

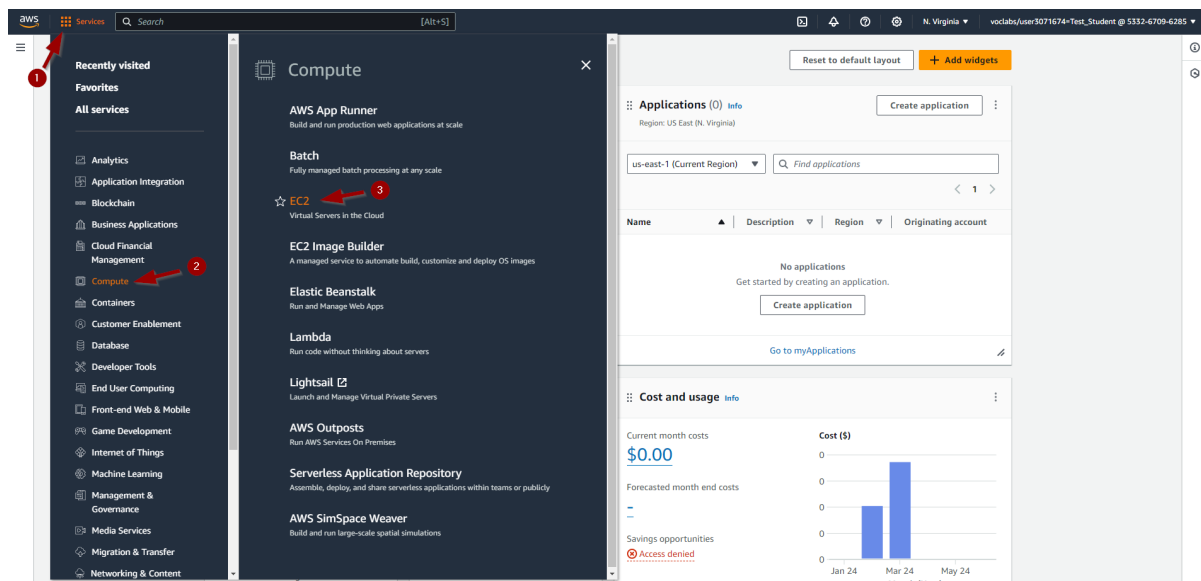
Lab

In de volgende hoofdstukken installeert Linus een Webserver en Minetest Server. Voordat hij dat kan doen, moet hij een Linux-systeem in gebruik hebben. In dit lab zal hij een Linux Cloud Instance aanmaken op Amazon Web Services (AWS). Met deze infrastructuur opgezet zal hij in staat zijn om zijn Webserver en Minecraft Server op een later tijdstip te installeren, configureren en onderhouden.

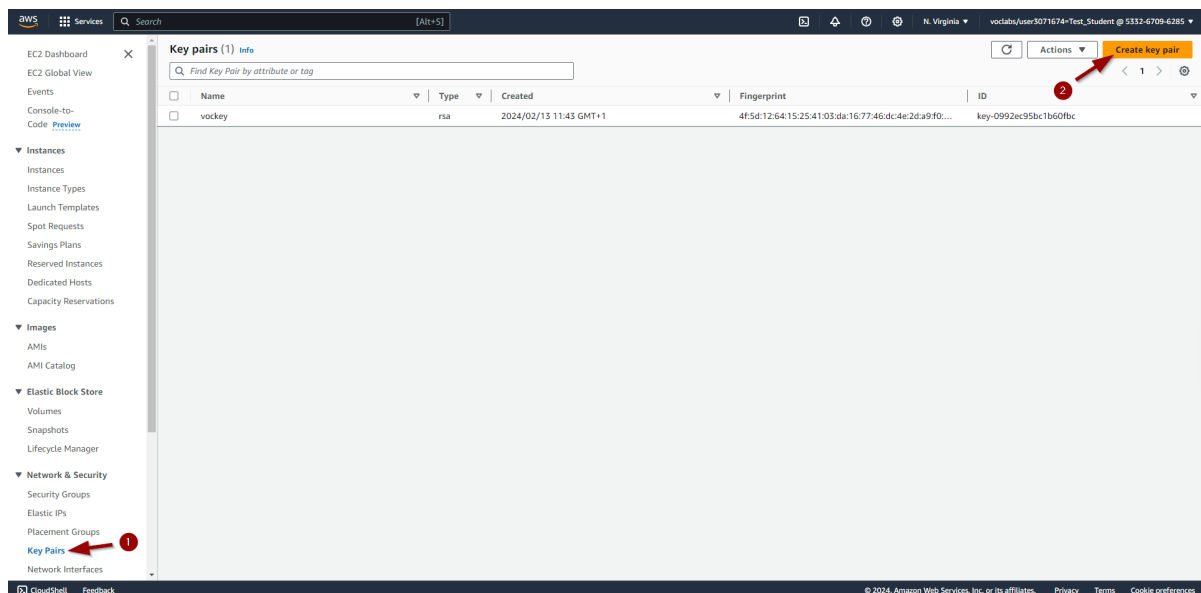
Aanmaken van SSH keypair

Vooraleer we de instance kunnen aanmaken hebben we een SSH keypair nodig om na creatie veilig te kunnen verbinden (= in te loggen) met deze instance.

Ga op AWS naar EC2.



Ga naar *Key Pairs* en maak een nieuwe aan



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 For use with OpenSSH
☐ .ppk For use with PuTTY

Tags - optional
No tags associated with the resource.
[Add new tag](#)
You can add up to 50 more tags.

[Cancel](#) [Create key pair](#) 4

De private key zal automatisch gedownload worden door jouw browser naar het *Downloads*-mapje.

aws Services Search [Alt+S]

EC2 Dashboard
EC2 Global View
Events
Console-to-Code [Preview](#)

▼ Instances
Instances
Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances

Successfully created key pair

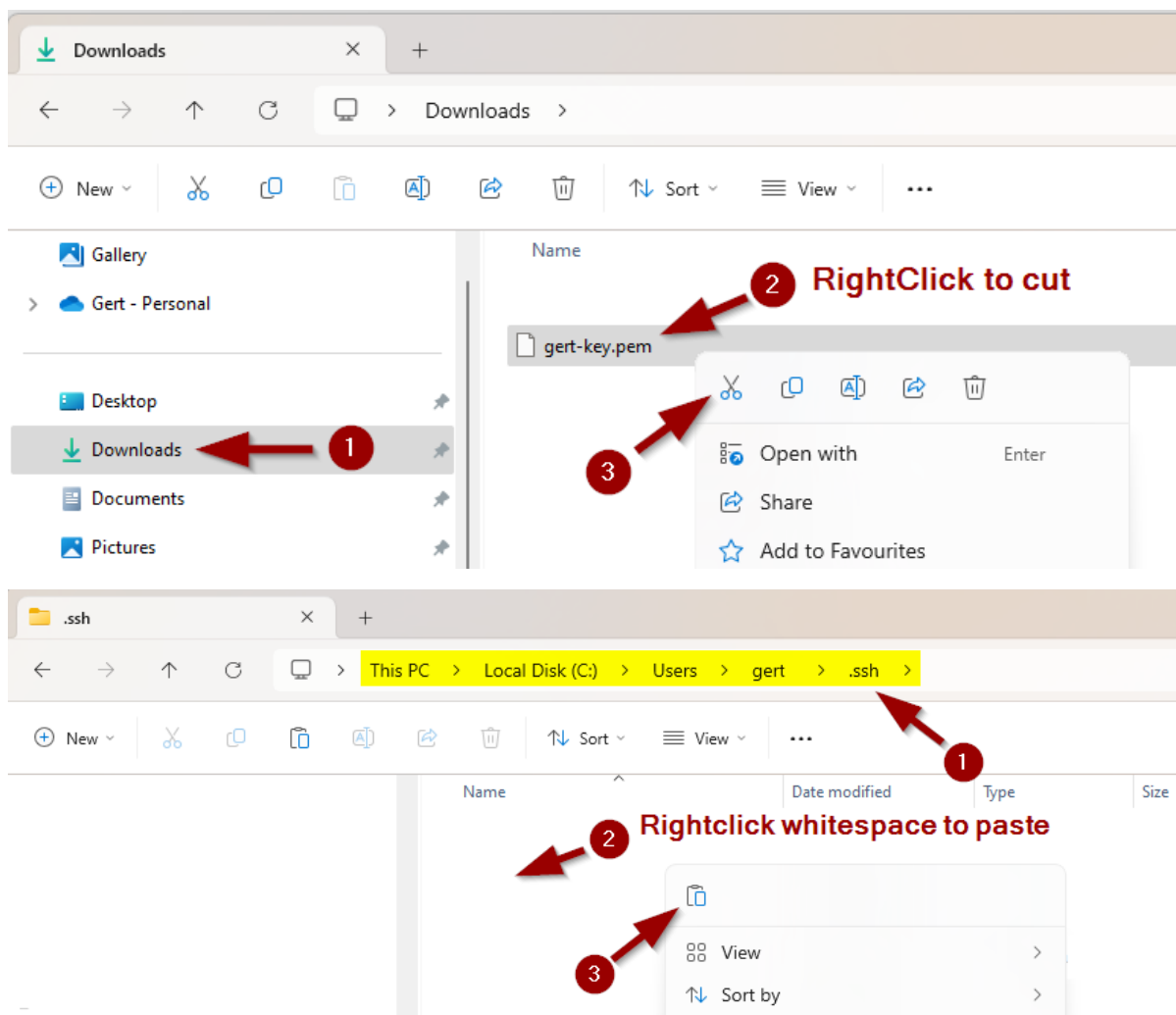
Key pairs (2) [Info](#)

Find Key Pair by attribute or tag

<input type="checkbox"/>	Name	Type	Created	Fingerprint	ID
<input type="checkbox"/>	gert-key	ed25519	2024/06/08 10:58 GMT+2	okhCAYhmT1xpW9ToODJP8ejyTN65MGf0x1GLE3Pfz3E=	key-0586124017f64d863
<input type="checkbox"/>	vockey	rsa	2024/02/13 11:43 GMT+1	4f5d:12:64:15:25:41:03:da:16:77:46:dc:4e:2da9:f0:0c:R0:81	key-0992ec95bc1b60fbc

gert-key.pem
Private Key in Downloads-folder!

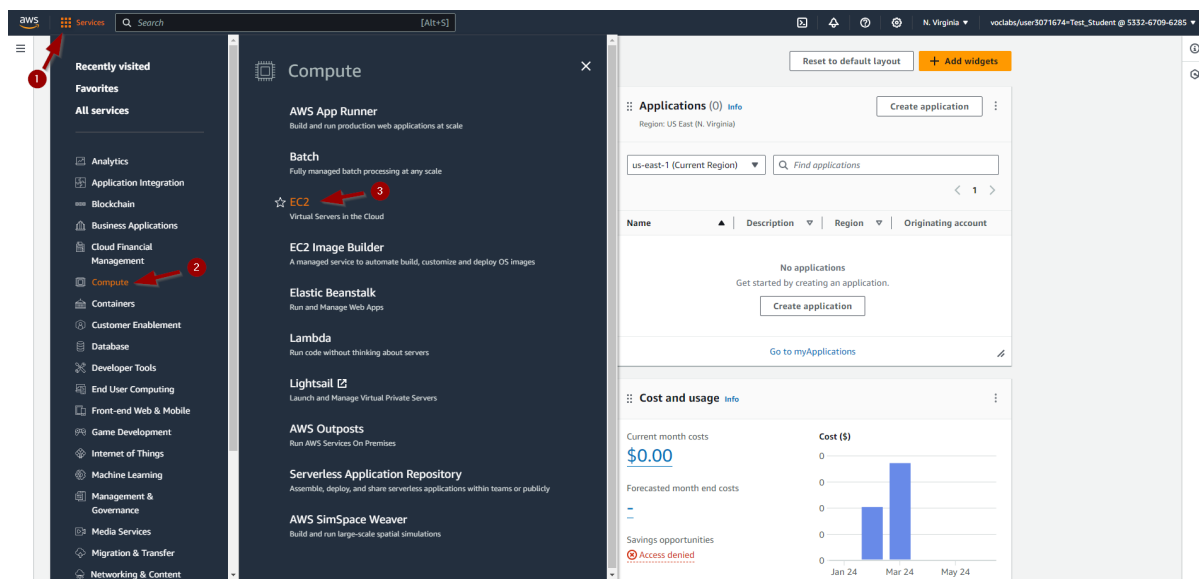
Verplaats deze key naar het mapje `.ssh` onder jouw account "`C:\Users\`". Indien nodig maak je dit mapje zelf aan.



Aanmaken van de Cloud instance

De Webserver en Minecraft Server draaien in een Linux Server Environment. Meer bepaald een Ubuntu Server.

Ga op AWS naar EC2.



Zorg dat je je in de Regio "N. Virginia" bevindt en klik op *Launch instance*.

us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#Home

EC2 Dashboard

Resources

You are using the following Amazon EC2 resources in the US East (N. Virginia) Region:

Instances (running)	0	Auto Scaling Groups	0	Dedicated Hosts	0
Elastic IPs	0	Instances	1	Key pairs	2
Load balancers	0	Placement groups	0	Security groups	2
Snapshots	0	Volumes	0		

Launch instance

To get started, launch an Amazon EC2 instance, which is a virtual server in the cloud.

Launch instance

Migrate a server

Note: Your instances will launch in the US East (N. Virginia) Region

Service health

AWS Health Dashboard

Region: US East (N. Virginia)

Status: This service is operating normally.

EC2 Free Tier

Offers for all AWS Regions.

0 EC2 free tier offers in use

End of month forecast

User: am:aws:sts:5332670962814=Test_Student is not authorized to on resource: am:aws:freetier:us-east-1 because no identity-based policy is action

Exceeds free tier

User: am:aws:sts:5332670962814=Test_Student is not authorized to on resource: am:aws:freetier:us-east-1 because no identity-based policy is action

View Global EC2 resources

Vul de juiste gegevens in.

Launch an instance

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

Name

Ubuntu Server

Add additional tags

Application and OS Images (Amazon Machine Image)

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

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

Quick Start

Amazon Linux

macOS

Ubuntu

Windows

Red Hat

SUSE L

Browse more AMIs

Including AMIs from AWS, Marketplace and the Community

Amazon Machine Image (AMI)

Ubuntu Server 24.04 LTS (HVM), SSD Volume Type

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

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

Free tier eligible

Description

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

Architecture

64-bit (x86)

AMI ID

ami-04b70fa74e45c3917

Verified provider

Instance type [Info](#) | [Get advice](#)

Instance type: **t2.medium** (marked with red arrow 1)

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

☐ All generations [Compare instance types](#)

[Additional costs apply for AMIs with pre-installed software](#)

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** (marked with red arrow 2) [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) (marked with red arrow 3)

☐ 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

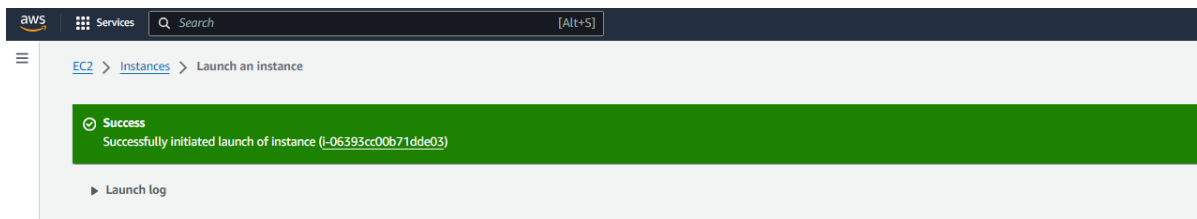
Firewall (security group)
 New security group

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](#) (marked with red arrow 4) [Review commands](#)

Je krijgt de melding dat de instance succesvol werd aangemaakt.



Na een tijdje verandert de status Pending ook naar Running om aan te geven dat de server ook succesvol is opgestart.

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	-	-

Een vast IP-adres toekennen (Elastic IP)

Iedere keer dat we een instance herstarten zal deze een ander IP adres (en DNS naam) krijgen.

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



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

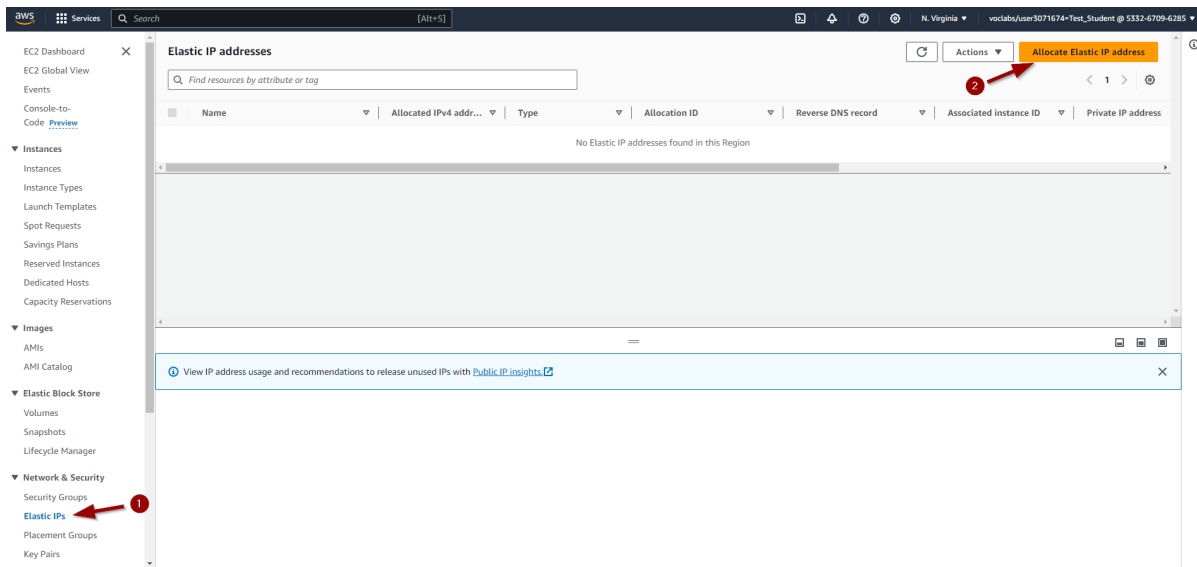
Instances (1) Info			
Find instance by attribute or tag (case-sensitive)			
<input type="checkbox"/>	Name	Instance ID	Public IPv4 DNS
<input type="checkbox"/>	gert-webserver	i-013209f1d8f529fe9	ec2-44-203-247-73.compute-1.amazonaws.com

We gebruiken dit IP adres (of DNS naam) om te connecteren naar de server. Het is dus veel makkelijker indien de server hetzelfde IP adres (en DNS naam) zou houden in de toekomst.

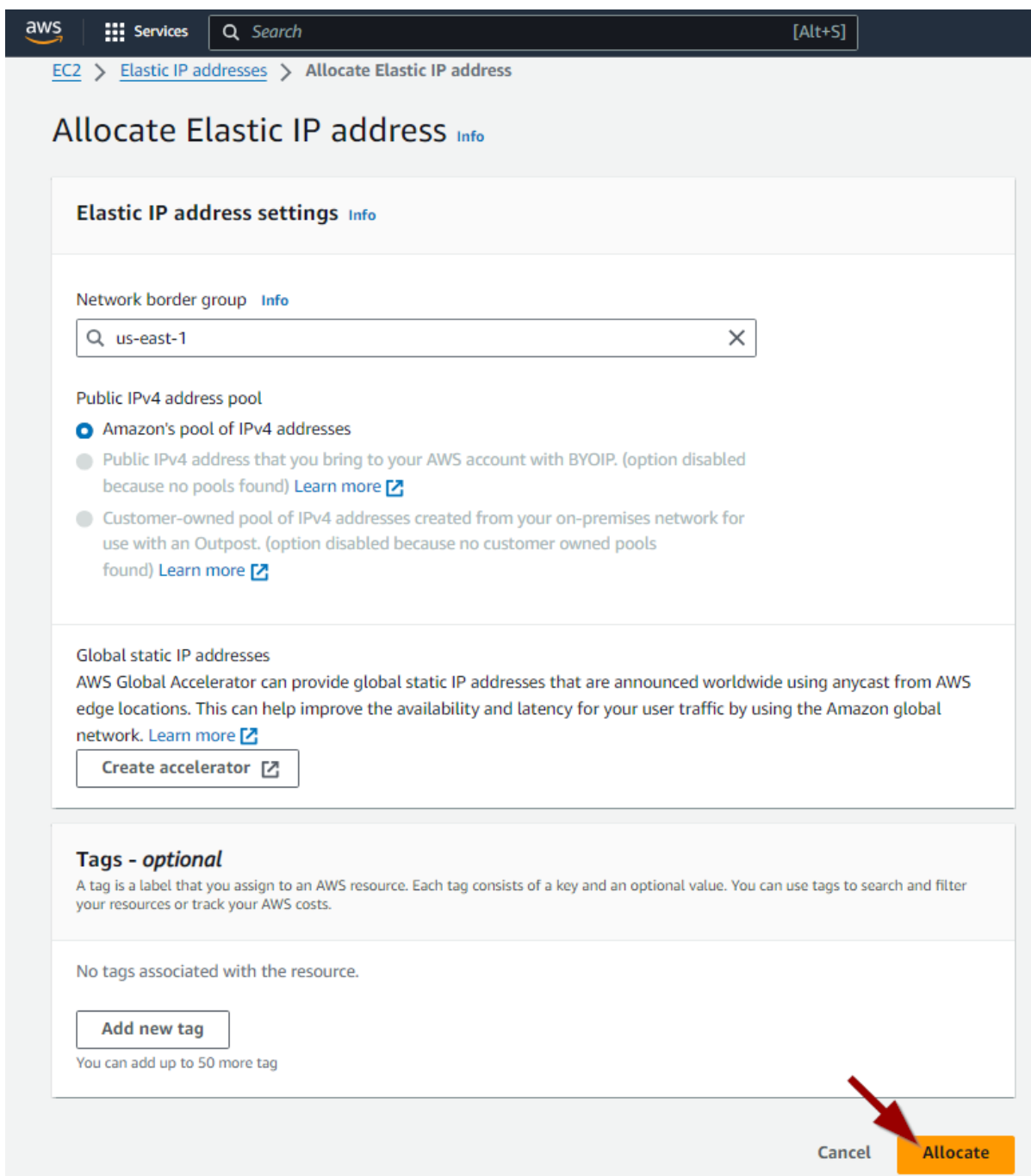
Om het veranderen van IP adres te voorkomen, zullen we de instance een Elastic (=static) IP moeten geven.

Ga op AWS naar EC2.

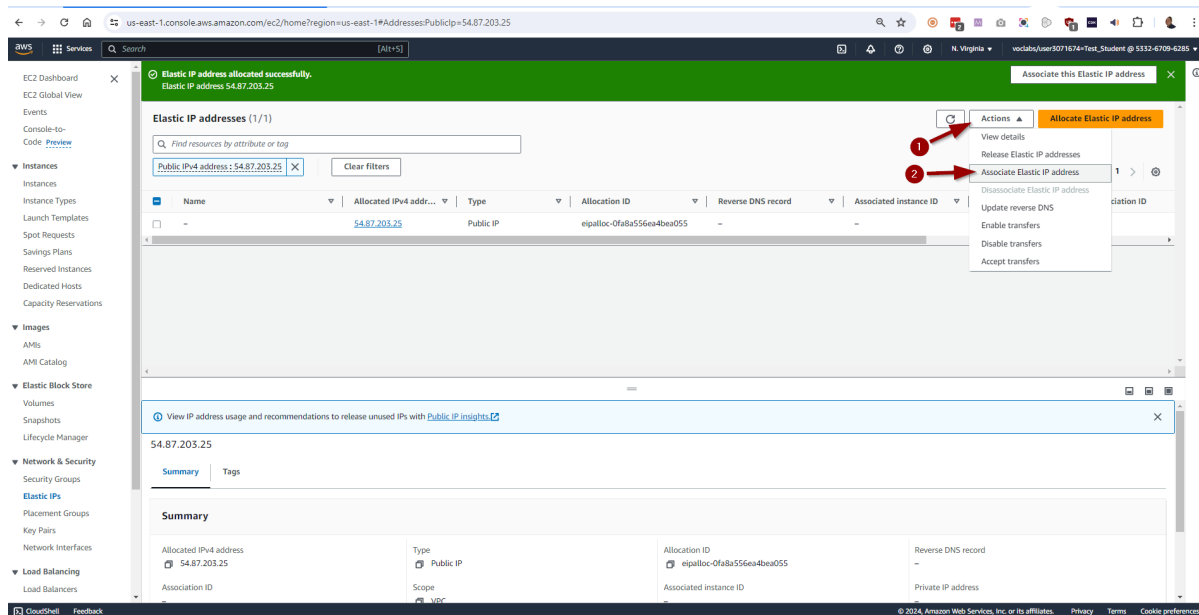
Klik op *Elastic IPs* en vervolgens op *Allocate Elastic IP address*.



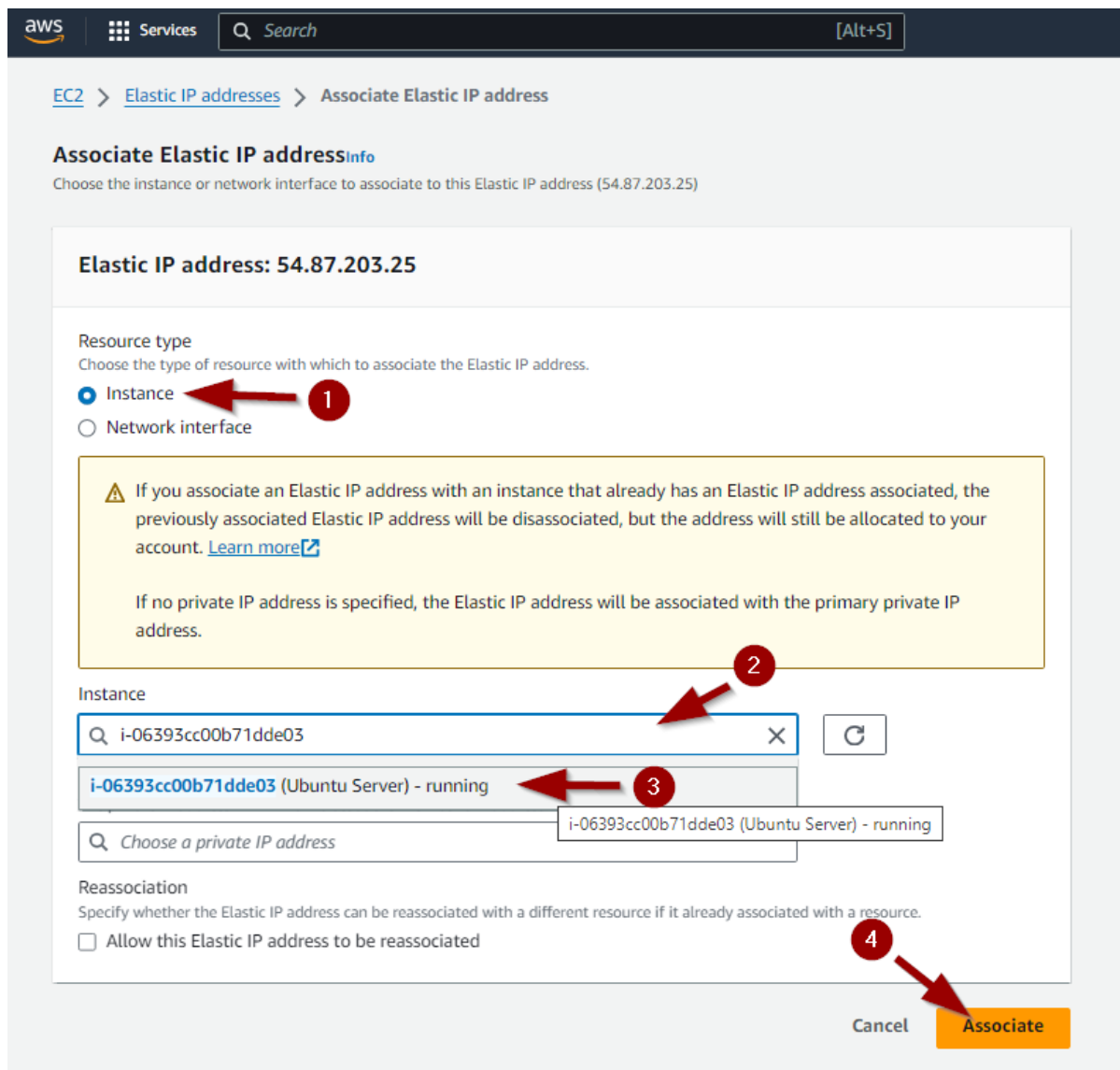
We maken een nieuw Elastic IP aan door op *Allocate* te klikken.



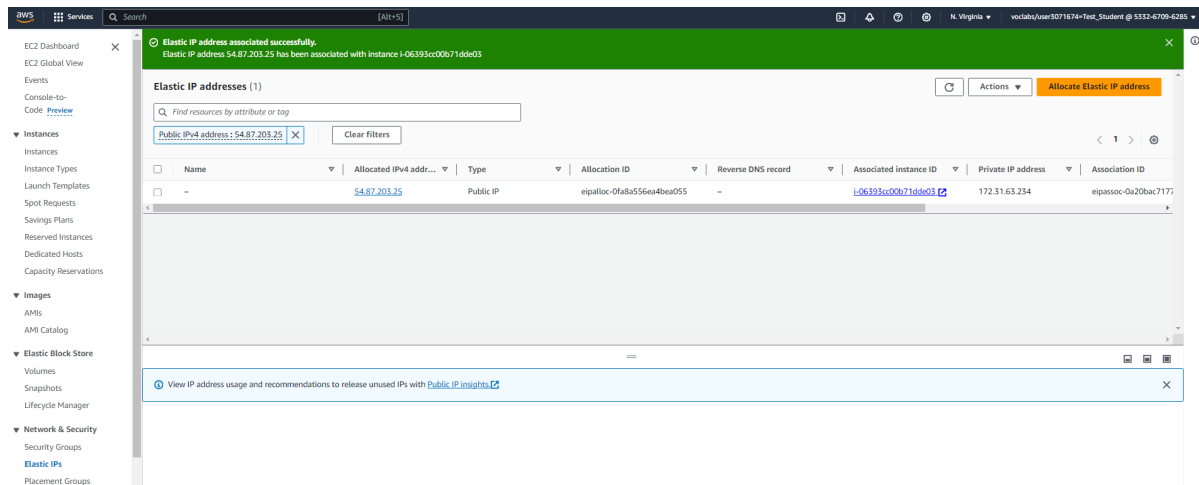
Klik op **Actions** en vervolgens op **Associate Elastic IP address**.



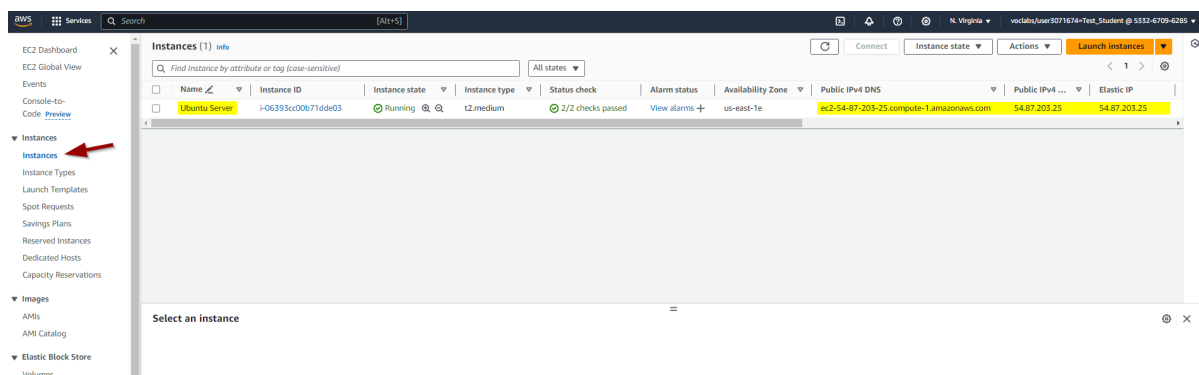
Selecteer de *Instance* waar dit Elastic IP adres aan gekoppeld moet worden en klik op **Associate**.



Het Elastic IP adres is succesvol gekoppeld aan onze server instance.



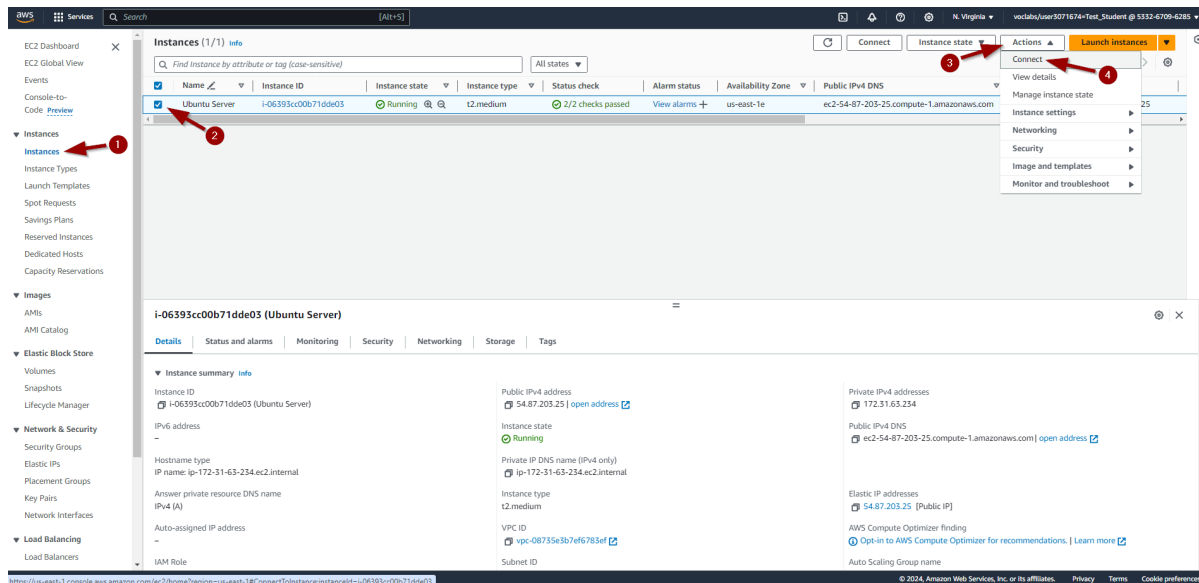
We zien dat dit gelukt is als we opnieuw naar de Instance gaan kijken. Wanneer we nu de instance gaan stoppen en nadien opnieuw starten, dan zal het IP adres en bijhorende DNS naam hetzelfde blijven.



Connecteren naar de Cloud instance

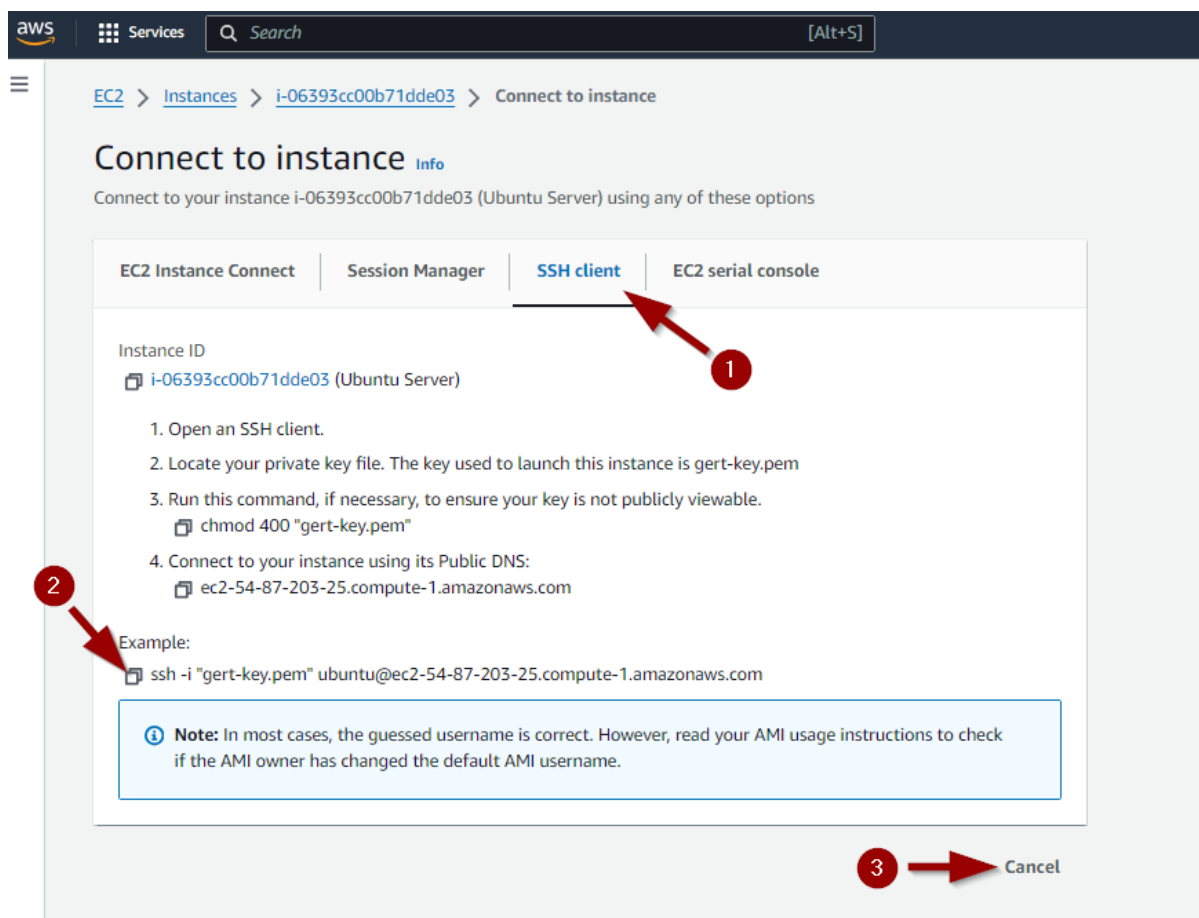
Om op de server instance te werken gaan we best over SSH een connectie starten vanop onze laptop. Om de gegevens die hiervoor nodig zijn op te vragen doen we het volgende.

Klik *Instances*. Selecteer vervolgens de server-instance en klik op *Connect*.



AWS stelt een SSH-commando voor met een bepaalde key.

Maar let op, onze key op de laptop kan anders noemen als je andere stappen hebt gevolgd tijdens het aanmaken van het SSH-keypair of indien je reeds een keypair had.



We starten een Powershell of Windows Terminal en plakken het commando, maar passen indien nodig de naam van onze key aan.

Plakken kan in een Powershell venster door op de rechtermuisknop te klikken.

```
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>
```

Zoals je in vorige screenshot kan zien zijn we dan ingelogd op de server. Indien je de connectie wenst te verlaten kan je het commando *exit* of *logout* geven.