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Building a World Spanning Web Application

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ABSTRACT

Nowadays, acquiring web applications on another is a most important necessity because whatever published on the internet exist exposed to differing attacks. While utilizing a web API framework like Ruby on Rails, the core itself takes preventing measures to secure the application against various malicious attacks from the internet [1][3]. Developing web application is easy nowadays but providing security and keeping web application active is very challenging part because the network world is occupied by security breaches. To overcome from this issue, in this paper describes serverless methods and side by side utilizing the effective tools that are provided by Google Cloud Platform to prevent attacks and secure web API, without compromising any security. And then setting Ip-based firewalls, also configure cloud IAM for least right access [6][8].
Keywords: Ruby on Rails, Google cloud computing, secure web application, serverless.

1. INTRODUCTION

Ruby on Rails happen rapidly developing and suitable platform to create dynamic web applications. And it is effective and popular core for designing web API [24][25]. More companies are moving towards Ruby on Rails because it is an Open-source framework, it is using Ruby programming language and it is following Model Controller View (MVC) architecture. Ruby on Rails create it simpler to congregate a database backend. Maintain web request that uses the Ruby programming language. Before Ruby on Rails, the web development is more monotonous for most web developer, the purpose of introducing Ruby is to make less monotonous and more flexible for web developer. Nowadays more web developing companies using the Ruby on Rails technology [12][13][17].

Rails is developed by Ruby programming language, with the purpose of server-side application. Rails follows an MVC (Model View Controller) it supplies default structure for web pages, database and web service. It encourages and assist the progress of web standards in the way that XML for information in visible from customer interfacing. Rails is a complete Open-source framework for developing web application [14][15].

To deploy the web API to the cloud, we need an infrastructure, that infrastructure should deliver the all type of needs that web API demands such as servers, data storage, hardware, data centre and networks this is called Infrastructure as a service (IaaS). In the current cloud computing world, more companies are providing cloud services such as AWS, Microsoft Azure and Google Cloud Platform. Even Google Cloud Platform provide all type of services such as IaaS, PaaS, SaaS and serverless computing [30][31][32].

In Google Cloud Platform Infrastructure as a service. Compute engine is helping to run Virtual Machines (VM's) it will support almost all types of systems such as Linux, Windows and Platform as a Service, the app engine will provide the all type of hardware's and creating VM that is stored in data centre. Each information in visible form centre present in zones and place of residence or activity of these zones are worldwide region and domain contains US, situated or towards the west Europe and East Asia [35][36].

2. LITERATURE REVIEW

[1] In a modern day, Ruby programming Rapid web development framework language provides a good prototyping and its easy to integrate other web services from different resources. Rails server helps for quick web application advancement, database privileges and AJAX, it makes appropriate for deploying front-end, back-end to the future use of web applications and administrations. So many web development frameworks are there in this developing world. Why ruby? Compare to various large web development frameworks. Rails have the good set of procedures of quick web application development with low cost. And It has some of other functions are extensibility, modifiability, etc. [2] The App engine is a great tool for hosting individual just as private small company applications however it's absence of capacity to control server-level factors, for example, the quantity of CPU, to a calculation just as dissecting approaching traffic over different workers settle on it still a helpless decision for genuine business adventures and that cloud is still out of the span of the venture market.

[3] The API Gateway system, it can reduce the quantity of distant calls and work on the intricacy for back-end administrations calling one another. The applications and back-end benefits just need to speak with API Gateway, we can progressively supplant or adjust the back-end administrations which is undetectable to the applications. [4] Making IP-based firewall rules, just as how to design cloud IAM for least advantage access. What's more, the work GCP naturally accomplishes for you to keep your application secure to the applications.

[5] The capacity of applications to react quick is basic to the achievement of any electronic business and time went through on the association with the data set is frequently the most tedious part of the general reaction

time. Although ongoing exploration proposes bunches of demonstrated procedures to improve this connection, the details of execution are regularly considered excessively tedious by API developers.

[6] In a Web application system reasonable for a code-driven improvement approach, keeping up the perfection of the security highlights is an issue on the grounds that the security highlights are scattered all through the code during the execution. This device produces a route model from an application code while holding the security properties and afterward checks the consistency of the security properties. [7] It help is utilized as a VM in which worker is introduced and later the site is conveyed on it. a few elements which are significant for the development and better advancement of the cloud, which are flexibility, versatility, programming administrations estimation.

[8] Serverless Workload Function Benchmarks are generally utilized in now daily. It furnishes reasonable information situated API. [9] This advancement exhibited that the framework could give comparable execution free of the quantity of compartments not exactly the predetermined number of holders. The assessments, not withstanding, showed additionally that conjuring more compartments brought about the serious execution decrease or the break.

3. PROBLEM STATEMENT

Before, introduction of cloud computing, every companies are followed a traditional IT organization. In that company have own infrastructure to setup and they have to analyse the security and maintain the performance. While developing a web API to customer the web application should have these measurements are minimizing maintenance needs, less error of a application and it should provide better end product. When creating a web application most of the companies will face lot of issues to give what customer exactly wants and as well as if they change the user interface design or increase their business needs or scalability [8][9].

There are common issues are while deploying web API such as slow response from server, poorly composes code and duplicate title tags.

Here happen seven of ultimate generally known web application accomplishment issues.

- Network connectivity and DNS issues.
- Response time and slow servers.
- Bad composed code.
- Load balancing issues.
- Excess of utilizing bandwidth usage.
- Certain HTML title tags.
- Traffic pierce.

After the cloud computing enters in to the web development world, It has the features like cloud service provider and it will maintain the performance and manage the security issues and it will also provide the user consumes how much resources they need to pay that much cost only and service provider will provide load balance as well as [12[13].

In cloud computing has one technique is called virtualization. This technique will separate a resource from the system physical layer and it will provide a virtual environment of these resources. And also, this method will provide vCPU units, storage unit and system memory units dynamically, not only data centres. If we want to improve resource utilization create multiple virtual machine (VM's) on a single physical server. Compare to traditional computing, cloud computing follows resource pool techniques, in this technique all physical resource is pooled together and it will convert in to virtualized resources and they are allocated dynamically those resources are CPU's, storage, etc [19][20].

In this digital world, as the stores happen becoming larger their sales state of being active and services exist in addition to increasing and it evolve in to very troublesome to survive the consumer data and stock. Software bear happen grown to keep up the stocks and orders of all the clients and it can store and retrieve the results or goods created analysis and the features given by the store. The usual or older method also does this maintaining product details and stocks but it will cause optimization issue. If the web application is cloud based, the cloud provider will provide extreme chance, approachability, chance and also it determines scalability and dependability to your web API. But now all the information in visible form that need expected reliable happen preserved in contact cloud provides improve the scalability, dependability, approachability and networking [22][23].

- Login to Google Cloud Platform console with credentials. And then create a App Engine and choose the language to deploy an web API on Google Cloud Platform.
- HTML, CSS, PHP, Ruby and NodeJS are used to develop the web API in compute engine. The modules are admin, customer, stock and payments.
- Following use case diagram to explaining a how modules are working and executing step by step procedure or how modules are inter connected with each other.

4. PROPOSED SYSTEM

Developing a ecommerce fully functional API with payments gateway. To provide a security, flexibility and reusability of this code, this API is completely developed by Ruby on Rails programming language and server. This API is compatible support for all types of OS such as windows, MacOS, Linux and all types of devices such as desktop, mobile and tablets.

This API has mainly two panels,

- Admin Panel
- User Panel

4.1 Admin Panel

In admin panel, only authorized people can access this which means admin or owner. Using this admin panel admin can manage their sales, orders, stocks, promotions, etc. In admin panel admin can see user details such as which product did, they ordered, address to deliver that product, contact numbers. Admin panel has following sections such as, Orders, Products, Promotions, Users, settings, stocks.

In order section, we can see orders which is placed by customers and their contact details and filters to see orders by date and month.

In Product d\sections, Products will be shown total number of products in the store and its prices and details. In promotion section, admin can create their promotions like coupon code and promote their products. In stock section, admin can upload their products, quantity and manage their stocks to keep active. In user section, collection of users will be there who and all customer of this tore and their contact details and address.

4.2 User panel

In user panel, any type of user can create their own account and login in to this store. After login user can able to see home page with collection of products and their details like price, and description. User can order those products or add in to cart. And check out using PayPal user can make online payment. Ordinarily detached hosting system for accomplishing something happen used to avail some request to the consumer. This portion exist make use of deploying the app and benefit of entertain application over cloud servers exist in this manner [42][43][44].

Creating Ruby on Rails web API in App Engine environment. That web application has all powers and it will use all type of google cloud products. The benefit of this feature is it will provide services to all type of users, one to millions of users at a time [26][27][28].

4.3 Hosting Platform

- App Engine: It provides an adaptable atmosphere to deploy app. And it bears method libraries and Ruby gems that's depend on the system.
- Google Kubernetes Engine (GKE): A toolkit to create your own package-based platform. It has a Rails container in a microservice atmosphere.
- Spanner: Spanner optimizes efficiency by certainly sharding the data establish request load and size of the information in visible form. It delivers manufacturing superior 99.999% availability for across the world and multi-region instances 10x less time during which an activity is stopped than four nines and provides understandable, synchronous copy across domain and multi-region configurations. It will deliver high extreme-performance business dealing accompanying strong coherence across domain and continents [40].
- Postgre SQL: Postgre SQL is a relational database, it is a cloud SQL. It is a fully-trained collection of data service that help you start, uphold, manage and authorize your Postgre SQL [31].

5. ARCHITECTURE

6. CONCLUSION

This paper proposes, a web API development for managing sales activity by storing the records of purchase, consumers credentials, Product stocks and visited people of the store. This web application is deployed on the Google Cloud Platform, it is a cloud Platform for deploying web applications. It bears been noticed that the cloud determines more availability and elasticity than utilizing the traditional method. The compute engine server is virtually created and the web application is deployed in App Engine [33][37][38].

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