Name: Eullaran, Czra Harvey BSIT4A

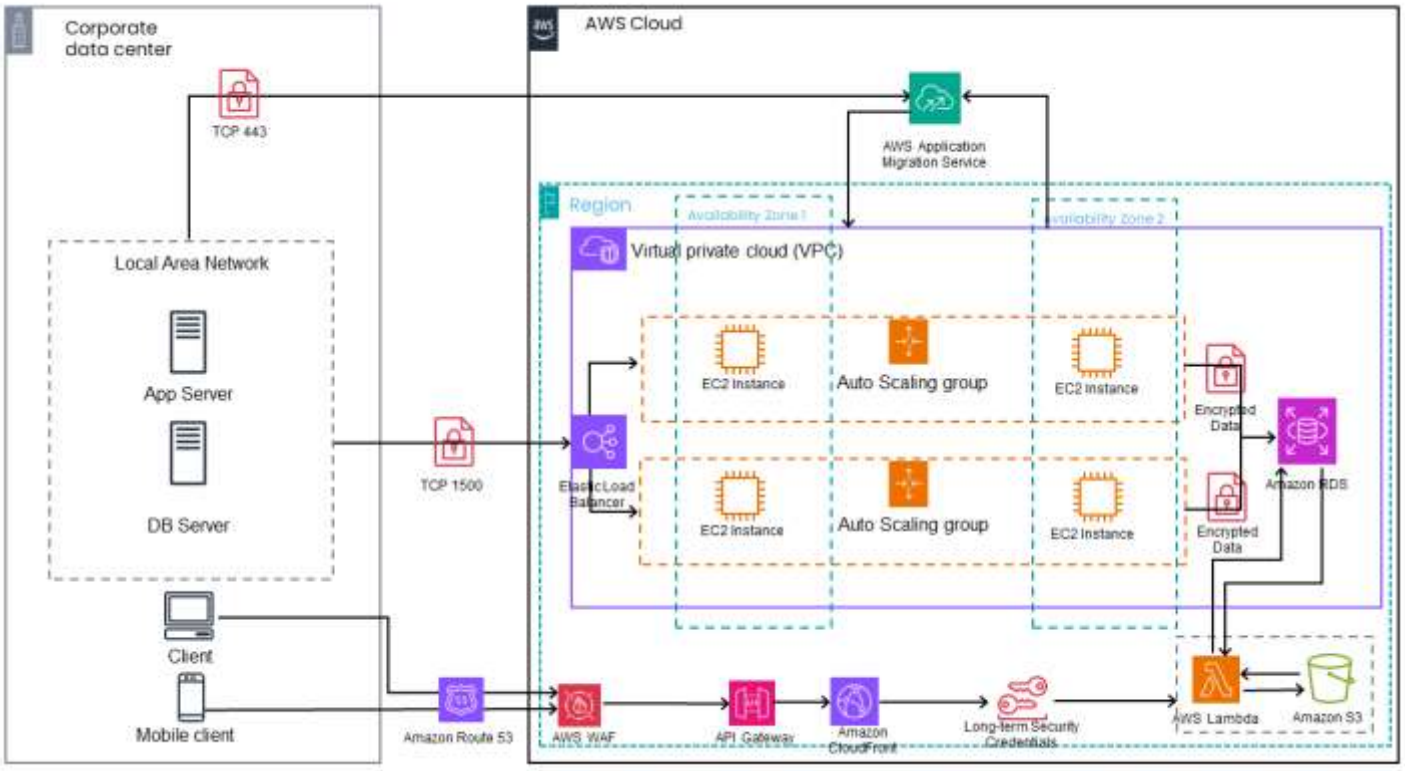
Final Case Study

Cloud Migration and Full System Integration using AWS.

Client Overview:

FCM (Free Choice Mart) is the grocers retail in Caruncho Ave., Pasig City. This company has been operating on a legacy system hosted on-premises. The current system is having a hard time dealing with sudden increases in data traffic and waste resources. The objective of this study is to migrate to AWS EC2, which will make the system more flexible, cost-effective, and give customers a better experience.

Migration of On-premises to AWS EC2 Architecture.



This architecture shows the migration of FCM on-premises application to Amazon Web Services (AWS) Elastic Compute Cloud (EC2) instances. Here are the step-by-step explanation of the migration

- The **Corporate Data Center** is where the current on-premises are located, and it is our first stop. The application is made up of a database server and an application

server that are both linked to a local area network (LAN). apps are accessed by clients, including mobile clients, via TCP (Transmission Control Protocol) ports 1500 (for some specialized apps) and 443 (HTTPS).

- **Amazon Route 53** is AWS's Domain Name System (DNS) service, which is a route used to requests to the correct resources. In this case, Route 53 directs traffic to the Elastic Load Balancer.
- AWS operates in several regions throughout the world; the figure displays one region's several **availability zones (AZs).** An isolated physical site with independent power, cooling, and networking to provide high availability is called AZ.
- **Elastic Load Balancer (ELB)** to guarantee high availability and fault tolerance, inbound application traffic is distributed over many EC2 instances.
- **Virtual Private Cloud (VPC)** is a conceptually separated area of the Amazon Web Services Cloud that allows you to launch AWS resources in a virtual network. In this picture, the VPC covers both AZ1 and AZ2.
- **AWS WAF (Web Application Firewall)** to guard against typical web attacks that might compromise security or impact the availability.
- **EC2 Instances**: These are AWS cloud-based virtual servers. To provide high availability, two instances are displayed in this figure, one in AZ1 and one in AZ2. The application server and database server are hosted by the instances.
- The migration will employ **API gateway** to enable the construction, publication, maintenance, monitoring, and security of APIs at any scale.
- **AWS Application Migration Service** to helps in migrating on-premises workloads to AWS.
- **Auto Scaling groups** consist of EC2 instances that dynamically scale in response to demand, ensuring optimal performance and cost efficiency by automatically adjusting the number of instances.
- **Amazon RDS** is a managed relational database service, providing a straightforward way to set up, operate, and scale relational databases in the cloud.
- The architecture uses **Amazon S3** because it is a highly durable and scalable object storage service, enabling the storage and retrieval of any amount of data in the cloud.
- To enable running the code without the need for provisioning or managing servers, the architecture uses **AWS Lambda**.
- **Long-term Security Credentials** are employed for authenticating and authorizing access to AWS services, providing a secure and persistent means of ensuring controlled and reliable access to the resources in the AWS environment over an extended period.

- **Encrypted data in AWS** ensures heightened data security by employing encryption measures for both data at rest and in transit, safeguarding sensitive information.
- **AWS CloudFront**, as the **content delivery network (CDN)** service in this architecture, caches and delivers application content from global edge locations, ensuring low-latency access and high availability for users by reducing the distance between them and the content, thus optimizing overall performance and user experience.