for transforming and modernizing mainframe applications to a contemporary environment.

In this quadrant report, ISG assesses the current market positioning of providers of mainframe application modernization and transformation services. Enterprises typically look for modernization that can help with cost savings with greater flexibility and are adaptable to dynamic demands. Providers in this space can assess and offer rewrite legacy programming language applications written on COBOL, RPG, Fortran and others that typically run on mainframes.

Enterprises are fastening their process of transforming and modernizing current technology, process and infrastructure and expect providers to accelerate delivery speed for core business systems. Service providers should have capabilities that can offer mainframe CI/CD (continuous integration/continuous development), rehosting mainframe to cloud (6R strategy), secure host access, etc. Enterprises have a hectic task to satisfy the need to hire the right professionals along with the required infrastructure to transform and modernize. To overcome this, enterprises reach out to providers with high skilled professionals along with the technology capability to help them modernize.

Banking and finance leaders should read this report to understand how mainframes allow banks and other financial services providers to process data on a scale that commodity servers can't handle.

Insurance leaders should read this report to understand the vast potential of insurers to differentiate by better meeting the evolving customer demands, particularly in the mobile realm. As mobile transactional applications connect through mainframes, these systems play a key role in supporting cutting-edge innovation.
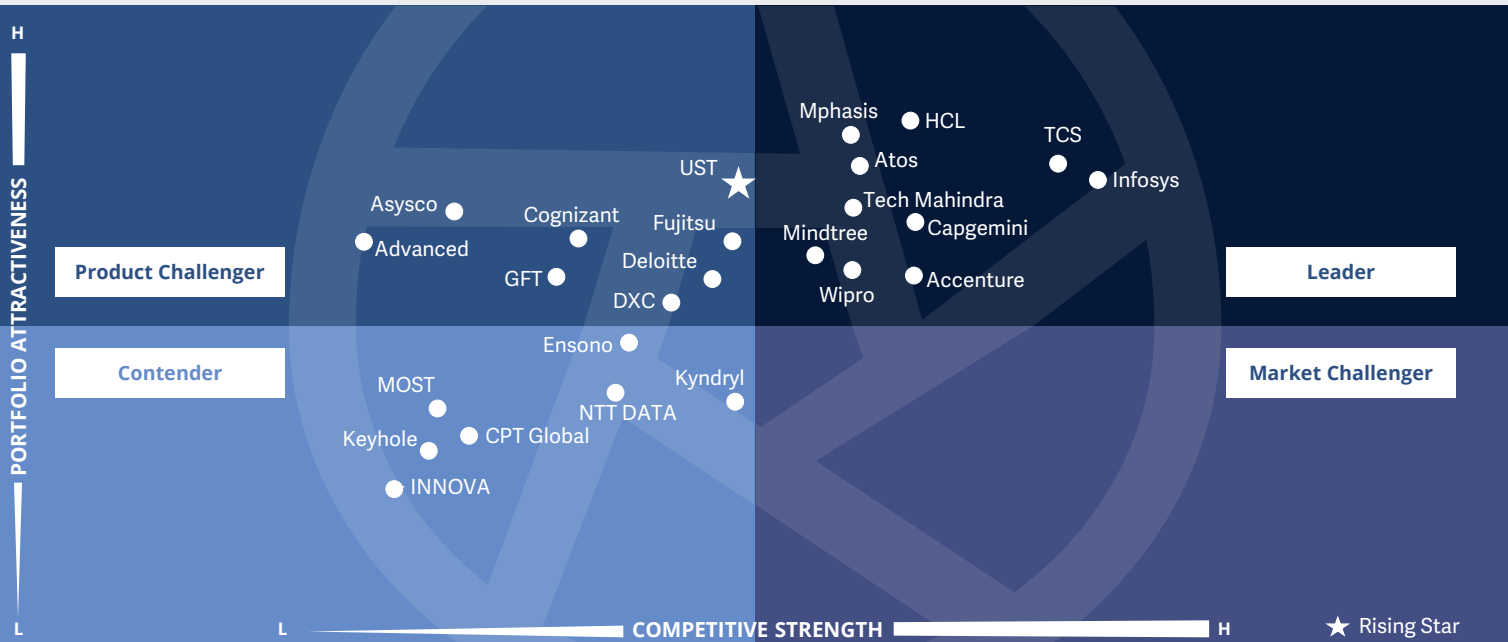
IT and technology leaders should read this report to understand the strengths and weaknesses of providers offering mainframe services, including their offerings, capabilities, market presence, strengths, relationships with other mainframe service providers. They will also be able to assess the way providers employ the latest technologies and capabilities to deliver reliable offerings in line with the enterprise business and market changes.

iSG Provider Lens™

Mainframes - Services and Solutions
Mainframe Application Modernization and Transformation Services

U.S. 2022

H

PORTFOLIO ATTRACTIVENESS

Product Challenger

Mphasis   HCL

UST   Atos   TCS   Infosys

Asysco   Tech Mahindra
Cognizant   Fujitsu   Mindtree   Capgemini
Advanced   Deloitte   Wipro   Accenture
GFT   DXC

Leader

Contender

Ensono   Market Challenger

MOST   Kyndryl
NTT DATA
Keyhole   CPT Global

INNOVA

L

L   COMPETITIVE STRENGTH   H   ★ Rising Star

This quadrant assesses service providers that focus on **rehosting, refactoring or reengineering mainframe applications to run in the cloud**. These providers have mainframe experience, software engineering skills and consulting capacity to use automated modernization tools.

Pedro L Bicudo Maschio

Mainframe Application Modernization and Transformation Services

Definition

This quadrant assesses providers of application development and maintenance services with newer application modernization methodologies to assess and transform legacy programming language applications written with COBOL, RPG, Fortran, PL/1, Natural and others that typically run on mainframes. The main target programming languages may include Java, .Net, C# and others, enabling the same logic and business rules to run on any platform, including the public cloud.

Clients that want to move their applications off the mainframe can choose service providers that offer modernization methods such as refactor, rehost or encapsulate, replatform, rewrite or reengineer. A complete transformation should include user interface (UI) translation services that can eliminate green screens while introducing modern graphic UI for a better user experience (UX).

Eligibility Criteria

1. The service provider should be able to reverse engineer legacy applications to provide application logic documentation.

2. It should be able to automate code conversion tools to reduce the time required to transform the applications.

3. It may offer emulation systems to run legacy applications on other platforms without rewriting code. However, the provider should offer convincing case studies that demonstrate the viability of the emulation to be considered.

4. Services must include application assessment, phased transformation with robust testing and quality assurance, application decoupling, system architecture, API development and future-state application governance.

5. The transformation should enable the enterprise client to operate agile development and maintenance with CI/CD automation.

Mainframe Application Modernization and Transformation Services

Observations

Service providers in this quadrant are ideal partners for clients that want to take full advantage of cloud platforms and technologies to provide an agile foundation for sustainable business growth. All participants, regardless of their position in this quadrant, have the tools and experience to simplify and accelerate the migration from mainframes to cloud.

Readers will notice that service providers use a common term in the market – the 7Rs, which refer to seven possible outcomes for a legacy application. These are rehost, refactor, reengineer, rearchitect, rewrite, replace and retire. Except for replace and retire, all other terms denote refactoring the application to run on x86 hardware. However, to be consistent with the market verbiage, ISG uses the 7Rs acronym to refer to providers that deliver the full scope of modernization options.

All major players in this market have large offshore capacity. Clients should understand that automation, modern tools and consistent program management favor offshoring the modernization program. However, a small team of senior experts should always be locally placed. No service provider can promise 100 percent automation of mainframe modernization.

From the 45 companies assessed for this study, 26 have qualified for this quadrant with 10 being Leaders and one as a Rising Star

accenture

Accenture leverages a robust application services organization and the best mainframe modernization tools to deliver broad modernization programs that can include business innovation.

Atos

Atos offers deep expertise in mainframe technologies to counsel clients on the best modernization approach. It has successful mainframe modernization cases in the U.S. and commits to cost savings on a yearly basis.

Capgemini

Capgemini has extensive experience in delivering mainframe services and is a top partner of all public cloud providers. It integrates several third-party tools with its CAP360 platform, ensuring that clients have the best toolset for their particular needs.

HCL

HCL leverages an experienced team of application engineers to employ the most effective tools for each transformation requirement. The diversity of options,

methods and tools takes the company to the highest position in the Portfolio Attractiveness axis.

Infosys

Infosys proposes a multi-year transformation program based on a robust methodology for phased migrations that optimize business value and reduce risks. The company partners with leading modernization tool vendors and leverages its advanced automated platforms to integrate partners and support the complexity of large mainframe clients.

Mindtree

Mindtree is a nimble company with deep mainframe and application services expertise. It has proprietary tools and engages with partner vendors to offer best-of-breed mainframe modernization tools to rehost, replatform and reengineer applications.

Mainframe Application Modernization and Transformation Services

Mphasis

Mphasis proposes a phased modernization approach that optimizes a client's application portfolio and eliminates technical debt. It focuses on clients' portfolios rather than one-time projects. The company's multi-year engagements focus on annual savings for a self-funding modernization.

TCS

TCS has a large footprint in the U.S. and is a robust organization to handle large and complex transformations, including the banking, financial services and insurance (BFSI) industry and its highly regulated environments. It uses MasterCraft™ – a comprehensive toolset to automate rehosting, refactoring and reengineering. It also uses partner tools whenever necessary for a best-of-breed approach.

Tech Mahindra

Tech Mahindra offers a comprehensive modernization program with value-added innovation and software engineering. It follows agile development practices with a robust automated test workbench to ensure quality and performance of the transformed applications. It excels in adding human expertise to ensure better results when compared to typical fabric approaches.

wipro

Wipro has long experience in mainframe services and modernization. It has been improving its application services toolset and added new modernization functionality in 2021. The company has also improved its cloud certifications around mainframe migration. These factors helped it move from a Market Challenger to a Leader position this year.

UST

UST is a Rising Star. It is a nimble, efficient software engineering company with a focus on digital transformation and customer experience. It offers mainframe modernization services to eliminate technology obsolescence in digital transformation engagements, freeing companies to grow into digital businesses. UST can introduce data lakes, analytics and advanced user interfaces in client modernization programs.

Mainframe as a Service (MFaaS)

Mainframe as a Service (MFaaS)

Who Should Read This

This report is relevant to enterprises in the U.S. for evaluating providers offering MFaaS within mainframe environments.

In this quadrant report, ISG assesses the current marketing positioning of providers of MFaaS in the country based on the depth of service offering and market presence.

The U.S. mainframe market is driven by increased demand for high-performance computing, development of IoT landscape, the increase in large data sets, and growth in adoption for MFaaS. The mainframe

vendor provides all the IT infrastructure and support, and the clients pay for the consumption of the service and for any of their own coding to run their batch processes. The key benefit for an enterprise's MFaaS is that the provider pays for the maintenance and upgrades to IT infrastructure, which translates to drastic cost and risk avoidance for the CIO.

Enterprises that use these offerings prioritize on reducing operational costs, achieving a quick turnaround and improving customer satisfaction.

Banking and finance leaders should read this report to understand how mainframes allow banks and other financial services providers to process data on a scale that commodity servers can't handle.

Insurance leaders should read this report to understand the vast potential of insurers to differentiate by better meeting the evolving customer demands, particularly in the mobile realm. As mobile transactional applications connect through mainframes, these systems play a key role in supporting cutting-edge innovation.
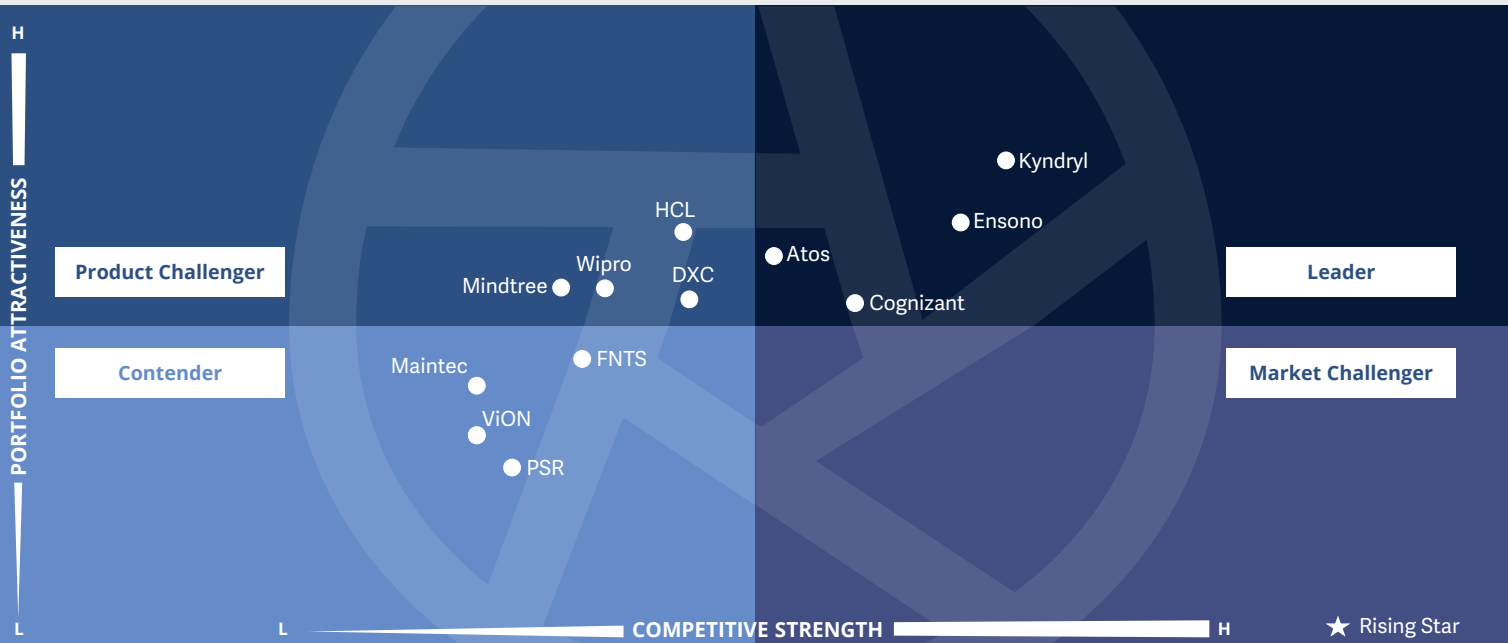
IT and technology leaders should read this report to understand the strengths and weaknesses of providers that offer mainframe services, including their offerings, capabilities, market presence, strengths and relationships with other mainframe service providers. They can also assess the way providers employ the latest technologies and capabilities to deliver reliable offerings in line with the enterprise business and market change.

ISG Provider Lens™

Mainframes - Services and Solutions
Mainframe as a Service (MFaaS)

U.S. 2022

PORTFOLIO ATTRACTIVENESS

H

Product Challenger

HCL

Wipro

Mindtree   DXC

Atos

Cognizant

Kyndryl

Ensono

Leader

Contender

Maintec   FNTS

ViON

PSR

Market Challenger

L

L   **COMPETITIVE STRENGTH**   H   ★ Rising Star

This quadrant assesses outsourcing providers that offer a **cloud-like mainframe application hosting experience**. MFaaS offers a pay-per-use, no investment option to decommission the clients' data centers.

Pedro L Bicudo Maschio

Mainframe as a Service (MFaaS)

Definition

This quadrant assesses infrastructure service providers that offer shared IBM Z® mainframes in a pay-per-use contract model. Services include facilities, hardware, connectivity, mainframe network management, licensing, operating systems and subsystems, tools and all maintenance services that are required to keep mainframe workloads running as per the expected performance established upfront. MFaaS is hosted on a provider's data center or that of partners, offering a cloud-like experience.

Eligibility Criteria

1. The service provider should use robust and secure data centers that can deliver high performance and availability as expected from mainframes.

2. It should offer services such as job scheduling, performance optimization, CICS©, batch, backup, restore, system upgrades, security patches and other typical mainframe operations.

3. It should demonstrate the disaster recovery effectiveness of its MFaaS infrastructure.

4. Hosting facilities should offer low-latency connections to clients' locations and the public cloud such as AWS Direct Connect, Azure Route and GCP Direct Connect. Carrier-neutral data centers are preferred.

5. The provider must demonstrate the financial capacity to invest in and grow its mainframe operations.

Observations

MFaaS has been growing at the same rate as traditional mainframe data center outsourcing (less than 10 percent a year). Typical MFaaS clients want to decommission their data centers; the participants in this quadrant have full capacity to help them reduce their MIPS needs, improve performance and integrate their mainframe with the cloud.

Mainframe clients are under cost pressure, particularly due to rising ISV licensing costs, including changes in the CA product line pricing strategy since Broadcom acquired CA Technologies in 2018. These clients have been pushed to resolve their dependence on niche software tools, finding in MFaaS a possible solution to free their applications. By transitioning to MFaaS, they can modernize their toolset to reduce or eliminate ISVs.

From the 45 companies assessed for this study, 12 have been qualified for this quadrant with four being Leaders.

Atos

Atos offers MFaaS in two data center locations in the U.S. It excels in managed service automation and offers fully compliant security. The company leverages an R&D center with mainframe engineering capabilities, including quantum computing, to design resilient MFaaS infrastructure and advanced managed services.

Cognizant

Cognizant is a long-time mainframe outsourcing service company with an extensive installed base. The MFaaS offering is an extension of its mainframe outsourcing services with minor differences in service levels and pricing

structure. The company differentiates itself by its experience and capacity to cover the entire U.S.

Ensono

Ensono is a prominent MFaaS competitor. The company is nimble in optimizing resources to help clients reduce their mainframe costs. At the same time, it offers a differentiated commercial model that enables clients to decommission mainframe applications and migrate to public clouds with support. Its agility and flexibility provide clients a safe path towards future hybrid infrastructures.

kyndryl

Kyndryl has the largest mainframe data center capacity in the world. The company was created in 2021 from the spinoff of IBM's Global Technology Services (GTS) organization and has retained all its

legacy data centers. Kyndryl leverages a large pool of mainframe experts from IBM, ensuring that the best mainframe knowledge is always available to clients.

Kyndryl

Leader

"Kyndryl hosts the largest IBM mainframe operations and MFaaS infrastructure, offering clients full scalability."

Pedro L Bicudo Maschio

Overview

Kyndryl has more than 88,000 employees supporting more than 4,000 customers in 63 countries. The company was created in 2021 as a spin-off from IBM's Global Technology Services organization. Kyndryl's Core Enterprise and zCloud Practice delivers a comprehensive portfolio of mainframe services, including managed infrastructure services, application operations, MFaaS, hyperscaler integration, and advisory and implementation services that transform the environment to use modern mainframe capabilities. Kyndryl's Managed Extended Cloud Infrastructure as a Service for IBM Z®, or zCloud, has the largest installed base in terms of IBM Z® mainframe MIPS.

Strengths

Cloud delivery model: Kyndryl zCloud, cloud delivery model, offers clients with access to a scalable, multi-tenant infrastructure, designed for flexibility and adaptability. Kyndryl supports several operating systems, including IBM z/OS, z/VM, Red Hat Enterprise Linux and other Linux flavors plus the latest versions of standardized software stacks to facilitate flexibility, for instance, CICS, IMS, DB2, WebSphere MQ and WebSphere Application Server. Clients only pay for the resource they use from a service catalog.

Advanced infrastructure services: Kyndryl zCloud supports both IBM and ISV software on a custom basis. The company offers support for Red Hat

OpenShift Container Platform (OCP) for application development, and z/OS Connect to expose traditional mainframe middleware and data through APIs. Clients can co-host these solutions on the same mainframe hardware for near-zero latency between applications before they connect to the cloud.

Hyper-connected hybrid data centers: Kyndryl offers large-scale data centers that interconnect with all public cloud providers. Clients can run mainframe microservices in containers and integrate them to their hybrid, private or public clouds. Kyndryl zCloud behaves as true cloud service.

Caution

Kyndryl is a new company with experienced staff. However, as in any broad reorganization, the company is still adapting to its new operations model. As the leading provider of IBM Z services, Kyndryl still maintains a strong relationship with IBM and avails product education, training and support. The company is building new partner ecosystem.

Mainframe Operations

Who Should Read This

This report is for U.S.-based enterprises to evaluate providers of mainframe operations related to mainframe applications.

In this quadrant report, ISG assess traditional outsourcing providers with extensive experience in offering mainframe services.

In this digital world, where downtime or even slow performance can significantly impact the bottom line, leading enterprise organizations continue to rely on the mainframe to run their most critical digital services. Mainframe operation support services provide organizations the flexibility, cost effectiveness and quality staff and processes they need to meet changing business needs. Mainframe operations management solutions will help to integrate the mainframe into the organization's overall service management strategy, ensuring that business priorities are aligned across IT for greater efficiencies, reduced operating costs and decreased risk of downtime.

Banking and finance leaders should read this report to understand how mainframes allow banks and other financial services providers to process data on a scale that commodity servers can't handle.
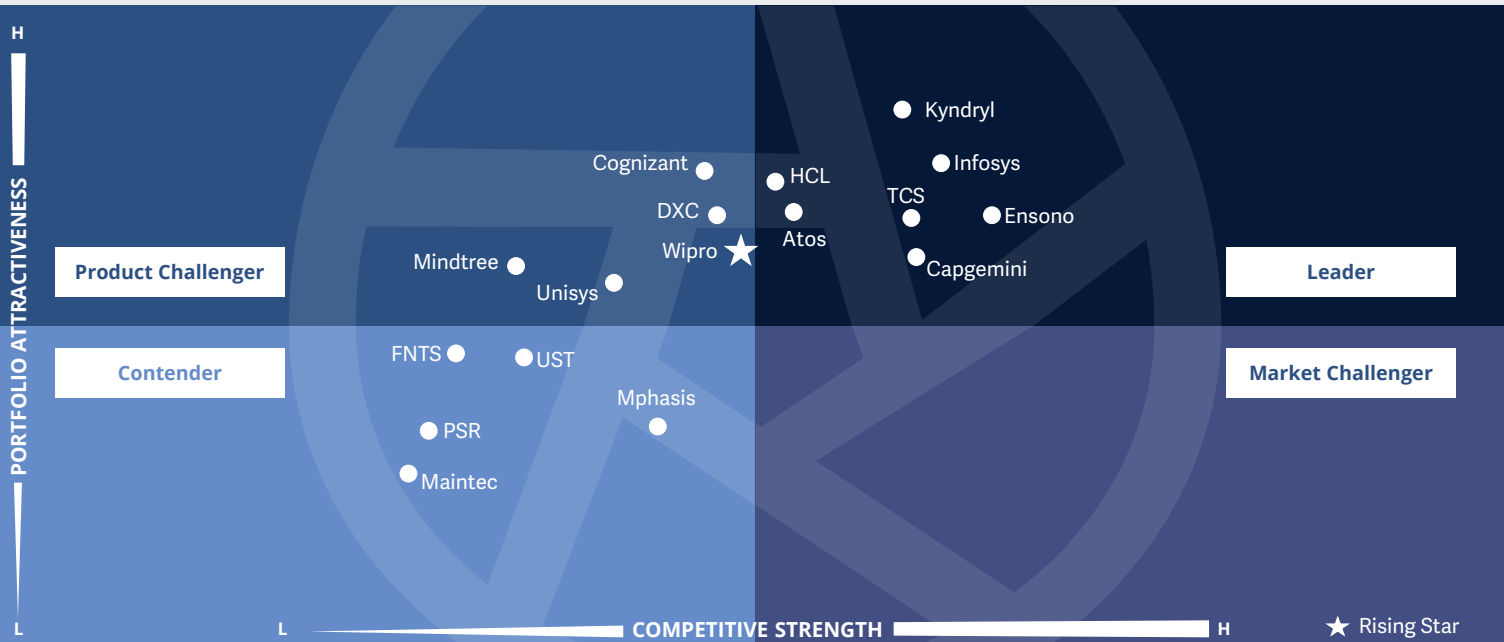
Insurance leaders should read this report to understand the vast potential of insurers to differentiate by better meeting evolving customer demands, particularly in the mobile realm. As mobile transactional applications connect through mainframes, these systems play a key role in supporting cutting-edge innovation.

IT and technology leaders should read this report to understand the strengths and weaknesses of providers offering mainframe services, including their offerings, capabilities, market presence, strengths and relationships with other mainframe service providers. They can also assess how providers employ the latest technologies and capabilities to deliver reliable offerings in line with the enterprise business and market change.

ISG Provider Lens™

Mainframes - Services and Solutions
Mainframe Operations

Source: ISG RESEARCH

U.S. 2022

PORTFOLIO ATTRACTIVENESS

H

Product Challenger

Contender

Cognizant

DXC

Mindtree

Unisys

Wipro ★

HCL

Atos

Kyndryl

Infosys

TCS

Capgemini

Ensono

Leader

Market Challenger

FNTS ● ●UST

Mphasis

● PSR

● Maintec

L

L   COMPETITIVE STRENGTH   H   ★ Rising Star

This quadrant assesses service providers that **operate mainframes** on behalf of their clients, offering expertise in problem management, incident management, capacity planning and other processes to ensure mainframe performance and security.

Pedro L Bicudo Maschio

Mainframe Operations

Definition

This quadrant assesses traditional outsourcing providers with extensive experience in offering mainframe services. Typical participants employ experienced practitioners to cover legacy mainframe technologies and the most recent mainframe releases.

Mainframe operation service providers have skilled teams to keep clients' mainframes running. Services can be delivered on any hosting facility (client or provider owned). These services, which have long been in existence, include job scheduling, performance optimization, CICS©, batch, backup, restore, system upgrades, security patches and other typical mainframe operations. Multiple options exist for hardware and software ownership, upgrades and modernization responsibilities. Mainframe operations cover staff augmentation and operation of client-owned on-premises mainframes.

Eligibility Criteria

1. The provider should demonstrate a strong **mainframe operation capacity** through case studies.

2. It should have a hiring and training program to ensure **skills availability** in the future.

3. It must offer **professional services** to manage and monitor CPUs, memory, databases, operating systems and tools.

4. Professional services must include patching services for operating systems, middleware and applications, system upgrades, data center security, network configuration and system integration.

5. The provider should offer management dashboards, including **utilization reports, performance indicators, chargeback** and other reporting functionality.

6. Services must comply with IT service management (ITSM) best practices and include incident management, problem management and release management.

7. Ideally, the provider should have available mainframe capacity to supplement its client **capacity during peak times** or future expansions.

Observations

Mainframe operations involve the pioneer providers of the IT outsourcing industry. Some of the participants in this quadrant have been offering mainframe services for more than 40 years. These providers accumulated deep expertise in mainframe operations, and a typical operation involves single-tenant mainframes.

Clients should take note that some of these providers are silently divesting from mainframes without upgrading their facilities and waiting for clients to migrate. Clients are not at risk because the participants qualified for this quadrant continue to offer quality services. However, those that plan to keep their mainframes running for more than five years will need to modernize or upgrade. In such cases, they could get better deals by moving to providers that are committed to investing in their expansion.

From the 45 companies assessed for this study, 17 have qualified for this quadrant with seven being designated as Leaders and one as a Rising Star.

Atos

Atos has extensive experience in mainframes. It invests in developing large x86 servers (its BullSequana product line) and quantum computing to serve clients that have high computing density needs. Atos offers deep understanding of clients' technical needs.

Capgemini

Capgemini has a large mainframe installed base that is well balanced across North America, Europe and South America. It has a large offshore delivery center in India to ensure mainframe service continuity. It is an ideal provider for multinational enterprises that require global operations.

Ensono

Ensono has been investing in mainframe operations and MFaaS. This nimble provider operates 10 data centers in the U.S., enabling it to offer low latency, high performance and client proximity.

HCL

HCL acquired a mainframe data center in Europe and the U.S. to offer mainframe hosting and MFaaS. It is a strategic IBM partner for co-developing software and tools. It has experienced professionals with deep technology expertise.

Infosys

Infosys has large mainframe operations in the U.S. and offshore delivery centers in India, offering a large pool of mainframe experts. It provides professional services and staff augmentation for clients that need partial outsourcing.

kyndryl

Kyndryl was created in 2021 from the spinoff of IBM's Global Technology Services (GTS) organization and has retained all its legacy data centers. It has a vast client base, expansive mainframe facilities and the largest MIPS installation in the world.

TCS

TCS serves large enterprises, including banks and financial service companies. It leverages automation tools and offers a robust delivery organization in the U.S. plus large offshore capacity in India.

wipro

Wipro is a Rising Star. After decommissioning its data centers in the U.S. a few years ago, it operates clients' mainframes on-premises or in Tier III colocation data centers. Wipro is well positioned to attract new clients that want to modernize their outsourcing deals.

Kyndryl

Leader

"Kyndryl has the largest mainframe operation, supporting clients with top-rated experts in IBM technologies. "

Pedro L Bicudo Maschio

Overview

Kyndryl is headquartered in New York, NY, U.S., and has more than 88,000 employees supporting over 4,000 customers in 63 countries. The company was created in 2021 as a spin-off from IBM's Global Technology Services (GTS) organization. Kyndryl's Core Enterprise and zCloud Practice delivers a comprehensive portfolio of mainframe services, including managed infrastructure services, application operations (AppOps), MFaaS, hyperscaler integration, as well as advisory and implementation services that transform the environment to the modern capabilities of the mainframe. It has more than 40 years of mainframe outsourcing experience.

Strengths

Large scale of operations: Kyndryl has the largest MIPS footprint in the U.S. and globally. It can handle any mainframe size. For large accounts, Kyndryl offers space and resources to support growth. For midmarket clients, it enables economies of scale at competitive prices. Kyndryl also demonstrates its large scale of operations through the number of skilled practitioners it offers.

Fully automated service platform: Kyndryl leverages a robust AIOps platform integrated with ServiceNow and Watson AI to provide end-to-end automation, from service request to service delivery. It offers analytics over a client's mainframe data with open-source data visualization dashboards. Kyndryl can also provide

service dashboards and self-service customer portals for some of its offerings.

Deep mainframe technology expertise: Kyndryl's heritage is supported by seasoned mainframe engineers to help clients make the best architectural decisions. The company has profound expertise in IBM products, which is reflected in its operation technology. It has user-friendly graphical interfaces to manage z/OS, subsystems and products, including the integration to z/OSMF and VS Code. Kyndryl also offers UI interfaces for native products.

Caution

The Kyndryl spinoff from IBM took place less than a year ago. Kyndryl started with the largest footprint in mainframe services, and ISG believes the company will grow and maintain a leadership position. However, Kyndryl has not shown revenue growth in previous quarters, and it is uncertain how the market will respond when old deals are up for renewal.

Mainframe Application Modernization Software

Mainframe Application Modernization Software

Who Should Read This

This report is relevant to enterprises in the U.S. for evaluating vendors of modernization application software within the mainframe ecosystem.

In this quadrant report, ISG assesses the current market positioning of vendors offering mainframe application modernization software to enterprises in the U.S., based on the depth of service offerings and market presence.

Enterprises that intend to modernize their applications are often challenged by a few market traits such as the short supply of legacy and next-generation technical skills, lack of a provider's partnership ecosystem with modernization vendors, and limited availability of modernization tools and platforms. At the same time, ISG observes significantly increased adoption of modernization software services to modernize and transform applications that are less than 10,000 MIPS. Enterprises partner with providers that have better experience and a partner ecosystem of platform/solution providers.

Banking and finance leaders should read this report to understand how mainframes allow banks and other financial services providers to process data on a scale that commodity servers can't handle.

Insurance leaders should read this report to understand the vast potential of insurers to differentiate by better meeting evolving customer demands, particularly in the mobile realm. As mobile transactional applications connect through mainframes, these systems play a key role in supporting cutting-edge innovation.
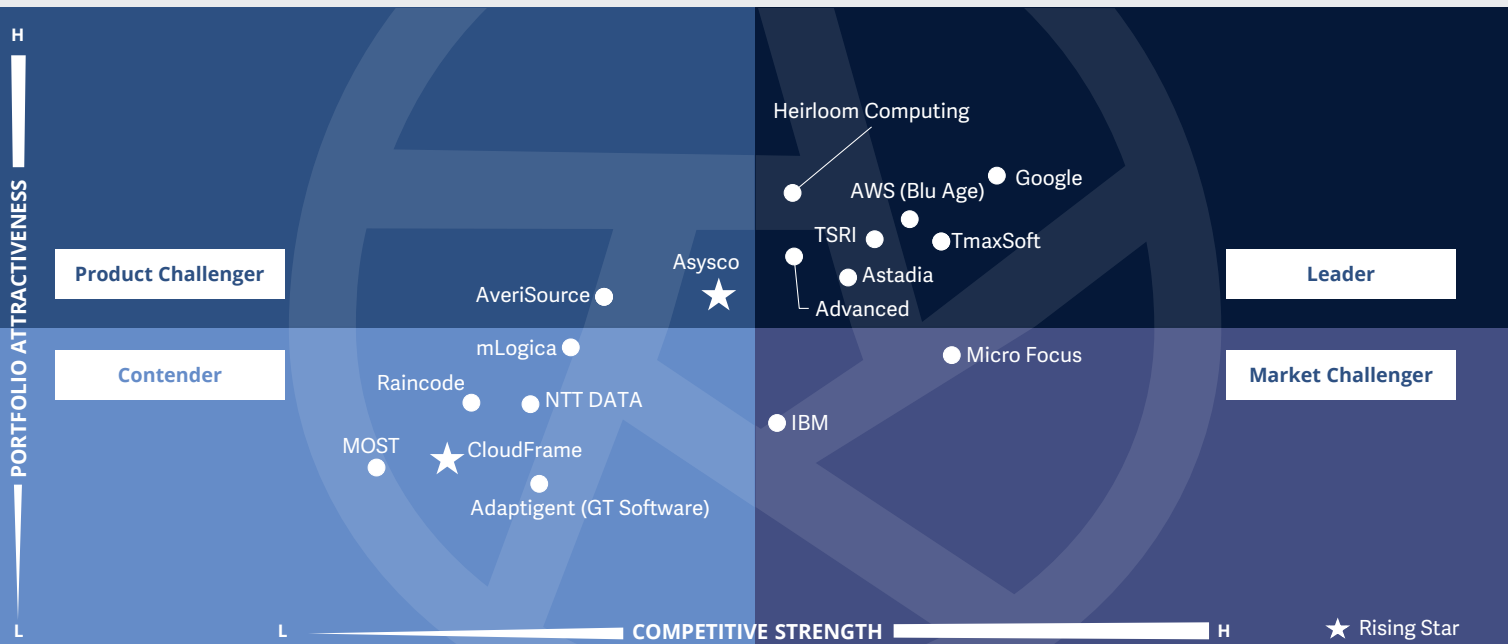
IT and technology leaders should read this report to understand the strengths and weaknesses of providers offering mainframe services, including their offerings, capabilities, market presence, strengths, relationships with other mainframe service providers. They can also assess the way providers employ the latest technologies and capabilities to deliver reliable offerings in line with the enterprise business and market change.

ISG Provider Lens™

Source: ISG RESEARCH

Mainframes - Services and Solutions
Mainframe Application Modernization Software

U.S. 2022

PORTFOLIO ATTRACTIVENESS

H

Heirloom Computing

Google

AWS (Blu Age)

TSRI

TmaxSoft

Product Challenger

Asysco

AveriSource

Astadia

Advanced

Leader

Contender

mLogica

Micro Focus

Market Challenger

Raincode

NTT DATA

MOST

CloudFrame

IBM

Adaptigent (GT Software)

L

L

COMPETITIVE STRENGTH

H

★ Rising Star

This quadrant assesses software vendors that specialize in migrating mainframe applications to the public or private clouds, enabling clients to **decommission their mainframe infrastructures**.

Pedro L Bicudo Maschio

Mainframe Application Modernization Software

Definition

This quadrant rates providers of software and toolsets that enable legacy application assessments and application conversion (replatform, rehost, refactor, rewrite or reengineer). Mainframe modernization software includes reverse engineering, business logic mapping, business rules extraction, code review and inspection, documentation, emulators, compilers, frameworks and application development tools that can accelerate code modernization and application modernization.

Enterprises and service providers require tools to perform their mainframe modernization and transformation. This quadrant covers vendors that supply the modernization toolset and eventually partner with global system integrators (GSIs) that deliver modernization services. Mainframe modernization software outcomes include logic flows, data architectures, automated code conversion, serverless functions, APIs and microservices that can accelerate the mainframe modernization program. Professional services and consulting expertise can improve the vendor rating but are not a requisite if they are offered through certified partners.

Eligibility Criteria

1. The software should be licensed or delivered as a service to enable client autonomy.

2. The vendor must have mainframe specialization and offer mainframe-specific tools.

3. The product must be available and in use by clients for more than one year.

4. The solution must have a robust support organization or service partner ecosystem to ensure enterprise-grade support.

5. Assessment tools and compilers are included. Generic code conversion tools or wide-scope server/cloud optimization tools are not covered. Vendors must have mainframe expertise.

Observations

The modernization tools assessed are based on four methods: OS emulators, compilers, code translation and application reengineering. Clients are invited to understand the different methods and their implications. For example, the first two enable clients to preserve their legacy language programmers and thus retain experienced talent. The other two require reskilling or new talent to support new applications. Major criteria are code maintainability, innovation potential, documentation, code readability, code quality and security. All methods can deliver application performance, but the effort required varies by vendor solution.

From the 45 companies assessed for this study, 17 have qualified for this quadrant with seven being designated as Leaders and two Rising Stars.

Advanced

Advanced is a U.K.-based company with a strong partner ecosystem to cover client requirements in the U.S. It employs robust technology and methods to take mainframe workloads to the cloud. The company offers assessments, application reengineering and rehosting.

Astadia

Astadia has extensive experience in application modernization and managed IT services. In 2021, it acquired Belgium-based Anubex for its refactoring capabilities. Astadia offers clients a migration factory that leverages a comprehensive toolset, including coding and testing automation for reengineering and rehosting mainframe applications in the cloud.

AWS

AWS (Blu Age) offers a sophisticated application reengineering solution that includes portfolio assessments and automated code writing. AWS acquired Blu Age in 2021 to invest in its growth and make Blu Age technology accessible to all AWS clients.

Google

Google acquired Cornerstone Technology and its G4 platform in 2020. It offers a complete reengineering and replatforming toolset that has demonstrated solid results. Google has added resources to expand G4 availability in the U.S. and in the research and product development capacity to make it the best application modernization toolset in the market.

Heirloom Computing

Heirloom Computing was named a Rising Star in 2021 and is a Leader in 2022. The company continues to grow and improve its relationship with cloud providers and system integrators. It offers rapid mainframe migrations converting legacy programming languages into Java which can run on any cloud.

TmaxSoft

TmaxSoft OpenFrame is a complete mainframe modernization solution to rehost and refactor applications on any x86 platform, including all public cloud providers. It has a successful track record, and its toolset is used by many system integrators to offer mainframe rehosting services.

Mainframe Application Modernization Software

TSRI

TSRI has deep software engineering expertise to deliver sophisticated reengineering of legacy applications. It proposes a full redesign of the application landscape to introduce innovation. With its vast experience in software, the company covers more than 35 application languages and can deliver true object-oriented, cloud-native applications.

Asysco

Asysco is a Rising Star for its improved toolset functionality and increased recognition from service providers (partners). The company is expected to continue on its revenue and client growth trajectory to enter the Leader's quadrant soon.

cloudframe

CloudFrame is a Rising Star for its easy-to-understand and easy-to-use toolset for incremental COBOL to Java modernization. The company is building a robust partner ecosystem with system integrators and hyperscalers including AWS, Azure and Google Cloud.

Appendix

Methodology & Team

The ISG Provider Lens 2022 – Mainframes – Services and Solutions analyzes the relevant software vendors/service providers in the global market, based on a multi-phased research and analysis process, and positions these providers based on the ISG Research methodology.

Lead Author:
Pedro L Bicudo Maschio - Lead Author, U.S.

Editors:
Ambrosia Sabrina, John Burnell

Research Analysts:
Srinivasan PN, Sandya Kattimani

Data Analyst:
Anirban Choudhury

Quality & Consistency Advisors:
Victor Medeiros, John Schick, Thorsten Hoeltken

Project Manager:
Krishnanunni Payyappilly

Information Services Group Inc. is solely responsible for the content of this report. Unless otherwise cited, all content, including illustrations, research, conclusions, assertions and positions contained in this report were developed by, and are the sole property of Information Services Group Inc.

The research and analysis presented in this report includes research from the ISG Provider Lens program, ongoing ISG Research programs, interviews with ISG advisors, briefings with services providers and analysis of publicly available market information from multiple sources. The data collected for this report represents information that ISG believes to be current as of April 2022, for providers who actively participated as well as for providers who did not. ISG recognizes that many mergers and acquisitions have taken place since that time, but those changes are not reflected in this report.

All revenue references are in U.S. dollars ($US) unless noted.

The study was divided into the following steps:

1. Definition of Mainframes – Services and Solutions market

2. Use of questionnaire-based surveys of service providers/vendor across all trend topics

3. Interactive discussions with service providers/vendors on capabilities & use cases

4. Leverage ISG's internal databases & advisor knowledge & experience (wherever applicable)

5. Use of Star of Excellence CX-Data

6. Detailed analysis & evaluation of services & service documentation based on the facts & figures received from providers & other sources.

7. Use of the following key evaluation criteria:

   * Strategy & vision

   * Tech Innovation

   * Brand awareness and presence in the market

   * Sales and partner landscape

   * Breadth and depth of portfolio of services offered

   * CX and Recommendation

Author & Editor Biographies

Lead Author

Pedro Luís Bicudo Maschio
Distinguished Analyst

Distinguished analyst and author, Pedro Maschio brings extensive experience in the research of the SEMEA (Southern Europe Middle East and Africa) and Latin America service markets. With more than 30 years of experience in sourcing, he has developed vendor assessments plus contract restructuring, services scope and IT benchmarking programs for diverse vertical markets in the Americas and APAC. Before joining ISG, Pedro was a partner of TGT Consult and managing vice president at Gartner Inc., responsible for the consulting business in APAC and Latin America.

Global Overview Analyst

Sandhya Kattimani
Senior Research Analyst

Sandya Kattimani is a senior research analyst at ISG and is responsible for supporting and co-authoring ISG Provider Lens™ studies on Contact Center, Life Sciences, Mainframes. Sandya has over 6 years of experience in the technology research industry and in her prior role, she carried out research delivery for both primary and secondary research capabilities. Her area of expertise lies in Competitive Intelligence, Customer Journey Analysis, Battle Cards, Market analysis and digital transformation. She is responsible for authoring the enterprise content and the global summary report, which includes market trends and insights.

Global Overview Analyst

Srinivasan PN
Senior Research Analyst

Srinivasan PN is a senior research analyst at ISG and is responsible for supporting and co-authoring ISG Provider Lens™ studies on AWS Ecosystem, Insurance BPO, Mainframe and Cybersecurity studies. His area of expertise lies in the space of engineering services and digital transformation. Srinivasan has over 6 years of experience in the technology research industry and in his prior role, he carried out research delivery for both primary and secondary research capabilities. Srinivasan is responsible for developing content from an enterprise perspective and author the global summary report. Along with this, he supports the lead analysts in the research process and writes articles about recent market trends in the industry.

IPL Product Owner

Jan Erik Aase
**Partner and Global Head –
The ISG Provider Lens™**

Mr. Aase brings extensive experience in the implementation and research of service integration and management of both IT and business processes. With over 35 years of experience, he is highly skilled at analyzing vendor governance trends and methodologies, identifying inefficiencies in current processes, and advising the industry. Jan Erik has experience on all four sides of the sourcing and vendor governance lifecycle - as a client, an industry analyst, a service provider and an advisor. Now as a research director, principal analyst and global head of ISG Provider Lens™, he is very well positioned to assess and report on the state of the industry and make recommendations for both enterprises and service provider clients.

ISG Provider Lens™

The ISG Provider Lens™ Quadrant research series is the only service provider evaluation of its kind to combine empirical, data-driven research and market analysis with the real-world experience and observations of ISG's global advisory team. Enterprises will find a wealth of detailed data and market analysis to help guide their selection of appropriate sourcing partners, while ISG advisors use the reports to validate their own market knowledge and make recommendations to ISG's enterprise clients. The research currently covers providers offering their services across multiple geographies globally. For more information about ISG Provider Lens research, please visit this webpage.

ISG Research™

ISG Research™ provides subscription research, advisory consulting and executive event services focused on market trends and disruptive technologies driving change in business computing. ISG Research delivers guidance that helps businesses accelerate growth and create more value.

For more information about ISG Research subscriptions, please email contact@isg-one.com, call +1.203.454.3900, or visit www.research.isg-one.com.

ISG

ISG (Information Services Group) (Nasdaq: III) is a leading global technology research and advisory firm. A trusted business partner to more than 800 clients, including more than 75 of the world's top 100 enterprises, ISG is committed to helping corporations, public sector organizations, and service and technology providers achieve operational excellence and faster growth. The firm specializes in digital transformation services, including automation, cloud and data analytics; sourcing advisory; managed governance and risk services; network carrier services; strategy and operations design; change management; market intelligence and technology research and analysis.

Founded in 2006, and based in Stamford, Conn., ISG employs more than 1,300 digital-ready professionals operating in more than 20 countries— a global team known for its innovative thinking, market influence, deep industry and technology expertise, and world-class research and analytical capabilities based on the industry's most comprehensive marketplace data. For more information, visit www.isg-one.com.

ISG Provider Lens™