Optimize to an Edge Services Web Performance Architecture

Executive Summary

The payment services provider's main priority is to support the business growth of other companies through the simplification of its receipt of payments such as credit cards, debit cards, wallets, and QR codes, either online or in a physical place. They process on average 240 million transactions annually, and in recent years they have had accelerated growth, therefore, they seek to improve the performance, capacity, and availability of its current application hosted on AWS using Edge services to provide a better service to its customers.

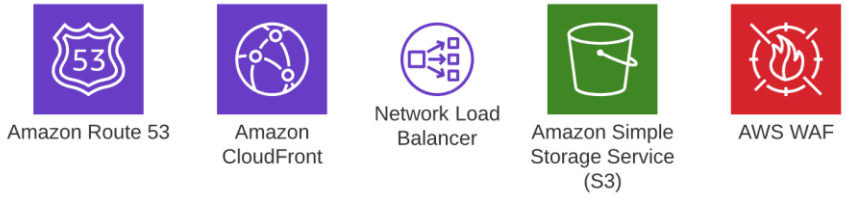
The Challenge

Analysis and redesign of the architecture of the current payment solution which is not following the AWS Well-Architected Framework (WAF). Below are several important points to consider:

- The inbound/outbound traffic to the application layer is handled by one Linux server hosted in an EC2, it is causing bottlenecks during busy business hours.
- To provide support to all customers in a timely way, the solution must automatically either increase or decrease computing capacity.
- The frontend application must be hosted as a static website.
- The solution must be able to handle the static content of the frontend and backend.
- The database runs only in one region. Lack of fault-tolerant architecture.

Why AWS

AWS offers content delivery tools (CDN) such as CloudFront that have features that allow enriching web applications by distributing them globally and in combination with other services such as Route 53, Application LoadBalancer, S3 and Web Application Firewall develop a robust solution architecture.



About Costumer

The payment services provider is a HUB that allows you to receive different media payment in a simple and secure way, either on site or online.

"Edge Services Web Performance"

- All content/request pass through CloudFront improving the response time.
- The NLB grants the scalability and performance of the customer requests demand.
- The requests are secure to process with help of WAF.

The Solution

With the use of Route53, CloudFront, Amazon S3 and Amazon WAF services, requests could be properly handled, secured, and distributed with high response time to end clients.

The role of each of the services in the solution is described in more detail below:

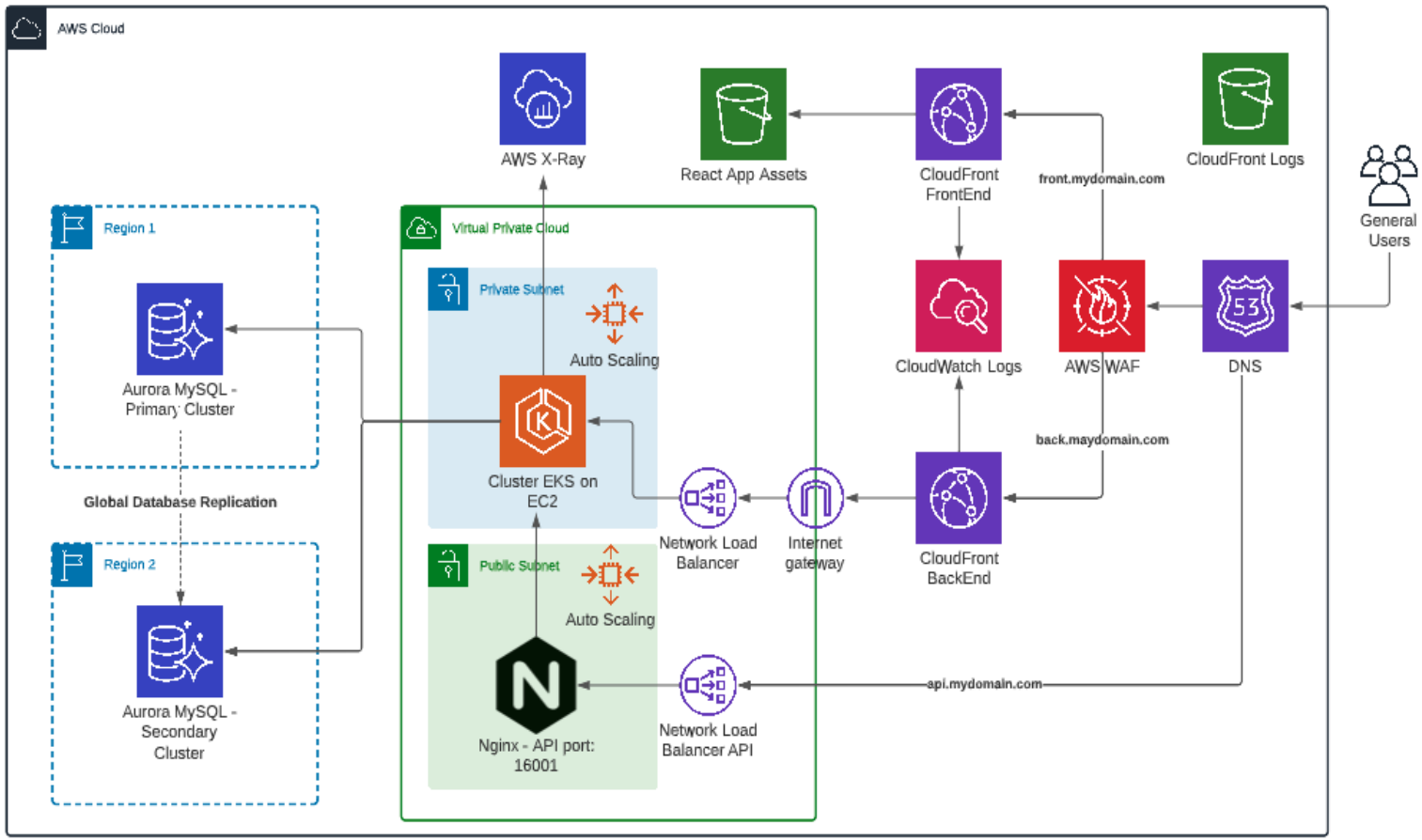
- **Amazon Route53:** The on-premises DNS server was migrated to the Route 53 service in order to handle all the domain's records leveraged the 100 % of availability of the service according to the SLA of Amazon.
- **Amazon CloudFront:** Distributions CloudFront was configured for the frontend and backend to intercept and validate all web requests. In addition, they improve the content delivery by its Edge Locations and static content delivery.
- **Network Load Balancer:** Input traffic balancer for the EKS cluster nodes distributed in different availability zones.
- **Amazon S3:** Stores the static website assets.
- **Web Application Firewall (WAF):** The WAF service was integrated into the CloudFront distributions to protect the frontend and backend of the common web attacks and have the visibility of the requests.
- **Multi-Region DB** : AuroraDB was configured Global with 2 nodes, one of them is the reader endpoint and in case of an event we can failover the DB from Region1 to Region2.

Results and Benefits

The result met the expectations of the client where the following results stand out:

- Client-server architecture composed of clients, servers, and resources, with the management of requests through HTTPS.
- Stateless communication between client and server, which means that client information is not stored between GET requests and that each one is independent and disconnected from the rest.
- Data that can be cached and optimizes interactions between the client and the server.
- A uniform interface between the elements, so that the information is transferred in a standardized way.
- With Lambda@Edge we can collect logs from the different CloudFront Edge Locations.
- Database Resilient.

DIAGRAM-Edge Services Web Performance



Next Steps

AWS makes it easy for us to focus on the development of the application and not on the services, with this, the solution for the payment services provider is capable of being transported to other regions, increasing or decreasing its capacity depending on its growth and needs of both the company and of your customers.

Benefits

Superior Performance

The infrastructure is scalable and the service stability when user demand increases, the solution is capable of sustaining load peaks through its Edge locations.

Low TCO

The use of the corresponding services, which are configured according to the client's needs, client budget and aligned with the best practices of high availability and performance that AWS offers.

Fully Managed

CloudFront and Lambda@Edge are services that ease the implementation of the solution because of its simplicity and range of options for configuration.

About IO Connect Services

IO Connect Services is a company specializing in Information Technology Consultancy Services. All our team members have one thing in common: our enthusiasm for technology and our passion for customer service excellence. We provide services in all North America, LATAM and Europe. Our headquarters are in NYC metropolitan area, and we also have offices in Guadalajara, Mexico and Madrid, Spain.

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