

# Showcasing of Product Offerings on Labs Platform through GCP Stack Launcher



## Customer Overview

The customer is an industry leader in cutting edge computer networking products. Leveraging advanced networking technologies, they deliver high performance, agility, availability, automation, and security through their award-winning platforms.

## The Context

The customer provides an IaC (Infrastructure as Code), cloud-based platform featuring virtual sandboxed labs in isolated cloud environments for each of their products. This platform enables potential customers to get familiar with product features and functionalities through hands-on interactions in the labs.

The customer wanted to create many more of such labs for two of their major product offerings. However, the two products were only compatible with the Google Cloud Platform (GCP) while the labs platform supported only Amazon Web Services (AWS). The customer also wanted to migrate some of the existing labs on AWS to GCP to reduce costs of operation. Due to these needs, the labs platform had to be enhanced to support launch of lab modules on both AWS and GCP.

## Type of Service Provided

Product Engineering

## Technologies Used

Node.js, REST, React, AWS (RDS)  
GCP (Firestore, Cloud Run, Deployment Manager, Compute Engine, APIs)

## The Solution

GS Lab | GAVS was approached by the customer due to our expertise in product engineering, cloud and automation technologies. The following components were either created from ground up or modified to upgrade the platform:

- Created the Stack Launcher app – Cloud Run container based light weight GCP application based on REST APIs to handle all operations for lab module launch, management, and termination. The cloud provider required for the lab module is determined at the time of request and forwarded to the respective service.
- Re-designed and modified the backend to support launch of lab modules on both AWS and GCP. Used GCP NoSQL database to store lab module data and to handle user assignments and lab termination.
- Created GCP deployment manager templates (YAML file) that are lab module specific for creation and management of resources such as VPC, subnetworks, firewalls, compute instances, with resource specific configurations, for module launch.
- Migrated AWS EC2 AMIs to GCP images to bring up instances with same functionalities. Resources required to launch lab modules such as the VM images for controllers were also migrated from AWS to GCP.
- Implemented log collection and email-based error reporting features.

## Challenges

- Increase in demand from potential clients for hands-on experience in product offerings
- Urgent requirement to develop several lab modules for new products
- Need to upgrade labs platform with minimal changes and impact to users while retaining current functionalities and security features
- Escalating costs of AWS resources due to increasing traffic on the platform

## Solution Highlights

- Implemented solution with minimum changes to existing code, within just 2 months
- Created the GCP Stack Launcher to launch labs on GCP or AWS based on product
- Re-designed and modified the backend to support both AWS and GCP
- Created lab module specific GCP deployment manager templates
- Migrated AWS EC2 AMIs and other resources to GCP
- Implemented log collection and error reporting

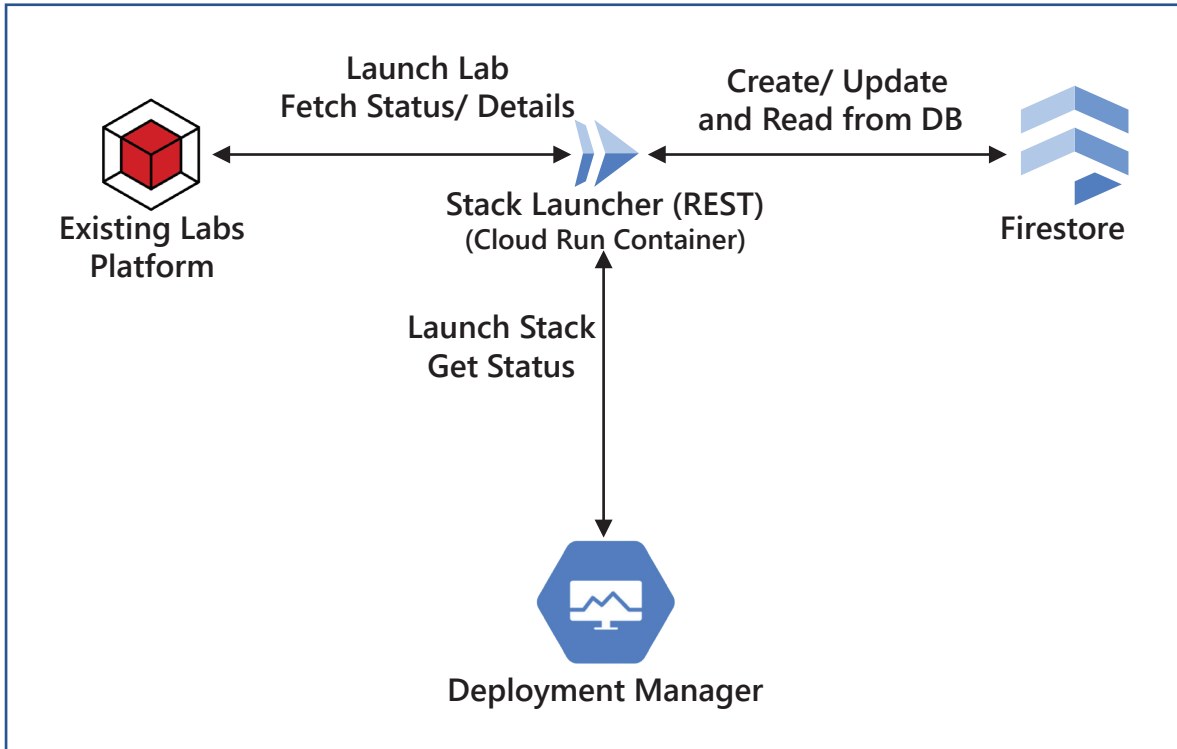
## Solution Outcomes

- Availability of new and significant product offerings on the labs platform
- Seamless platform upgrade with minimal disruption to users and functionalities
- Increased customer confidence that any product could be rapidly deployed on the platform
- Decreased monthly costs of resources by migrating some major lab modules to GCP
- Reduced lab provisioning time for most labs, for instance, from 15-20 minutes on AWS to 5-8 minutes on GCP for a module
- Enhanced end user experience through quicker lab launches
- Auto scaling and cost reduction through serverless approach
- High flexibility due to architecture redesign for solution to be used by any REST client
- High portability and adaptability due to solution being REST based
- Proactive issue resolution through comprehensive error reporting and logging

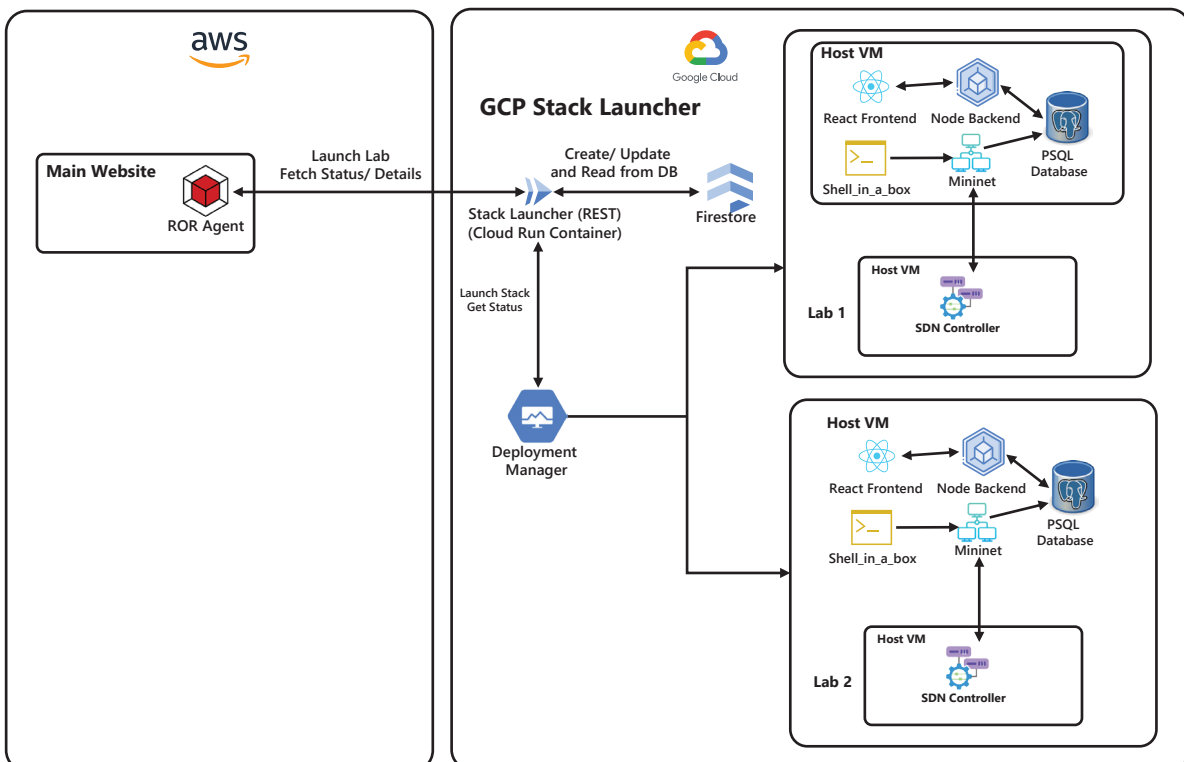
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## GCP Stack Launcher



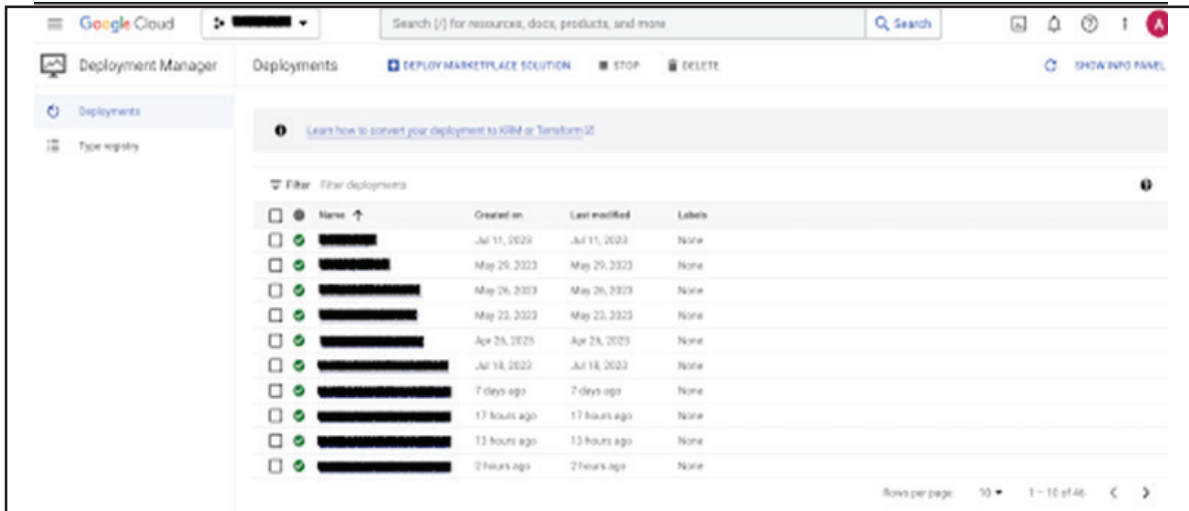
## Architecture Design



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## Deployment Manager Resource Preview



## Cost Analysis using GCP Cloud Run Metrics



## Customer Speak

"This is a great step as it may also drive more traffic to our other labs. This will also drive more traffic across all products and use cases"

"Great work here, and thank you for all the efforts! This is great to see all these labs in one place, making it easier for our customers to experience our products. Thanks again!"

"I know this was a tremendous effort. This is a great step in getting all of the labs in one place."

"Awesome stuff! Great work team ;-)"

"Great job! Now customers and prospects can have on a single page most of our technologies to test with their hands!"