

Capstone Project Weekly Progress Report

Project Title	Zene Cloud
Group Name	Group-I
Student names/Student IDs	Antarpreet Kaur (C0737410) Charanjeet Singh (C0740039) Hemal Chudasama (C0734999) Kanwaldeep Singh (C0735948) Surbhi (C0736237)
Reporting Week	03 June 2019 – 09 June 2019 (Week 4)
Faculty Supervisor	William Pourmajidi

1. Tasks Outlined in Previous Weekly Progress Report

- We have created new IAM (Identity and Access Management) Role and S3 (Simple Storage Service) bucket
- We then assigned IAM (Identity and Access Management) role to EC2 (Elastic Compute Cloud) instance and copied application data to S3 (Simple Storage Service) bucket.
- We have created Route53 hosted zones to map with domain.
- We choose AMI (Amazon Machine Image) for EC2 (Elastic Compute Cloud) Instance
- We tried to access Application with Route53

2. Progress Made in Reporting Week

- Accessing RDS (Relational Database) instance from EC2 (Elastic Compute Cloud) instance
 - We created a database “Zene_Database” and assigned database port number 3306.
 - We copied the RDS (Relational Database) endpoint name as well.
 - We added an inbound rule into our EC2 (Elastic Compute Cloud) instance which allows all the traffic coming from port 3306.
 - We SSH (Secure Shell) our EC2 (Elastic Compute Cloud) instance using command prompt

- We then SSH (Secure Shell) our RDS (Relational Database) instance through EC2 (Elastic Cloud Compute) instance using the following command
 - ✓ `-mysql -h [endpoint_name] -u [master_username] -p`
 - ✓ Enter password: master_password
- Creating new IAM (Identity and Access Management) role for EC2 (Elastic Cloud Compute) instance to access RDS (Relational Database) instance, following are the steps:
 - Create new role
 - Select AWS service role for RDS (Relational Database)
 - Set permissions → AWS RDS (Relational Database) full access
 - Enter role name
 - Click on create role
- Creating S3 (Simple Storage Service) bucket
 - Click on create bucket
 - Enter a bucket name, which must be unique globally.
 - Select Region
 - Click on create bucket
- Assigning IAM role to EC2 instance
 - Right click on the EC2 instance
 - Click on “Instance Settings”
 - Click on “Attach/Replace IAM role”
 - Click on “Attach”
- We then created a Route 53 hosted zone

3. Difficulties Encountered in Reporting Week

- While accessing the RDS instance through EC2, it didn't work earlier. Then we found out that we didn't add the inbound rule in our EC2 instance for port 3306.
- We faced the error while creating the S3 bucket, we were trying to give the name “Zene_Cloud”. It showed us the error **“Bucket name must not contain uppercase characters. Bucket name must start with a lowercase letter or number. Bucket name must be between 3 and 63 characters long”**, we then fixed it by giving the name as “zenecloud”.

4. Tasks to Be Completed in Next Week

- Create ELB (Elastic Load Balancer)
- Create Launch Configuration and AutoScaling
- Enable ACM (AWS Certificate Manager) and ELB (Elastic Load Balancer)
- Secure infra at Security Group and VPC level.
- Terminate all Instances. To check that AutoScaling should be able to create new EC2 instances.

5. Project Scope

- The Zene Cloud is purely AWS (Amazon Web Service) based. Zene Cloud uses many AWS services as:
 - AWS Organisation
 - Route 53
 - Hosted Domains
 - Record Set
 - VPC (Virtual Private Cloud)
 - Subnets
 - Internet Gateways
 - Route Tables
 - Security Groups
 - SNS (Simple Notification Service)
 - SES (Simple Email Service)
 - ELB (Elastic Load Balancer)
 - ACM (Aws Certificate Manager)
 - EC2 (Elastic Cloud Compute)
 - EIP (Elastic IP)
 - AutoScaling
 - RDS (Relational Database Service)
 - RDS Master
 - RDS Read Replica
 - Snapshot
 - RDS Subnets
 - S3 (Simple Storage Service)
 - Buckets
 - IAM (Identity and Access Management) Access
 - Lambda
 - Snapshots
 - Event Processor
 - Alexa Skills
 - CloudWatch
 - Monitor Events
 - Alerts to SNS
- We also user Bluehost for creating our webpage
<https://www.bluehost.com>
- We are halfway done in our Project on Zene Cloud, it was not an easy task to reach the mid way, we faced many difficulties, therefore took help from some websites and github to reach at this point
https://github.com/awsdocs/amazon-s3-getting-started-guide/tree/master/doc_source
<https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/concepts.html>
<https://docs.aws.amazon.com/AmazonCloudFront/latest/DeveloperGuide/Introduction.html>
<https://docs.aws.amazon.com/vpc/latest/userguide/what-is-amazon-vpc.html>

- Our team contains five members and each member plays a different role in developing a high available and fault tolerant website as
 - **Antarpreet Kaur:** Setup EC2, CloudWatch and EBS
 - **Charanjeet Singh:** Creating Website and Setup Route 53
 - **Hemal Chudasama:** Setup ELB and AutoScaling
 - **Kanwaldeep Singh:** Creating RDS, Developing Alexa Skills, Lambda and Setup VPC
 - **Surbhi:** Setup S3, IAM, SNS and AWS Organisation

6. Project Scope Creep

- The road was not easy till here we faced many difficulties and challenges while creating some of the services, some challenges took us two days to solve them.
- Our project budget was limited but when we got the idea, we assume that budget will be enough for our project, we are only halfway, and we have exceeded the budget limit and there is so much work is left to do.
 - We will do cost optimisation and try to find some cost-effective ways for some services as
 - Instead of using S3 Standard we will use S3 Infrequent Access
 - We will try to replace RDS Read Replicas with Multi-AZ
 - We will not enable enhanced CloudWatch Monitoring, as 5 minutes monitoring time is good for us, which is by default.
 - As we will not be having so much heavy traffic and request, we will use the free tier for lambda functions requests
- Zene Cloud project is converted into two phases and second phase is the advance version of the project which will include more services and features. As we are running out of the budget and also the time is limited, we will try to make our phase one best and will includes some of the phase two features in phase one.