**CMP6210**

**Cloud Computing 2020–2021**

Web-application report

Grocery shopping application

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# Aim

To implement a grocery shopping application to allow users to add items to their basket.

Objectives

. To create a database containing names of items, images and prices.

. Implement a feature where users can create accounts.

. To allow users to add items to the basket.

# Design database

Firstly, a server will be needed on AWS. This is to allow client requests to be handled. The database shall make use of tables – a table for products and a table for users.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| (Int)ID | (String)Name | (Currency)Price | (String)Image | (String)Category | (Int)Ratings ( /5) | (String)Description |
| 1 | Apple | 50p | … | Fruit&Veg | 4 | Ingredients/Allergies |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| (Int)ID | (String)Username | (String)Password | (String)Email | (Int)Phone No. |
| 1 | Admin | Oiejt48t | Admin@ | 0121 3459699 |
|  |  |  |  |  |
|  |  |  |  |  |

## Create Accounts

Click ‘signup’ (Transitions to signup page) – Enter Username – Enter Email – Enter Password – Enter phone number - Click ‘create account’(Transitions to ‘home’ page).

## Add Products

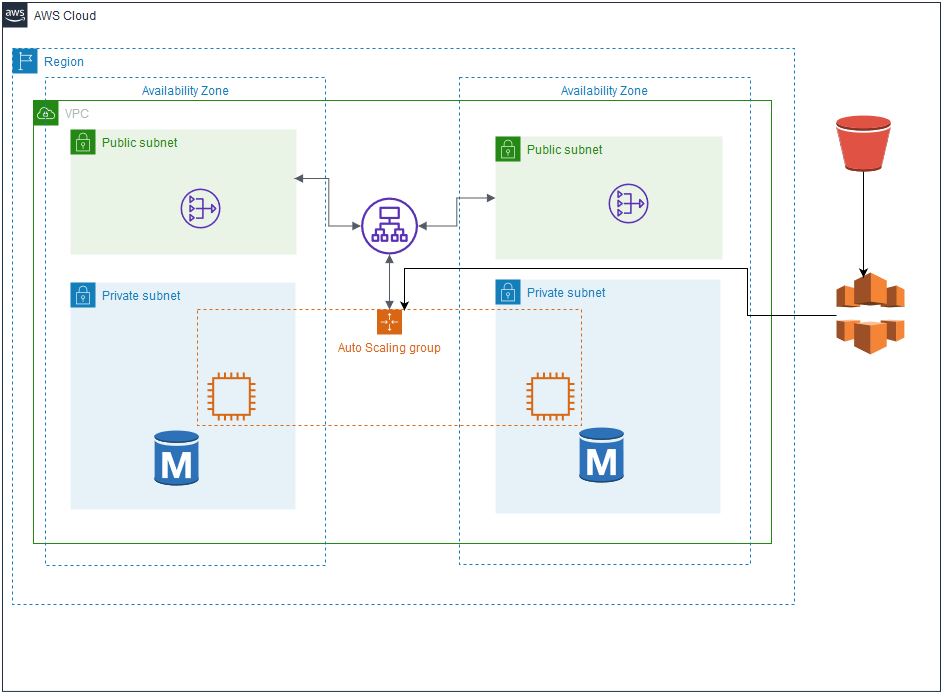
Only the admin can add products to the database.

(Same login process as users) After logging in, transitions to admin page with admin options such as adding products – Click ‘Add Products’ – Form appears to enter product details – Click ‘submit product’.

## Permissions

|  |  |
| --- | --- |
| User | Admin |
| Can add items to cart | Can add items to cart |
| Remove items from cart | Remove items from cart |
| Sign in/out | Sign in/out |
| View products | View products |
| Option to checkout | Option to checkout |
| Update account details | Update account details |
| Contact admin/store | Add/remove users |
| Choose payment method | Add/remove products |
|  | View user details |
|  | Update product details |

# AWS infrastructure diagram

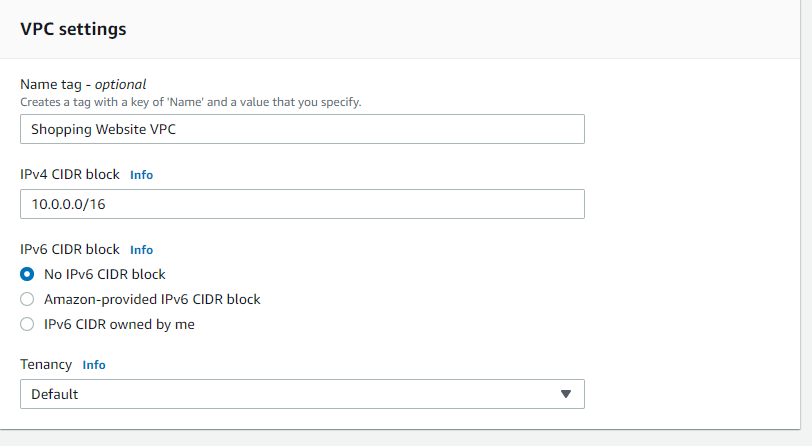


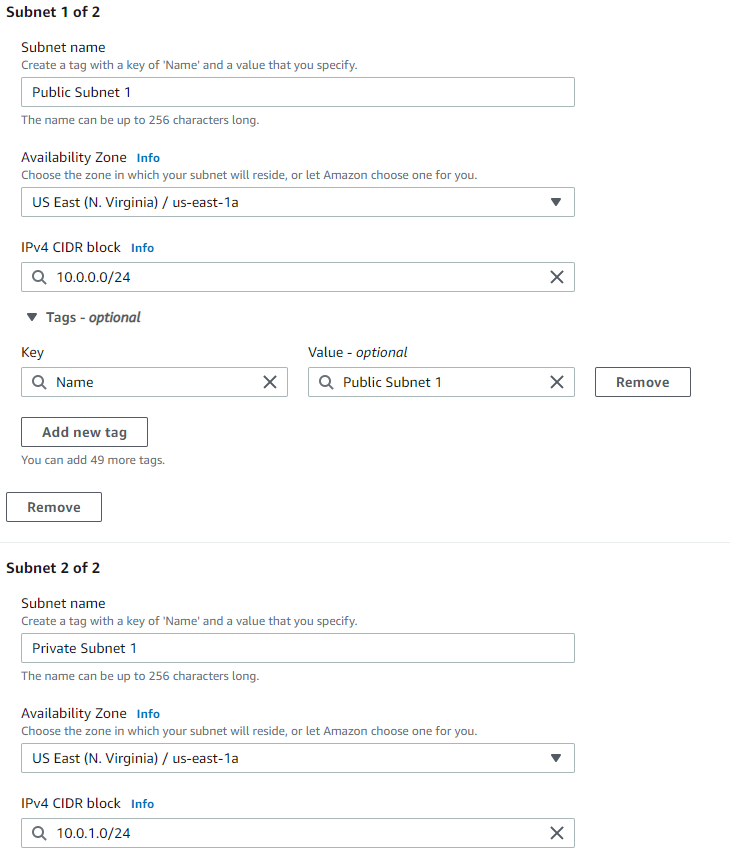
# VPC

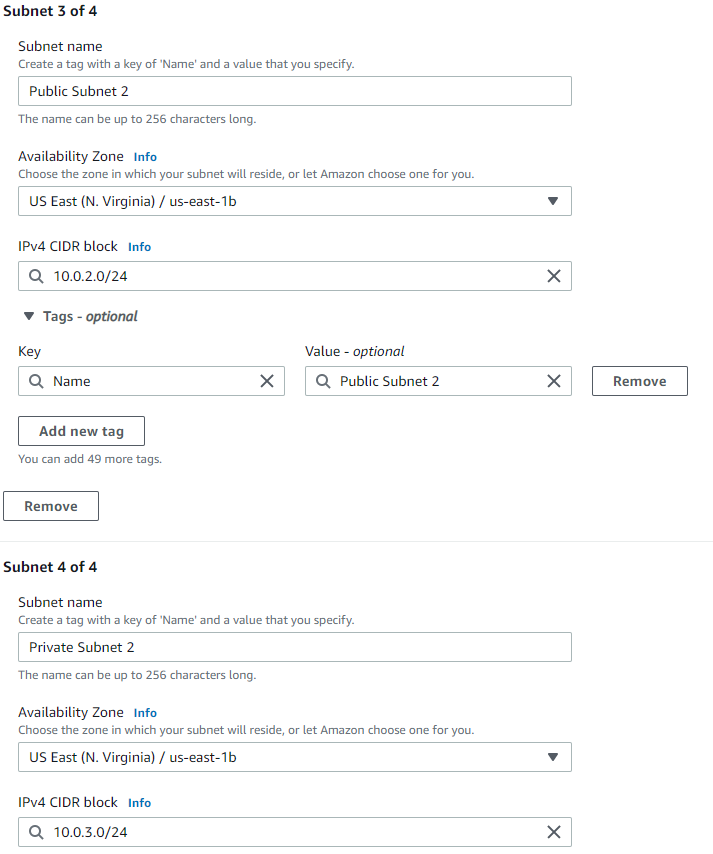
To begin, we first need to create our Virtual Private Cloud. According to AWS (2021):

*Amazon Virtual Private Cloud (Amazon VPC) is a service that lets you launch AWS resources in a logically isolated virtual network that you define. You have complete control over your virtual networking environment, including selection of your own IP address range, creation of subnets, and configuration of route tables and network gateways.*

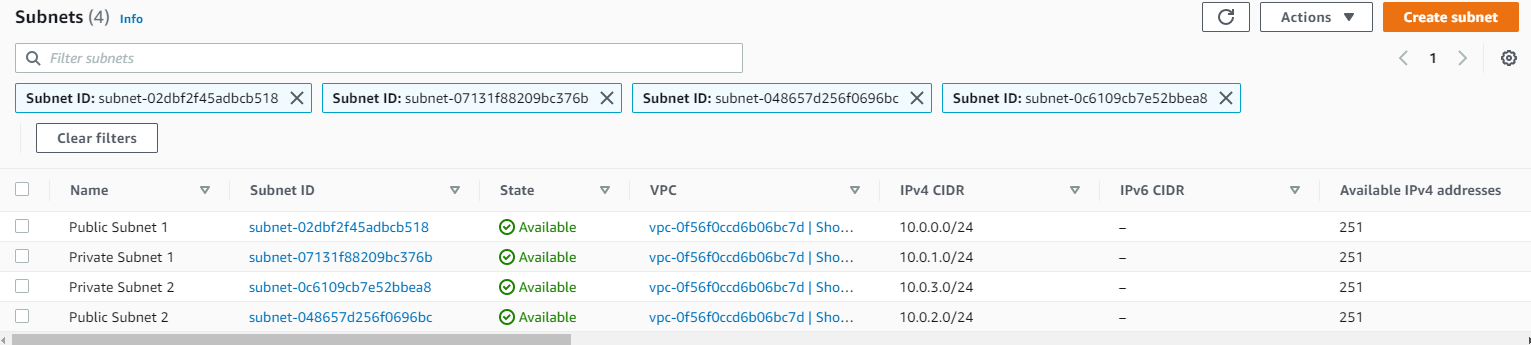
This shall be named *Shopping Website VPC* with a CIDR block of *10.0.0.0/16* as seen below.

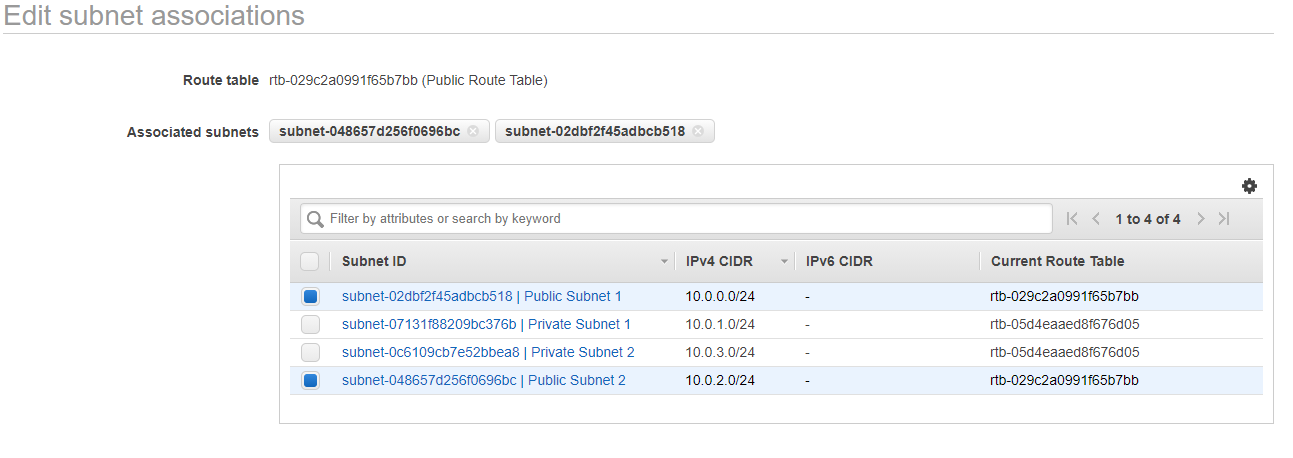


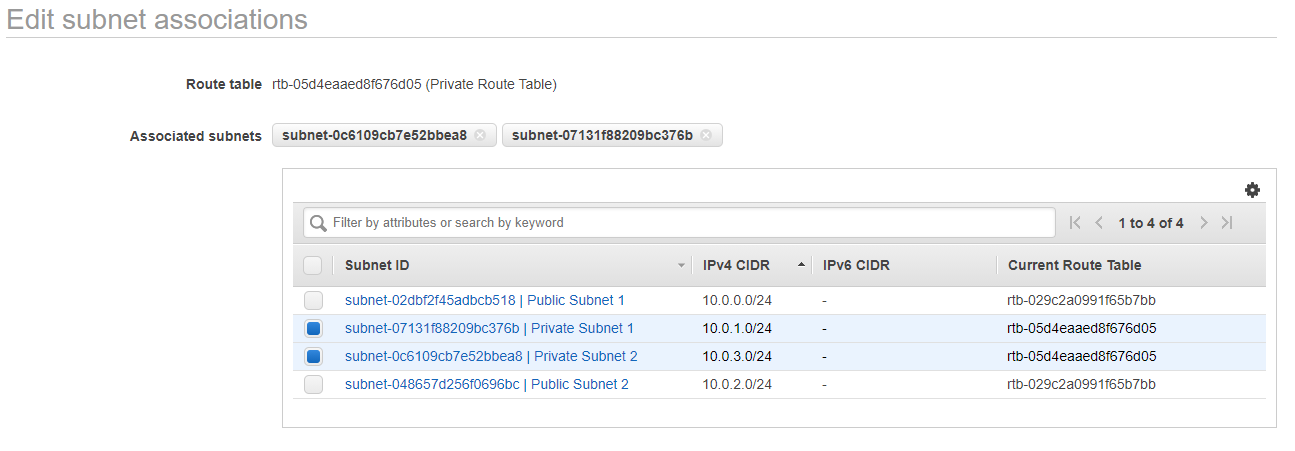
A set of Public and Private subnets shall be created and assigned for two separate availability zones ‘US-East-1a’ and ‘US-East-1b’. The subnets shall be assigned a CIDR block of 10.0.**x**.0/24 (where x is a chosen digit).



Here is a list of all the created subnets:

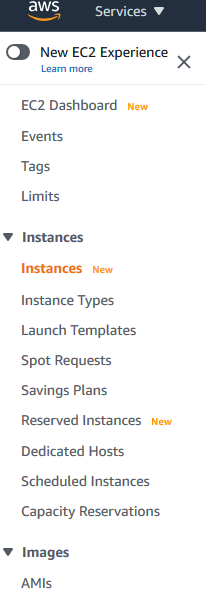


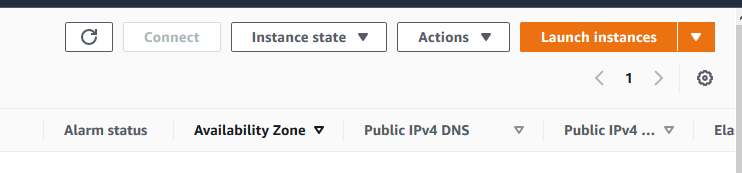
Next, we’ll be editing the subnet associations for the public and private subnets. A public route table and a private route table will be created to accommodate this.



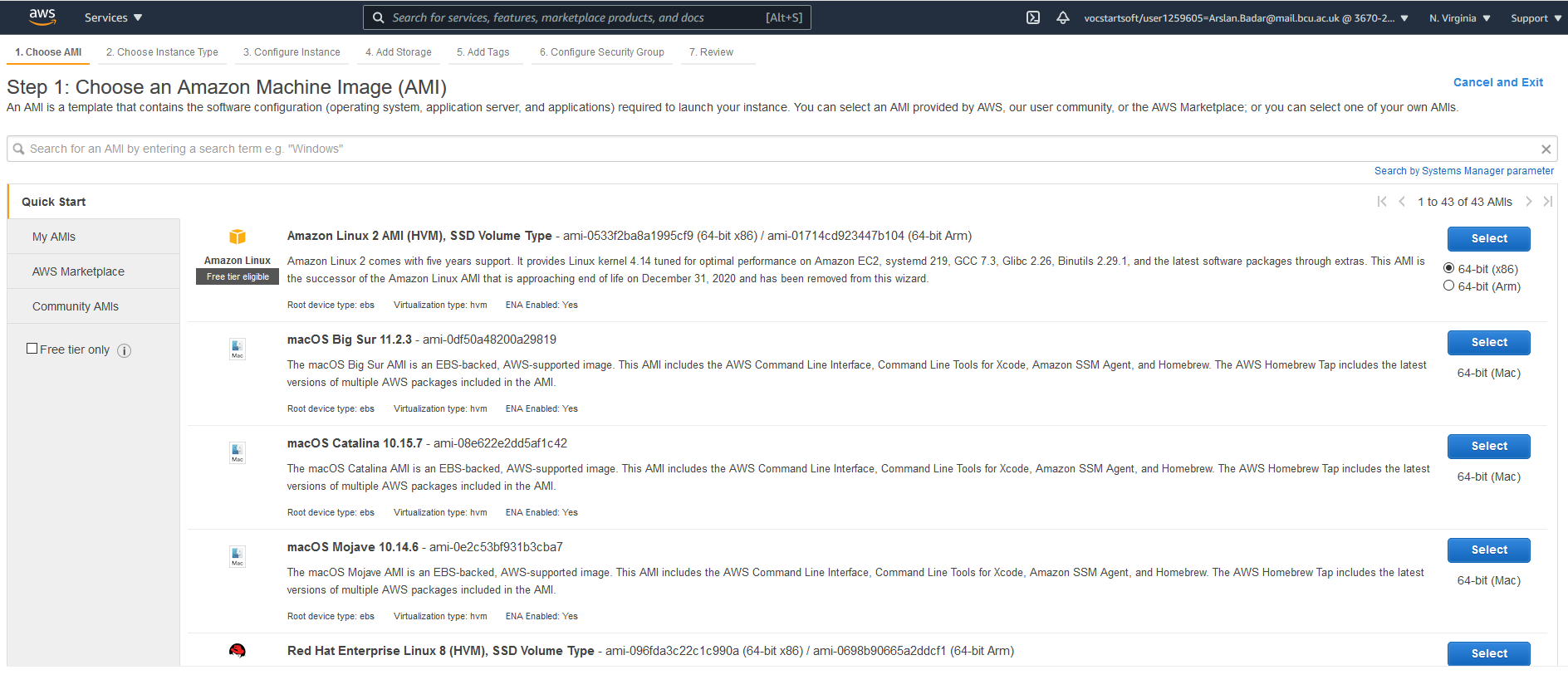
# EC2

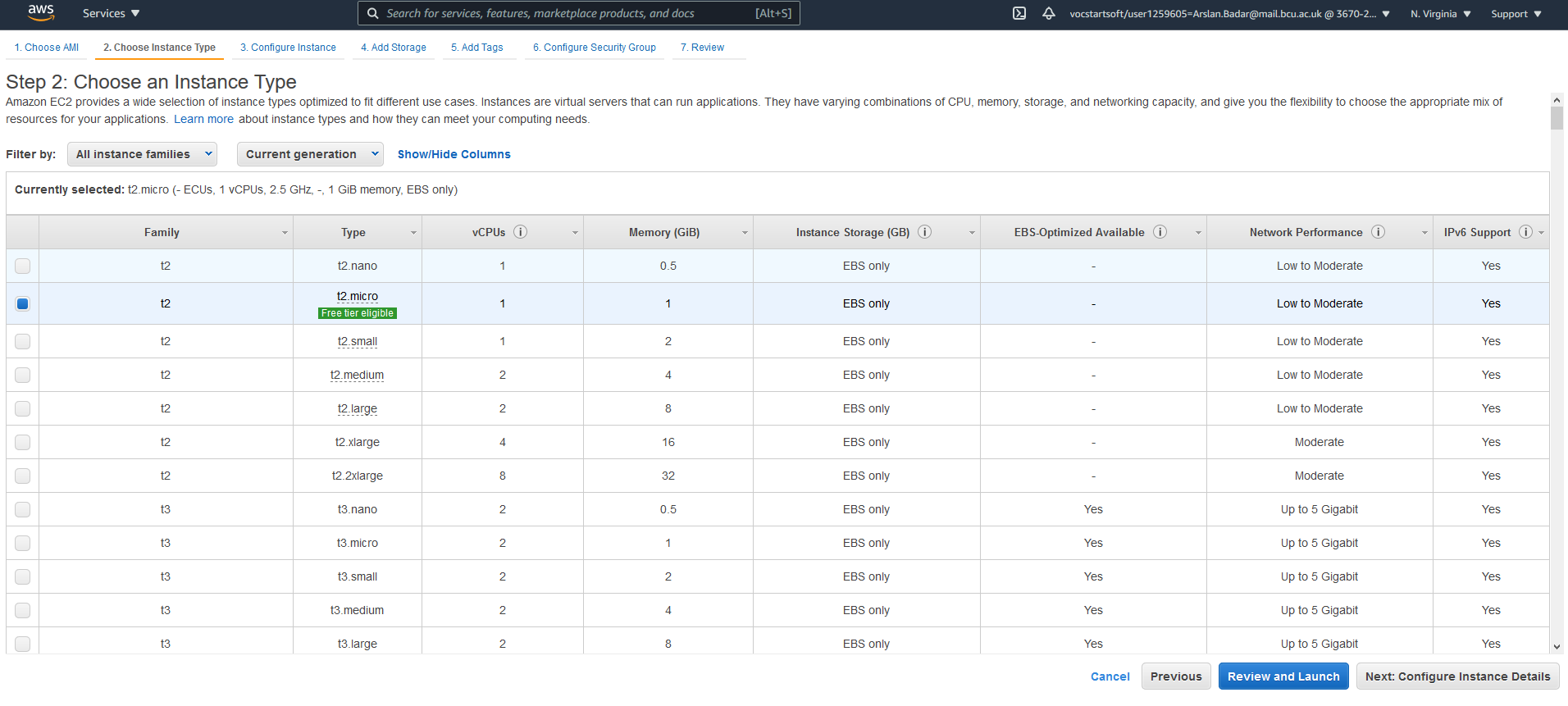
According to Wigmore (2014), the Amazon elastic compute cloud (EC2) is a virtual server that allows for the running of applications on Amazon’s web services infrastructure. The creation of an instance will allow for unique configurations for the virtual server which the shopping website will run on.

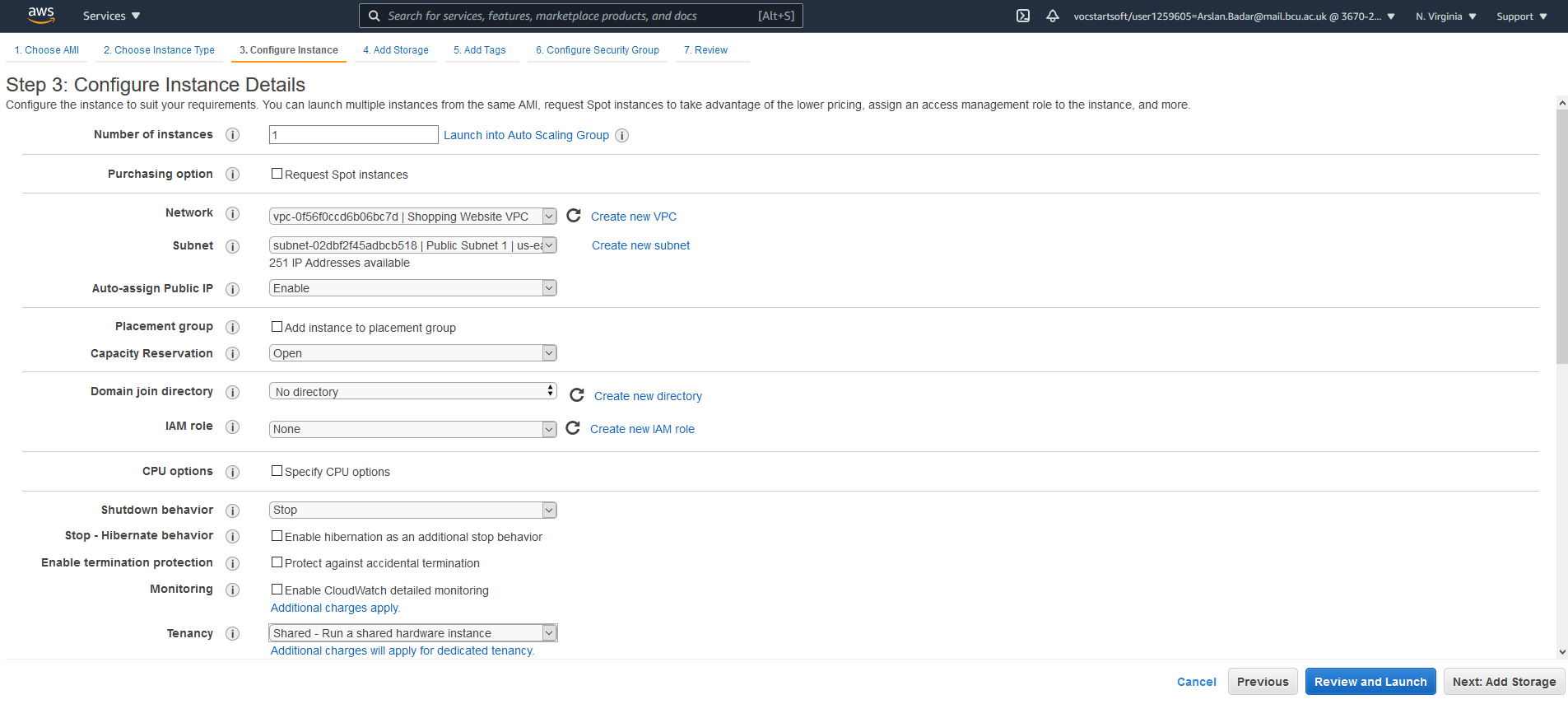


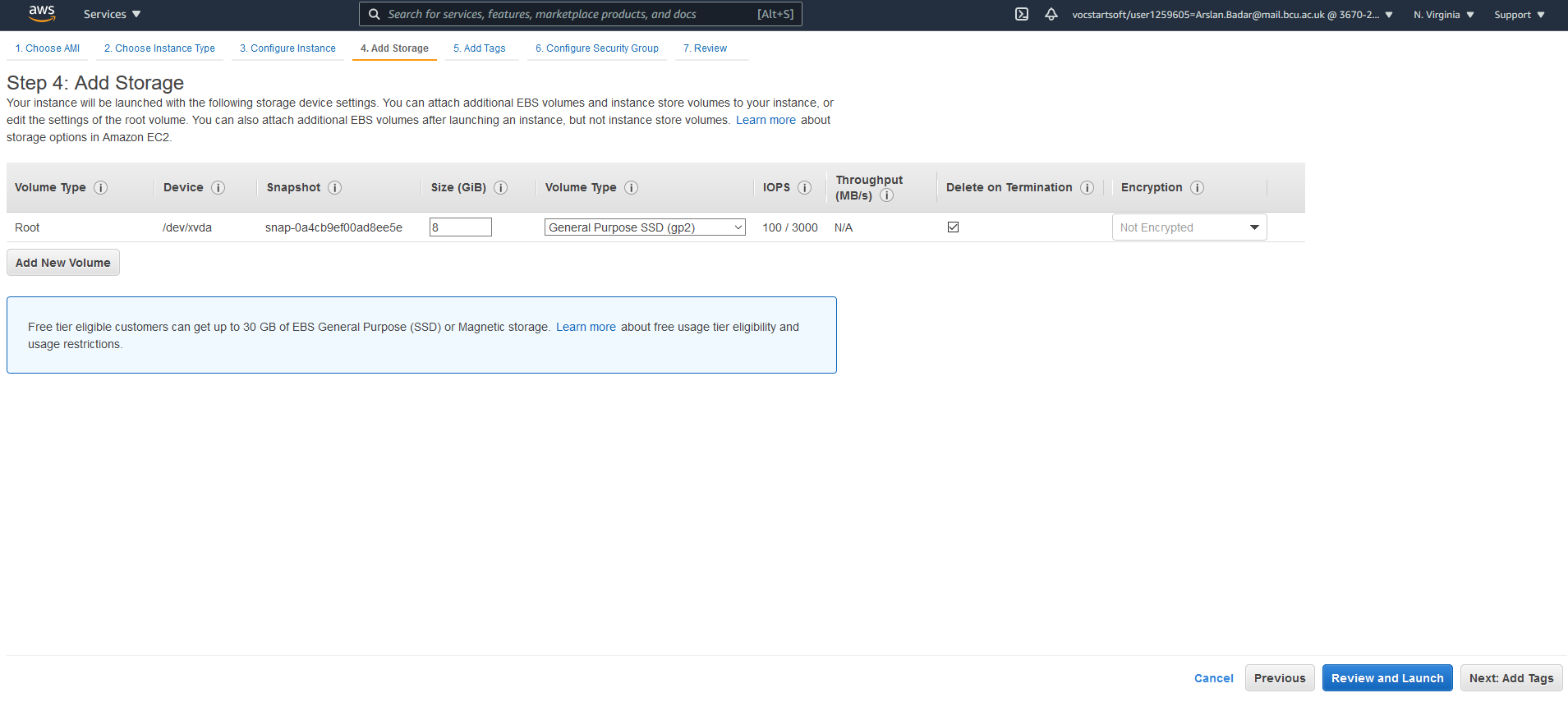


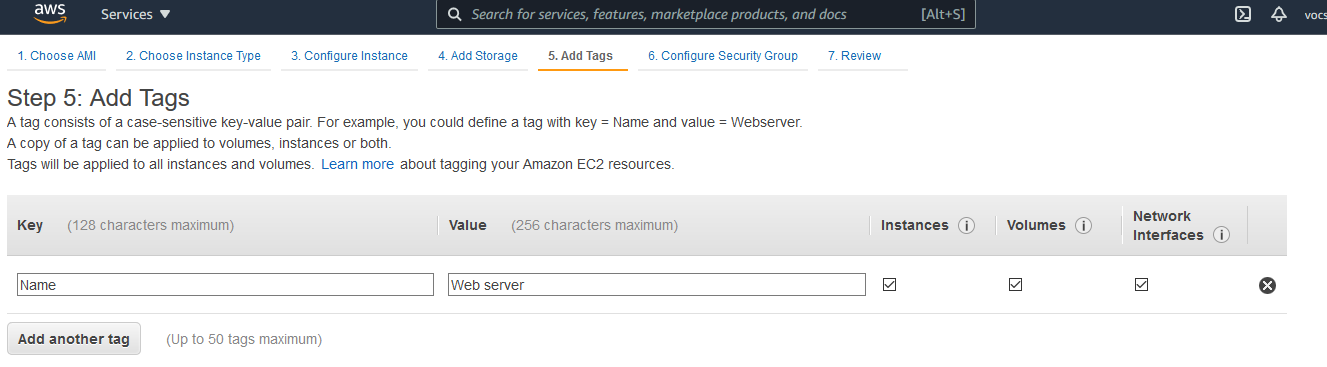
For this project, the Amazom Linux 2 AMI will be used.



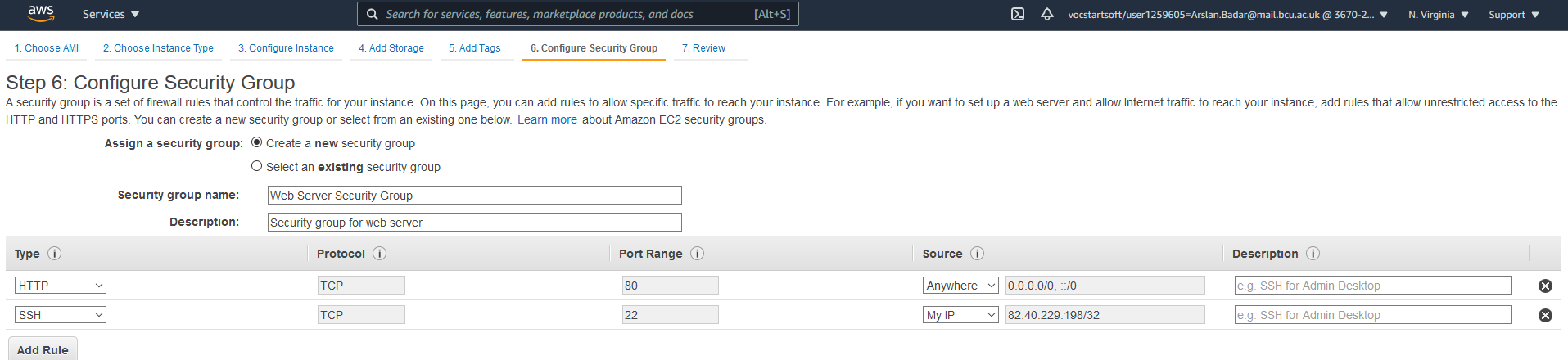


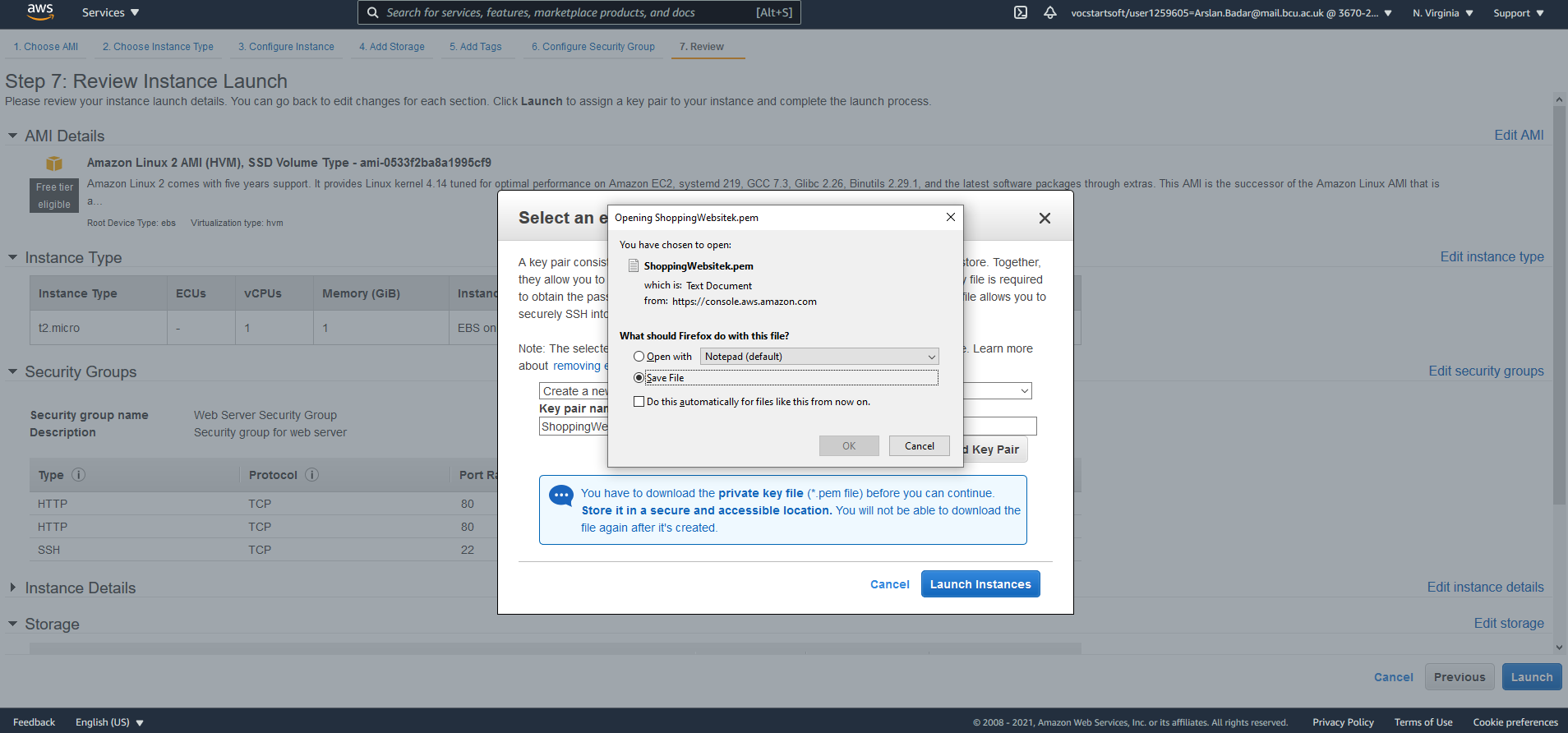


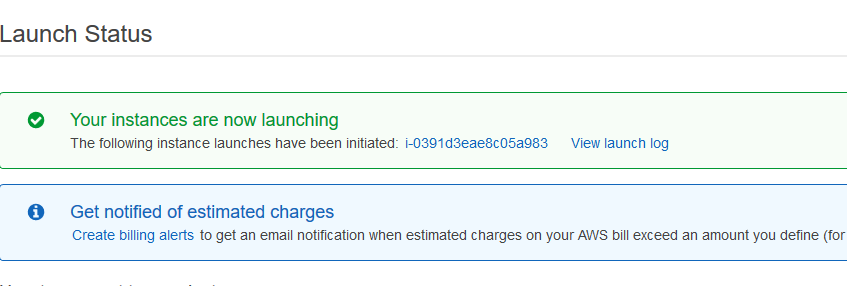


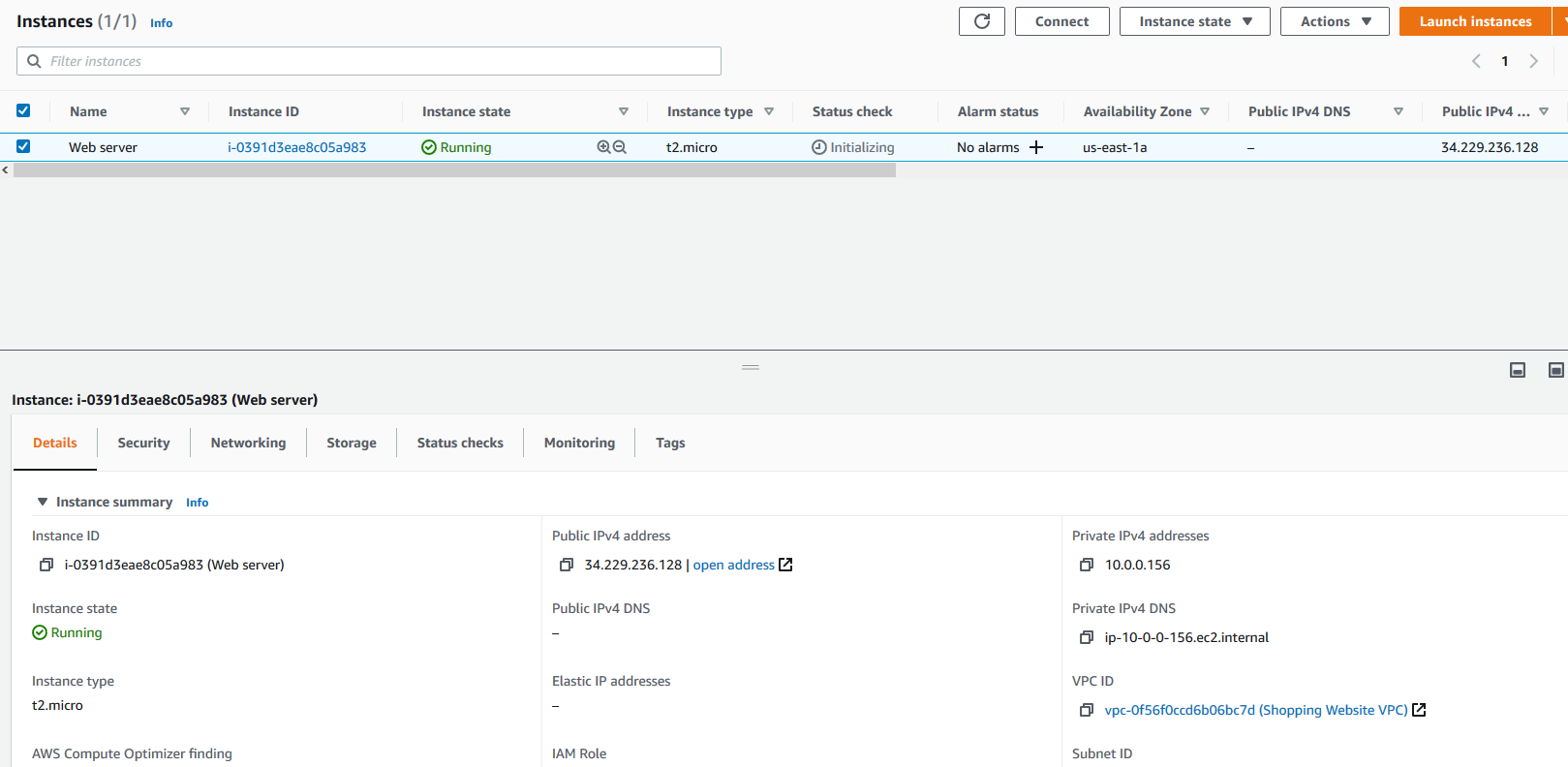


A security group for the website shall be created, titled ‘Shopping Website Security Group’. Enabling HTTP access will allow for HTTP inbound rules to be added.









References

Wigmore, I. (2014) *Amazon EC2 instance* Available at: [What is Amazon EC2 instance? - Definition from WhatIs.com (techtarget.com)](https://searchaws.techtarget.com/definition/Amazon-EC2-instances#:~:text=An%20EC2%20instance%20is%20a,programs%20in%20the%20computing%20environment.) (Accessed: 5th April 2021)

AWS. (2021)*What is Amazon EC2?* Available at: [What is Amazon EC2? - Amazon Elastic Compute Cloud](https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/concepts.html) (Accessed: 5th April 2021)

AWS. (2021)*Amazon Virtual Private Cloud* Available at: [Amazon Virtual Private Cloud (VPC)](https://aws.amazon.com/vpc/?vpc-blogs.sort-by=item.additionalFields.createdDate&vpc-blogs.sort-order=desc) (Accessed: 2nd April 2021)