



# A PHARMACEUTICAL COMPANY USES AWS TO ELEVATE ITS CUSTOMER EXPERIENCE – OFFERING SPEEDY ACCESS TO MEDICINES

## EXECUTIVE SUMMARY

With a rapidly expanding global footprint and rising consumer expectations, a leading global pharmaceutical company was intent on improving its customer experience while significantly reducing costs in the face of unprecedented business pressures. Addressing these issues strains current capacity, operating models, and diverts precious resources from the desired focus: bringing advanced medicines to save lives. The company took an innovative approach to achieving its goals – including the way it managed its enterprise infrastructure around the globe. With failing IT projects and absence of skill sets around user-centric customer experience, the company turned to DMI to help pave a path for a futuristic transformational journey for its customers by using AWS cloud. The modernized applications armed the client to compete and be future-ready for growth and business success.

## THE CHALLENGE

To enhance customer experience, the pharmaceutical giant providing life-saving medicines to local and global communities wanted an agile, scalable, and cost-effective cloud-based environment that would support a provisioning and build-and-deployment solution. It had several application development teams for its internal as well as external-facing apps and sought a shared, enterprise CI/CD solution to build apps from GitHub and deploy to various platforms such as Artifactory, OpenShift, AWS, and Heroku. The client also demanded an engineering solution that would help provision and manage its environment effectively. To reduce the cost of maintaining large data centers, as a larger organization strategy, the company pushed the app development teams to go cloud native. Over time, we helped the company on several complex challenges that include:

- Upgrading a web application to access clinical trial information
- Improving legacy applications' flexibility with public cloud providers such as AWS
- Tracking shipments of its medicines across the globe through a single unified dashboard
- Migrating its Heroku applications to AWS
- Creating a centralized CI/CD pipeline for use by all development teams
- Creating cookie cutter examples for Lambda-based serverless applications for development teams to reuse

## ABOUT PHARMACEUTICAL LEADER IN THE U.S.

Specializing in the discovery and development of high-quality medicines, the company parlays aggressive R&D into business success by taking advantage of its broad portfolio of health care professionals, employees, and research centers. Across the globe, their employees work to discover and bring life-changing medicines to those who need them, improve the understanding and management of disease, and give back to communities through philanthropy and volunteerism.



The efforts DMI has put into creating the SPA and cloud formation templates enabled us to consume the offerings in AWS much faster. It positioned us as a leader and innovative enterprise offering solutions.

PHARMACEUTICAL SERVICES  
MANAGER - ENTERPRISE  
AUTOMATION

## WHY DMI

A pharmaceutical provider sought a partner who could see its vision, understand its complex challenges, and work hand in hand to strengthen its technology portfolio and increase its developer productivity - instead of simply delivering software. They chose **DMI**, an **AWS Partner Network (APN) Select Consulting Partner**.

## WHY AWS?

The ultimate benefit of cloud computing, and AWS, is the ability to leverage a new business model and turn capital infrastructure expenses into variable costs. Businesses no longer need to plan and procure servers and other IT resources weeks or months in advance. Using AWS, businesses can take advantage of Amazon's expertise and economies of scale to access resources when their business needs them, delivering results faster and at a lower cost. Today, Amazon Web Services provides a highly reliable, scalable, low-cost infrastructure platform in the cloud that powers hundreds of thousands of enterprises, governments, and startups in 190 countries around the world.

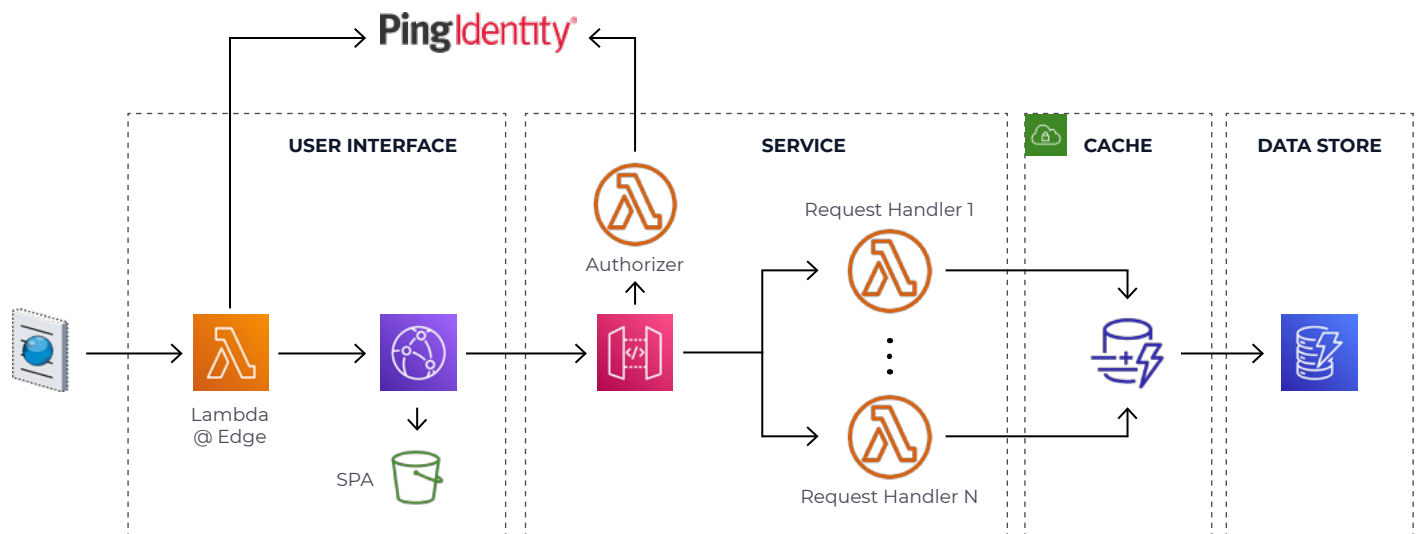
## THE SOLUTION STATE-OF-THE-ART CLOUD SOLUTIONS FUEL SUCCESS

To carry out the company's vision as a unified organization equipped with the right tools, it collaborated with DMI to create a new digital strategy and undergo a complete business and technology transformation with AWS.

### Building a digital design studio to deliver UX-first products.

To begin with, DMI worked with the organization to build a Digital Design Center, a unique, shared CoE that focuses on delivering design-centric digital projects across the organization. Leveraging the design thinking approach allowed the team to perform extensive user research to build empathy and define user needs for clinical trial teams. DMI designed a search-driven tool within the UX platform, created using lean design thinking methodologies. Leveraging both Agile strategy/research teams and Agile design/development teams have proved tremendously successful for the client.

**Building a stable and flexible environment that's ready to scale.** All those redundant and disparate software applications? They were modernized using serverless technologies on the AWS cloud platform. Here is a reference architecture for Single Page Application (SPA) that DMI created as a cookie-cutter example repo for the client development teams to reuse:



The architecture optimizes content delivery by using AWS CloudFront while protecting the UI assets against unauthorized access through Lambda@Edge. The UI assets reside in an S3 bucket. The API calls from the SPA are fronted by API Gateway proxied to Lambdas that perform CRUD operations on data store (RDS and Dynamo). The architecture also supports a Cache layer where necessary such as DAX for DynamoDB. The DAX cluster is deployed within a client VPC. The API calls are also authorized using custom authorizer Lambdas. The stack is deployed using Serverless Application Model (SAM).

An architecture for SPA such as the one presented here reduces the maintenance burden of using outdated technologies and maintaining on-prem VMs. This helps curb the total cost of ownership and embraces the pay-as-you-go model of the Cloud. It also offers on-demand scalability as the traffic to the applications increase.

One of the challenges of rolling out AWS across the enterprise is to have a set of patterns, practices that align with Enterprise Application standards to reduce the risk of information security non-compliance, scalability of resources, and proper automation for developers to reduce the effort for developing in the cloud. We helped create standard automated tools and processes to ensure alignment with enterprise cloud strategy. Additionally, many AWS products are restricted by the Landing Zone security policy. To help developers do things they are not allowed to do in Landing Zone, such as creating S3 buckets, we developed the Custom Resource Vending Machine, a collection of AWS CloudFormation custom resources backed by AWS Lambda functions that use elevated privileges to create resources that meet the needs of developers while also satisfying the organization's security standards.

#### **Moving from Heroku to AWS for performance efficiency and scalability.**

The company needed faster infrastructure deployment with improved cost optimization, performance efficiency, and scalability. To migrate 100s of legacy apps, it engaged with DMI to move its Heroku-based workload to AWS environment. DMI developed an interactive migration guide and automation tool. The migration tool creates a deployment environment in AWS Fargate that emulates Heroku. The tool automatically migrates standard Node.js apps and provides guidance and partial automation for more complicated apps. This enables the company to be flexible and enhances their ability to scale as it expands its global reach.

**Unified dashboard to track shipments.** To track all freight forwarding partners for shipping medicines across the globe in a single UI, we built an end-to-end AWS cloud platform integrated with PowerBI that provides shipment statuses in a centralized dashboard. It is their first end-to-end AWS project being implemented from one of its Asian headquarters.

**The power of modernized web application with a loyalty card.** A modern web application featuring serverless architecture and extensibility allowed seamless sharing of data and services. With an advanced digital wallet savings card (accessible offline) powered by mobile-first experience, a scalable serverless solution forged our client's overall business strategy.

## **RESULTS AND BENEFITS**

Together with AWS, our profound domain CX expertise plus technology consulting, we helped the client optimize its operational environment with cloud-native solutions. It has also reduced its administrative overheads and enabled its team to focus on other business priorities by provisioning the organization's environment and automating the build-and-deployment process. Some broader results across projects include:

- The average time spent by the customer online is now only three and a half minutes, resulting in 75% time savings for customers
- The company now has CI/CD integrated within its infrastructure deployment. The continuous delivery-as-a-service platform allows its developers to release code quickly and securely. They now focus more on serving customers, less on managing infrastructure.
- One aspect of the strategy, the AWS Cloud platform, is already generating benefits for the organization. Composing business infrastructure for new projects used to take days and can now be accomplished in hours.

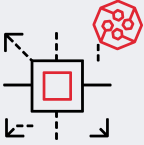
## **OUTCOMES & HIGHLIGHTS**



## BENEFITS



Reduces application costs by 70



Reducing Total Cost of Ownership by 30%



Enhancing customer experience offering dashboard visibility and custom reports for management



Provides flexible framework for expansion and integration of newer technologies



DIGITAL AT THE EDGE.  
HUMAN AT THE CORE.

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Digital Management, LLC (DMI)

- With an interactive migration guide and automation tool, the company enjoys optimized costs, gains operational efficiency, flexibility, and broader services than Heroku. For example, most static marketing sites can move to S3 + AWS CloudFront that is inexpensive than running it on containers/dynos.
- Standardizing builds across platforms. Knowing the tight integration between Jenkins and OpenShift, DMI helped the client stand up CloudBees Core Jenkins environments on top of their on-premise OpenShift cluster as well as on AWS EKS. The solution spread the workload for enterprise builds across several managed masters. Stability was achieved by isolating each master in a resource-controlled Kubernetes namespace.
- Improving performance and preparing for scale – DMI created a framework for quickly developing and testing Jenkins shared libraries that allowed reusing Kubernetes pods and containers to minimize resource consumption. It reduced git and install operations in the enterprise pipelines to speed up the builds.
- The team of DMI and client engineers won the CIO award for the Jenkins-as-a-service work.

Since the project began, the organization has deployed several application services and enhancements within the AWS cloud environment. This provides enhanced agility in producing working code faster at higher quality and lower cost, all within a more secure, environment that stays continuously aligned with the organization's mission.

Technology has not only transformed our client's processes, but it has also supported the scalability of its applications to various businesses that support its purpose to create advanced medicines and strengthen the lives of people who can afford them easily. Now, the company is closer to reaching its goal so that everyone can access its high-quality medicines faster.

## NEXT STEPS

The company believes that creating an easily accessible life-saving drug provides the foundation for a thriving society. But outdated systems prevented it from adapting to the digital age as well as limited its effectiveness. The organization worked with DMI to undergo a complete business and technology transformation, eliminating redundant software applications and siloes and supporting the launch of new apps as part of its digital-first strategy.

## ABOUT DMI

DMI is recognized as an Amazon Web Services (AWS) Select Consulting Partner, helping companies enable, operate, and innovate in the cloud. From data migrations to operational excellence and futuristic transformation, DMI is a full spectrum AWS integrator in the Commercial and Public sector business.

Learn more at [www.DMInc.com](http://www.DMInc.com).

