**Task 3 Deliverable**

Setup a server for communication with the phone app that was developed in Task 2.

We choose to use Amazon Web Services (AWS) to run our server. We reviewed the architecture of AWS which showed to have a lot of tool for building a cloud based services.

AWS has offers support for secure cloud servers running multiple operating systems options for Linux to Microsoft Windows servers, a number of different database services, block and object storage, backup and archive, security, container and content delivery services.

The following process was taken to setup a compute server running on AWS to collect the GPS data generated on the mobile phone app.

Virtual Private Cloud (VPC)

A VPC is a virtual private cloud or assume to be our virtual datacentre in the cloud had to be first created to host the amazon EC2 instance. The VPC allow you run instances of virtual servers and management of security and networking services to support cloud instances.

We had a general review the VPC reference architectures, we then followed to configure the VPC according to the following settings below.

The VPC covers a single geographic region supported by multiple Availability Zones (AZ). The AZ are amazon datacentres within a geographic region that have high speed connectivity between the datacentres. So when designing applications to take advantage the level redundancy. AWS have between two to three AZ’s within a particular Region.

AWS reserves 5 address per subnet for internal network communications with VPC, we used a single IPv4 and IPv6 prefix block addresses

* Configurations  
  The VPC supernet used was 172.31.0.0/16  
  VPC Name - vpc-8c2473e5 not renamed yet (ase-group1)  
  Public Subnet - 172.31.1.0/24 0 eu-west-2a AZ  
  Subnet name - Public  
  enable DNS hostnames
* Hardware tenancy – default shared tenancy
* All machine instances are tagged (TAG) with names that help categorizes different AWS resource for monitoring, billing and security.
* Security Groups applies as a resource level traffic firewall  
      Applies to instances, firewalls, elb etc  
      Applies to both ingress and egress traffic  
      Stateful - return traffic allowed
* Access Control Lists - Is a subnet level traffic firewall  
     this is a source and protocol filtering rules   
     functions are Stateless   
     Support Separate inbound and outbound rules set  
    
    
  Elastic Block Volumes – was created a 30Gb storage volume  
      - But note that the storage volume is empherial so we will not be powering off the machine.  
    
  EC2 Instances -   
     - setup the instance using Amazon Linux AMI - this support a version of RedHat  
     - Uses EBS - SSD of OS disk   
     - using free tier - 1GB ram, 1vCPU,   
     - Network use default VPC  
     - Subnet - Public Subnet  
     - We have not yet enabled cloud watch which will have charges  
     - EC2 tenancy - Shared not dedicated  
     - Shutdown behaviour is to stop  
    
  Assignment of Elastic IP address to EC2 instance for public access to the virtual instance   
   - Created and associated IPv4 address and IPv6 address   
    
  Install and Setup MySQL DB  
    - Installed MySQL 5.7 server and client utilities

Phone Home of the App