

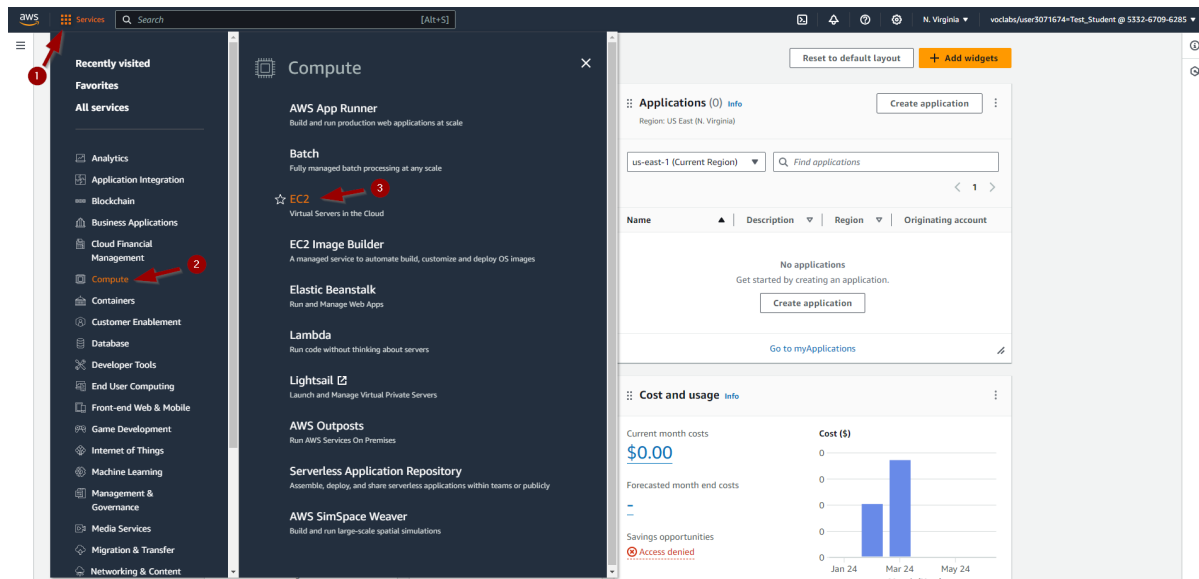
Lab

In the following chapters Linus will install a Webserver and Minetest Server. Before he can do that, he will need to have a Linux System up and running. In this lab he will create a Linux Cloud Instance on Amazon Web Services (AWS). With this infrastructure set up he will be able to install, configure and maintain his Webserver and Minecraft Server at a later time.

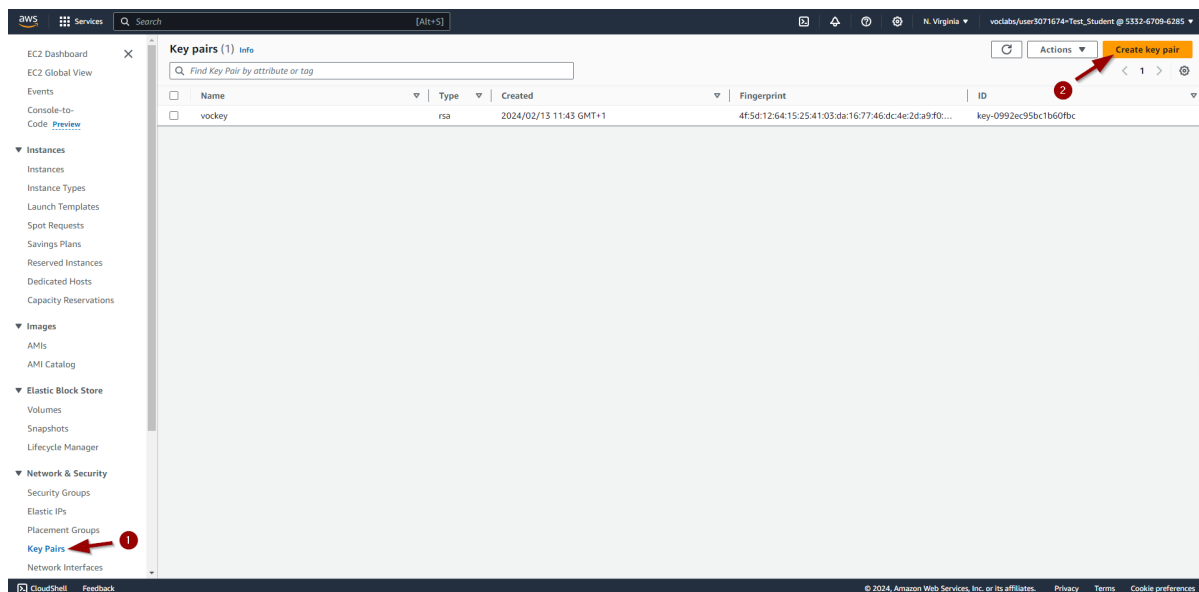
Creating the SSH keypair

Before we can install the instance we need to create an SSH keypair so we will be able to connect (=login) to the instance af creation.

On AWS, go to EC2.



Go to *key pairs* and create a new one.



aws Services Search [Alt+S]

EC2 > Key pairs > Create key pair

Create key pair [Info](#)

Key pair
A key pair, consisting of a private key and a public key, is a set of security credentials that you use to prove your identity when connecting to an instance.

Name
gert-key 1
The name can include up to 255 ASCII characters. It can't include leading or trailing spaces.

Key pair type [Info](#)
☐ RSA
☒ ED25519 2

Private key file format 3
☒ .pem 3 For use with OpenSSH
☐ .ppk For use with PuTTY

Tags - optional
No tags associated with the resource.

 You can add up to 50 more tags.

4

The private key will automatically be downloaded by your browser to the *Downloads* folder.

Successfully created key pair

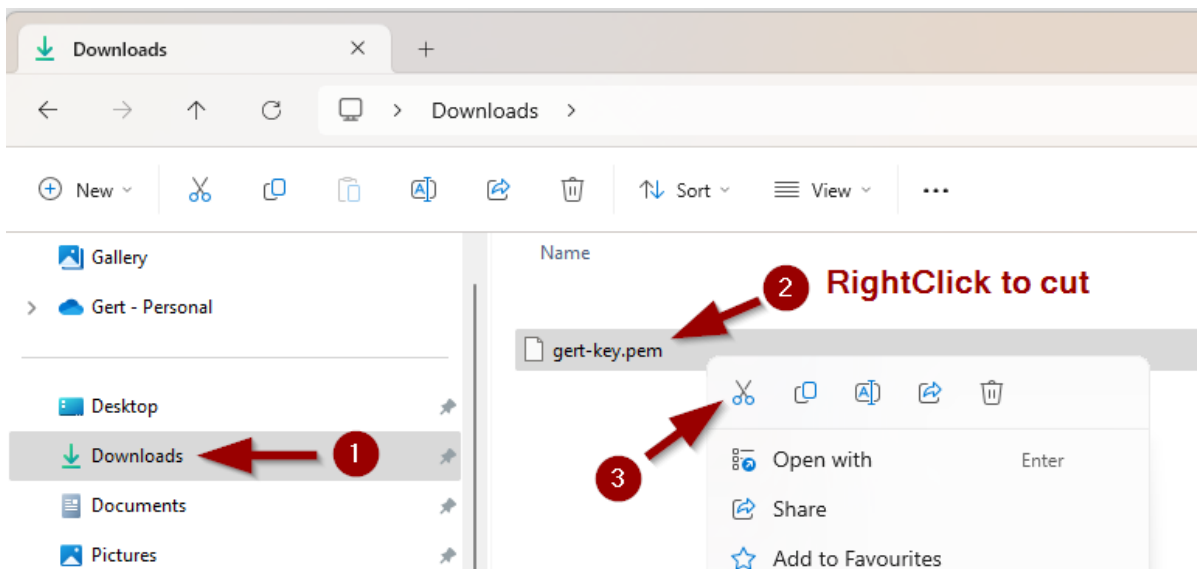
Key pairs (2) [Info](#)

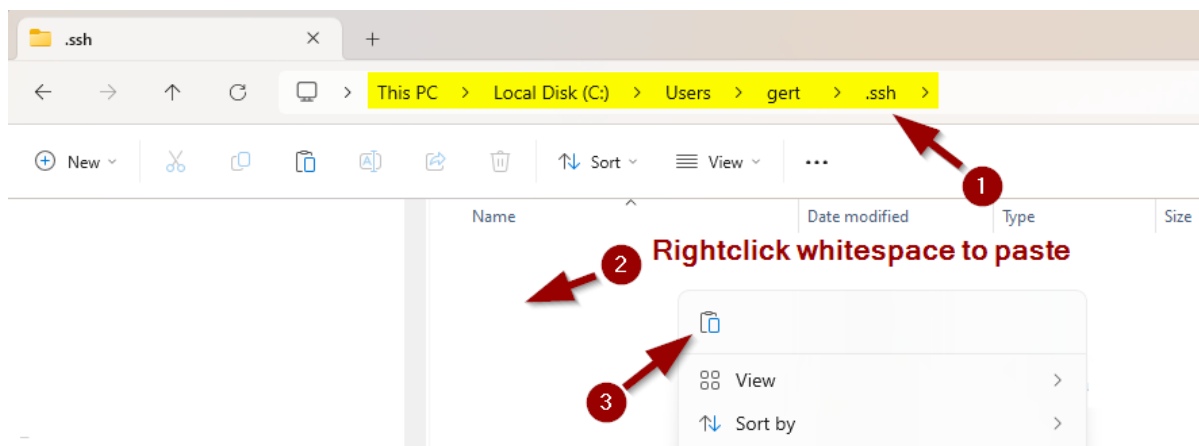
Find Key Pair by attribute or tag

Name	Type	Created	Fingerprint	ID
gert-key	ed25519	2024/06/08 10:58 GMT+2	okhCAYhmT1xpW9ToODJP8ejyTNG5MGf0x1GLE3Pfz3E=	key-0586124017fe4d863
vockey	rsa	2024/02/13 11:43 GMT+1	4f5d126415254103da167746dc4e2da9f0DcR081	key-0992ec95bc1b60fbc

gert-key.pem
Private Key in Downloads folder!

Move this key to the folder `.ssh` under your account `"C:\Users\"`. Create this folder if it doesn't exit.

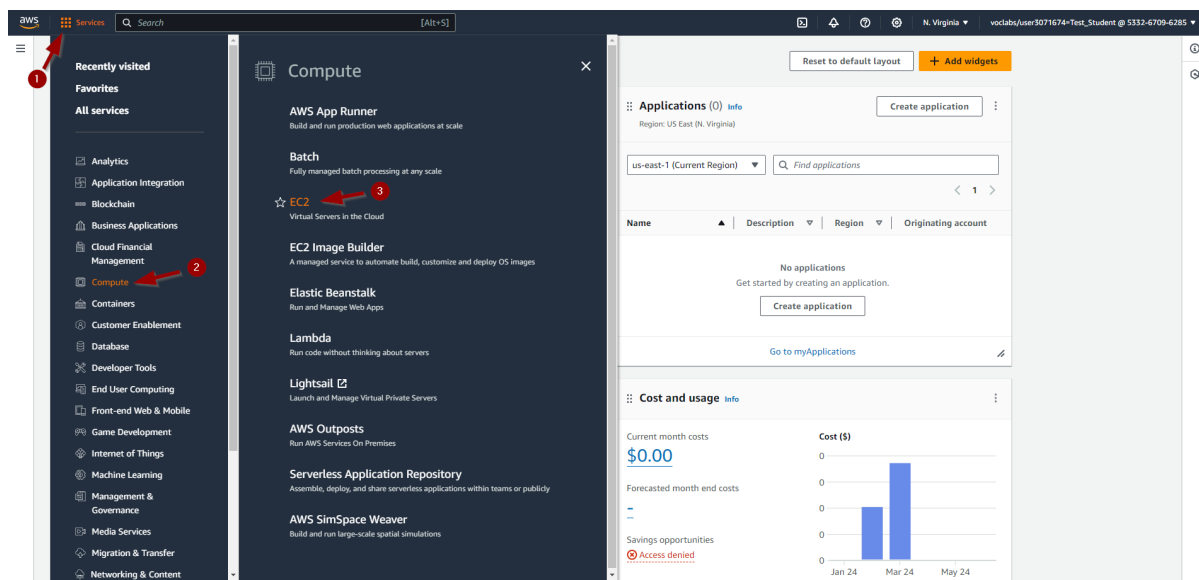




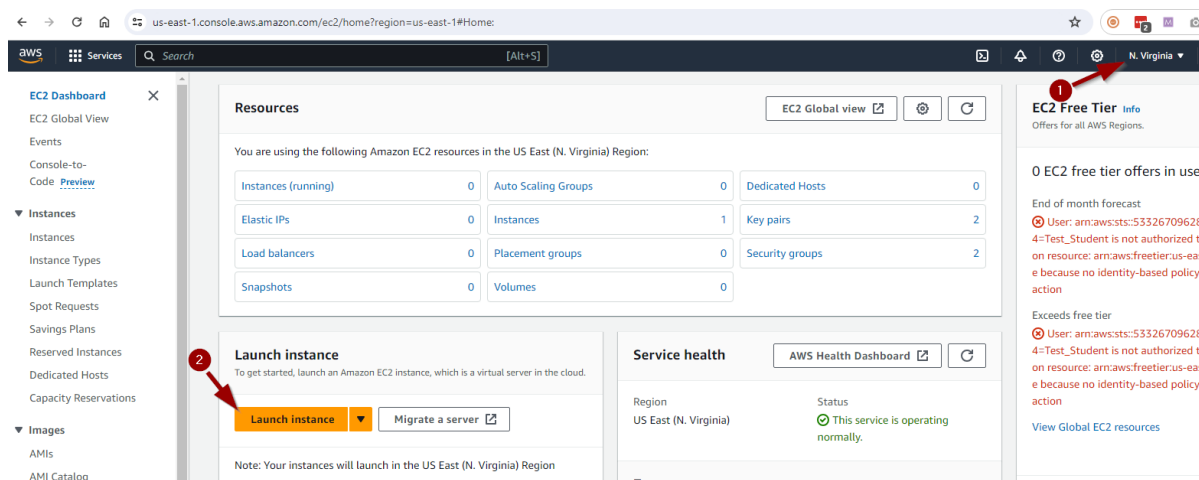
Creating the Cloud instance

The Web server and Minecraft Server run in a Linux Server Environment. More specifically, an Ubuntu Server.

On AWS, go to EC2.



Make sure you are in the "N. Virginia" Region and click *Launch instance*.



Fill in the correct details.

aws

Services

Q Search

[Alt+S]

☰

Launch an instance Info

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

Name and tags Info

Name

Ubuntu Server ➔ 1

Add additional tags

▼ Application and OS Images (Amazon Machine Image) Info

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

Q Search our full catalog including 1000s of application and OS images

Quick Start ➔ 2

Amazon Linux

aws

macOS

Mac

Ubuntu

ubuntu

Windows

Microsoft

Red Hat

Red Hat

SUSE L

SUS

Q

Browse more AMIs

Including AMIs from AWS, Marketplace and the Community

Amazon Machine Image (AMI) ➔ 3

Ubuntu Server 24.04 LTS (HVM), SSD Volume Type

Free tier eligible ▼

ami-04b70fa74e45c3917 (64-bit (x86)) / ami-0eac975a54dfec8cb (64-bit (Arm))

Virtualization: hvm ENA enabled: true Root device type: ebs

Description

Canonical, Ubuntu, 24.04 LTS, amd64 noble image build on 2024-04-23

Architecture ➔ 4

AMI ID

ami-04b70fa74e45c3917

Verified provider

64-bit (x86) ▼

▼ Instance type

Info | Get advice

Instance type

t2.medium

Family: t2 2 vCPU 4 GiB Memory Current generation: true
On-Demand Linux base pricing: 0.0464 USD per Hour
On-Demand RHEL base pricing: 0.1064 USD per Hour
On-Demand Windows base pricing: 0.0644 USD per Hour
On-Demand SUSE base pricing: 0.1464 USD per Hour

Additional costs apply for AMIs with pre-installed software

All generations

Compare instance types

▼ Key pair (login)

Info

You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.

Key pair name - required

gert-key

Create new key pair

▼ Network settings

Info

Edit

Network

Info

vpc-08735e3b7ef6783ef

Subnet

Info

No preference (Default subnet in any availability zone)

Auto-assign public IP

Info

Enable

Additional charges apply when outside of free tier allowance

Firewall (security groups)

Info

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

Create security group

Select existing security group

We'll create a new security group called 'launch-wizard-2' with the following rules:

☒ Allow SSH traffic from

Helps you connect to your instance

Anywhere

0.0.0.0/0

☐ Allow HTTPS traffic from the internet

To set up an endpoint, for example when creating a web server

☐ Allow HTTP traffic from the internet

To set up an endpoint, for example when creating a web server

▼ Summary

Number of instances

Info

1

Software Image (AMI)

Canonical, Ubuntu, 24.04 LTS, ...read more

ami-04b70fa74e45c3917

Virtual server type (instance type)

t2.medium

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 8 GiB

Free tier: In your first year includes

750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 750 hours of public IPv4 address usage per month, 30 GiB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Cancel

Launch instance

Review commands

You will receive a message that the instance was successfully created.

The screenshot shows the AWS Management Console interface. At the top, there's a navigation bar with the AWS logo, 'Services', a search bar, and a user profile. Below the navigation bar, the breadcrumb trail reads 'EC2 > Instances > Launch an instance'. A large green banner with a white checkmark icon and the text 'Success' is displayed, followed by 'Successfully initiated launch of Instance (i-06393cc00b71dde03)'. Below the banner, there is a 'Launch log' link.

After a while, the Pending status also changes to Running to indicate that the server has also started successfully.

The screenshot shows the 'Instances' page in the AWS Management Console. The left sidebar has a menu with 'Instances' selected. The main content area shows a table of instances. The table has columns for Name, Instance ID, Instance state, Instance type, Status check, Alarm status, Availability Zone, Public IPv4 DNS, Public IPv4 address, Elastic IP, and IPv6 IPs. One instance is listed: 'Ubuntu Server' with Instance ID 'i-06393cc00b71dde03', state 'Running', type 't2.medium', and status '2/2 checks passed'. The instance is located in 'us-east-1e' and has a public IPv4 address of 'ec2-54-166-140-86.co...'. The table also shows the instance's public IPv4 DNS name and its Elastic IP address.

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...	Elastic IP	IPv6 IPs
Ubuntu Server	i-06393cc00b71dde03	Running	t2.medium	2/2 checks passed	View alarms	us-east-1e	ec2-54-166-140-86.co...	54.166.140.86	-	-

Giving the instance a static IP address (Elastic IP)

Everytime we restart the instance it wil get another IP address (and DNS name).

Instances (1) Info		Instance state ▼	Actions ▼	Launch instances ▼
Find instance by attribute or tag (case-sensitive)				
<input type="checkbox"/>	Name ▼	Instance ID	Public IPv4 DNS	Public IPv4 ... ▼
<input type="checkbox"/>	gert-webserver	i-013209f1d8f529fe9	ec2-3-235-28-0.compute-1.amazonaws.com	3.235.28.0



✓ Successfully started i-013209f1d8f529fe9	×
✓ Successfully stopped i-013209f1d8f529fe9	×
✓ Successfully rebooted i-013209f1d8f529fe9	×

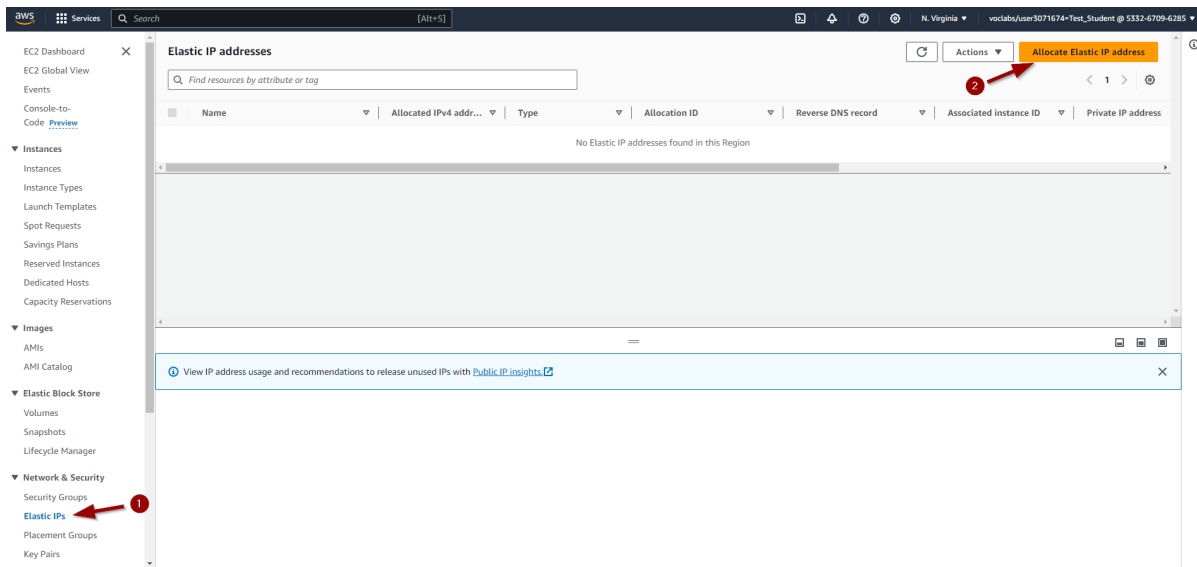
Instances (1) Info		Instance state ▼	Actions ▼	Launch instances ▼
Find instance by attribute or tag (case-sensitive)				
<input type="checkbox"/>	Name ▼	Instance ID	Public IPv4 DNS	Public IPv4 ... ▼
<input type="checkbox"/>	gert-webserver	i-013209f1d8f529fe9	ec2-44-203-247-73.compute-1.amazonaws.com	44.203.247.73

We use this IP address (or DNS name) to connect to the server. Het is dus veel makkelijker indien de server hetzelfde IP adres (en DNS naam) zou houden in de toekomst.

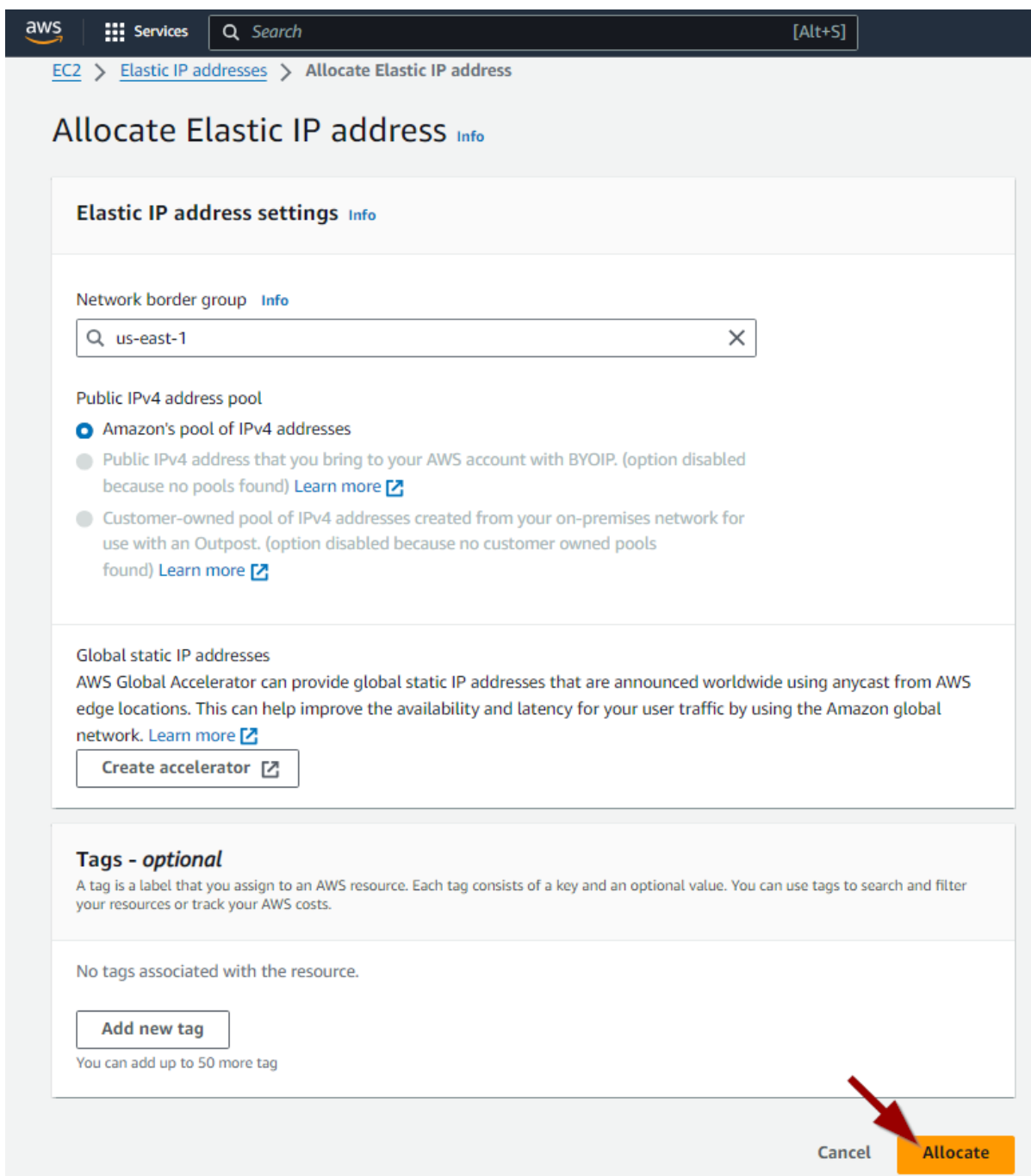
To prevent changing the IP address, we will have to give the instance an Elastic (=static) IP.

On AWS, go to EC2.

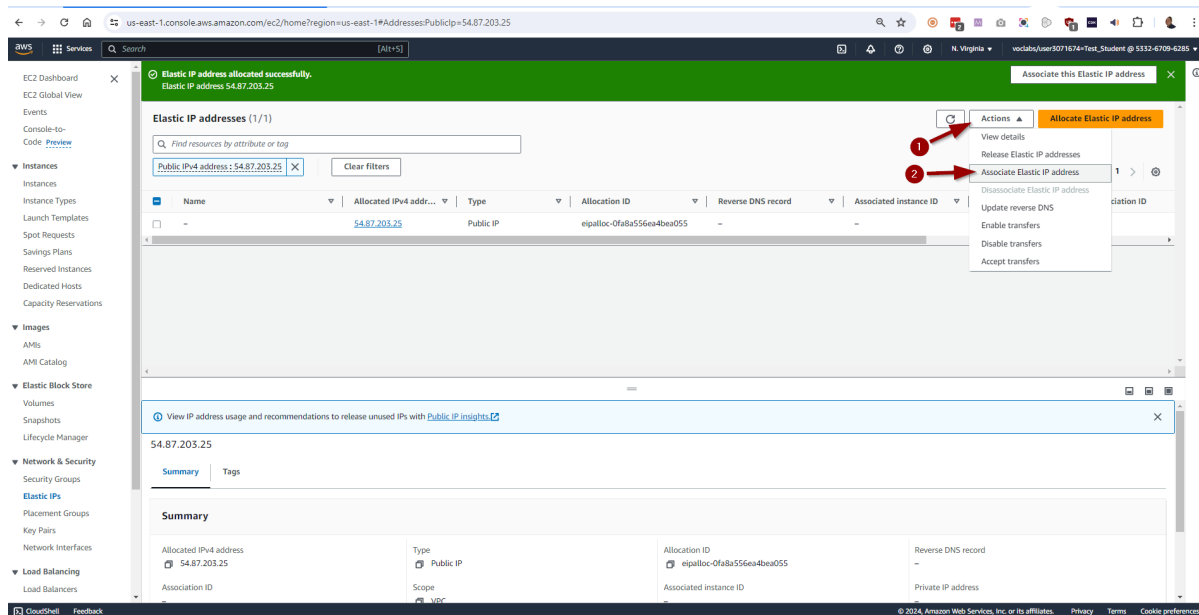
Click on *Elastic IPs* and then *Allocate Elastic IP address*.



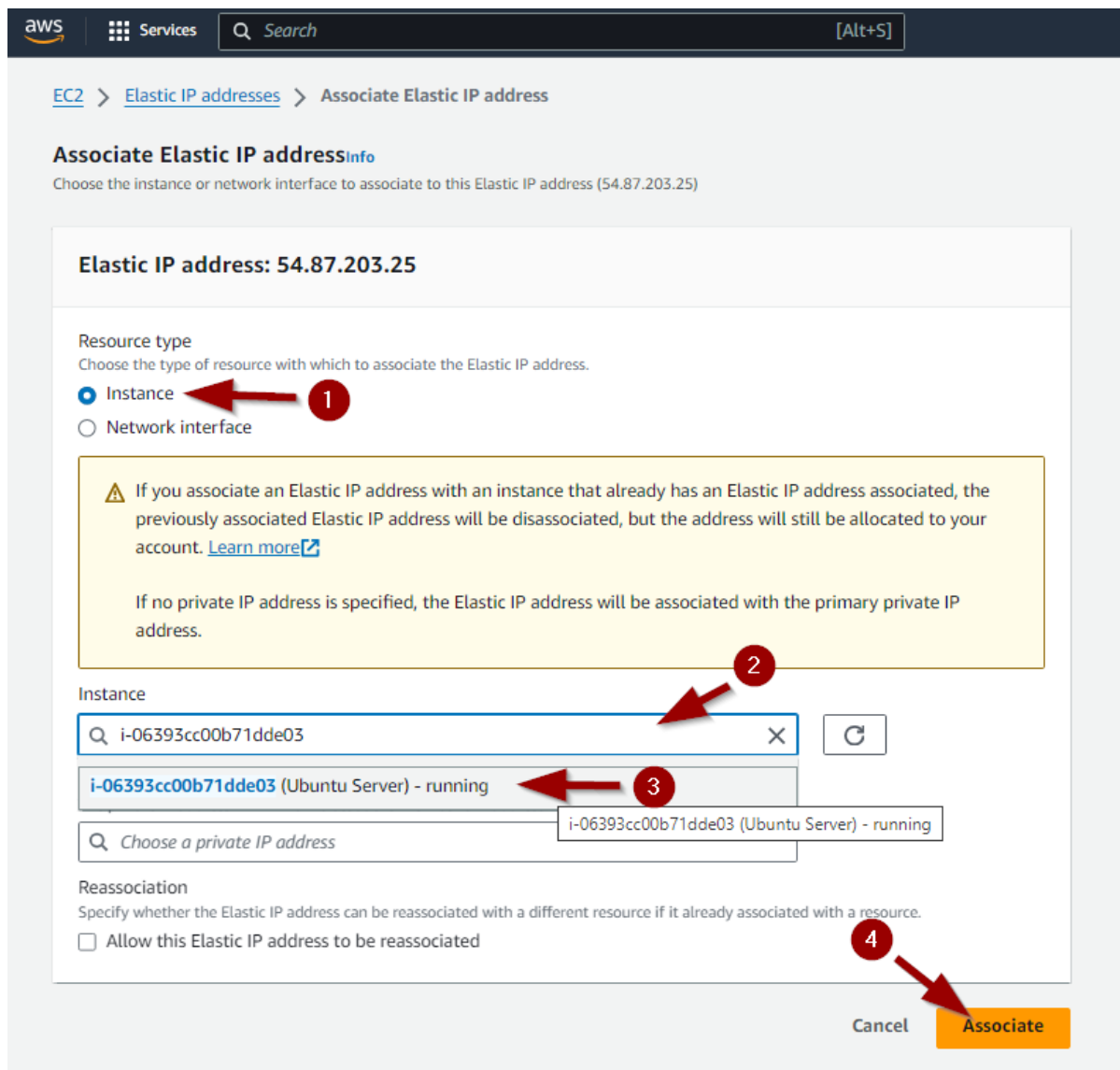
We create a new Elastic IP by clicking *Allocate*.



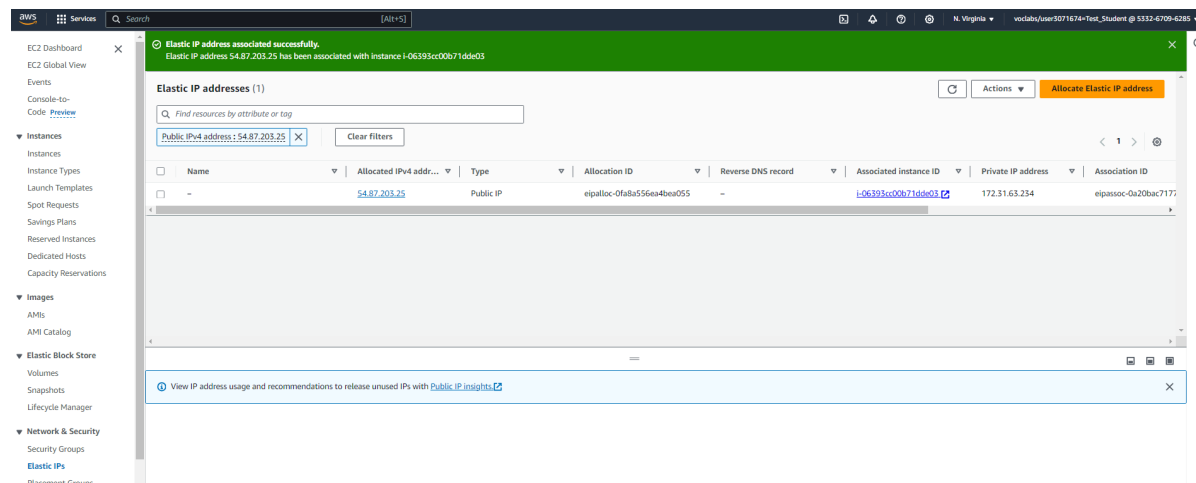
Click on **Actions** and then on **Associate Elastic IP address**.



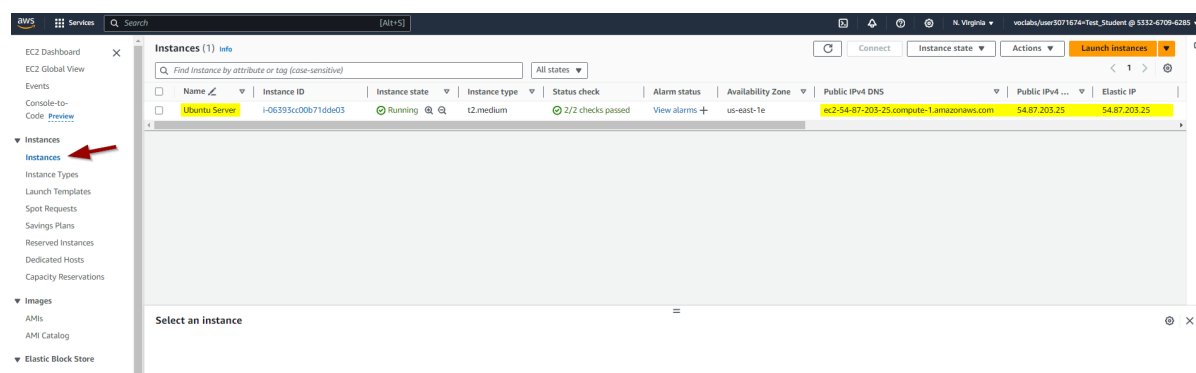
Select the *Instance* to which this Elastic IP address should be linked and click on **Associate**.



The Elastic IP address has been successfully linked to our server instance.



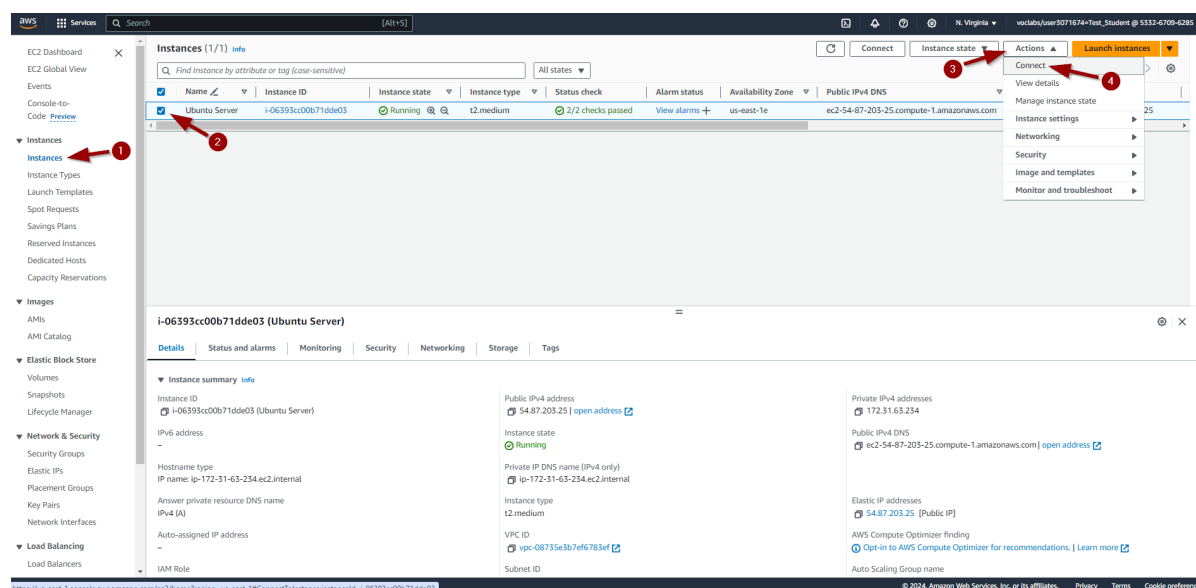
We see that this has been successful when we look at the Instance again. If we now stop the instance and restart it afterwards, the IP address and associated DNS name will remain the same.



Connecting to the Cloud instance

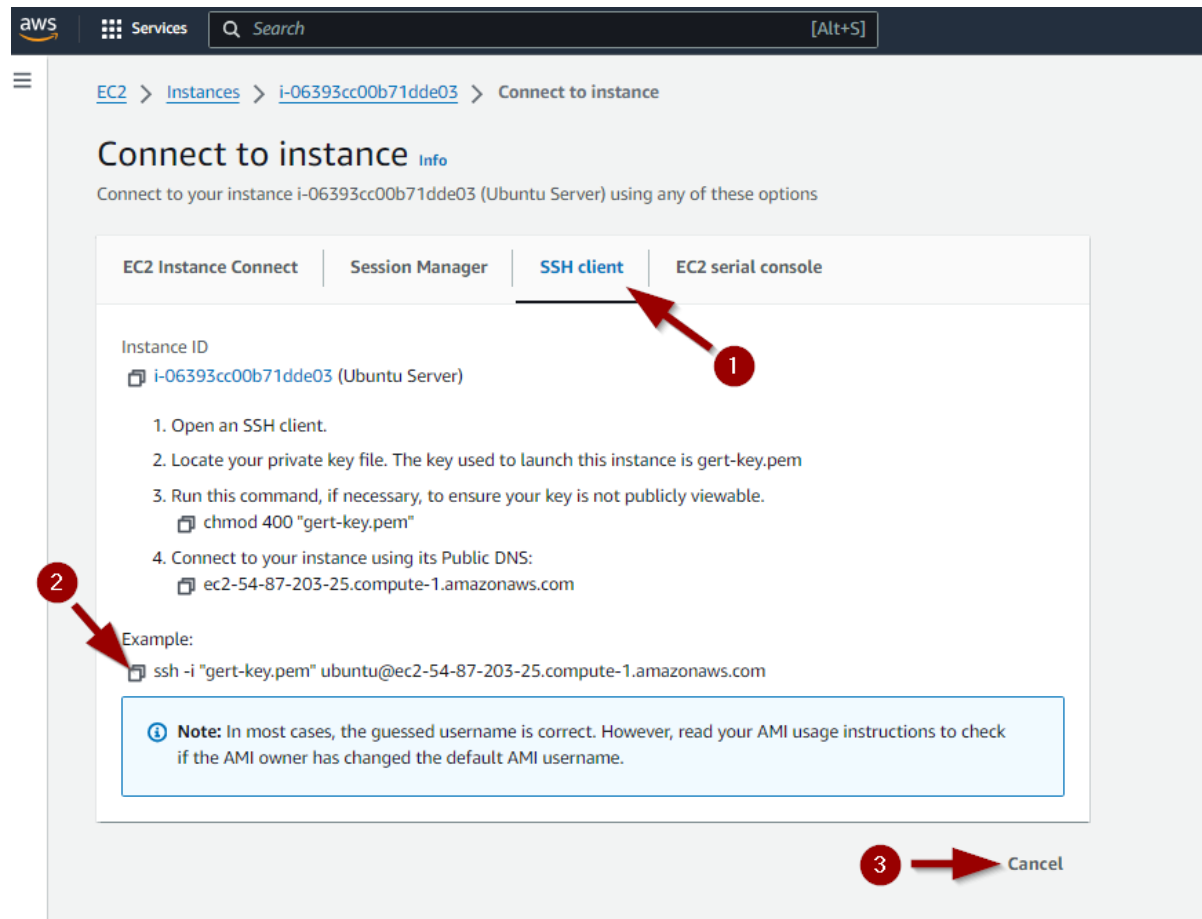
To work on the server instance, it is best to start a connection from our laptop via SSH. To request the data required for this, we do the following.

Click *Instances*. Then select the server instance and click *Connect*.



AWS suggests an SSH command with a certain key.

But please note, our key on the laptop may be named differently if you followed different steps while creating the SSH keypair or if you already had a keypair.



We start a Powershell or Windows Terminal and paste the command, but change the name of our key should this be necessary.

You can paste into a Powershell window by clicking the right mouse button.

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

Loading personal and system profiles took 825ms.
PS C:\Users\gertv> cd .ssh
PS C:\Users\gertv\.ssh> ssh -i "gert-key.pem" ubuntu@ec2-54-87-203-25.compute-1.amazonaws.com
Warning: Permanently added 'ec2-54-87-203-25.compute-1.amazonaws.com' (ED25519) to the list of known hosts.
Welcome to Ubuntu 24.04 LTS (GNU/Linux 6.8.0-1008-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/pro

System information as of Wed Jun 12 08:46:38 UTC 2024

System load:  0.02          Processes:      112
Usage of /:   25.0% of 6.71GB Users logged in:  0
Memory usage: 5%           IPv4 address for enX0: 172.31.63.234
Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-63-234:~$ exit
logout
Connection to ec2-54-87-203-25.compute-1.amazonaws.com closed.
PS C:\Users\gertv\.ssh>
```

As you can see in the previous screenshot, we are now logged in to the server. If you wish to leave the connection you can give the command *exit* or *logout*.