

Title: Engineering a cost-optimized e-commerce solution in the Cloud

Author: Alex Owusu

Abstract/Artist Statement: Question: How can companies achieve true cost optimization and efficiency in their journey to migrate on-premises infrastructure to the cloud? Cost Optimization is a critical pillar in cloud solution design, as a key component, it involves the ability to run systems that deliver business value at the lowest price point.

Rationale: Cloud computing is the new kid on the block in the technology space for some time now and its popularity has continued to soar. In simple terms, cloud computing provides an on-demand availability of computer system resources, especially data storage and computing power, without direct active management by the user. Mell and Grace (2011), quoting NIST (National Institute of Standards and Technology, USA) defines "Cloud computing as a model for enabling convenient, on-demand network access to a shared pool of configurable resources (e.g., networks, servers, storage, applications and services) that can rapidly be provisioned and released with minimal management effort or service provider interactions. While the promise of cloud computing points to efficiency and cost-effectiveness, a recent study conducted in the UK reveals that up to 58% of organizations said that moving to the cloud has been more expensive than initially thought. Research firm Canalys found that organizations splashed out a record \$107 billion (£83 billion) for cloud computing infrastructure in 2019 alone, up 37% from 2018, and that the bill is only set to increase in the next five years. This begs the question whether the cloud computing is cost-efficient? Can we attribute the steep cost to undifferentiated heavy liftings companies embark in the cloud, for instance moving outdated architectures to the cloud and not adapting to new cost-efficient cloud technology options?

Methods: We put this to test by engineering an e-commerce solution and deploying to Serverless cloud Infrastructure as well as deploy same solution to a virtual machine (EC2 instance).

Results: The virtual machine (EC2 instance) cost three times(3x) more to run the solution than on a serverless infrastructure (elastic container service).

Principal Conclusions: The serverless architecture improves cost-savings significantly to run the e-commerce solution than on an EC2 instance. More testing and iteration are currently being conducted.