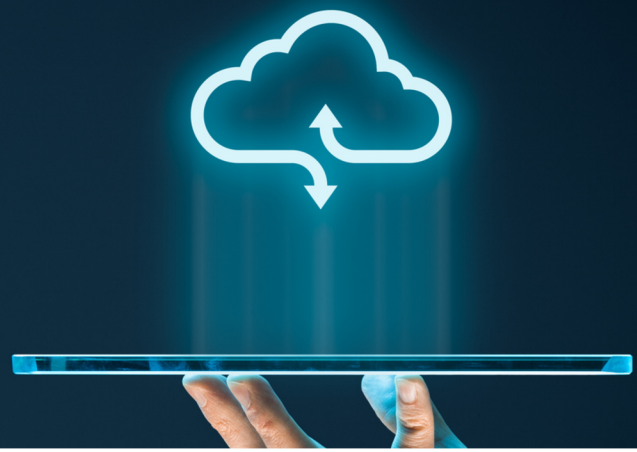




AMERICA'S FIRST AI-POWERED MORTGAGE ADVISOR MIGRATES FROM AZURE TO EMBRACE IBM CLOUD

Home Lending Pal (HLP) created Kev, the first AI-powered mortgage advisor designed to make mortgage affordability risk information more transparent to the borrower. Its technology predicts home loan approval odds, analyzes spending habits and provides unbiased but personalized home loan recommendations.



EXECUTIVE SUMMARY

Business Challenge

In order to embrace new business opportunities, Home Lending Pal, had to migrate cloud platforms from Microsoft's Azure to IBM Cloud. Being a startup, cost was a key driver for Home Lending Pal to move forward. Moreover, they were looking for a vendor that not only specializes in IBM Cloud but Azure as well. Sygitech has subject matter experts and specialists not just for Azure and IBM Cloud but for AWS, GCP, and private cloud services as well. As far as cost goes, Sygitech, due to its lean operations and a global delivery model, enjoys significant cost competitiveness.

Solutions

Home Lending Pal quickly began migrating its apps and databases from Microsoft Azure to IBM cloud by seeking the professional services, cloud consulting, and cloud migration services offered by Sygitech. As this was to be a migration from Azure to IBM cloud (and not a migration of an on-premise legacy app), Sygitech advised Home Lending Pal that there was no need to majorly transform their existing app to meet the requirements of a cloud-native based microservices architecture.

Results

The core application of Home lending Pal along with databases were migrated in less than 30 days by Sygitech's cloud specialists. By migrating to the IBM cloud, Home Lending Pal can use core IBM cloud services for free.



THE BUSINESS CHALLENGES

Home Lending Pal (HLP) is the first AI-Powered Mortgage Advisor in the United States. HLP has been using Microsoft Azure cloud platform to build and host its AI-powered SaaS-based Mortgage application. Of late, the company got qualified for the "Startup with IBM" program. This program by IBM encourages fintech & healthtech startups to build and scale SaaS products. Although there are many benefits of the program to Home Lending Pal, one of the most compelling benefits offered by IBM is that it offers them IBM Cloud credits to access more than 130 services completely free of charge. Some of the key IBM services that HLP can use for free with IBM cloud credits include Watson, IBM Blockchain, and IBM Analytics. As HLP's core products use AI, Blockchain and Analytics, and the fact that IBM offers free access to these services; it made complete sense for Home Lending Pal to move to the IBM Cloud. The challenge was to move the core mission-critical application and databases from Azure to IBM Cloud. The entire process of migration had to be done in the shortest possible time. It had to be very economical in terms of overall cost. And lastly, the entire process had to be documented so that Home Lending Pal could replicate the process and re-deploy more apps as and when required. As the application was being used by homeowners across the United states in all time zones, it had to be available 24/7. Also, it needed to be highly secure because potential home owners upload their extremely confidential financial information through this app. Lastly, the deployment needed to be scalable depending on the business needs to optimize cost and ensure good customer experience.

SOLUTIONS OFFERED

The Sygitech project team accessed the infrastructure hosted on Azure cloud and created a well defined migration plan of UAT and production environment. Here're the solutions that Sygitech suggested and deployed as a part of the overall migration process.

1. IBM managed kubernetes Service

Kubernetes—also known as 'k8s' or 'kube'—is a container orchestration platform for scheduling and automating the deployment, management, and scaling of containerized applications. A container is an executable unit of software in which application code is packaged—together with

libraries and dependencies—in common ways so that it can be run anywhere on the desktop, traditional IT, or the cloud. Kubernetes schedules and automates these and other container-related tasks:



Deployment: Deploy a specified number of containers to a specified host and keep them running in a desired state.



Rollouts: A rollout is a change to a deployment. Kubernetes lets you initiate, pause, resume, or roll back rollouts.



Service discovery: Kubernetes can automatically expose a container to the internet or to other containers



Storage provisioning: Storage is a critical part of running containers, and Kubernetes offers some powerful primitives for managing it. Dynamic volume provisioning, a feature unique to Kubernetes, allows storage volumes to be created on-demand. The dynamic provisioning feature eliminates the need for cluster administrators to pre-provision storage. Instead, it automatically provisions storage when it is requested by users



Load balancing and scaling: When traffic to a container spikes, Kubernetes can employ load balancing and scaling to distribute it across the network to maintain stability



Self-healing for high availability: When a container fails, Kubernetes can restart or replace it automatically; it can also take down containers that don't meet the health-check requirements.

2. IBM Cloud Databases for MongoDB

–for production

The IBM fully managed MongoDB database offering provides ready-to-use integrations with IBM Identity and Access Management and IBM Activity Tracker to extend access control and auditing. Additionally, IBM Cloud Databases for MongoDB allows scaling of disk and RAM independently to best fit application requirements.

3. MongoDB deployment on kubernetes

– for UAT

Once the Kubernetes cluster was up and running, a cloud native storage solution was installed and configured. In the third step, Sygitech deployed a highly available MongoDB database.



4. Helm package manager (version 3)

– for defining all infrastructure components

Complex Kubernetes apps can be added to the cluster by using Helm charts. Helm is a Kubernetes package manager that uses Helm charts to define, install, and upgrade complex Kubernetes apps. Helm makes it easy to run applications inside Kubernetes. Helm gives teams the tools they need to collaborate when creating, installing, and managing applications inside of Kubernetes to find prepackaged software (charts) to install and use, query the cluster to see what packages are installed and running, and to update, delete, rollback, or view the history of installed packages.

5. Nginx-ingress controller

– for load balancing

The NGINX Ingress Controller for Kubernetes provides enterprise-grade delivery services for Kubernetes applications. Kubernetes has a built-in configuration for HTTP load balancing, called Ingress, that defines rules for external connectivity to Kubernetes services. The NGINX Ingress Controller for Kubernetes is what enables Kubernetes to configure NGINX for load balancing Kubernetes services.

As Home Lending Pal is a relatively simple application with manageable traffic at the moment, it will not need an external load balancer at the moment. In future, when the traffic grows multifold, HLP will probably need to start with an external load balancer. This load balancer will then route traffic to a Kubernetes service (or ingress) on the cluster that will perform service-specific routing.

6. Lets-encrypt cert manager

– for automatically generating SSL certificates for various end points

Cert-manager is a native Kubernetes certificate management controller. It can help with issuing certificates from a variety of sources, such as Let's Encrypt, HashiCorp Vault, Venafi, a simple signing key pair, or self signed. Sygitech chose Let's encrypt. With Let's encrypt, it is very simple to obtain auto-renewable, self-signed, and free SSL certificates for website domains that are managed by Ingresses in the Kubernetes clusters.

7. Horizontal Pod scaler (HPA)

– For Scalability of the resources

Autoscaling is one of the key features in Kubernetes cluster. It is a feature in which the cluster is capable of increasing the number of nodes as the demand for service response increases and decreasing the number of nodes as the requirement decreases. HPA makes scaling decisions based on the observed CPU utilisation values of pods that are part of a Kubernetes controller. Utilisation values are calculated as a percentage of the resource requests of individual pods.

VALUES ADDED

1

Complete cloud infrastructure has been created cost effectively within the given timeframe

2

Helm charts allow clients to easily replicate, and update the infrastructure, deploy new releases of applications

3

Certificate manager takes care of managing SSL certificates when a new end point is created

4

Horizontal pod scaling (HPA) gives extra level of flexibility to scale the resources as and when required

5

Complete documentation was provided by Sygitech to help the HLP team manage the infrastructure going forward



THANK YOU

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