

Lab 2: Build your VPC and Launch a Web Server

Name : Le Ngoc An Thu

Lab overview and objectives

In this lab, you will use Amazon Virtual Private Cloud (VPC) to create your own VPC and add additional components to produce a customized network. You will also create a security group. You will then configure and customize an EC2 instance to run a web server and you will launch the EC2 instance to run in a subnet in the VPC.

Amazon Virtual Private Cloud (Amazon VPC) enables you to launch Amazon Web Services (AWS) resources into a virtual network that you defined. This virtual network closely resembles a traditional network that you would operate in your own data center, with the benefits of using the scalable infrastructure of AWS. You can create a VPC that spans multiple Availability Zones.

After completing this lab, you should be able to do the following:

- Create a VPC.
- Create subnets.
- Configure a security group.
- Launch an EC2 instance into a VPC.

Duration

This lab takes approximately **30 minutes** to complete.

AWS service restrictions

In this lab environment, access to AWS services and service actions might be restricted to the ones that are needed to complete the lab instructions. You might encounter errors if you attempt to access other services or perform actions beyond the ones that are described in this lab.

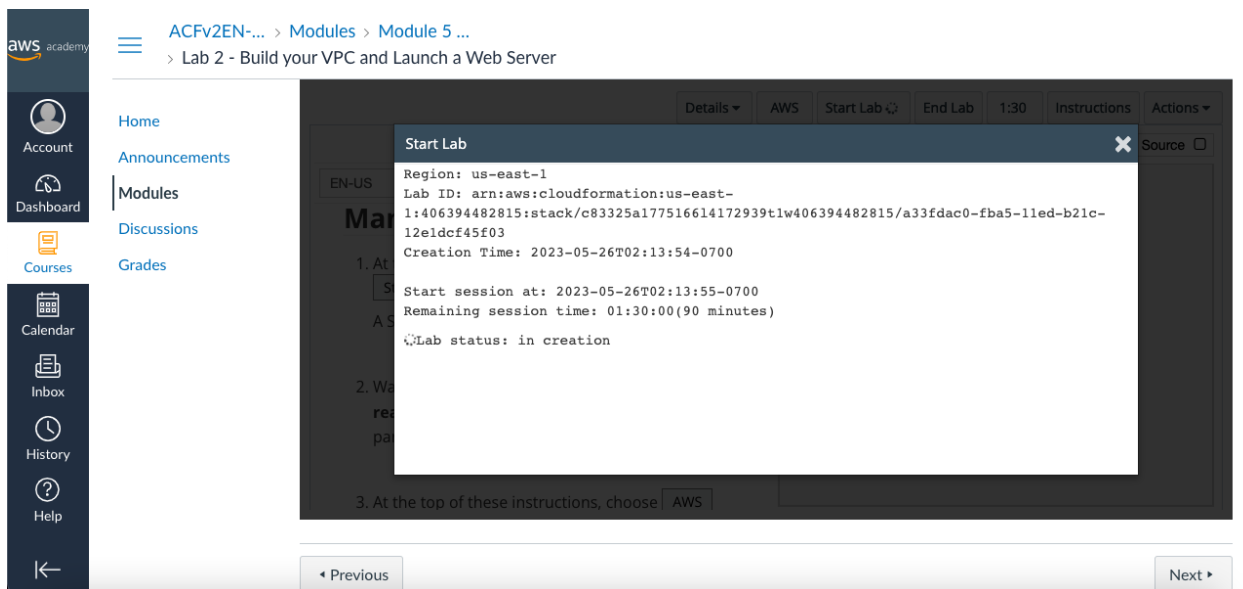
Scenario

In this lab you build the following infrastructure:

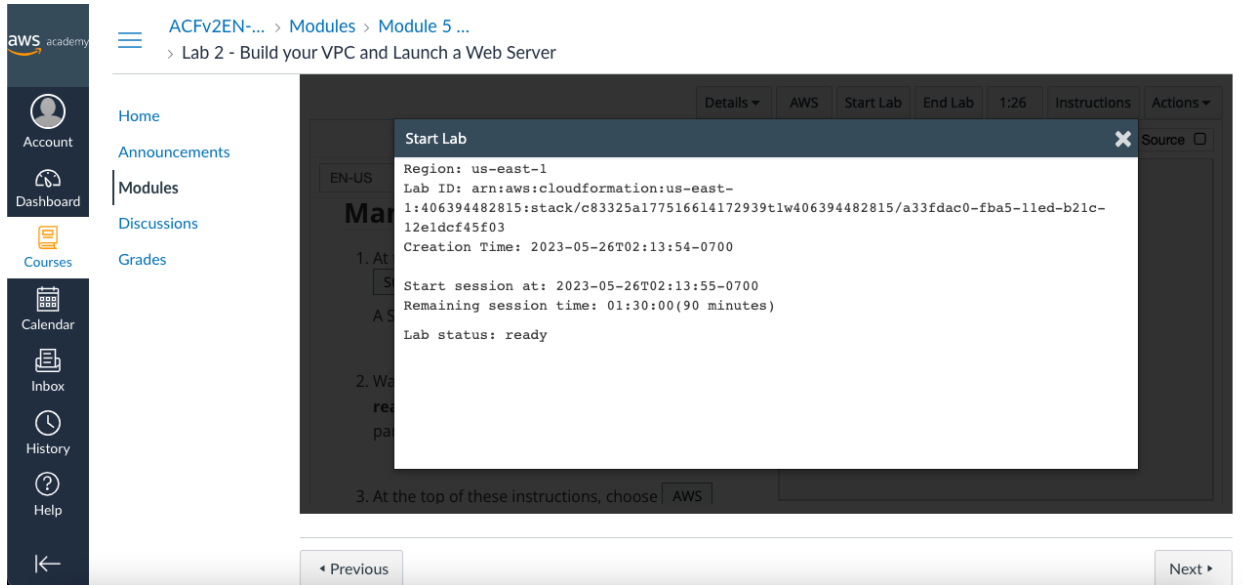


Accessing the AWS Management Console

1. At the top of these instructions, choose **Start Lab** to launch your lab.
A Start Lab panel opens displaying the lab status.



2. Wait until you see the message "**Lab status: ready**", then choose the **X** to close the Start Lab panel



3. At the top of these instructions, choose **AWS**

This will open the AWS Management Console in a new browser tab. The system will automatically log you in.

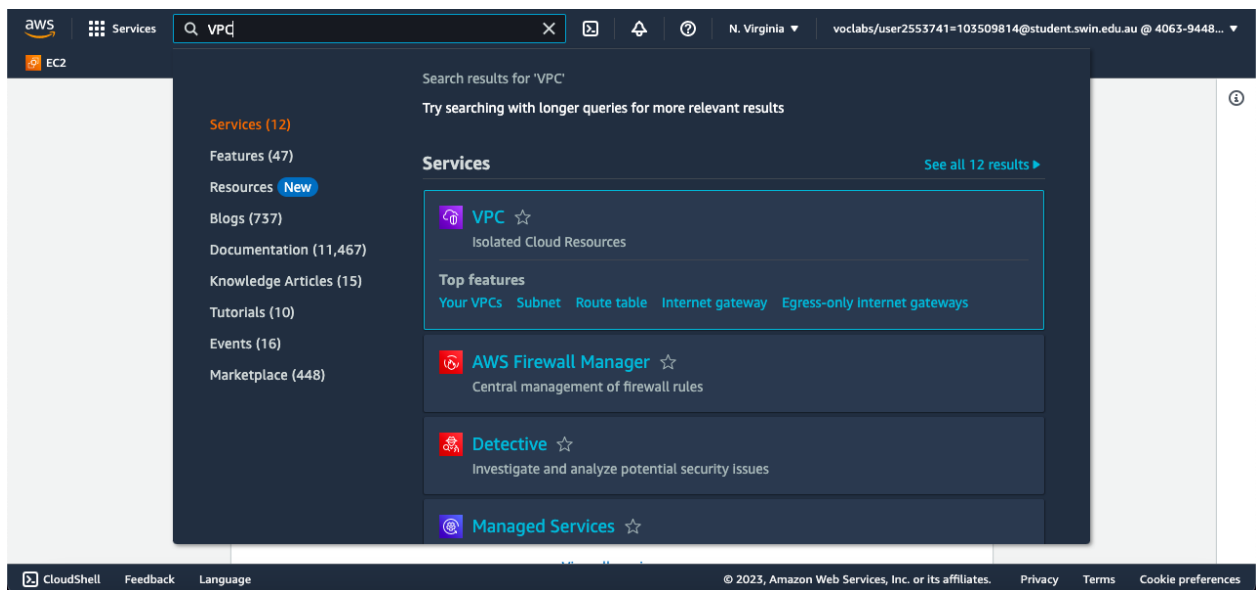
Tip: If a new browser tab does not open, there will typically be a banner or icon at the top of your browser indicating that your browser is preventing the site from opening pop-up windows. Choose on the banner or icon and choose "Allow pop ups."

4. Arrange the AWS Management Console tab so that it displays along side these instructions. Ideally, you will be able to see both browser tabs at the same time, to make it easier to follow the lab steps.

Task 1: Create Your VPC

In this task, you will use the *VPC and more* option in the VPC console to create multiple resources, including a *VPC*, an *Internet Gateway*, a *public subnet* and a *private subnet* in a single Availability Zone, two *route tables*, and a *NAT Gateway*.

5. In the search box to the right of **Services**, search for and choose **VPC** to open the VPC console.



6. Begin creating a VPC.
 - In the top right of the screen, verify that **N. Virginia (us-east-1)** is the region.
 - Choose the **VPC dashboard** link which is also towards the top left of the console.
 - Next, choose **Create VPC**.

Note: If you do not see a button with that name, choose the Launch VPC Wizard button instead.

7.

Configure the VPC details in the *VPC settings* panel on the left:

 - Choose **VPC and more**.
 - Under **Name tag auto-generation**, keep *Auto-generate* selected, however change the value from project to **lab**.
 - Keep the **IPv4 CIDR block** set to 10.0.0.0/16
 - For **Number of Availability Zones**, choose **1**.
 - For **Number of public subnets**, keep the **1** setting.
 - For **Number of private subnets**, keep the **1** setting.
 - Expand the **Customize subnets CIDR blocks** section
 - Change **Public subnet CIDR block in us-east-1a** to **10.0.0.0/24**
 - Change **Private subnet CIDR block in us-east-1a** to **10.0.1.0/24**
 - Set **NAT gateways** to **In 1 AZ**.
 - Set **VPC endpoints** to **None**.
 - Keep both **DNS hostnames** and **DNS resolution enabled**.

aws

Services

Search

[Option+S]

N. Virginia

voclabs/user2553741=103509814@student.swin.edu.au @ 4063-9448...

EC2

VPC settings

Resources to create [Info](#)

Create only the VPC resource or the VPC and other networking resources.

☐ VPC only

☒ VPC and more

Name tag auto-generation [Info](#)

Enter a value for the Name tag. This value will be used to auto-generate Name tags for all resources in the VPC.

☒ Auto-generate

lab

IPv4 CIDR block [Info](#)

Determine the starting IP and the size of your VPC using CIDR notation.

10.0.0.0/1665,536 IPs

IPv6 CIDR block [Info](#)

☒ No IPv6 CIDR block

☐ Amazon-provided IPv6 CIDR block

Preview

VPC [Show details](#)

Your AWS virtual network

lab-vpc

Subnets (4)

Subnets within this VPC

us-east-1a

lab-subnet-public1-us-east-1a

lab-subnet-private1-us-east-1a

us-east-1b

lab-subnet-public2-us-east-1b

lab-subnet-private2-us-east-1b

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N. Virginia

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EC2

Number of Availability Zones (AZs) [Info](#)

Choose the number of AZs in which to provision subnets. We recommend at least two AZs for high availability.

123

Customize AZs

Number of public subnets [Info](#)

The number of public subnets to add to your VPC. Use public subnets for web applications that need to be publicly accessible over the internet.

01

Number of private subnets [Info](#)

The number of private subnets to add to your VPC. Use private subnets to secure backend resources that don't need public access.

012

Customize subnets CIDR blocks

NAT gateways (\$) [Info](#)

Choose the number of Availability Zones (AZs) in which to create NAT gateways. Note that there is a charge for each NAT gateway.

NoneIn 1 AZ1 per AZ

Preview

VPC [Show details](#)

Your AWS virtual network

lab-vpc

Subnets (2)

Subnets within this VPC

us-east-1a

lab-subnet-public1-us-east-1a

lab-subnet-private1-us-east-1a

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N. Virginia

voclabs/user2553741=103509814@student.swin.edu.au @ 4063-9448...

EC2

10.0.0.0/24256 IPs

Private subnet CIDR block in us-east-1a

10.0.1.0/24256 IPs

NAT gateways (\$) [Info](#)

Choose the number of Availability Zones (AZs) in which to create NAT gateways. Note that there is a charge for each NAT gateway.

NoneIn 1 AZ1 per AZ

VPC endpoints [Info](#)

Endpoints can help reduce NAT gateway charges and improve security by accessing S3 directly from the VPC. By default, full access policy is used. You can customize this policy at any time.

NoneS3 Gateway

DNS options [Info](#)

☒ Enable DNS hostnames

☒ Enable DNS resolution

Preview

VPC [Show details](#)

Your AWS virtual network

lab-vpc

Subnets (2)

Subnets within this VPC

us-east-1a

lab-subnet-public1-us-east-1a

lab-subnet-private1-us-east-1a

CloudShell

Feedback

Language

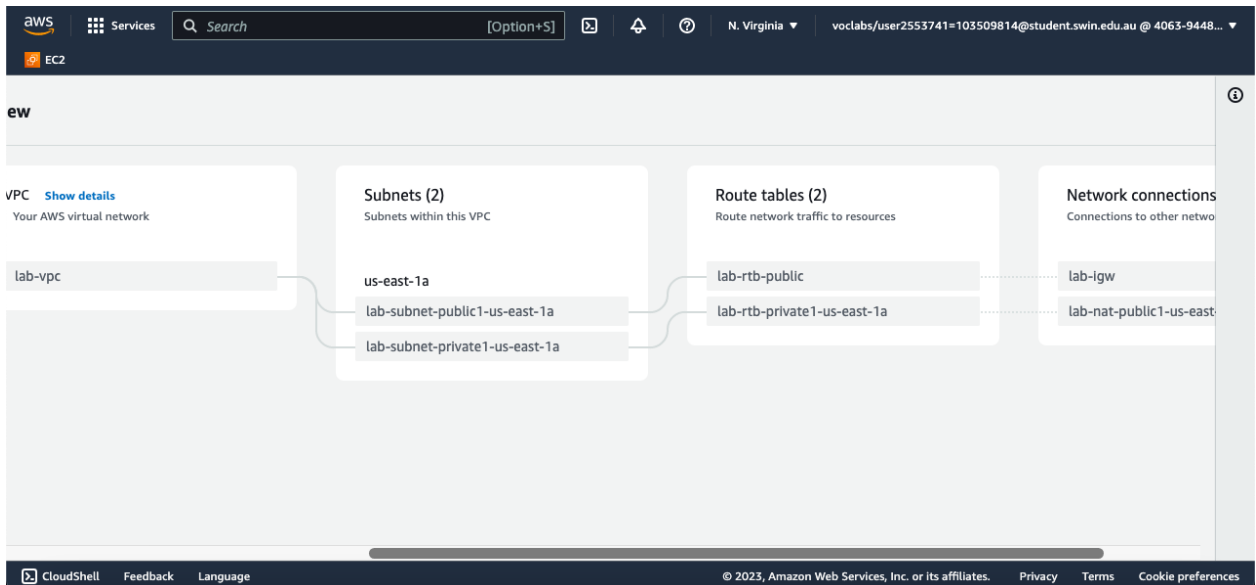
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Privacy

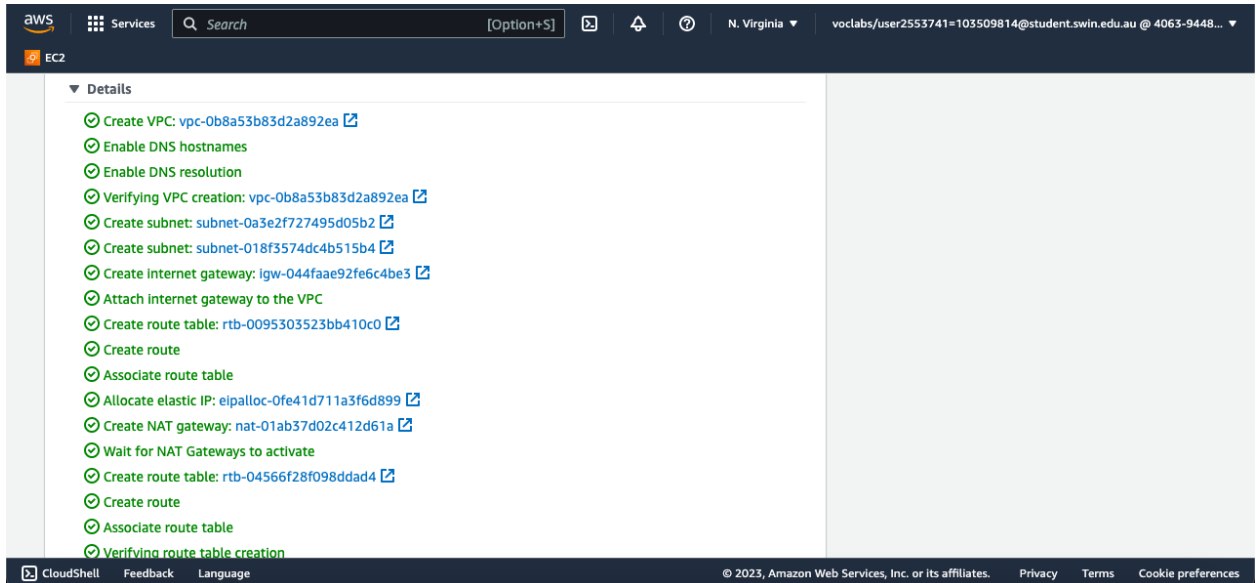
Terms

Cookie preferences

8. In the *Preview* panel on the right, confirm the settings you have configured.
- **VPC:** `lab-vpc`
 - **Subnets:**
 - `us-east-1a`
 - **Public subnet name:** `lab-subnet-public1-us-east-1a`
 - **Private subnet name:** `lab-subnet-private1-us-east-1a`
 - **Route tables**
 - `lab-rtb-public`
 - `lab-rtb-private1-us-east-1a`
 - **Network connections**
 - `lab-igw`
 - `lab-nat-public1-us-east-1a`



9. At the bottom of the screen, choose **Create VPC**
- The VPC resources are created. The NAT Gateway will take a few minutes to activate.
- Please wait until *all* the resources are created before proceeding to the next step.



10. Once it is complete, choose **View VPC**

The wizard has provisioned a VPC with a public subnet and a private subnet in one Availability Zone with route tables for each subnet. It also created an Internet Gateway and a NAT Gateway.

To view the settings of these resources, browse through the VPC console links that display the resource details. For example, choose **Subnets** to view the subnet details and choose **Route tables** to view the route table details. The diagram below summarizes the VPC resources you have just created and how they are configured.



An *Internet gateway* is a VPC resource that allows communication between EC2 instances in your VPC and the Internet.

The `lab-subnet-public1-us-east-1a` public subnet has a CIDR of **10.0.0.0/24**, which means that it contains all IP addresses starting with **10.0.0.x**. The fact the route table associated with this public subnet routes 0.0.0.0/0 network traffic to the internet gateway is what makes it a public subnet.

A *NAT Gateway*, is a VPC resource used to provide internet connectivity to any EC2 instances running in *private* subnets in the VPC without those EC2 instances needing to have a direct connection to the internet gateway.

The `lab-subnet-private1-us-east-1a` private subnet has a CIDR of **10.0.1.0/24**, which means that it contains all IP addresses starting with **10.0.1.x**.

Task 2: Create Additional Subnets

In this task, you will create two additional subnets for the VPC in a second Availability Zone. Having subnets in multiple Availability Zones within a VPC is useful for deploying solutions that provide *High Availability*.

After creating a VPC as you have already done, you can still configure it further, for example, by adding more **subnets**. Each subnet you create resides entirely within one Availability Zone.

11. In the left navigation pane, choose **Subnets**.

First, you will create a second *public* subnet.

12. Choose **Create subnet** then configure:

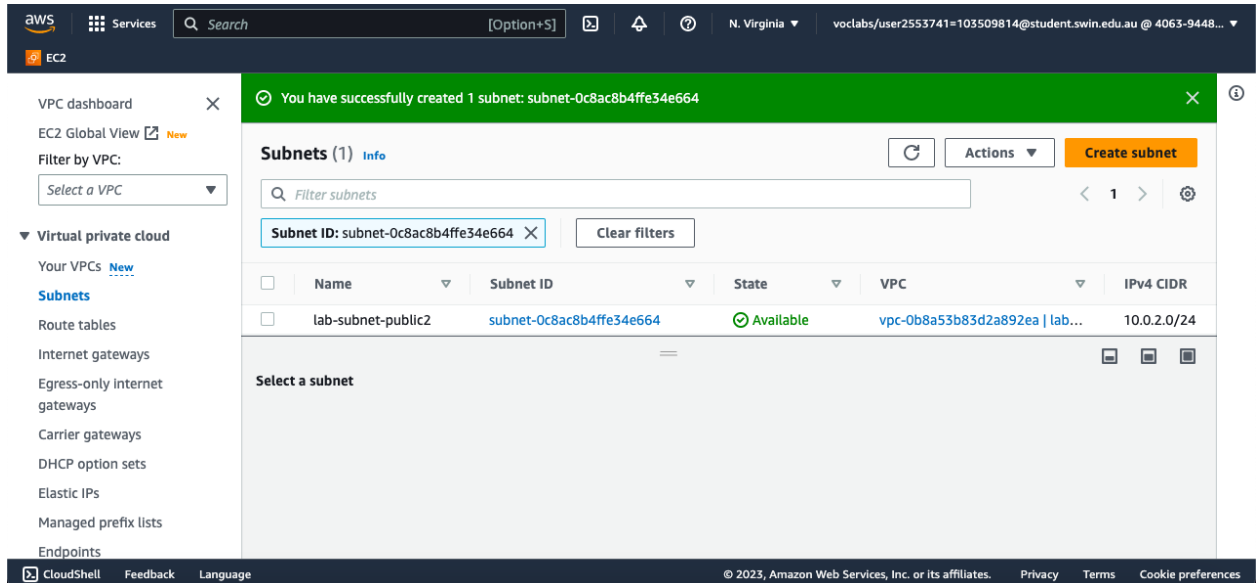
- **VPC ID:** **lab-vpc** (select from the menu).
- **Subnet name:** **lab-subnet-public2**
- **Availability Zone:** Select the *second* Availability Zone (for example, us-east-1b)
- **IPv4 CIDR block:** **10.0.2.0/24**

The screenshot shows the AWS Management Console interface for creating a new subnet. The top navigation bar includes the AWS logo, 'Services', a search bar, and user information. The left sidebar shows the 'EC2' service selected. The main content area is titled 'Subnet settings' with the instruction 'Specify the CIDR blocks and Availability Zone for the subnet.' Below this, the 'Subnet 1 of 1' section contains three main configuration fields: 'Subnet name' with the value 'lab-subnet-public2', 'Availability Zone' set to 'US East (N. Virginia) / us-east-1b', and 'IPv4 CIDR block' set to '10.0.2.0/24'. There is also a 'Tags - optional' section with a table for adding tags. The bottom of the console shows a footer with 'CloudShell', 'Feedback', 'Language', and copyright information for Amazon Web Services, Inc. or its affiliates.

13. The subnet will have all IP addresses starting with **10.0.2.x**.

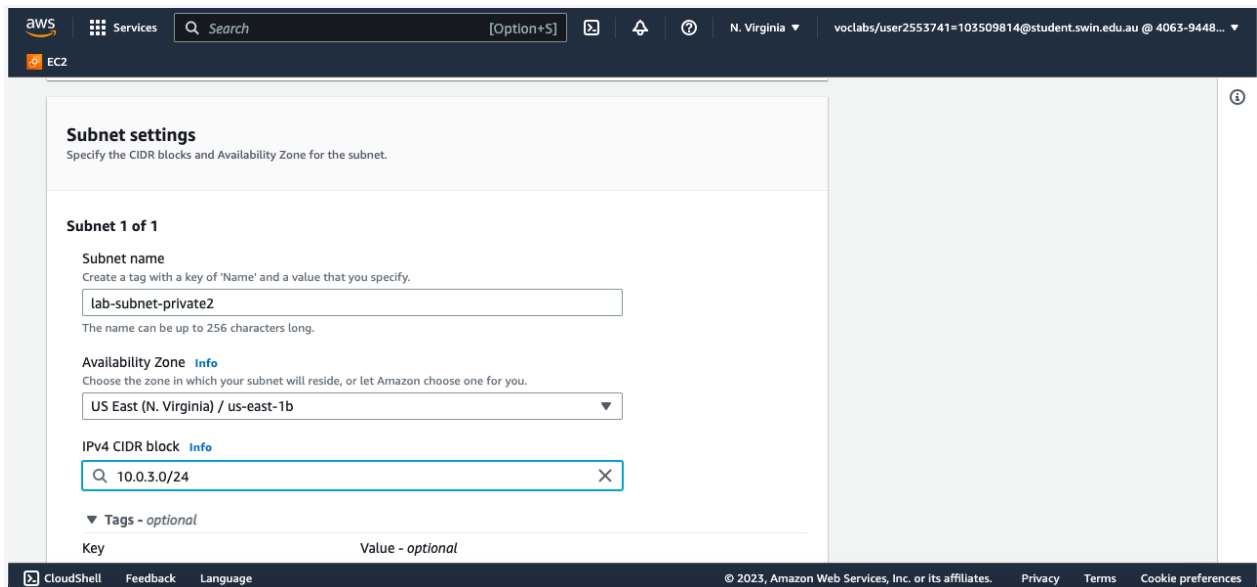
14. Choose **Create subnet**

The second *public* subnet was created. You will now create a second *private* subnet.



15. Choose **Create subnet** then configure:

- **VPC ID:** lab-vpc
- **Subnet name:** lab-subnet-private2
- **Availability Zone:** Select the *second* Availability Zone (for example, us-east-1b)
- **IPv4 CIDR block:** 10.0.3.0/24



16. The subnet will have all IP addresses starting with **10.0.3.x**.

17. Choose **Create subnet**

The second *private* subnet was created.

You will now configure this new *private* subnet to route internet-bound traffic to the NAT Gateway so that resources in the second private subnet are able to connect to the Internet, while still keeping the resources private. This is done by configuring a *Route Table*.

A *route table* contains a set of rules, called *routes*, that are used to determine where network traffic is directed. Each subnet in a VPC must be associated with a route table; the route table controls routing for the subnet.

18. In the left navigation pane, choose **Route tables**.

The screenshot shows the AWS Management Console interface. The left navigation pane is open, showing the 'Route tables' option selected under the 'Virtual private cloud' section. The main content area displays a table of route tables. The table has columns: Name, Route table ID, Explicit subnet associations, Edge associations, and Main. There are 6 route tables listed. Below the table is a 'Select a route table' section.

Name	Route table ID	Explicit subnet associations	Edge associations	Main
-	rtb-041f41631c4595c57	-	-	Yes
-	rtb-0cec4bc9e9330d035	-	-	Yes
lab-rtb-public	rtb-0095303523bb410c0	subnet-0a3e2f727495d0...	-	No
lab-rtb-private1-us-east-1a	rtb-04566f28f098ddad4	subnet-018f3574dc4b51...	-	No
-	rtb-0ec42dec594d99274	-	-	Yes

19. Select the **lab-rtb-private1-us-east-1a** route table.

The screenshot shows the AWS Management Console interface. On the left, the 'Virtual private cloud' section is expanded, and 'Route tables' is selected. The main panel displays a list of route tables. The table 'lab-rtb-private1-us-east-1a' is selected, indicated by a blue checkmark in the selection column. Below the list, the details for this route table are shown, including tabs for 'Details', 'Routes', 'Subnet associations', 'Edge associations', 'Route propagation', and 'Tags'. A notification bar at the bottom of the details section states: 'You can now check network connectivity with Reachability Analyzer' with a 'Run Reachability Analyzer' button.

Name	Route table ID	Explicit subnet associati...	Edge associations	Main
-	rtb-0cec4bc9e9330d035	-	-	Yes
lab-rtb-public	rtb-0095303523bb410c0	subnet-0a3e2f727495d0...	-	No
lab-rtb-private1-us-east-1a	rtb-04566f28f098ddad4	subnet-018f3574dc4b51...	-	No
-	rtb-0ec42dec594d99274	-	-	Yes
Work Public Route Table	rtb-0b369ac22beecf93b	subnet-02338305527a1c...	-	No

20. In the lower pane, choose the **Routes** tab.

Note that **Destination 0.0.0.0/0** is set to **Target nat-xxxxxxx**. This means that traffic destined for the internet (0.0.0.0/0) will be sent to the NAT Gateway. The NAT Gateway will then forward the traffic to the internet. This route table is therefore being used to route traffic from private subnets.

The screenshot shows the same AWS Management Console interface, but now the 'Routes' tab is selected for the route table 'lab-rtb-private1-us-east-1a'. The 'Routes' tab displays a table with columns: 'Destination', 'Target', 'Status', and 'Propagated'. There are two routes listed: one for destination '0.0.0.0/0' with target 'nat-01ab37d02c412d61a' and status 'Active', and another for destination '10.0.0.0/16' with target 'local' and status 'Active'.

Destination	Target	Status	Propagated
0.0.0.0/0	nat-01ab37d02c412d61a	Active	No
10.0.0.0/16	local	Active	No

21. Choose the **Subnet associations** tab.

You created this route table in task 1 when you chose to create a VPC and multiple resources in the VPC. That action also created *lab-subnet-private-1* and associated that subnet with this route table.

Now that you have created another private subnet, lab-subnet-private-2, you will associate this route table with that subnet as well.

The screenshot shows the AWS Management Console interface for the 'Route tables' section. On the left, the 'Virtual private cloud' sidebar is visible. The main content area displays a list of route tables. The 'lab-rtb-private1-us-east-1a' route table is selected. Below the list, the 'Edit subnet associations' panel is open, showing a table of available subnets. The subnets listed are 'lab-subnet-public2', 'lab-subnet-private1-us-east-1a', 'lab-subnet-private2', and 'lab-subnet-private1-us-east-1a'. The 'lab-subnet-private2' subnet is highlighted, indicating it is being selected for association.

Name	Subnet ID	IPv4 CIDR	IPv6 CIDR	Route table ID
lab-subnet-public2	subnet-0c8ac8b4ffe34e664	10.0.2.0/24	-	Main (rtb-0cec4bc9e9330d035)
lab-subnet-private1-us-east-1a	subnet-0a3e2f727495d05b2	10.0.0.0/24	-	rtb-0095303523bb410c0 / lab-rtb-private1-us-east-1a
lab-subnet-private2	subnet-0b8ce71c08900c3ae	10.0.3.0/24	-	Main (rtb-0cec4bc9e9330d035)
lab-subnet-private1-us-east-1a	subnet-018f3574dc4b515b4	10.0.1.0/24	-	rtb-04566f28f098ddad4 / lab-rtb-private1-us-east-1a

22. In the Explicit subnet associations panel, choose **Edit subnet associations**

The screenshot shows the 'Edit subnet associations' panel in the AWS Management Console. The panel displays a list of available subnets and a 'Selected subnets' section. The 'lab-subnet-private1-us-east-1a' subnet is selected, and the 'lab-subnet-private2' subnet is also selected, as indicated by the 'X' icon next to it in the 'Selected subnets' section. The 'Save associations' button is visible at the bottom right of the panel.

Name	Subnet ID	IPv4 CIDR	IPv6 CIDR	Route table ID
lab-subnet-public2	subnet-0c8ac8b4ffe34e664	10.0.2.0/24	-	Main (rtb-0cec4bc9e9330d035)
lab-subnet-private1-us-east-1a	subnet-0a3e2f727495d05b2	10.0.0.0/24	-	rtb-0095303523bb410c0 / lab-rtb-private1-us-east-1a
lab-subnet-private2	subnet-0b8ce71c08900c3ae	10.0.3.0/24	-	Main (rtb-0cec4bc9e9330d035)
lab-subnet-private1-us-east-1a	subnet-018f3574dc4b515b4	10.0.1.0/24	-	rtb-04566f28f098ddad4 / lab-rtb-private1-us-east-1a

21. Leave **lab-subnet-private1-us-east-1a** selected, but also select **lab-subnet-private2**.

aws Services Search [Option+S] N. Virginia voclabs/user2553741=103509814@student.swin.edu.au @ 4063-9448...

EC2 Edit subnet associations

Change which subnets are associated with this route table.

Available subnets (2/4)

Filter subnet associations

	Name	Subnet ID	IPv4 CIDR	IPv6 CIDR	Route table ID
<input type="checkbox"/>	lab-subnet-public2	subnet-0c8ac8b4ffe34e664	10.0.2.0/24	-	Main (rtb-0cec4bc9e9330d035)
<input type="checkbox"/>	lab-subnet-public1-us-east-1a	subnet-0a3e2f727495d05b2	10.0.0.0/24	-	rtb-0095303523bb410c0 / lab-r
<input checked="" type="checkbox"/>	lab-subnet-private2	subnet-0b8ce71c08900c3ae	10.0.3.0/24	-	Main (rtb-0cec4bc9e9330d035)
<input checked="" type="checkbox"/>	lab-subnet-private1-us-east-...	subnet-018f3574dc4b515b4	10.0.1.0/24	-	rtb-04566f28f098ddad4 / lab-rtb

Selected subnets

subnet-018f3574dc4b515b4 / lab-subnet-private1-us-east-1a X subnet-0b8ce71c08900c3ae / lab-subnet-private2 X

Cancel Save associations

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22. Choose **Save associations**

You will now configure the Route Table that is used by the Public Subnets.

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VPC dashboard X

EC2 Global View New

Filter by VPC: Select a VPC

Virtual private cloud

- Your VPCs New
- Subnets
- Route tables**
- Internet gateways
- Egress-only Internet gateways
- Carrier gateways
- DHCP option sets
- Elastic IPs
- Managed prefix lists
- Endpoints

Route tables (1/6) Info

Find resources by attribute or tag

	Name	Route table ID	Explicit subnet associati...	Edge associations	Main
<input type="checkbox"/>	-	rtb-041f41631c4595c57	-	-	Yes
<input type="checkbox"/>	-	rtb-0cec4bc9e9330d035	-	-	Yes
<input type="checkbox"/>	lab-rtb-public	rtb-0095303523bb410c0	subnet-0a3e2f727495d0...	-	No

rtb-04566f28f098ddad4 / lab-rtb-private1-us-east-1a

Details Routes Subnet associations Edge associations Route propagation Tags

You can now check network connectivity with Reachability Analyzer Run Reachability Analyzer X

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23. Select the **lab-rtb-public** route table (and deselect any other subnets).

The screenshot shows the AWS Management Console interface for the 'Route tables' section. The left sidebar contains navigation links for VPC dashboard, EC2 Global View, and various VPC resources. The main content area displays a list of route tables. The 'lab-rtb-public' route table is selected, and its details are shown in the lower pane. The 'Details' tab is active, displaying a notification to use the Reachability Analyzer.

Name	Route table ID	Explicit subnet associati...	Edge associations	Main
-	rtb-0cec4bc9e9330d035	-	-	Yes
<input checked="" type="checkbox"/> lab-rtb-public	rtb-0095303523bb410c0	subnet-0a3e2f727495d0...	-	No
<input type="checkbox"/> lab-rtb-private1-us-east-1a	rtb-04566f28f098ddad4	2 subnets	-	No
<input type="checkbox"/> -	rtb-0ec42dec594d99274	-	-	Yes
<input type="checkbox"/> Work Public Route Table	rtb-0b369ac22beecf93b	subnet-02338305527a1c...	-	No

rtb-0095303523bb410c0 / lab-rtb-public

Details | Routes | Subnet associations | Edge associations | Route propagation | Tags

You can now check network connectivity with Reachability Analyzer [Run Reachability Analyzer](#)

24. In the lower pane, choose the **Routes** tab.

Note that **Destination 0.0.0.0/0** is set to Target **igw-xxxxxxx**, which is an Internet Gateway. This means that internet-bound traffic will be sent straight to the internet via this Internet Gateway.

You will now associate this route table to the second public subnet you created.

The screenshot shows the AWS Management Console interface for the 'Route tables' section. The 'lab-rtb-public' route table is selected, and the 'Routes' tab is active in the lower pane. The 'Routes' tab displays a list of routes with columns for Destination, Target, Status, and Propagated.

Destination	Target	Status	Propagated
0.0.0.0/0	igw-044faae92fe6c4be3	Active	No
10.0.0.0/16	local	Active	No

25. Choose the **Subnet associations** tab.

The screenshot shows the AWS Management Console interface. On the left is a navigation sidebar with options like 'VPC dashboard', 'EC2 Global View', and 'Virtual private cloud'. The main content area is titled 'Route tables (1/6)' and shows a list of route tables. The 'lab-rtb-public' route table is selected. Below the list, the 'Subnet associations' tab is active, showing 'Explicit subnet associations (1)'. A table lists the associated subnets, with 'lab-subnet-public1-us-east-1a' selected.

Name	Subnet ID	IPv4 CIDR	IPv6 CIDR	Route table ID
lab-subnet-public2	subnet-0c8ac8b4ffe34e664	10.0.2.0/24	-	Main (rtb-0cec4bc9e9330d035)
lab-subnet-public1-us-east-1a	subnet-0a3e2f727495d05b2	10.0.0.0/24	-	rtb-0095303523bb410c0 / lab-rt
lab-subnet-private2	subnet-0b8ce71c08900c3ae	10.0.3.0/24	-	rtb-04566f28f098ddad4 / lab-rtb
lab-subnet-private1-us-east-...	subnet-018f3574dc4b515b4	10.0.1.0/24	-	rtb-04566f28f098ddad4 / lab-rtb

26. In the Explicit subnet associations area, choose **Edit subnet associations**

The screenshot shows the 'Edit subnet associations' page in the AWS Management Console. It displays a list of 'Available subnets (1/4)' and a 'Selected subnets' section. The 'lab-subnet-public1-us-east-1a' subnet is selected in the available list. The 'Selected subnets' section shows the selected subnet: 'subnet-0a3e2f727495d05b2 / lab-subnet-public1-us-east-1a'.

Name	Subnet ID	IPv4 CIDR	IPv6 CIDR	Route table ID
lab-subnet-public2	subnet-0c8ac8b4ffe34e664	10.0.2.0/24	-	Main (rtb-0cec4bc9e9330d035)
lab-subnet-public1-us-east-1a	subnet-0a3e2f727495d05b2	10.0.0.0/24	-	rtb-0095303523bb410c0 / lab-rt
lab-subnet-private2	subnet-0b8ce71c08900c3ae	10.0.3.0/24	-	rtb-04566f28f098ddad4 / lab-rtb
lab-subnet-private1-us-east-...	subnet-018f3574dc4b515b4	10.0.1.0/24	-	rtb-04566f28f098ddad4 / lab-rtb

27. Leave **lab-subnet-public1-us-east-1a** selected, but also select **lab-subnet-public2**.

28. Choose **Save associations**

Your VPC now has public and private subnets configured in two Availability Zones. The route tables you created in task 1 have also been updated to route

network traffic for the two new subnets.



aws Services Search [Option+S] N. Virginia voclabs/user2553741=103509814@student.swin.edu.au @ 4063-9448...

Edit subnet associations

Change which subnets are associated with this route table.

Available subnets (2/4)

Filter subnet associations

	Name	Subnet ID	IPv4 CIDR	IPv6 CIDR	Route table ID
<input checked="" type="checkbox"/>	lab-subnet-public2	subnet-0c8ac8b4ffe34e664	10.0.2.0/24	-	Main (rtb-0cec4bc9e9330d035)
<input checked="" type="checkbox"/>	lab-subnet-public1-us-east-1a	subnet-0a3e2f727495d05b2	10.0.0.0/24	-	rtb-0095303523bb410c0 / lab-rt...
<input type="checkbox"/>	lab-subnet-private2	subnet-0b8ce71c08900c3ae	10.0.3.0/24	-	rtb-04566f28f098ddad4 / lab-rt...
<input type="checkbox"/>	lab-subnet-private1-us-east-...	subnet-018f3574dc4b515b4	10.0.1.0/24	-	rtb-04566f28f098ddad4 / lab-rt...

Selected subnets

subnet-0a3e2f727495d05b2 / lab-subnet-public1-us-east-1a X subnet-0c8ac8b4ffe34e664 / lab-subnet-public2 X

Cancel Save associations

CloudShell Feedback Language © 2023, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

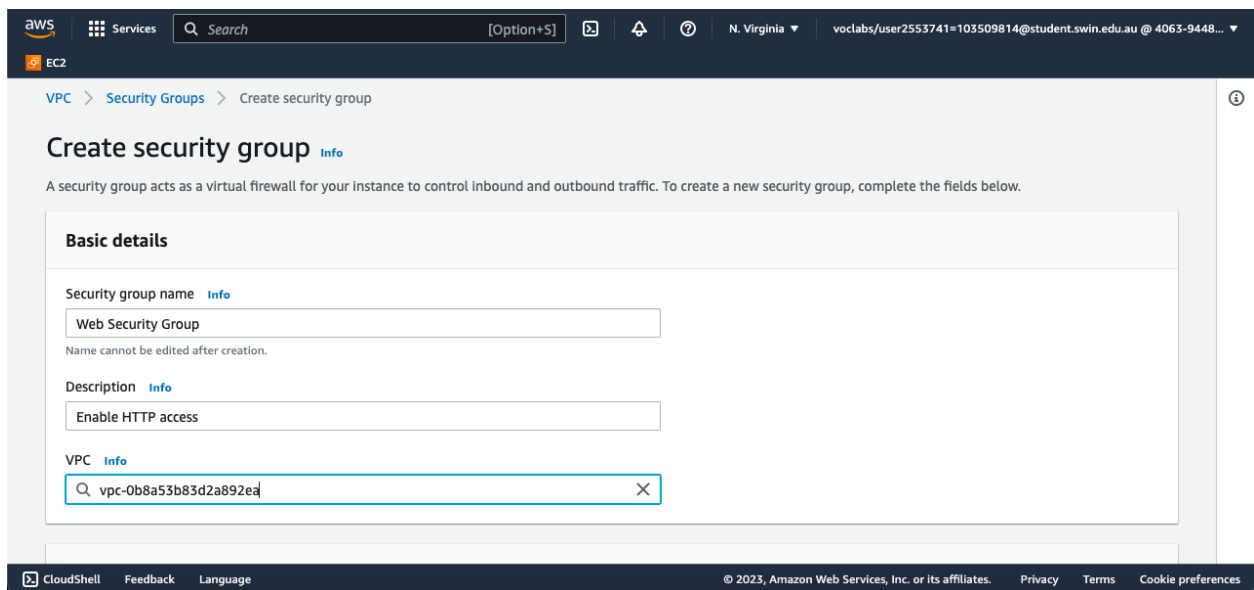
Task 3: Create a VPC Security Group

In this task, you will create a VPC security group, which acts as a virtual firewall. When you launch an instance, you associate one or more security groups with the instance. You can add rules to each security group that allow traffic to or from its associated instances.

29. In the left navigation pane, choose **Security groups**.

30. Choose **Create security group** and then configure:

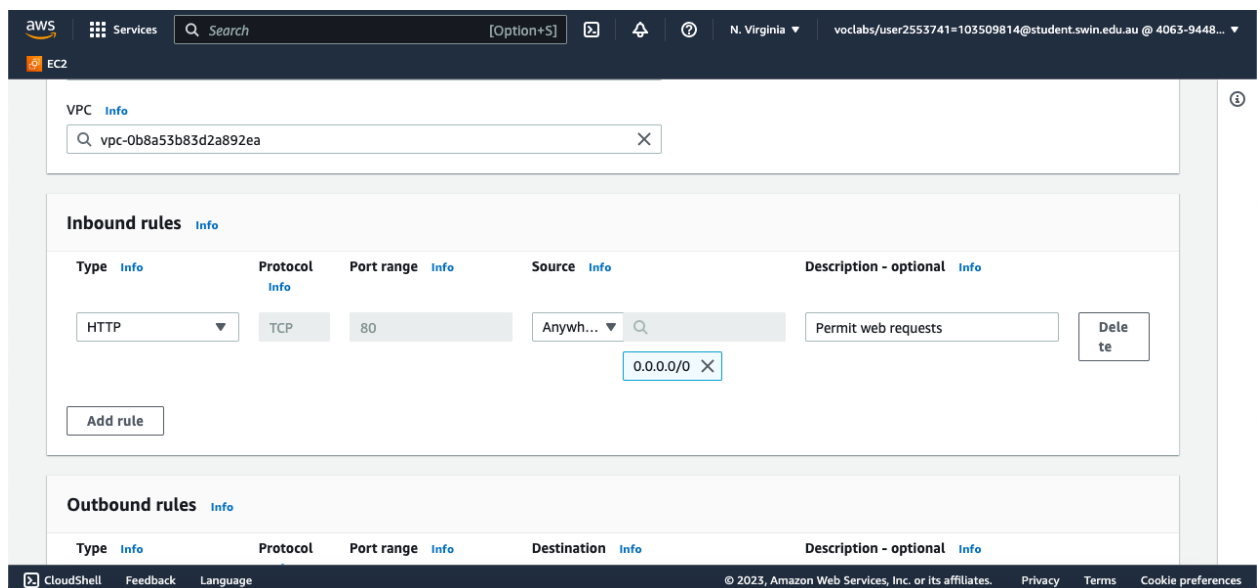
- **Security group name:** Web Security Group
- **Description:** Enable HTTP access
- **VPC:** choose the X to remove the currently selected VPC, then from the drop down list choose **lab-vpc**



31. In the **Inbound rules** pane, choose **Add rule**

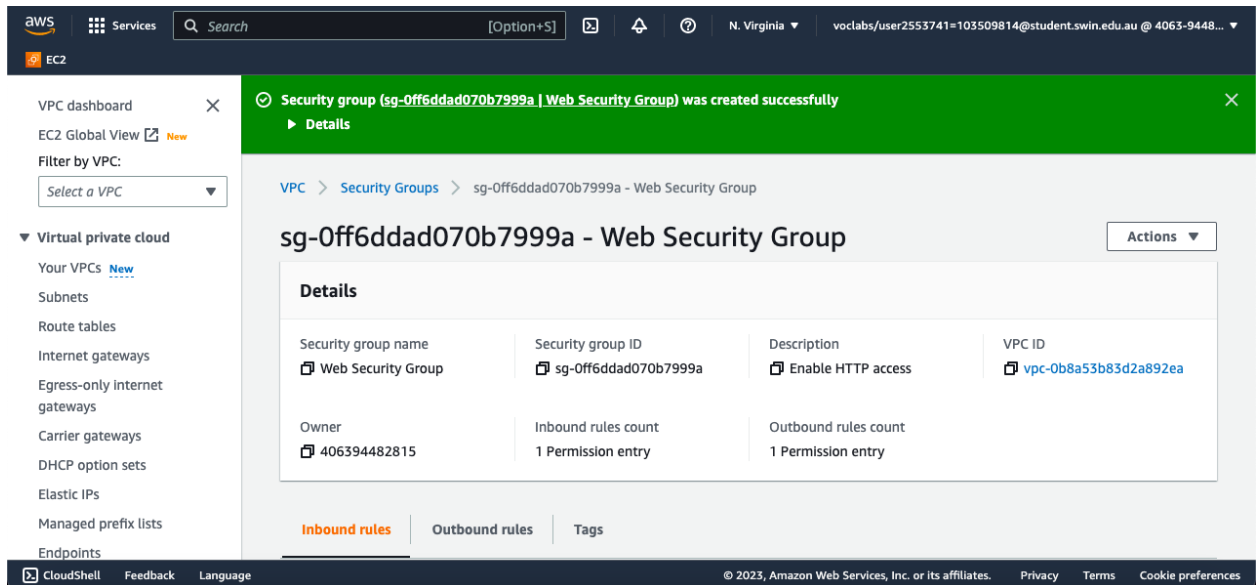
32. Configure the following settings:

- **Type:** *HTTP*
- **Source:** *Anywhere-IPv4*
- **Description:** *Permit web requests*



33. Scroll to the bottom of the page and choose **Create security group**

You will use this security group in the next task when launching an Amazon EC2 instance.

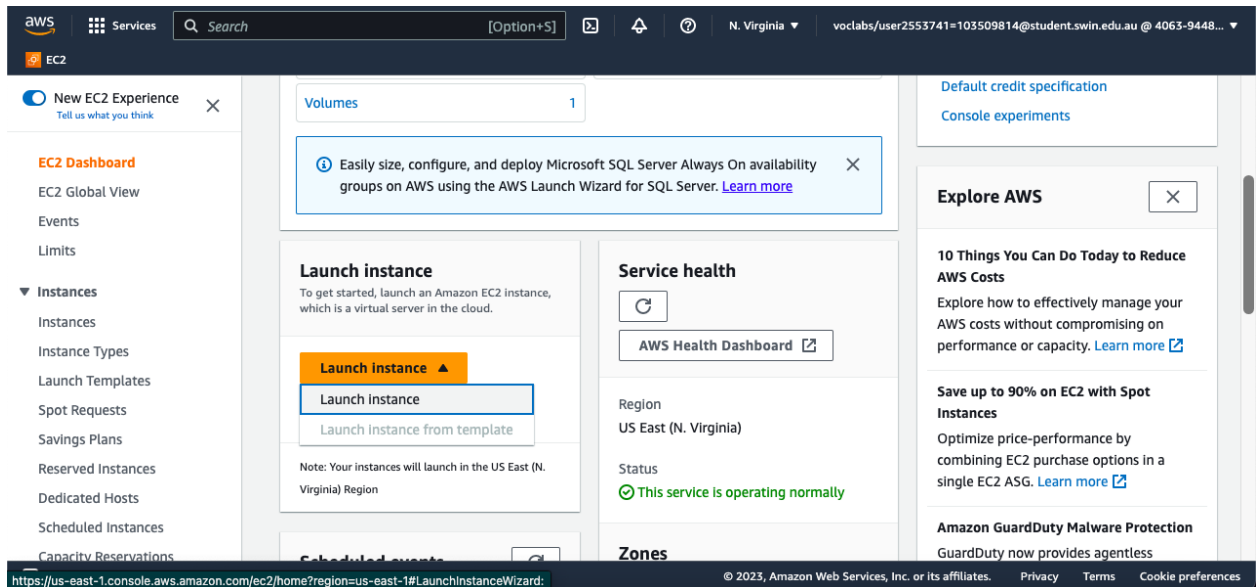


Task 4: Launch a Web Server Instance

In this task, you will launch an Amazon EC2 instance into the new VPC. You will configure the instance to act as a web server.

34. In the search box to the right of **Services**, search for and choose **EC2** to open the EC2 console.

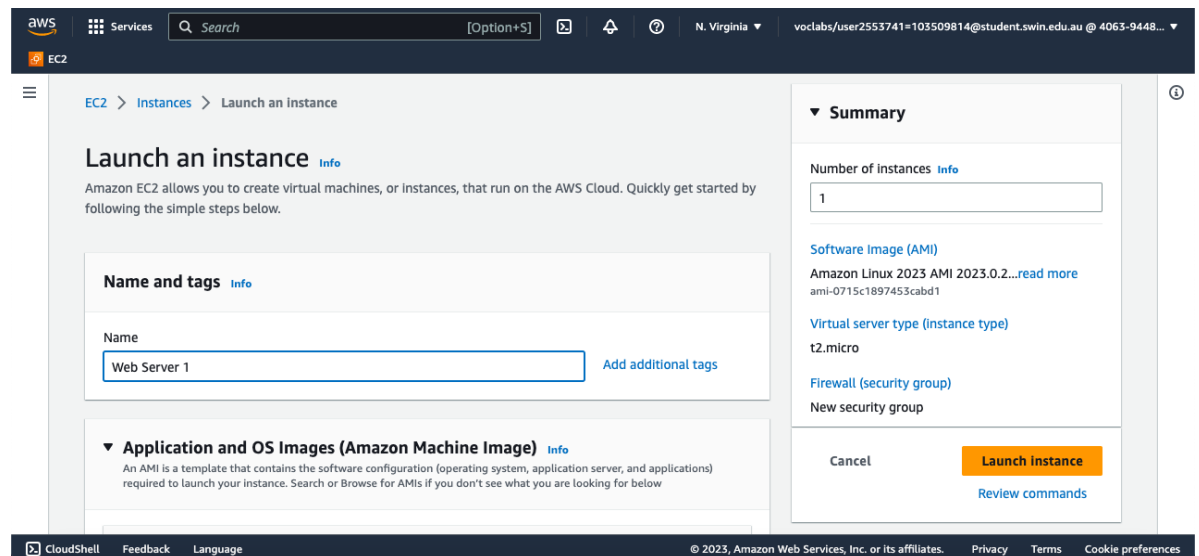
35. From the **Launch instance** menu choose **Launch instance**.



36. Name the instance:

- Give it the name **Web Server 1**

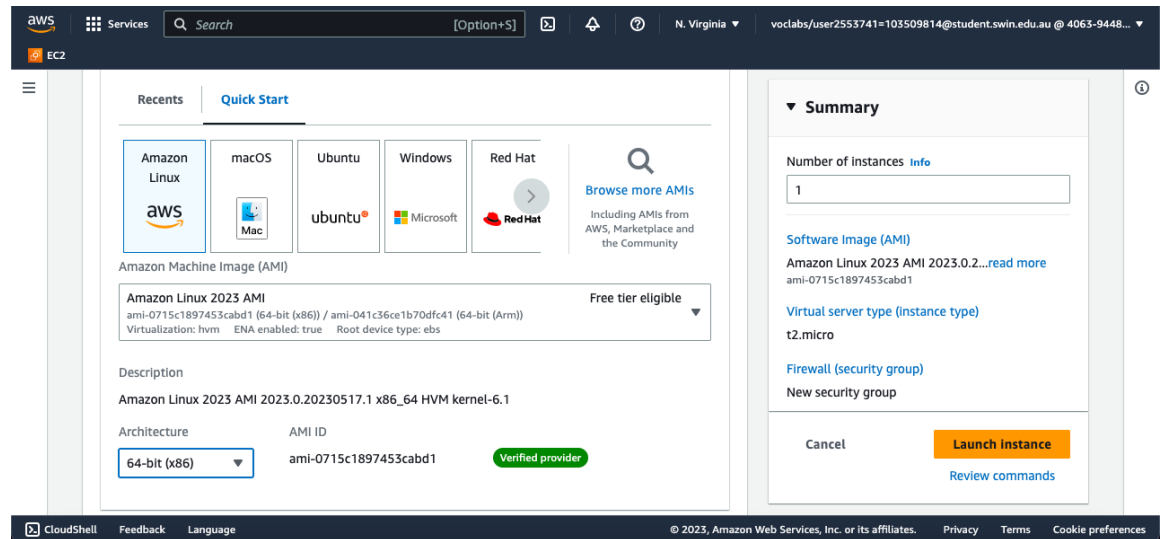
When you name your instance, AWS creates a tag and associates it with the instance. A tag is a key value pair. The key for this pair is ***Name***, and the value is the name you enter for your EC2 instance.



37. Choose an AMI from which to create the instance:

- In the list of available **Quick Start** AMIs, keep the default **Amazon Linux** selected.
- Also keep the default **Amazon Linux 2023 AMI** selected.
The type of *Amazon Machine Image (AMI)* you choose determines the

Operating System that will run on the EC2 instance that you launch.

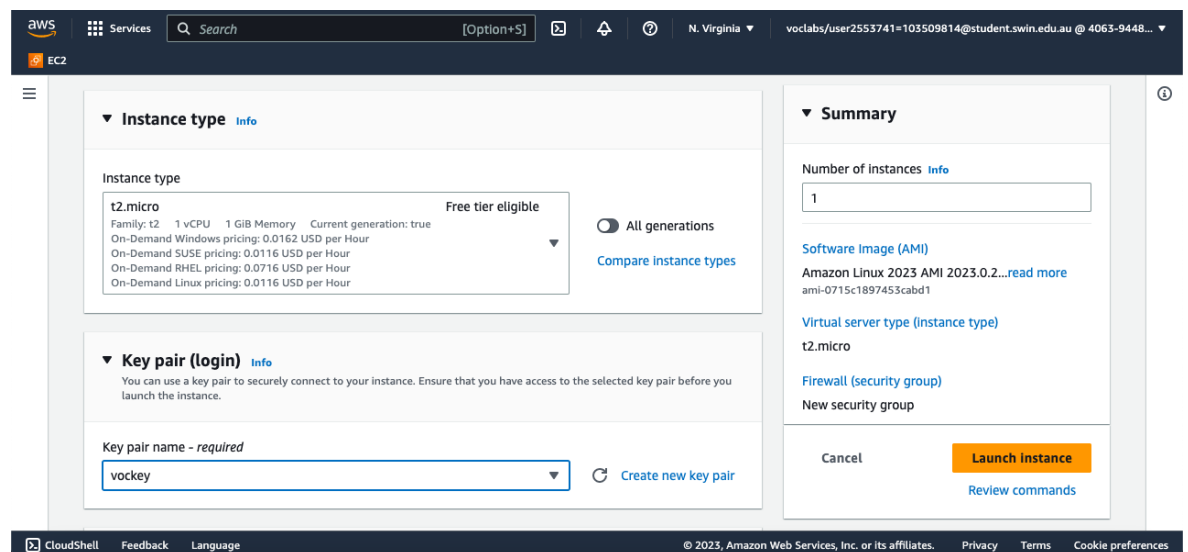


38. Choose an Instance type:

- In the *Instance type* panel, keep the default **t2.micro** selected.
The *Instance Type* defines the hardware resources assigned to the instance.

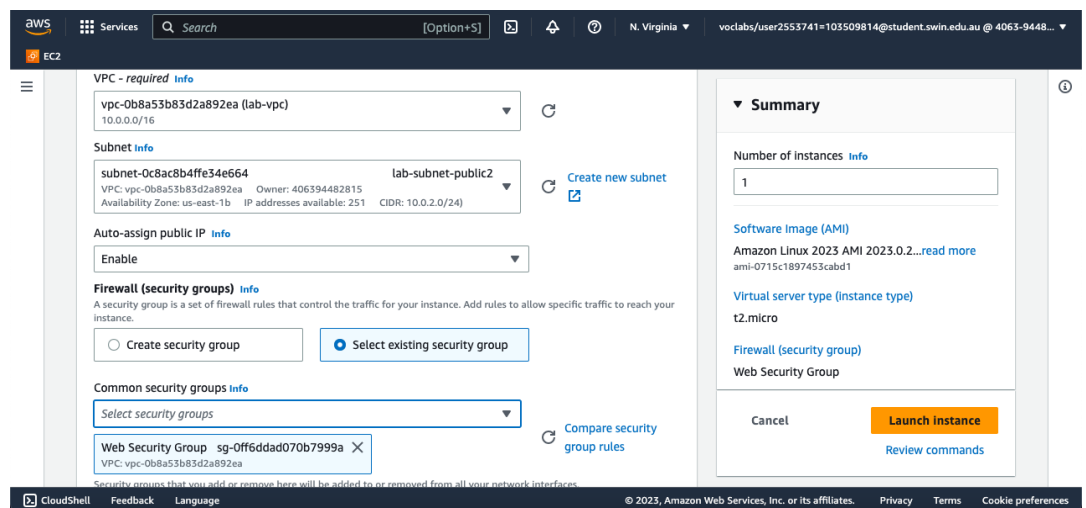
39. Select the key pair to associate with the instance:

- From the **Key pair name** menu, select **vockey**.
The vockey key pair you selected will allow you to connect to this instance via SSH after it has launched. Although you will not need to do that in this lab, it is still required to identify an existing key pair, or create a new one, when you launch an instance.



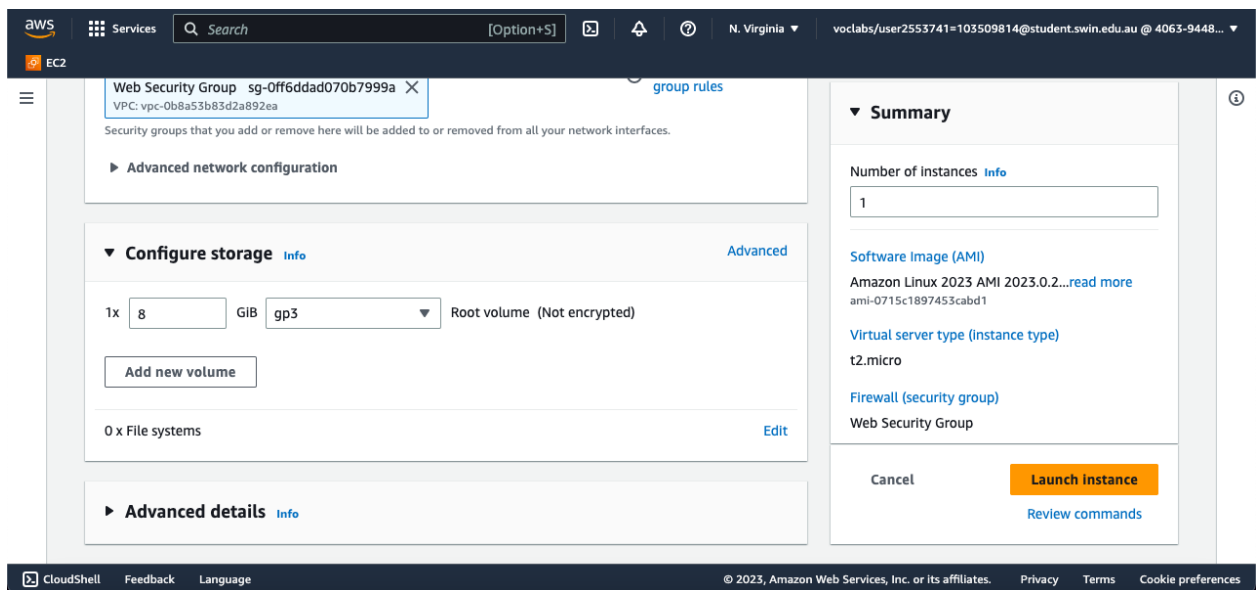
40. Configure the Network settings:

- Next to Network settings, choose **Edit**, then configure:
 - **Network:** *lab-vpc*
 - **Subnet:** *lab-subnet-public2* (not Private!)
 - **Auto-assign public IP:** *Enable*
- Next, you will configure the instance to use the *Web Security Group* that you created earlier.
 - Under Firewall (security groups), choose **Select existing security group**.
 - For **Common security groups**, select **Web Security Group**. This security group will permit HTTP access to the instance.



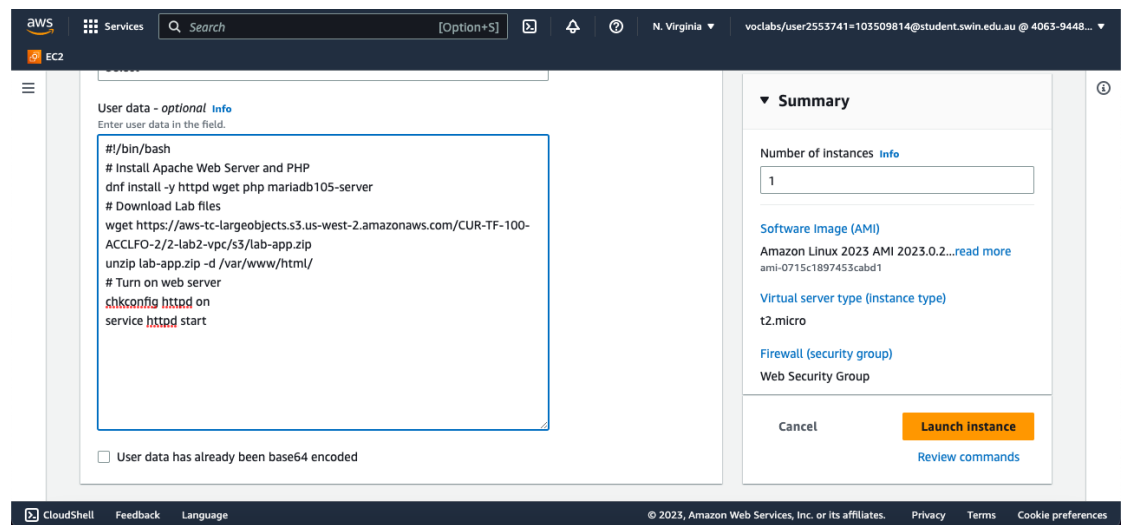
41. In the *Configure storage* section, keep the default settings.

Note: The default settings specify that the *root volume* of the instance, which will host the Amazon Linux guest operating system that you specified earlier, will run on a general purpose SSD (*gp3*) hard drive that is 8 GiB in size. You could alternatively add more storage volumes, however that is not needed in this lab.

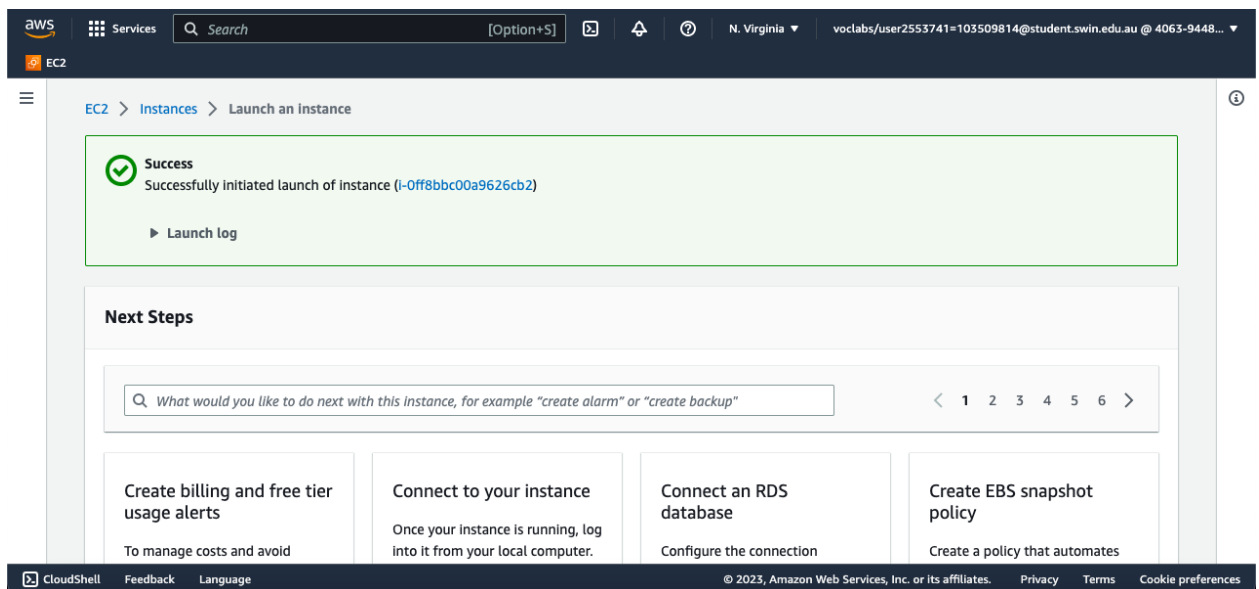


42. Configure a script to run on the instance when it launches:

- Expand the **Advanced details** panel.
- Scroll to the bottom of the page and then copy and paste the code shown below into the **User data** box:
- ```
#!/bin/bash
Install Apache Web Server and PHP
dnf install -y httpd wget php mariadb105-server
Download Lab files
wget
https://aws-tc-largeobjects.s3.us-west-2.amazonaws.com/CUR-TF-100-ACCLFO
-2/2-lab2-vpc/s3/lab-app.zip
unzip lab-app.zip -d /var/www/html/
Turn on web server
chkconfig httpd on
service httpd start
```
- This script will run with root user permissions on the guest OS of the instance. It will run automatically when the instance launches for the first time. The script installs a web server, a database, and PHP libraries, and then it downloads and installs a PHP web application on the web server.

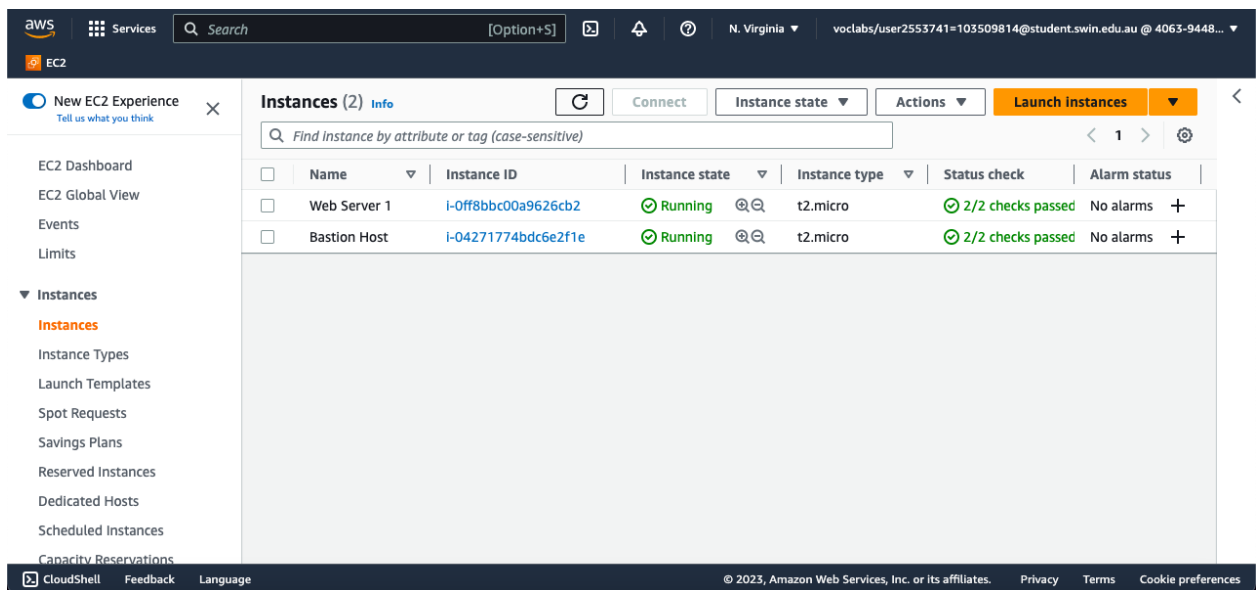


43. At the bottom of the **Summary** panel on the right side of the screen choose **Launch instance**. You will see a Success message.



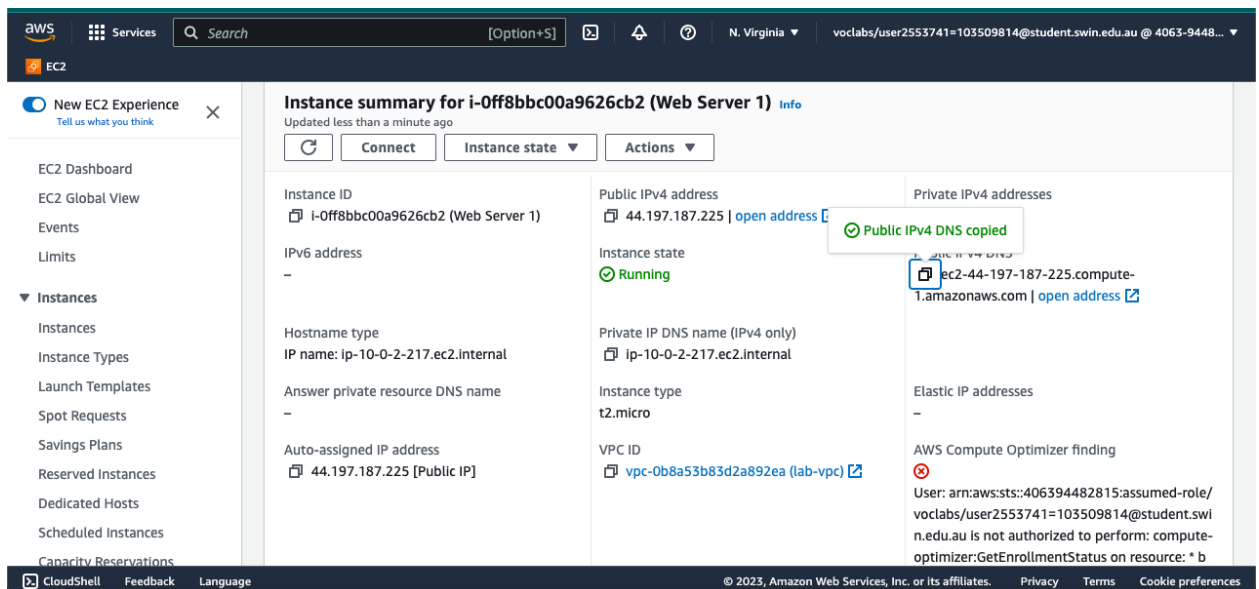
44. Choose **View all instances**

45. Wait until **Web Server 1** shows *2/2 checks passed* in the **Status check** column. This may take a few minutes. Choose the refresh icon at the top of the page every 30 seconds or so to more quickly become aware of the latest status of the instance. You will now connect to the web server running on the EC2 instance.



46. Select **Web Server 1**.

47. Copy the **Public IPv4 DNS** value shown in the **Details** tab at the bottom of the page.




48. Open a new web browser tab, paste the **Public DNS** value and press Enter. You should see a web page displaying the AWS logo and instance meta-data values.



The complete architecture you deployed is:



 Load Test RDS

| Meta-Data         | Value               |
|-------------------|---------------------|
| InstanceId        | i-0ff8bbc00a9626cb2 |
| Availability Zone | us-east-1b          |

Current CPU Load: **0%**

## Lab Complete

Congratulations! You have completed the lab.

49. Choose **End Lab** at the top of this page and then choose **Yes** to confirm that you want to end the lab.

A panel will appear, indicating that "DELETE has been initiated... You may close this message box now."

aws academy

ACFv2EN-... > Modules > Module 5 ...  
> Lab 2 - Build your VPC and Launch a Web Server

Details ▾ AWS Start Lab End Lab 0:44 Instructions Actions ▾

Files ☐ README ☒ Terminal ☒ Source ☐

EN-US

5. In the search box to the right of **Services**, search for and choose **VPC** to open the VPC console.

6. Begin creating a VPC.

- In the top right of the screen, verify that **N. Virginia (us-east-1)** is the region.
- Choose the **VPC dashboard** link which is also towards the top left of the console.

Launch Terminal

◀ Previous Next ▶

50. Choose the **X** in the top right corner to close the panel.

aws academy

ACFv2EN-... > Modules > Module 5 ...  
> Lab 2 - Build your VPC and Launch a Web Server

Details ▾ AWS Start Lab End Lab 00:00:00 Instructions Actions ▾

Files ☐ README ☒ Terminal ☒ Source ☐

EN-US

5. In the search box to the right of **Services**, search for and choose **VPC** to open the VPC console.

6. Begin creating a VPC.

- In the top right of the screen, verify that **N. Virginia (us-east-1)** is the region.
- Choose the **VPC dashboard** link which is also towards the top left of the console.

End Lab

Region: us-east-1  
Lab ID: arn:aws:cloudformation:us-east-1:406394482815:stack/c83325a177516614172939t1w406394482815/a33fdac0-fba5-11ed-b21c-12e1dcf45f03  
Creation Time: 2023-05-26T02:13:54-0700  
You may close this message box now. Lab resources are terminating ...

◀ Previous Next ▶

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