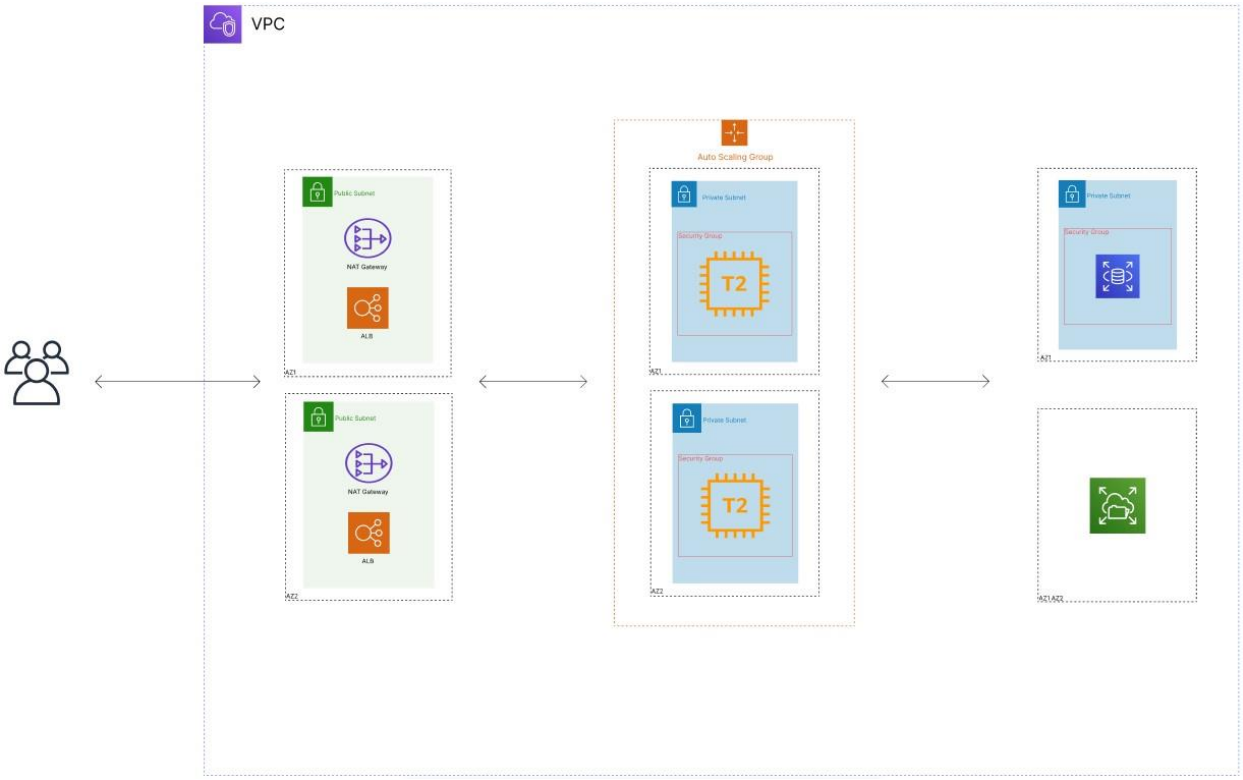
Cloud Engineer Trainee Assignment Theoretical Design

1.1 Architectural diagram.



1.2 Explanation

1.1 Operational Excellence

The system will monitor, maintained and improved over time by using different AWS resources, for example to monitor the health of the instances and provision them over the time we attached an ALB with a TG to the instances to check the health status of them, we also can connect to the instances using ICE, by doing this we make sure to get into the instances safely and check the logs of them, also the system could be improved a lot in the future due to ASG and the flexibility to adjust the instances and the number of them as needed.

1.2 Security

To make sure that the instances and the DB are secure, we made sure that they are inside private subnets and could be only accessed by ALB in a public instance with connecting to IG and ICE which is located inside private instance.

1.3 Reliability

We made sure that the system is reliable by having an ASG and distributing the system over 2 different availability zones A and C in Ireland region, the ASG will make sure to launch 2 instances as minimum if any of them become unhealthy, also the EFS are distributed in two different availability zones which will make the application more reliable.

1.4 Performance Efficiency

As a future plane, the ASG will be able to launch more instances once the demand increase by holding the AVG CPU usage under 70%, it will increase them as 3 maximums in favor to stay within the cost limit.

1.5 Cost Optimization

To maintain the cost reasonable to the project, we made sure that the RDS is only deployed in on Az instead of multiple AZ's in favor to be within the cost limit, we also made sure to keep the instances and the EFS size small and within the free tier.

1.6 Assumptions

The infrastructure is managed via Auto Scaling Groups, 24/7 human monitoring is not assumed, also the instances needed to be accessed securely without being exposed to the public and that's why we used ICE, also the expected traffic is low and the ASG will do the job and finally we made sure to stay within the cost limit by not enabling RDS with multiple AZ's.