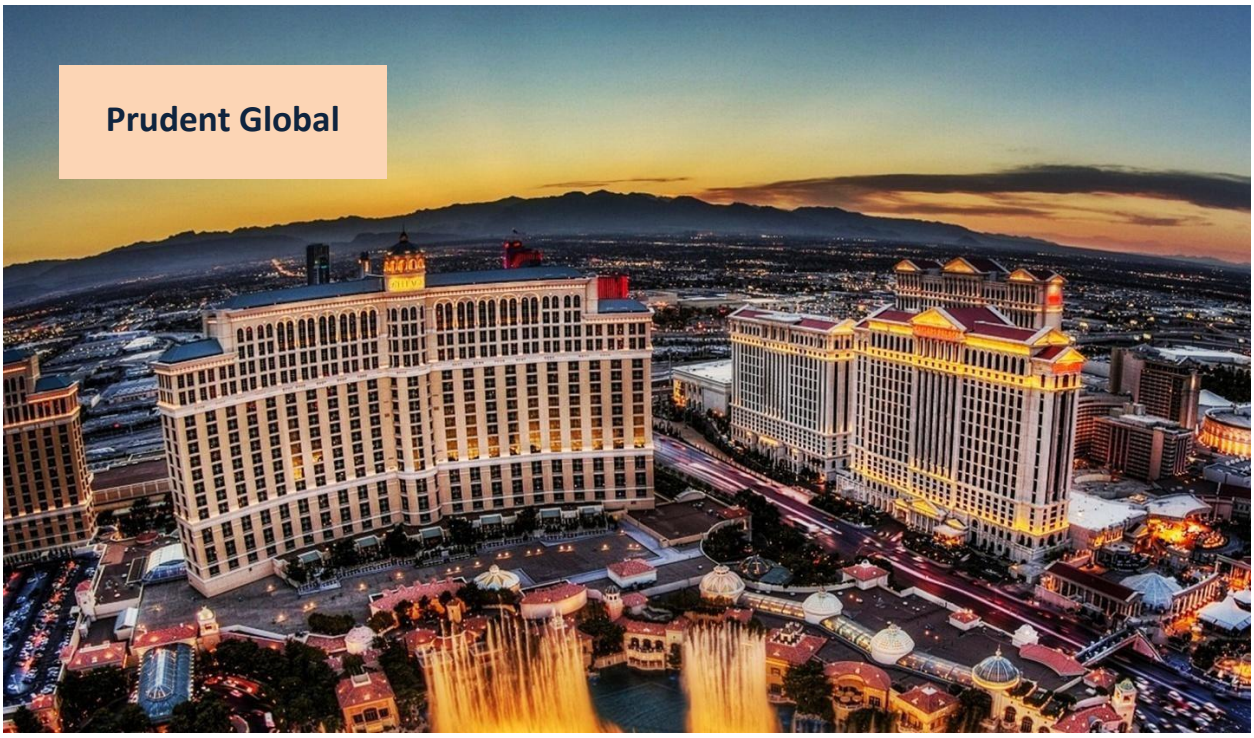

Business Evaluation

Online direct-to-consumer Lagos-based footwear and apparel retailer	Values	Immediate Goals
Cymbal Direct has experienced rapid growth and has had trouble meeting demand. The organization wants to implement solutions that will help scale services and personalize customer experiences.	Customer experience Leveraging analytics Improving digital marketing	● Easily scale to handle additional demand when needed ● Streamline development ● Ensure that developers spend as much time on core business functionality as possible, and not have to worry

		about scalability wherever possible ● Let partners order directly via AP ● Deploy a production version of the social media highlighting service and ensure no inappropriate content

Key business assumptions

Stream real-time video to their pilots, as well as their coordinates, so that customers can see the location of their shoes on a map	Improve customer experience and easily scale to handle additional demand when needed	Potentially different storage solutions for applications and analytics

Technical Evaluation

Existing Environment	Technical Watch points	Proposed Solution
Website frontend, pilot, and truck management systems run on Kubernetes	● Move to managed services wherever possible ● Ensure that developers can deploy container based workloads to testing and production environments in a highly scalable environment.	● Global HTTP(s) Load Balancer ● GKE in two regions ● Autoscaler ● Private cluster ● Separate projects for website / pilot / truck management - dev,test,staging for each

	● Standardize on containers where possible	● Cloud Build ● Cloud Source Repository ● Artifact Registry ● Migration type: lift and shift ● Automation tooling: Terraform ● Firewall rules - http/s ● Separate IAM roles for developers and devops ● Replace GKE with Cloud Run for website (future)
The social media highlighting service currently runs on a single virtual machine ● SuSE linux ● Python	Deploy a production version of the social media highlighting service as is. Refactor the VM so that it can scale out instead of scaling up Ensure no inappropriate content	●Compute Engine (future) ●Containers ●GKE autoscaling deployment. Image Classification task
The social media highlighting service has some performance and scalability issues.	Storage ●Externalize state to a separate database service	● Cloud SQL (for MySQL data) ● Memorystore for Redis

● MySQL DB ● Redis	● Multiple databases including MySQL and Redis	
●Many of the APIs are simply built into monolithic apps, and were not designed for partner integration, lacking functionality such as versioning. ●APIs do not have a built-in mechanism for supporting multiple accounts and granting access is very limited as a result.	API Integration Partners to integrate with Cymbal Direct's APIs to submit orders and specify customizations with versioning enabled	●Configure access with IAM ●Apigee ●Cloud endpoint
●Positional data for drone and truck location kept in MongoDB database clusters ● Drones connected to virtual machines using a stateful connection, streaming video via RMTP to the pilots and sending commands from the pilots to the drones	Data needs ●Stream IoT data from drones ●Store the streamed data	●IOT Core ●Pub/Sub ● Dataflow for bulk and stream processing ● BigTable ideal for IoT, gives consistently sub-10ms latency, and can be used at a petabyte scale ● BigQuery for analytics