HCLTech | Supercharging Progress™

HCLTech Assessment Services for Modernization & Migration of Mainframes to Azure

Service Overview

For many companies, the cost of maintaining a mainframe ecosystem is outpacing revenue growth. In addition to reduced cost, migrating out of mainframes to cloud provide added benefits in terms of reduced risks (brittle code making even small changes a challenge), increased digitization (data exported can be leveraged better using latest analytics tools) and better skill set availability (MF language skills are rare in the market).

But many companies that started the mainframe to cloud journey have failed or have faced massive cost and time overruns. Most of it has to do with insufficient experience they had in the target platform i.e., cloud. Poor project phasing, insufficient attention to the challenges of staged migration, suboptimal treatment options, incorrect testing strategy and flawed cutover/rollback plan are additional deficiencies faced. An initial assessment exercise before the migration can help clients to understand these challenges and formulate mitigations upfront.

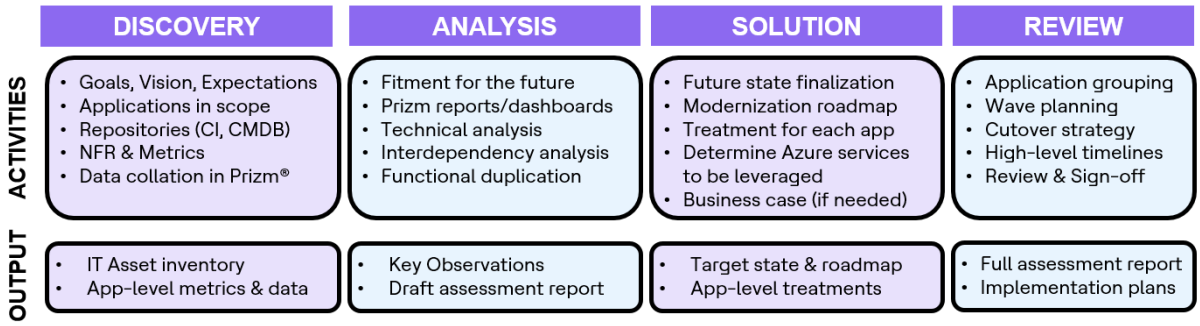
HCLTech offers an assessment service for developing the modernization and migration roadmap for mainframe applications, that ensures assured and least risk transformation, whilst managing the change that impacts business value chains, people, and organization policies. The assessment will involve both manual and tool-based steps to identify the right modernization path for the applications, both from portfolio and organizational maturity perspective. Some of the focus and outcomes of our typical assessment engagements are tabulated below:

FOCUS	OUTCOME	Remarks
Organizational maturity in migrating to cloud	Cloud readiness assessment	A high level POV on how well the organization is prepared for migrating from MF to cloud platform, including recommendations for Organizational Change Management (OCM) if needed
Value Realization	Business case	HCLTech has developed estimation templates that can be used to evaluate the business case for migration through comparison of the TCO of the portfolio in the current and target platforms. These templates are customizable for each client.
Migration Strategy	Optimal treatments for each of the application in scope	HCLTech believes an "one size fits all" solutioning that most migrations opt for is inherently flawed; our assessments follow the following cardinal principles: • Multiple treatments are possible in a single modernization initiative, so end state may not be homogeneous. • Various intermediate and end state could also be hybrid in nature, requiring need for co-existence planning. • What is key is aligning the business requirements to the values generated out of the migration program
Incremental Cloud Adoption	Wave planning and Transition architecture to enable implementation in agile way	Most organizations understand a big-bang shift from MF to Cloud is not practically feasible, but do not plan or design properly for inter-app linkages and/or handling the intermediate stages before the target architecture is reached. HCL's Prizm tool can be used to understand the interdependencies within the portfolio of apps and architect for the transition stages better

Testing Strategy	Gap Analysis	The analysis of the gaps between the current and target states that is done as part of developing the roadmap, can be used to understand the changes to be made and hence areas of focus for testing

Assessment Methodology

HCLTech has a proven modernization assessment methodology as part of its Application Modernization and Migration services portfolio, that has been successfully implemented for several prestigious customers and it has **4 phases**, each having a specific focus and a defined outcome as described below.



1. Discovery

This involves collection and collation of data at multiple levels to form the foundation of analysis and solutioning in the later stages. This is the only phase where substantial support is expected from the customer, in terms of workshops, supplying documentation, identification of the data sources and repositories, etc. All data collected will be uploaded into Prizm ®, the in-house repository and assessment tool of HCL.
Data needs to be collected at Enterprise level (drivers, expectations, EA blueprints & strategy, etc.), Portfolio level (Apps in scope, repositories, CMDB extraction, etc.), Application level (Tech stack, Value Chain (L1/L2 level), pain points, etc.) and Infrastructure level (resources committed for each app, SLAs, metrics, etc.) to get an overarching picture of the existing landscape and to aid its analysis and solutioning.

The final step will be the documentation of the knowledge gained, including MIPS, Volumetrics, TCO, Cloud Strategy, Risk assessment, DR, etc.

2. Analysis

This phase is where data collected earlier are examined for opportunities to optimize in terms of process and technology. Client support is expected in terms of clearing gaps in the understanding of HCLTech team and will be kept as minimal as possible. Analysis will be driven by the graphs, reports, and dashboards (both out-of-the-box and customized) generated using Prizm and through the code analysis by HCLTech proprietary iLIT-DC tool.

The analysis is done across multiple tracks: Technical (Code analysis, missing/unused components, call tree, Database, DB objects, etc.), Functional (Workflows, data flows, functional duplications, etc.) and Dependencies (In and Out interfaces, upstream and downstream systems, process flows, impact analysis, etc.)

The insights gained will be used in developing the solutions and high-level plans in the subsequent phases.

3. **Solution**

This phase is when the treatment for each application is determined and the target state is defined, subject to the EA Blueprint and EA guardrails (if any). This will be a manual process, aided and supported heavily by Prizm. Some support is expected from Sponsors, Enterprise Architects and SMEs in finalizing the TO-BE architecture.
The treatment for each app will be determined based on multiple factors including criticality, level of technical debt, app lifecycle status, risk appetite, etc. The target state is then compared against EA and organizational constraints, refined, and finalized. The different possible treatments are provided in detail in the next section. The solution will also leverage Azure services or offerings wherever possible replacing legacy equivalents. If required, business case for the migration can also be generated based on requirements.

4. **Review**

Once the target state is defined, a modernization roadmap with quick wins, estimations of cost, effort and duration will be calculated using the estimation templates available with HCL. A high-level implementation plan, including wave/group plan, cutover plan and decommission plan (if applicable) will be developed.

Deliverables

- Technical & Functional Assessment Report
- Target Solution Architecture blueprint including Treatment options
- High Level Migration Wave Plan & overall timeline

Determining the right treatment type

The identification of the right treatment/disposition for each app in scope will be part of the solution phase. A high-level overview of the dispositions pertaining to Azure deployment are provided below:

Rehost or Re platform involves recompiling of mainframe applications to Mainframe rehosting services of Azure (Micro Focus ES, TmaxSoft Open Frame). This will decompose mainframe application into isolated tiers and lead to standardization of software technology stack and infrastructure agility. This also is very low intrusive and hence least risky.

Accelerators and Automation

HCLTech Accelerators in the space are as below: -

HCLTech Accelerators	Description
HCL /iLIT-DC	iLIT-DC is a Mainframe inventory analysis tool to automatically extract sizing, complexity metrics, dependency mappings and assist in business rules extraction (BRE). The tool enables to give a complete view of the application functionality that is being looked to be transformed

Modernize and Migrate entails tool based transpiration of the existing application code to modern platforms and frameworks and hosting them in cloud. HCLTech has expertise in several in-house and partner tools that have been successfully used in multiple engagements. The migration can be done in phases, with low dependencies on client SMEs, **and deployed onto IaaS (Azure VMs), PaaS (App Service) or CaaS (AKS) platforms** on Azure. Use cases for this treatment type would include applications that have no functional debt and need to be converted to cloud-native apps in Azure.

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ATMA TECHNOLOGY THAT REINCARNATES	Accelerates modernization of legacy applications to modern architecture and platforms through automated code transpilation. It supports a multitude of legacy source platforms and modern target stacks on Azure
ADvantage Migrate	Accelerates the migration of database schema, objects and data from legacy persistence systems to target database systems on Azure managed databases. It enables automated data sync, data validations post migration

Transform treatment involves either **Rearchitect/Rebuild** ground up or suitable replacement with equivalent commercial products (**Replace**) available in the Azure marketplace or third party. The first step for both options is business rules extraction (BRE) from legacy code using iLIT-DC tool of HCL. *Rearchitect* involves using these requirements to develop cloud-native applications ground up using 12-factor design principles. Deployment for *rearchitect* would be on CaaS (AKS), PaaS (Azure AppService) or FaaS(Azure Functions). The use cases for *Rearchitect/Rebuild* include applications with high functional and/or technical debt. *Replace* involves using the business rules to identify the right replacement candidates (cloud-based COTS or SaaS) through Azure marketplace or from external marketplace. The deployment will be through *ground up installation/configuration* of the third-party *COTS* on *Azure VMs* or acquisition and configuration of *SaaS product* through *Azure marketplace* For example. The use cases for *Replace* would include applications with non-differentiating functionality.

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PathFINDER	HCL's Top-down analysis framework to identify business capabilities enabling key business outcomes, process discovery and product backlog definition for forward engineering
VANTAGE {CODE}	It auto-generates service boot strapping code deployable on Cloud platforms on Java/.Net and other modern language platforms. The tool auto generates CI/CD pipeline on the AzureDevOps platform
Application 360	It provides the integrated view of overall project health with all key element of health in one place. It brings engineering aspects into ALM by provisioning, code generators, pipeline automation, etc.

Based on the treatment definitions the applications are deployed on Azure with the level of cloud native capabilities injected by the treatment.

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