



APPLICATION PORTFOLIO CLOUD TRANSFORMATION USING AMAZE® FOR APPLICATIONS



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1. EXECUTIVE SUMMARY

Application portfolio cloud transformation has become extremely critical for better application management with speed, agility, and infinite scalability. Cloud modernizing on-premise Java and .NET legacy applications without impacting business continuity and delivering optimum user experience requires a lot of planning and expertise.

This whitepaper talks about the various options available today for cloud migration – like rehosting, rewriting, and replatforming. Further, it thoroughly evaluates replatforming as a balanced solution for rapid cloud transformation with drastic TCO reduction. The paper also gives an insight into Amaze[®] for Applications, Hexaware's proprietary application cloud replatforming product suite, and highlights its key business benefits. It also gives a quick walkthrough of the steps involved in cloud transformation with Amaze[®].

2. APPLICATION TRANSFORMATION THROUGH CLOUD ADOPTION

For IT-enabled organizations, transforming applications through cloud adoption is perhaps not an option anymore and may have already become a mandate as a part of their digital journey. Most of them may be already in the middle of their cloud migration journey and looking beyond high availability, high performance, operational simplification, etc.

High performance software tools and platforms hosted on "*pay-for-usage*" cloud environments, integrated with cloud AI, ML, high throughput messaging, and streaming, are becoming the new IT environment. This enables advanced applications to achieve a competitive edge.



In these advanced and integrated cloud environments, it has become increasingly complicated (and unfeasible in most cases) to manage large commercial middleware and databases due to high maintenance costs and other limitations. Most of the cloud environments are already witnessing a transition from large commercial application platforms to the lightweight open-standard/open-source integration-ready software tools/platforms that can scale massively with pay-for-usage cloud environments.

Such mass cloud adoption can result in a significant reduction in application software licensing cost and realize huge TCO reduction for application portfolio cloud transformation as shown in the cost takeout model in the Figures 1 and 2 below.











3. APPLICATION PORTFOLIO CLOUD TRANSFORMATION CHALLENGES

For IT-enabled businesses, this may be the right time to embrace the cloud for resilience and stay ahead of the curve. The question that arises now is whether cloud migration requires significant investment and time because migrating bulk legacy applications to the cloud/mass cloud adoption to the open-standard/open-source technology platforms on a "*Pay-for-use*" massively scalable IT environment is not that simple. Some of the challenges can be as follows:

- How do I balance the risks, costs, and timelines while completing the process of cloud migration?
- What is the right cloud migration approach rehost, replatform, or rearchitect?
- Which type of cloud to go for single/multi-cloud/hybrid?
- Is it possible to go cloud native with an option to migrate to some other cloud in the future without a rewrite?
- Challenges of the existing complex applications that are more than 7 years old and there is a lack of SMEs
- Which approach will give maximum TCO savings?
- Which approach will increase the productivity for future releases?
- Which approach will protect my investment and help accelerate digital enablement?

4. APPLICATION PORTFOLIO CLOUD TRANSFORMATION AS REHOSTING

Enterprises usually evaluate the rehost (lift-and-shift) option first due to its low-cost and quick implementation. However, on realizing that this option does not perform well for all the key parameters, sooner or later, they understand the below limitations of rehosting for application migration.

- The application portfolio infra remains nearly the same (unless optimized) as was in the on-premises. This results in a similar or minimal cost benefit from infrastructure cost savings.
- Mass cloud migration of legacy monolithic applications as-is is generally done by retaining the same application software platforms (application server/middleware and database servers). Hence, the rehosting may not result in any substantial software license savings. This may even add more complexity on the cloud for the legacy applications based on commercial large on-premises application software platforms.
- Rehosting of monolithic applications as-is does not result in agility and high velocity releases (a feature of cloud) because of the monolithic nature of the legacy applications. DevOps releases may also be mostly at the application level.



• The digital initiatives of IT-enabled organizations may not have easy integration unless all their application portfolios are integration-ready.



シュジャ 5. APPLICATION PORTFOLIO CLOUD ビー TRANSFORMATION AS REARCHITECTING

Enterprises often evaluate the extreme option to rearchitect/rewrite an application to leverage the true benefits of cloud migration. However, rearchitecting/ rewriting legacy application portfolio to cloud native is no easy task. This involves not only a significant effort/budget, but also the risk of re-stabilizing the entire portfolio. It can result in severe impact on business continuity. Below are some of the limitations of rearchitect/rewrite:

- Significant planning, effort, and budget required for rewriting even a mid-size legacy application portfolio to a cloud native architecture.
- The IT-enabled organization's technology team may require significant re-skilling to gain enough expertise to adopt cloud native application best practices.
- Modernizing from legacy to cloud native architecture may span beyond technology, and perhaps would require rethinking of IT and business processes. It may even be linked to a cultural change.



- Enough documentation/ legacy applications SMEs may not be available for providing all the business and technology details of the legacy applications required to rearchitect/rewrite them as per the cloud native architecture best practices.
- If the IT resources engaged in supporting business-as-usual are tasked in this complex and daunting mission, the business continuity may face a severe impact.
- In case the business units are siloed, the lack of umbrella leadership may deter enterprise digital initiatives. Digital initiatives form a core part of migrating to cloud native application architectures.

6. APPLICATION PORTFOLIO CLOUD TRANSFORMATION AS REPLATFORMING

A mid-path between these two extremes of rehosting and rewriting is the cloud application modernization/ application replatforming. It may best suit mid- to-large IT-enabled organizations for their mass cloud migration journey. Below are some of the key features of such cloud modernization solution:



- Replatforms applications portfolio from heavy-weight and costly commercial application platforms, middleware, and databases to light-weight pay-for-use cloud application platforms, middleware, and databases.
- Decouples application's (in the portfolio) user interfaces and business logic, and refactors the application business layers from legacy interfaces to the cloud native best practices and cloud platforms.
- Enables APIs of all the business logic and also seamless integration with other applications in the portfolio and advanced cloud solutions.
- Enables API gateway for seamless integration with any enterprise digital initiatives.
- Enables API security for secure cloud native business service access.
- Enables containerization of cloud native business services for higher availability, scalability, and performance.
- Enables continuous development and continuous integration for the application portfolio for higher release velocities catering to cloud native application principles.
- Accelerates digital enablement with omni-channel user experience seamlessly integrated with the application portfolio over the newly introduced API.



7. HEXAWARE AMAZE® APPLICATION PORTFOLIO CLOUD TRANSFORMATION

Hexaware's Amaze[®] for Applications adopts the mid-path of application replatforming with AI-based extreme automation. It enables up to 70% faster mass cloud modernization and up to 60% TCO reduction. It is suitable for mid to large IT-enabled organizations for their mass cloud migration journey.

7.1. Amaze[®] App Modernization/Cloud Transformation Execution Steps

7.1.1. Amaze[®] for Applications for Private/Public Cloud



7.1.2. TIBCO BW Replatform to Cloud Native App





Amaze[®]'s portfolio cloud transformation of legacy Java and .NET applications customizes business web applications, commercial integration applications and related middleware (app servers, message brokers, integration brokers, schedulers, etc.), and databases (Oracle, Sybase, DB2, SQL Server) up to 60% faster and results in up to 70% TCO reduction. This speed and TCO reduction for application transformation is achieved by replatforming of heavy-weight and costly commercial application platforms, middleware, and databases to open-source/open-standard Azure, AWS, and GCP cloud PaaS.

7.1.3. Amaze® App Modernization/Cloud Transformation Catalog

On-premise	App Modernization/ Cloud Transformation to Cloud Native App with Cl/CD on Private/Public Cloud							
Technology	VM/ Kubernetes/ PCF/ OpenShift	Azure App Services/ AKS	AWS ECS/ Fargate/ EKS	Google GKE/ Cloud Run				
ASP.NET, Razor, SPA, .NET Legacy, WCF Web Service, Messaging, Batch, ADO, Entity Framework, Telerik on IIS	Decoupled as-is ASP.NET, Razor, SPA Front End Integrated with Macro Business Services with Rest/SOAP, Messaging, Batch End Point with ADO.NET, Entity Framework on .NET Core 3.15/5.0 with CI/CD on Kestral/IIS							
JSP, Servlets, JSF, Struts, SPA, EJB, Web Services, Messaging, ORM, Batch on WebLogic/WebSphere	Decoupled as-is JSP, Servlets, JSF, Struts, SPA Front End Integrated with Macro BusinessServiceswith Rest/SOAP, Messaging, Batch End Point with ORM Framework Spring Boot on Tomcat/Spring Batch on Java 1.8 + with CI/CD							
TIBC [®] BusinessWorks	Macro Business Services with Rest/SOAP, Messaging, Batch End Point with ORM Framework Spring Boot Integration on Java 1.8+ with CI/CD							
Microsoft Message Queuing	TIBCO MQ/ IBM MQ/ Sonic MQ/ Active MQ	Q/ IBM Active MQ/ Azure Service Active MQ/ SQS		Active MQ/ Pub-Sub				
Schedulers AUTOSYS	Autosys/ Control- M/Quartz	Azure Batch	AWS Batch	Cloud Scheduler/ Data Flow				
Database	Oracle/ DB2/ Sybase/ SQL Server/ Postgres	Azure SQLServer/ Azure Postgres	AWS Postgres/ AWS Aurora Postgres	Cloud SQLPostgres/ SQL Server				

7.1.4. Amaze® App Modernization/Cloud Transformation Capability

On-premise	App Modernization/ Cloud Transformation to Cloud Native App with CI/CD on Private/Public Cloud On-prem			On-premise	App Modernization/ Cloud Transformation to Cloud Native App Database on Private/Public Cloud					
Technology	Kubernetes / PCF/ OpenShift	Azure PaaS App Service/ AKS	AWS PaaS ECS/ Fargate	/ GCP PaaS Cloud Run/ GKE	Technology	VM Postgres	AWS Postgres	GCP-Cloud SQL Postgres	Azure Postgres	Azure SQL Server/ GCP Cloud SQL Server
ASP. NET, Razor, SPA, NET			EKS		🖉 ŠQL Server					
Legacy, WCF Web Service, Messaging, Batch, ADO, Entity Framework, Telerik on IIS					ORACLE	S	\bigcirc	\bigcirc	Ø	\bigcirc
JSP, Servlets, JSF, Struts, SPA, EJB, Web					III DB2	⊘		\bigcirc		\bigcirc
ORM, Batch on WebLogic/WebSphere			V	v	SAR ASE	\bigcirc		\bigcirc		
TIBC 1 BusinessWorks			\bigcirc		MySQL.					
Microsoft TIBC					MariaDB					
Soniciviu Soniciviu					cassandra					
Schedulers Control-M AUTOSYS					• mongoDB					
automation	70%	70%	70%	70%	AUTOMATION	70%	70%	70%	70%	70%
					09					

Amaze[®] enables true application cloud transformation by modernizing the on-premises application portfolio architecture tailored to the cloud vendor's PaaS platform. Amaze[®] not only modernizes on-premise applications to a specific cloud (AWS/Azure/GCP), but also helps transform the existing on-premise application portfolio to a private/ public/ multi-cloud suitable for true hybrid cloud and minimal vendor lock-in.

8. APPLICATION PORTFOLIO CLOUD TRANSFORMATION STEPS WITH AMAZE®

Amaze[®] for Applications is best suited for enterprises with a goal of application portfolio cloud transformation of 30+ applications to private/ public/ hybrid cloud over a span of 12 to 18 months. A typical Amaze[®] engagement is a 4-step model – solution workshop, cloud transformation readiness assessment, pilot of a sample client application, and portfolio cloud transformation execution. The execution steps include delivery, hand-over, and warranty support in groups/waves. On successful execution of the pilot, the remaining applications in the portfolio are cloud transformed using a factory model that ends with the hand-over of the transformed applications to the client application teams. Below are the steps we follow:



8.1. STEP 1 - CLOUD TRANSFORMATION SOLUTION WORKSHOP

Hexaware's mass cloud modernization/transformation workshop is a collaborative session to understand the client's cloud vision, cloud readiness, enterprise architecture standards, and the business and technical expectations from the application cloud transformation.



8.2. STEP 2 - CLOUD TRANSFORMATION READINESS ASSESSMENT

One of the most important tasks in the application cloud transformation is to understand the cloud transformation readiness of the applications in the portfolio and analyze the quantum of changes the application will have to undergo.

It also helps to assess the associated risks, costs, and timelines, as well as the impact on other dependent applications. Traditionally, this was done as a manual activity and took a significant amount of time because a typical developer's productivity or assessment is roughly around 20,000 lines of code per day. It would take several weeks to complete an assessment of a medium-sized application with 300,000 lines of code. With Amaze[®] for Applications, in most cases the assessment can be easily completed in minutes or an hour.

After the assessment is completed, Amaze[®] produces an interactive report in HTML format with drill-down features providing in-depth details in the following areas:



8.3. STEP 3 - CLOUD TRANSFORMATION PILOT

Even with a successful history of cloud transformation of 400+ JEE and .NET applications, and 1200+ cloud transformation readiness assessment for global Fortune 500 customers in various geographies with varied complexity across various verticals, it's imperative for us to prove that the solution will work for our new cloud customers for the applications in their portfolio in their private/ public/ hybrid cloud environment.

As a part of this proof-point check, we do one pilot cloud transformation 'free of charge' for one sample application of mutually agreed complexity from the customer applications in their portfolio. We also call this "*Free POC Offer*".

8.4. STEP 4 – APPLICATION PORTFOLIO CLOUD TRANSFORMATION EXECUTION

Post the successful completion of the pilot, we group the applications in the portfolio into waves (based on dependencies, technologies, complexities, migration risks, and other parameters). These are then cloud transformed using the factory model. Every wave starts with a detailed design document, followed by Amaze[®] for Application Replatforming run, evemanual review/ corrections/ integrations by Amaze[®] consultants, and rigorous quality gates before confirming the cloud transformation for the application ready for client SIT.

We provide complete support for any defects during SIT/UAT, post which we transition the cloud-transformed application(s) to the client application team(s) with complete code handover and training on all the changes that have been done, followed by warranty support of 30 days (hyper-care support).



9. PROOF POINTS

1200+

Applications Assessed for 40+ Fortune 500 Global Customers

400+

Applications Cloud-transformed for 20+ Fortune 500 Global Customers

800+

Applications in Pipeline for 30+ Global MNC Customers

10. VALUE DELIVERED

60% Applications in the Portfolio TCO Reduction 60% Faster than Manual





About Hexaware

Hexaware is the fastest growing next-generation provider of IT, BPO and consulting services. Our focus lies on taking a leadership position in helping our clients attain customer intimacy as their competitive advantage. Our digital offerings have helped our clients achieve operational excellence and customer delight by 'Powering Man Machine Collaboration.' We are now on a journey of metamorphosing the experiences of our customer's customers by leveraging our industry-leading delivery and execution model, built around the strategy— 'Automate EverythingTM, Cloudify EverythingTM and Transform Customer Experiences^{TM'}.

We serve customers in Banking, Financial Services, Capital Markets, Healthcare, Insurance, Manufacturing, Retail, Education, Telecom, Professional Services (Tax, Audit, Accounting and Legal), Travel, Transportation and Logistics. We deliver highly evolved services in Rapid Application prototyping, development and deployment; Build, Migrate and Run cloud solutions; Automation-based Application support; Enterprise Solutions for digitizing the back-office; Customer Experience Transformation; Business Intelligence & Analytics; Digital Assurance (Testing); Infrastructure Management Services; and Business Process Services.

Hexaware services customers in over two dozen languages, from every major time zone and every major regulatory zone. Our goal is to be the first IT services company in the world to have a 50% digital workforce.

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Certain statements in this press release concerning our future growth prospects are forward-looking statements, which involve a number of risks, and uncertainties that could cause actual results to differ materially from those in such forward-looking statements. The risks and uncer ainties relating to these statements include, but are not limited to, risks and uncertainties regarding fluctuations in earnings, our ability to manage growth, intense competition in IT services including those factors which may affect our cost advantage, wage increases in India, our ability to attract and retain highly skilled professionals, time and cost overruns on fixed-price, fixed-time frame contracts, client concentration, restrictions on immigration, our ability to manage our international operations, reduced demand for technology in our key focus areas, disruptions in telecommunication networks, our ability to successfully complete and integrate potential acquisitions, liability for damages on our service contracts, the companies in which Hexaware has made strategic investments, withdrawal of governmental fiscal incentives, political instability, legal restrictions on raising capital or acquiring companies outside India, and unauthorized use of our intellectual property and general economic conditions affecting our industry.

