*iSG Provider Lens™

2021

Mainframe Services & Solutions 2021

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ISG (Information Services Group) (NASDAQ: III) is a leading global technology research and advisory firm. A trusted business partner to more than 700 clients, including 75 of the top 100 enterprises in the world, 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; technology 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 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.

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Definition

Large enterprises require massive processing capacity, especially for high-volume transactions in retail banking, investment brokerage and pay/card processing, as well as weather forecasting and scientific computing. In some cases, large airlines, retail stores and other businesses may also have high transactions per second (TPS) requirements.

Mainframes have evolved and scaled to handle high TPS requirements. These machines consolidate many high-performing CPUs (cores) into a single hardware platform. Their architecture distributes tasks to cores that run in parallel, sharing the internal bus, memory and I/O, thereby providing superior performance.

To comply with digital transformation business requirements, clients can modernize their mainframe applications and introduce Agile methods as well as automating continuous integration tools. Two alternatives exist in the market: modernization and transformation. Modernization updates legacy code without changing the programming language and introduces automation, DevOps and modern Agile practices. Mainframe transformation converts legacy code into modern languages to run on modern platforms, including private and public clouds.

To align with pay-as-you-go (PAYG) approaches, service providers have been offering mainframe as a service (MFaaS), which includes all hardware, software licensing and operations under a pay-per-MIPS arrangement. MFaaS is provided in a shared environment. Clients that need PAYG but prefer not to share resources may opt for managed mainframe operations, which enable custom combinations of hardware and licensing ownership.

The transformation options and hosting alternatives are not new. However, the mainframe and Cobol skills shortage and business demand for agility are accelerating clients' decisions around mainframe transformation and hosting strategies.

The ISG Provider Lens™ study offers the following to IT decision-makers:

- Transparency on the strengths and weaknesses of relevant providers

- A differentiated positioning of providers by segments

- A perspective on different markets

This study focuses on the mainframe services market in the U.S.

The ISG studies serve as an important decision-making basis for positioning, key relationships and go-to-market considerations. ISG advisors and enterprise clients use information from these reports to evaluate their current vendor relationships and potential new engagements.

Quadrants Research

As part of this ISG Provider Lens™ quadrant study, we are introducing the following five quadrants on mainframe services and solutions:

Simplified illustration

Mainframe Services & Solutions 2021	
Mainframe Modernization Services	Mainframe Transformation Services
MFaaS – Mainframe as a Service	Mainframe Operations
STaaS - Storage as a Service	Mainframe Modernization Software

Source: ISG 2020

Mainframe Modernization Services

Service providers in this quadrant offer legacy application modernization, introducing code repositories such as GitHub or similar options, DevOps integration and testing automation, including 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.

The service provider can assess a client's application landscape to propose a modernization roadmap, offering a modernization plan that includes guidance as to which applications to retain on the mainframe platform and which to transform and migrate to other platforms, enabling cost optimization.

Eligibility criteria:

- The participant should provide case studies around mainframe modernization of either IBM Z, IBM AS/400 or Unisys ClearPath mainframe applications.

- The case studies must include DevOps tools integration, including code repository.

- The 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).

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

Mainframe Transformation Services

This quadrant assesses application development and maintenance service providers that have evolved their application modernization methodologies to assess and rewrite legacy programming language applications written with Cobol, RPG, Fortran, PL/1, Natural and others, which 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 into other infrastructure technologies can choose a service provider to convert legacy code to programing languages suited to run on open platforms. Destination servers can include high-performance computing (HPC) clusters on cloud infrastructure as a service (IaaS). Data stored in mainframe-type databases such as DB2 are converted to other SQL databases (many options). A complete transformation should include user interface (UI) translation services, eliminating green screens while introducing modern graphic UI for better user experience (UX).

Eligibility criteria:

- The service provider must be able to reverse engineer legacy applications to provide application logic documentation.

- The service provider must be able to automate code conversion tools to reduce the time required to transform the applications.

- Optionally, the service provider can 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.

- The participant should have data center infrastructure (mainframes, servers, middleware, storage, databases and tools) to support the transformation program. Optionally, the provider can show it has partner resources that enable the hosting of the transformation program.

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

- The transformation should enable the client organization to operate Agile development and maintenance with CI/CD automation.

Mainframe as a Service (MFaaS)

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

Eligibility criteria:

- The provider must use robust and secure data centers, compatible with the high performance and availability expected from mainframes.

- The provider must offer services such as job scheduling, performance optimization, CICS©, Batch, backup, restore, system upgrades, security patches and other typical mainframe operations.

- The provider must be able to demonstrate the disaster recovery effectiveness of its MFaaS infrastructure.

- 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.

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

- The company must have a hiring and training program to ensure skills availability in the future.

- The provider must offer high performance and security, included in service-level agreements and corresponding contractual penalties.

Mainframe Operations

This quadrant assesses traditional outsourcing providers that have long been offering mainframe services. Typical participants employ experienced practitioners to cover legacy mainframe technologies as well as the most recent mainframe releases .

Mainframe operation service providers offer skilled teams to keep clients' mainframes running. Services can be delivered on any hosting facility (client or provider owned). Mainframe operation services exist for a long time and 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.

Eligibility criteria:

- Robust mainframe operation capacity must be demonstrated through case studies.

- The company must have a hiring and training program to ensure skills availability in the future.

- The company must offer professional services for the management and monitoring of CPU, memory, databases, operating systems and tools.

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

- The company must provide management dashboards, including utilization reports, performance indicators, chargeback and other reporting functionality.

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

- Ideally, the service provider should have available mainframe capacity to supplement its client capacity during peak times.

Storage as a Service (STaaS)

This quadrant assesses vendors of storage solutions with the commercial option of pay per use. These vendors enable clients to free their capital invested in storage systems and adopt new storage appliances or cloud-hosted storage options, or both.

STaaS vendors ensure significant cost savings for clients that modernize their storage methods, with tools that dynamically move data to the most appropriate storage device and location considering I/O speed, access frequency, size, cost and other factors that define data availability and reliability.

Eligibility criteria:

- Vendor/provider must demonstrate performance increase and cost reduction.
- The technology offered should integrate with mainframe systems using standard connectors or APIs.
- The pricing model must enable clients to grow and reduce spending according to the usage (elasticity).
- The technology should incorporate high-end solid state disk (SSD) and integrate with low-cost cloud-based storage.
- The solution must have a robust service support organization or service partner ecosystem in the U.S. to ensure enterprise support. (Ideally, service response time is less than 4 hours.)

Mainframe Modernization Software

This quadrant ranks the software and toolsets to enable legacy application code assessments and code conversion. Mainframe modernization software includes reverse engineering, business logic mapping, business rules extraction, code review and inspection, documentation, emulators, 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 includes vendors that supply the modernization toolset and eventually partner with global system integrators (GSI) that deliver modernization services. Mainframe modernization software outcomes can include logic flows, data architectures, automated code conversion, serverless functions, APIs and microservices that accelerate the mainframe modernization program.

Eligibility criteria:

- Vendor should provide case studies that illustrate its software capabilities.
- The software should be licensed or delivered as a service, enabling client autonomy.
- The vendor must have mainframe specialization and offer mainframe-specific tools.
- Generic code conversion tools or wide-scope server/cloud optimization tools are not included.
- The product must be available and in use by clients for more than one year.
- The solution must have a robust service support organization or service partner ecosystem in the U.S. to ensure enterprise support.

Quadrants by Region

Quadrants	Global	U.S.
Mainframe Modernization Services	Overview	√
Mainframe Transformation Services	Overview	√
MFaaS – Mainframe as a Service	Overview	√
Mainframe Operations	Overview	√
STaaS - Storage as a Service	Overview	√
Mainframe Modernization Software	Overview	√

Schedule

The research phase falls in the period between **December 2020 and March 2021**, during which survey, evaluation, analysis and validation will take place. The results will be presented to the media in **April 2021**.

Milestones	Beginning	End
Launch	December 7, 2020	
Survey Phase	December 7, 2020	January 8, 2021
Sneak Preview	March 2021	
Press release	April 2021	

Access to Online Portal

You can view/download the questionnaire from here using the credentials you have already created or refer to instructions provided in the invitation email to generate a new password. We look forward to your participation!

Please refer to the link to view/download the ISG Provider Lens™ 2020 research agenda:

Research Production Disclaimer:

ISG collects data for the purposes of writing research and creating provider/vendor profiles. The profiles and supporting data are used by ISG advisors to make recommendations and inform their clients of the experience and qualifications of any applicable provider/vendor for outsourcing the work identified by clients. This data is collected as part of the ISG FutureSource process and the Candidate Provider Qualification (CPQ) process. ISG may choose to only utilize this collected data pertaining to certain countries or regions for the education and purposes of its advisors and not produce ISG Provider Lens™ reports. These decisions will be made based on the level and completeness of the information received directly from providers/vendors and the availability of experienced analysts for those countries or regions. Submitted information may also be used for individual research projects or for briefing notes that will be written by the lead analysts.

Partial list of companies being invited for the survey

Are you in the list or do you see your company as relevant provider that is missing in the list? Then feel free to contact us to ensure your active participation in the research phase.

Accenture	Dell EMC
Advanced	Deloitte
Array	DXC Technology
Astadia	Ensono
Asysco	Fujitsu
Atos	GFT
AveriSource	GT Software
Birlasoft	HCL
Blu Age	Heirloom
Broadcom	Hexaware
Capgemini	Hitachi Vantara
CGI Group	Hostbridge
Cisco	HPE
Coforge	IBM
Cognizant	Infosys
Commvault	Innova Consulting
Cornerstone (Google)	Keyhole Software
DataKinetics	Lenovo

LTI	RainCode
Luminex	RSM Partners (BMC)
LzLabs	Software AG
Maintec	TCS
Micro Focus	Tech Mahindra
Mindtree	TierPoint
Model9	TmaxSoft
Most Technologies	TSRI
Mphasis	T-Systems
NetApp	Unisys
NTT Data	UST Global
PSR	ViON
Pure Storage	Wipro

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Do you need any further information?

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