Topic: Create a load balancer

Part A: Create VPC and subnet

- Open the Amazon VPC console at https://console.aws.amazon.com/vpc/.
- In the dashboard, choose **Start VPC Wizard.**
- Select the first option, **VPC with a Single Public Subnet**, and then choose **Select**.
- For **VPC name** and **Subnet name**, you can name your VPC and subnet to help you to identify them later in the console. You can specify your own IPv4 CIDR block range for the VPC and subnet, or you can leave the default values (10.0.0.0/16 and 10.0.0.0/24 respectively).

***Question*: If there is a CIDR block 10.10.1.32/27, Does 10.10.1.44 match this CIDR block? How about 10.10.1.90? Please give the answer and explain in the lab report.**

- You can leave the rest of the default settings, and choose **Create VPC**.
- Go back to VPC Dashboard, click **Subnets**.
- Click **Create Subnet.**
- Name your subnet, select the VPC you have created one. Choose the same availably zone with the subnet you have created (figure1). Enter a valid IPV4 CIDR Block.

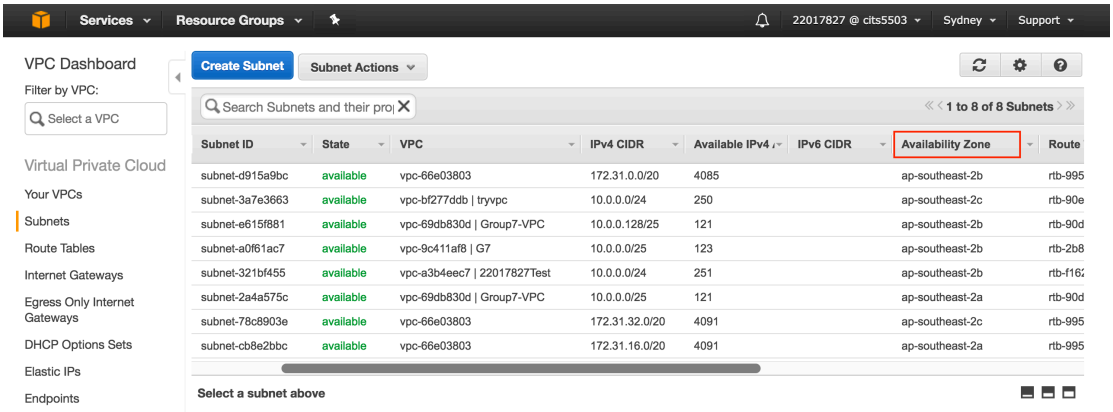

figure1

- Choose **Yes, Create**

Part B: Create security group

- Open the Amazon VPC console at https://console.aws.amazon.com/vpc/.
- In the navigation pane, choose **Security Groups**.
- Choose **Create Security Group**.

- Provide a name and description for the security group. Select the ID of your VPC from the **VPC** menu, and then choose **Yes, Create**.
- On the **Inbound Rules** tab, choose **Edit**, and then do the following:
  1. Select **HTTP** from the **Type** list, and enter 0.0.0.0/0 in the **Source** field.
  2. Add **HTTPS** from the **Type** list, and enter 0.0.0.0/0 in the **Source** field.
  3. **Add another rule**, then select **SSH** (for Linux) or **RDP** (for Windows) from the **Type** list, and enter 0.0.0.0/0 in the **Source** field.
- Choose **Save.**

Part C: Launch an instance into VPC

- Open the Amazon EC2 console at https://console.aws.amazon.com/ec2/.
- From the dashboard, choose **Launch Instance**.
- Choose *Ubuntu Server 16.04 LTS (HVM), SSD Volume Type - ami-e2021d81*
- To the **Configure Instance Details** page, select the VPC that you created in Part A from the Network list, and then specify a subnet, choose the **public subset** (not the second one you created.).
- To assign a public IPv4 address now, ensure that you select **Enable** from the **Auto-assign Public IP** list.
- On the next two pages of the wizard, you can configure storage for your instance, and add tags. On the **Configure Security Group** page, select the **Select an existing security group** option, and select the security group that you created. Choose **Review and Launch**.

Part D: Install apache2 on your instance

- Connect to your instance
- Enter **sudo bash** in command line
- Enter **apt-get update** in command line
- After updating successfully, enter **apt-get install apache2** in command line
- Find your **Public DNS** (figure2), copy the DNS, and open it in the web browser. If successfully, Apache2 ubuntu default page will welcome you. ***Screenshot this Apache2 ubuntu default page with DNS url on top.***

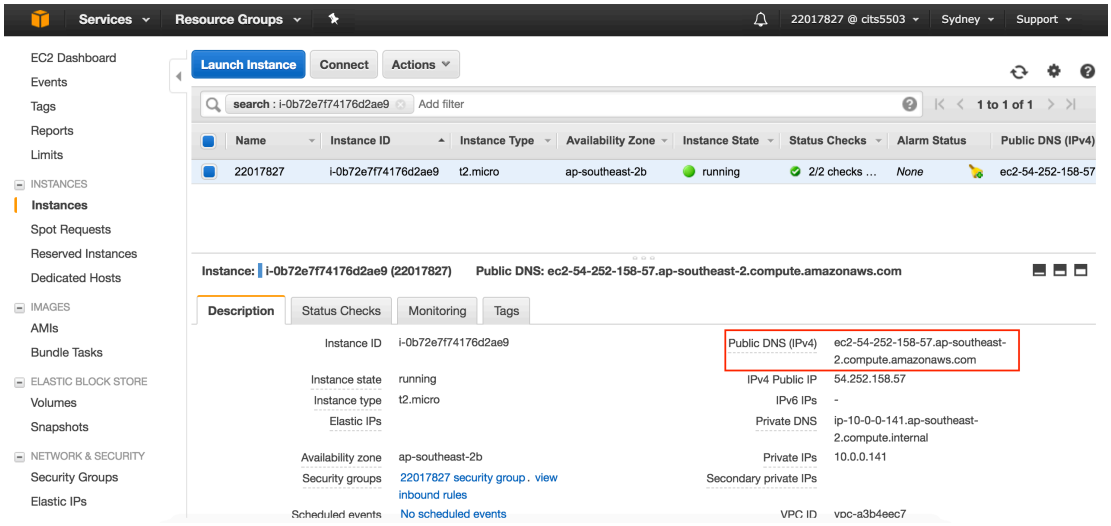

figure2

Part E: Create a load balancer

- Go back to EC2 Dashboard, click **Load Balancers.**
- Click **Create Load Balancer.**
- Choose Classic Load Balancer, click **Create**.
- Connect it to the VPC you have created, In Selected subnets, select the public one (not the second one you created) into the Selected subnets (figure3). Click **Next:Assign Security Groups**

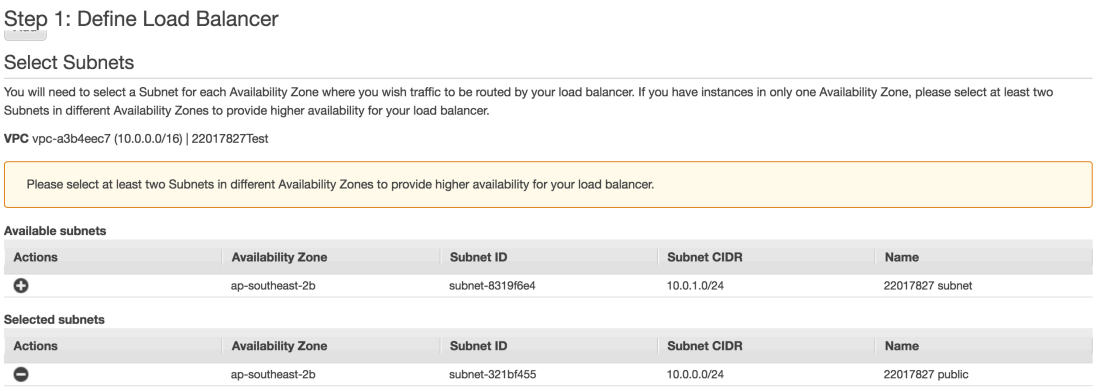

figure3

- Choose the security group you have created.
- In **Step4: Configure Health Check**, For Ping Path, replace the default value with a single forward slash ("/"). This tells Elastic Load Balancing to send health check queries to the default home page for your web server, such as index.html. (figure4)

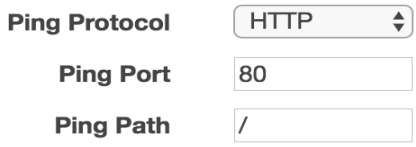

figure4

- In **Step5: Add EC2 instances**, add instance you have created.
- Then, set a tag if you want. Last, **Create**.
- Find your load balancer, check the **Instances** status (figure5). If it's OutOfService, wait until status show InService.

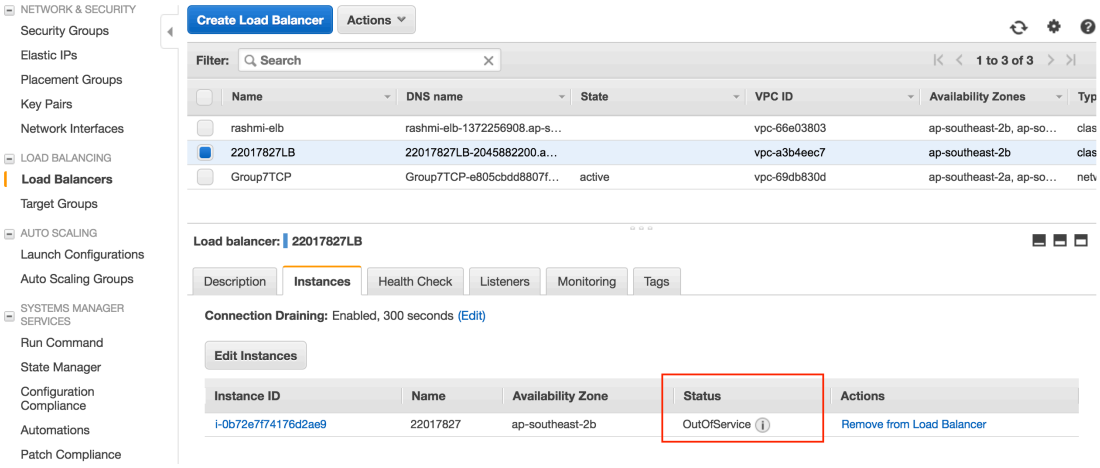

figure5

- Go back to **Description**, find your load balancer DNS (figure6), copy the DNS, and open it in the web browser. If successfully, Apache2 ubuntu default page will welcome you. ***Screenshot this Apache2 ubuntu default page with DNS url on top.***

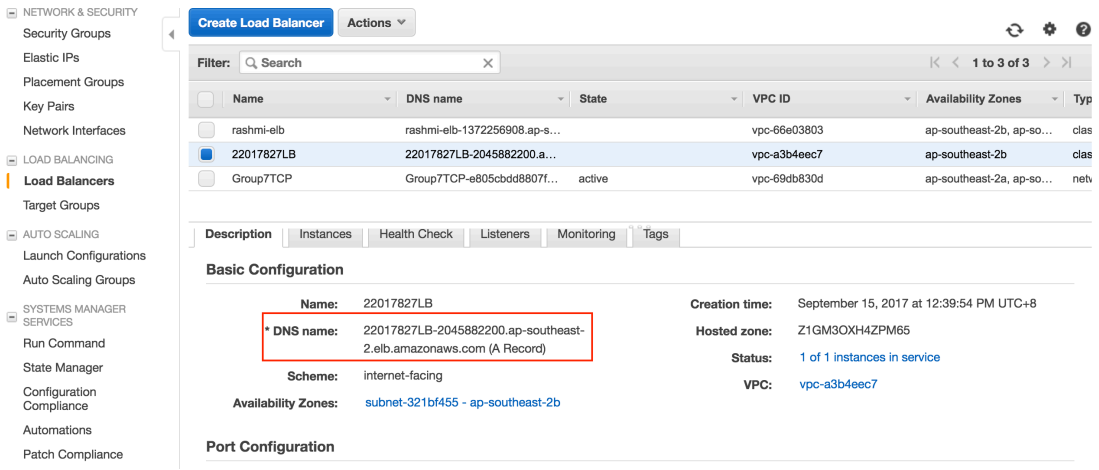

figure6