



Labo 7 Google Cloud Docker - 03/05/2025



Voorbereiding cloud en Docker

Ik heb ondertussen de credits voor **The Lab - ISB** geïnd en kan nu beginnen aan de labo.

```
./install.sh
$ gcloud components update

Modify profile to update your $PATH and enable shell command completion?
Do you want to continue (Y/n)? y

The Google Cloud SDK installer will now prompt you to update an rc file to bring
the Google Cloud CLIs into your environment.

Enter a path to an rc file to update, or leave blank to use
[/Users/youneselazzouzi/.zshrc]:
Backing up [/Users/youneselazzouzi/.zshrc] to [/Users/youneselazzouzi/.zshrc.backup].
[/Users/youneselazzouzi/.zshrc] has been updated.

==> Start a new shell for the changes to take effect.

Google Cloud CLI works best with Python 3.12 and certain modules.

Download and run Python 3.12 installer? (Y/n)? y

Running Python 3.12 installer, you may be prompted for sudo password...
Password:
```

DSK kan ik vinden op de officiële download website van Google Cloud zelf.

```
~/Downloads/google-cloud-sdk
> gcloud --version

Google Cloud SDK 520.0.0
bq 2.1.15
core 2025.04.25
gcloud-crc32c 1.0.0
gsutil 5.34
```

```

Welcome to Cloud Shell! Type "help" to get started.
To set your Cloud Platform project in this session use `gcloud config set project [PROJECT_ID]`.
You can view your projects by running `gcloud projects list`.
younes_elazzouzi@cloudshell:~$ gcloud projects list
PROJECT_ID: cs2-elazzouzi-younes
NAME: CS2-ElAzzouzi-Younes
PROJECT_NUMBER: 691655510767

PROJECT_ID: panelproject-451608
NAME: PanelProject
PROJECT_NUMBER: 704160297165
younes_elazzouzi@cloudshell:~$ gcloud config set project cs2-elazzouzi-younes 2
ERROR: (gcloud.config.set) unrecognized arguments: 2

To search the help text of gcloud commands, run:
  gcloud help -- SEARCH_TERMS
younes_elazzouzi@cloudshell:~$ gcloud config set project cs2-elazzouzi-younes
Updated property [core/project].
younes_elazzouzi@cloudshell:~ (cs2-elazzouzi-younes)$ █

```

Nu kan ik verdergaan naar het aanmaken het Windows Server 2019 Core aan te maken. (Hier komt IP1 heel goed van pas ;))

- ☐ gcloud compute instances create win-server-core \
- ☐ --zone=europe-west1-b \
- ☐ --image-family=windows-2019-core \
- ☐ --image-project=windows-cloud \
- ☐ --machine-type=n1-standard-1 \
- ☐ --boot-disk-size=50GB \
- ☐ --tags=http-server \
- ☐ --scopes=https://www.googleapis.com/auth/cloud-platform \
- ☐ --metadata=windows-startup-script-ps1="Write-Host 'VM setup complete'"

Ik ga wel nog de firewall voor RDP connectie moeten enablen:

- ☐ gcloud compute firewall-rules create allow-rdp \
- ☐ --allow=tcp:3389 \
- ☐ --direction=INGRESS \
- ☐ --priority=1000 \
- ☐ --network=default \
- ☐ --target-tags=http-server \
- ☐ --source-ranges=0.0.0.0/0 \

☐ --description="Allow RDP access"

```
WARNING: Some requests generated warnings:
- Disk size: '50 GB' is larger than image size: '32 GB'. You might need to resize the root repartition manually if the operating system does not support automatic resizing. See https://cloud.google.com/compute/docs/disks/add-persistent-disk#resize_pd for details.
- You are creating a global DNS VM. VM instances using global DNS are vulnerable to cross-regional outages. To reduce the risk of widespread service disruption, use zonal DNS instead. Learn more at https://cloud.google.com/compute/docs/networking/zonal-dns

NAME: win-server-core
ZONE: europe-west1-b
MACHINE_TYPE: n1-standard-1
PREEMPTIBLE:
INTERNAL_IP: 10.132.0.6
EXTERNAL_IP: 104.155.84.113
STATUS: RUNNING
younes_elazzouzi@cloudshell:~ (cs2-elazzouzi-younes)$
```

Nu ga ik een windows wachtwoord instellen:

☐ gcloud compute reset-windows-password win-server-core --zone=europe-west1-b

```
younes_elazzouzi@cloudshell:~ (cs2-elazzouzi-younes)$ gcloud compute reset-windows-password win-server-core --zone=europe-west1-b

This command creates an account and sets an initial password for the user [younes_elazzouzi] if the account does not already exist. If the account already exists, resetting the password can cause the LOSS OF ENCRYPTED DATA secured with the current password, including files and stored passwords.

For more information, see:
https://cloud.google.com/compute/docs/operating-systems/windows#reset

Would you like to set or reset the password for [younes_elazzouzi] (Y/n)? Y

Resetting and retrieving password for [younes_elazzouzi] on [win-server-core]
Updated [https://www.googleapis.com/compute/v1/projects/cs2-elazzouzi-younes/zones/europe-west1-b/instances/win-server-core].

WARNING: Some requests generated warnings:
- Your VM is using global DNS. VM instances using global DNS are vulnerable to cross-regional outages. To reduce the risk of widespread service disruption, use zonal DNS instead. Learn more at https://cloud.google.com/compute/docs/networking/zonal-dns

ip_address: 104.155.84.113
password: +bkdj4j88|&FPI\
username: younes_elazzouzi
```

Credentials:

```
password: +bkdj4j88|&FPI\
username: younes_elazzouzi
```

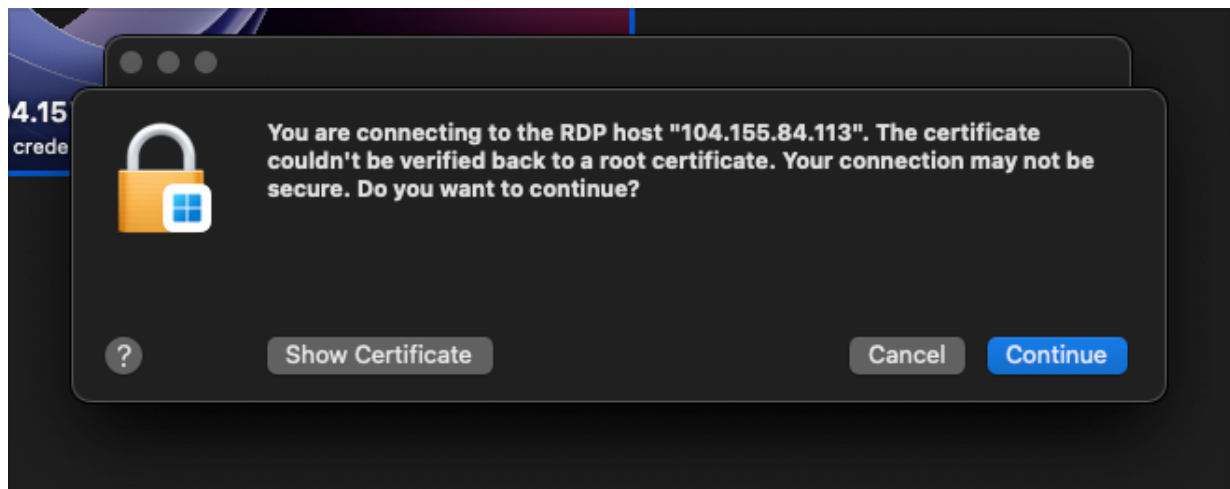
☐ password: +bkdj4j88|&FPI\
☐ username: younes_elazzouzi

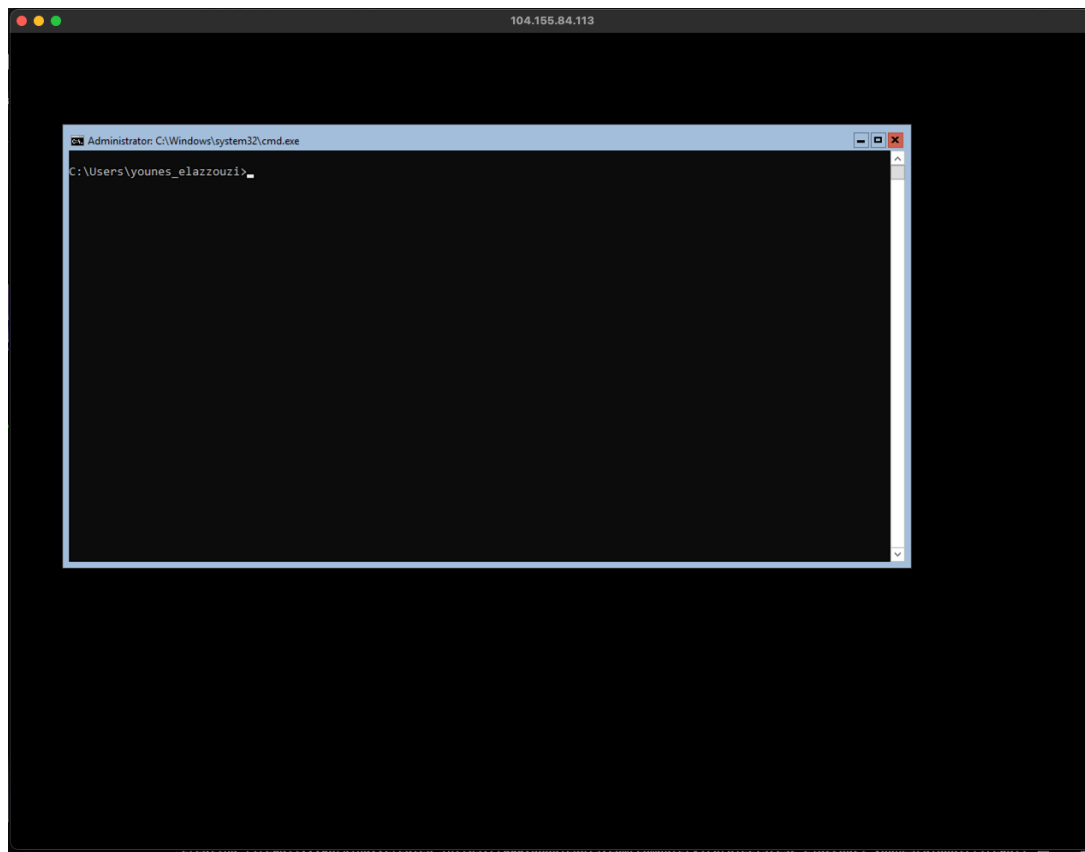
⚠ RDP verbinding met de Server

Hiervoor kan ik het mij makkelijker maken door de volgende app in de app store te gebruiken:



Nu add ik de credentials aan de applicatie en log ik in met het password en login van eerder.





⚠ Docker installatie

Hiervoor open ik Powershell en voer hetvolgende uit:

- ☐ Invoke-WebRequest -UseBasicParsing "https://raw.githubusercontent.com/microsoft/Windows-Containers/Main/helpful_tools/Install-DockerCE/install-docker-ce.ps1" -OutFile install-docker-ce.ps1
- ☐ .\install-docker-ce.ps1

```
Administrator: C:\Windows\System32\WindowsPowerShell\v1.0\powershell.exe
104.155.84.113
Querying status of Windows feature: Containers...
Feature Containers is already enabled.
Docker default
Checking Docker versions
Downloading https://download.docker.com/win/static/stable/x86_64/docker-28.1.1.zip to C:\Users\younes_elazzouzi\
rs\younes_elazzouzi\docker-downloads\docker-28.1.1.zip
Installing Docker... C:\Users\younes_elazzouzi\docker-downloads\docker-28.1.1\docker\docker.exe
Installing Docker daemon... C:\Users\younes_elazzouzi\docker-downloads\docker-28.1.1\docker\dockerd.exe
Configuring the docker service...
Waiting for Docker daemon...
Successfully connected to Docker Daemon.
The following images are present on this machine:
REPOSITORY TAG IMAGE ID CREATED SIZE
Script complete!
PS C:\Windows\system32> docker --version
Docker version 28.1.1, build 4eba377
PS C:\Windows\system32> docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
PS C:\Windows\system32>
```

Wachten tot de installatie voltooid is, kan zijn dat de connectie verloren gaat en checken met:

- ☐ **docker --version**
- ☐ **docker images**

⚠ Image maken van de VM en VM deletion

Status	Name	Zone	Internal IP	External IP	Connect
<input checked="" type="checkbox"/>	win-server-core	europe-west1-b	10.132.0.6 (nic0)	104.155.84.113 (nic0)	RDP

Filter Enter property name or value

Status	Name	Zone	Recommendations	In use by	Internal IP	External IP	Connect
<input checked="" type="checkbox"/>	win-server-core	europe-west1-b			10.132.0.6 (nic0)	104.155.84.113	RDP

Related actions

Explore Backup and DR **New**

Back up your VMs and set up disaster recovery

View billing report

View and manage your Compute Engine billing

Monitor VMs

View outlier VMs across metrics like CPU and network

Explore VM logs

View, search, analyze, and download VM instance logs

Set up firewall rules

Control traffic to and from a VM instance

Patch management

Schedule patch updates and view patch compliance on VM instances

Load balance between VMs

Set up Load Balancing for your

- Start / Resume
- Stop
- Suspend
- Reset
- Run maintenance
- Delete
- Create a group based on this VM **Preview**
- View network details
- Create new machine image**
- View logs
- View monitoring



Create a machine image

A machine image contains a VM's properties, metadata, permissions, and data from all its attached disks. You can use a machine image to create, backup, or restore a VM. [Learn more](#)

Name *

win-docker-server

Name is permanent

Description

Source VM instance *

win-server-core

Location



Multi-regional



Regional

Select location

eu (multiple regions in European Union)

Encryption



Google-managed encryption key

Keys owned by Google



Cloud KMS key

Keys owned by customers

Create

Cancel

Equivalent command line

Equivalent REST

Compute Engine

Machine images

Create machine image Import machine image Refresh Delete Learn

A machine image contains a VM's properties, metadata, permissions, and data from all its attached disks. You can use a machine image to create, backup, or restore a VM. [Learn more](#)

Filter Enter property name or value

Status	Name	Source instance	Machine type	Architecture	Storage location	Creation time	Actions
	win-docker-server	win-server-core	n1-standard-1	x86/64		May 3, 2025, 1:30:32 PM UTC+02:00	

<input type="checkbox"/>	Status	Name	Source instance	Machine type	Architecture	Storage location	Creation time	Actions
<input type="checkbox"/>	✓	win-docker-server	win-server-core	n1-standard-1	x86/64	eu	May 3, 2025, 1:30:32 PM UTC+02:00	

Dit kan eventjes duren.
Nu kan ik de aangemaakt VM verwijderen.

Related actions

Explore Backup and DR View billing report Monitor VMs

Explore VM logs Set up firewall rules Patch management

Load balance

Delete win-server-core

Are you sure you want to delete instance win-server-core?

This will delete boot disk win-server-core

The VM will shut down. If processes are still running, the VM will be forced to stop prior to deletion and files may get corrupted.

☒ Skip graceful shutdown (if applicable) Beta

Cancel Delete

```
l:~ (cs2-elazzouzi-younes)$ gcloud compute firewall-rules create allow-rdp \
```

⚠ Nieuwe VM Instance maken vanuit de Image

Dit kan ik doen door de volgende commando te gebruiken.

○ gcloud compute instances create win-iis-server \

- ☐ --zone=europe-west1-b \
- ☐ --machine-type=n1-standard-1 \
- ☐ --source-machine-image=win-docker-server \
- ☐ --boot-disk-size=50GB \
- ☐ --tags=http-server \
- ☐ --scopes=https://www.googleapis.com/auth/cloud-platform

```
younes_elazzouzi@cloudshell:~ (cs2-elazzouzi-younes)$ gcloud compute instances create win-iis-server \
--zone=europe-west1-b \
--machine-type=n1-standard-1 \
--source-machine-image=win-docker-server \
--boot-disk-size=50GB \
--tags=http-server \
--scopes=https://www.googleapis.com/auth/cloud-platform
WARNING: You have selected a disk size of under 200GB. This may result in poor I/O performance. For more information, see: https://developers.google.com/compute/docs/disks#performance.
Created [https://www.googleapis.com/compute/v1/projects/cs2-elazzouzi-younes/zones/europe-west1-b/instances/win-iis-server].
WARNING: Some requests generated warnings:
- You are creating a global DNS VM. VM instances using global DNS are vulnerable to cross-regional outages. To reduce the risk of widespread service disruption, use zonal DNS instead. Learn more at https://cloud.google.com/compute/docs/networking/zonal-dns

NAME: win-iis-server
ZONE: europe-west1-b
MACHINE_TYPE: n1-standard-1
PREEMPTIBLE:
INTERNAL_IP: 10.132.0.9
EXTERNAL_IP: 104.155.84.113
STATUS: RUNNING
younes_elazzouzi@cloudshell:~ (cs2-elazzouzi-younes)$
```

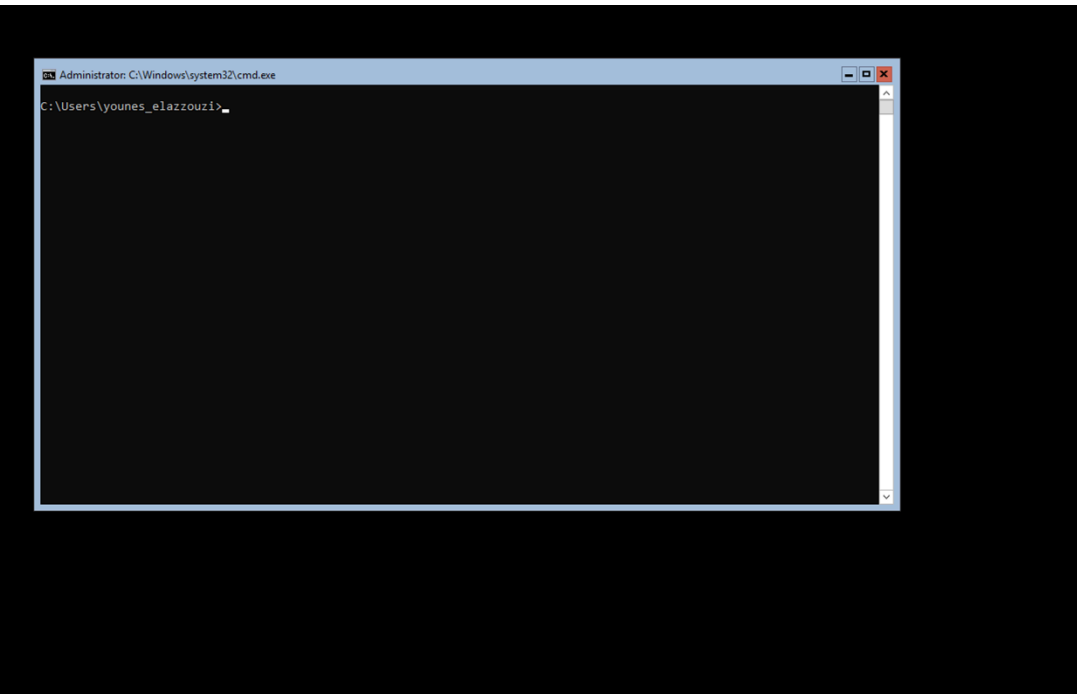
Passwoord ophalen voor RDP:

- ☐ gcloud compute reset-windows-password win-iis-server --zone=europe-west1-b

Credentials:

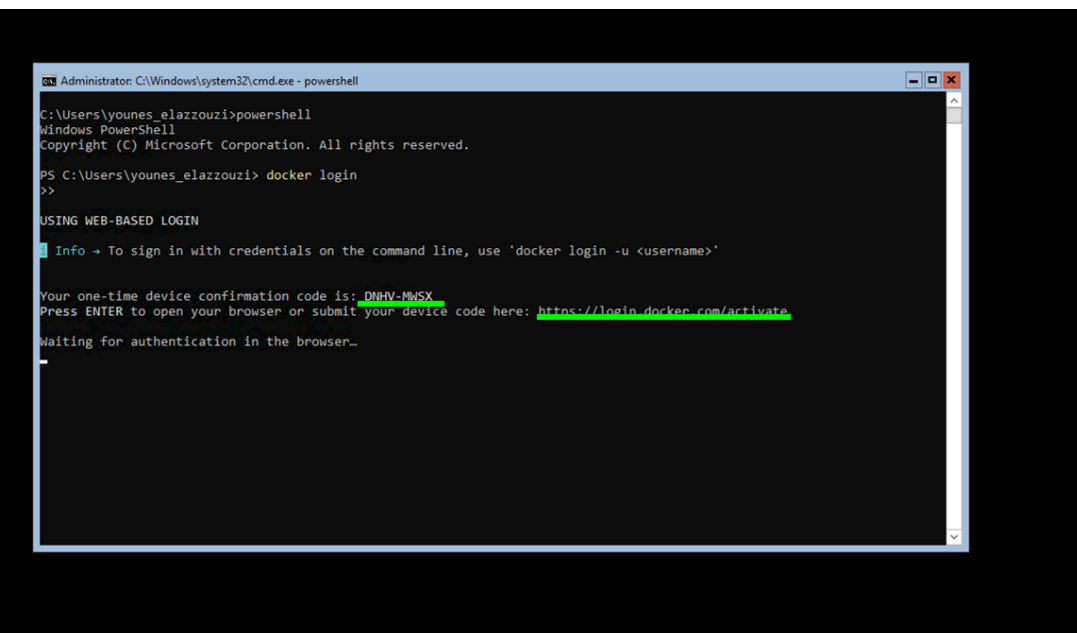
- ☐ password: KTr\$D<57cFXwdf0
- ☐ username: younes_elazzouzi

En dan ga ik weer RDP connecten via de Windows App.



Dan ga ik naar:

- ☐ powershell
- ☐ docker login
- ☐ login met mijn credentials



Ik ga nu naar de link en gebruik de one-time pass:

<https://login.docker.com/activate>

```
Login Succeeded
PS C:\Users\younes_elazzouzi> _
```

Nu voer ik de volgende commando's uit in powershell voor de mappenstructuur te maken.

- ☐ New-Item -Path C:\my-windows-app -ItemType Directory
- ☐ Set-Location C:\my-windows-app
- ☐ New-Item -Path .\content -ItemType Directory

```
Directory: C:\

Mode                LastWriteTime         Length Name
----                -
d-----          5/3/2025  11:53 AM                my-windows-app

Directory: C:\my-windows-app

Mode                LastWriteTime         Length Name
----                -
d-----          5/3/2025  11:53 AM                content

PS C:\my-windows-app> _
```

Nu ga ik een HTML pagina toevoegen:

- ☐ Set-Content -Path .\content\index.html -Value "<h1>Hello from IIS on Docker!</h1>"

En nu ga ik verder met het aanmaken van een DockerFile.

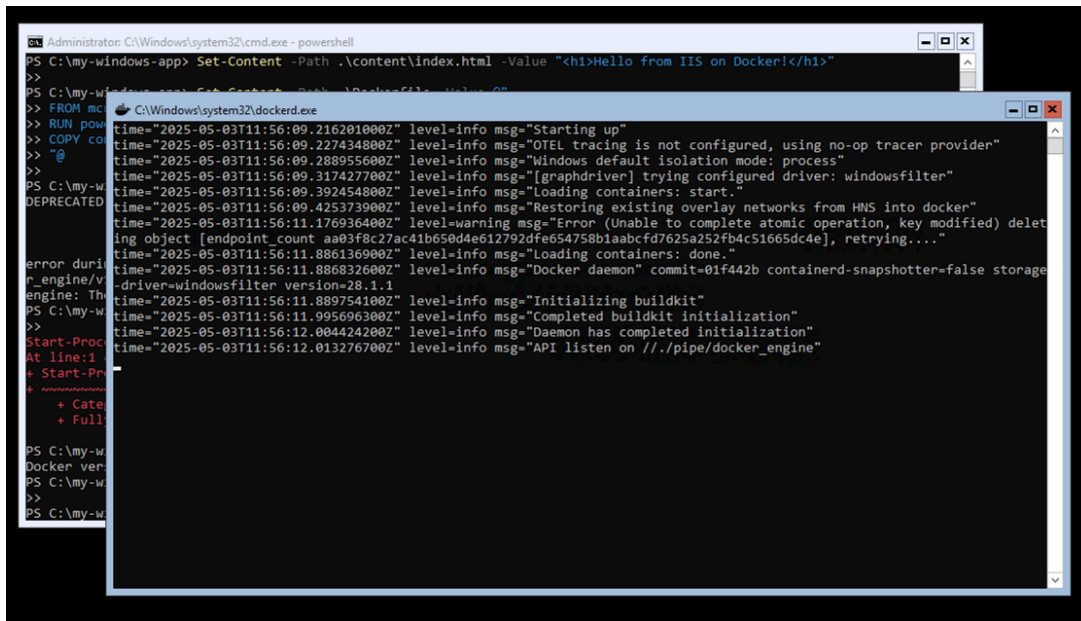
- ☐ Set-Content -Path .\Dockerfile -Value @"
- ☐ FROM mcr.microsoft.com/windows/servercore:ltsc2019
- ☐ RUN powershell -Command "Install-WindowsFeature -Name Web-Server"
- ☐ COPY content/ C:/inetpub/wwwroot

☐ CMD ["ping", "-t", "localhost"]

☐ "@"

Docker was niet opgestart:

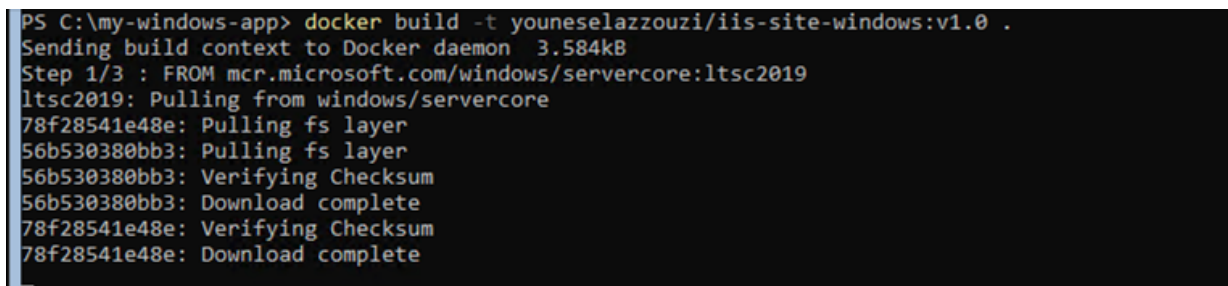
☐ Start-Process dockerd



```
Administrator: C:\Windows\system32\cmd.exe - powershell
PS C:\my-windows-app> Set-Content -Path .\content\index.html -Value "<h1>Hello from IIS on Docker!</h1>"
>>
PS C:\my-windows-app> Set-Content -Path .\Dockerfile -Value "
FROM mcr.microsoft.com/windows/servercore:ltsc2019
RUN powershell ping -t localhost
COPY content\index.html .
@"
PS C:\my-windows-app> dockerd.exe
time="2025-05-03T11:56:09.216201000Z" level=info msg="Starting up"
time="2025-05-03T11:56:09.227434800Z" level=info msg="OTEL tracing is not configured, using no-op tracer provider"
time="2025-05-03T11:56:09.288955600Z" level=info msg="Windows default isolation mode: process"
time="2025-05-03T11:56:09.317427700Z" level=info msg="[graphdriver] trying configured driver: windowsfilter"
time="2025-05-03T11:56:09.392454800Z" level=info msg="Loading containers: start."
time="2025-05-03T11:56:09.425373900Z" level=info msg="Restoring existing overlay networks from HMS into docker"
time="2025-05-03T11:56:11.176936400Z" level=warning msg="Error (Unable to complete atomic operation, key modified) deleting object [endpoint_count aa03f8c27ac41b650d4e612792dfe654758b1aabcfd7625a252fb4c51665dc4e], retrying..."
time="2025-05-03T11:56:11.886136900Z" level=info msg="Loading containers: done."
time="2025-05-03T11:56:11.886832600Z" level=info msg="Docker daemon commit=01f442b containerd-snapshotter=false storage-driver=windowsfilter version=28.1.1"
time="2025-05-03T11:56:11.889754100Z" level=info msg="Initializing buildkit"
time="2025-05-03T11:56:11.995696300Z" level=info msg="Completed buildkit initialization"
time="2025-05-03T11:56:12.004424200Z" level=info msg="Daemon has completed initialization"
time="2025-05-03T11:56:12.013276700Z" level=info msg="API listen on //./pipe/docker_engine"
error during engine/ver
engine: Th
PS C:\my-w
>>
Start-Proce
At line:1
+ Start-Pro
+ Start-Pro
+ Cate
+ Full
PS C:\my-w
Docker ver
PS C:\my-w
>>
PS C:\my-w
```

En dan voer ik uit:

☐ docker build -t youneselazzouzi/iis-site-windows:v1.0 .



```
PS C:\my-windows-app> docker build -t youneselazzouzi/iis-site-windows:v1.0 .
Sending build context to Docker daemon 3.584kB
Step 1/3 : FROM mcr.microsoft.com/windows/servercore:ltsc2019
ltsc2019: Pulling from windows/servercore
78f28541e48e: Pulling fs layer
56b530380bb3: Pulling fs layer
56b530380bb3: Verifying Checksum
56b530380bb3: Download complete
78f28541e48e: Verifying Checksum
78f28541e48e: Download complete
```

Nu even wachten

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

PS C:\Users\younes_elazzouzi> cd C:\my-windows-app
>>
PS C:\my-windows-app> docker build -t youneselazzouzi/iis-site-windows:v1.0 .
>>
DEPRECATED: The legacy builder is deprecated and will be removed in a future release.
Install the buildx component to build images with BuildKit:
https://docs.docker.com/go/buildx/

error during connect: this error may indicate that the docker daemon is not running: Post "http://%2F%2F.%2Fpipe%2Fdocke
r_engine/v1.49/build?dockerfile=Dockerfile&t=youneselazzouzi%2Fiis-site-windows%3Av1.0&version=1": open //.pipe/docker_
engine: The system cannot find the file specified.
PS C:\my-windows-app> docker build -t youneselazzouzi/iis-site-windows:v1.0 .
Sending build context to Docker daemon 3.584kB
Step 1/3 : FROM mcr.microsoft.com/windows/servercore:lts2019
--> c6a454740582
Step 2/3 : RUN powershell -Command "Install-WindowsFeature -Name Web-Server"
--> Using cache
--> e429394c62b1
Step 3/3 : COPY content/ C:/inetpub/wwwroot
--> Using cache
--> fe8bb0ca5908
Successfully built fe8bb0ca5908
Successfully tagged youneselazzouzi/iis-site-windows:v1.0
PS C:\my-windows-app>
```

En daarna run ik de dockerfile:

☐ docker run -d -p 80:80 youneselazzouzi/iis-site-windows:v1.0

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

PS C:\Users\younes_elazzouzi> cd C:\my-windows-app
>>
PS C:\my-windows-app> docker build -t youneselazzouzi/iis-site-windows:v1.0 .
>>
DEPRECATED: The legacy builder is deprecated and will be removed in a future release.
Install the buildx component to build images with BuildKit:
https://docs.docker.com/go/buildx/

error during connect: this error may indicate that the docker daemon is not running: Post "http://%2F%2F.%2Fpipe%2Fdocke
r_engine/v1.49/build?dockerfile=Dockerfile&t=youneselazzouzi%2Fiis-site-windows%3Av1.0&version=1": open //.pipe/docker_
engine: The system cannot find the file specified.
PS C:\my-windows-app> docker build -t youneselazzouzi/iis-site-windows:v1.0 .
Sending build context to Docker daemon 3.584kB
Step 1/3 : FROM mcr.microsoft.com/windows/servercore:lts2019
--> c6a454740582
Step 2/3 : RUN powershell -Command "Install-WindowsFeature -Name Web-Server"
--> Using cache
--> e429394c62b1
Step 3/3 : COPY content/ C:/inetpub/wwwroot
--> Using cache
--> fe8bb0ca5908
Successfully built fe8bb0ca5908
Successfully tagged youneselazzouzi/iis-site-windows:v1.0
PS C:\my-windows-app> docker run -d -p 80:80 youneselazzouzi/iis-site-windows:v1.0
>>
ec8a385447f713112797b5cda0f3918daeead60fadfa915fca7f5993b7e97c43
```

Daarna kan ik surfen op mijn mac naar de IP adres van de vm en zou ik de HTML page te zien krijgen.

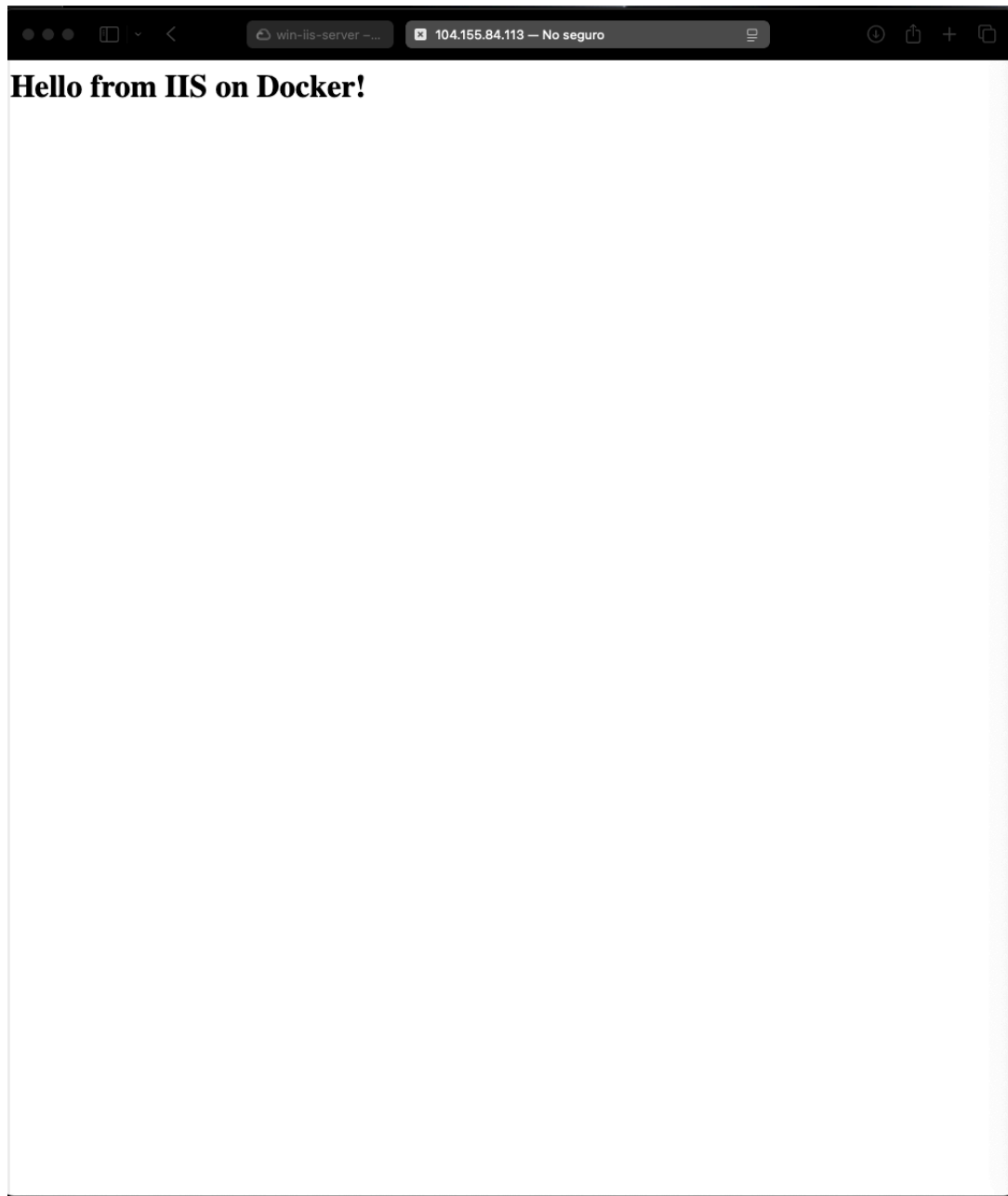


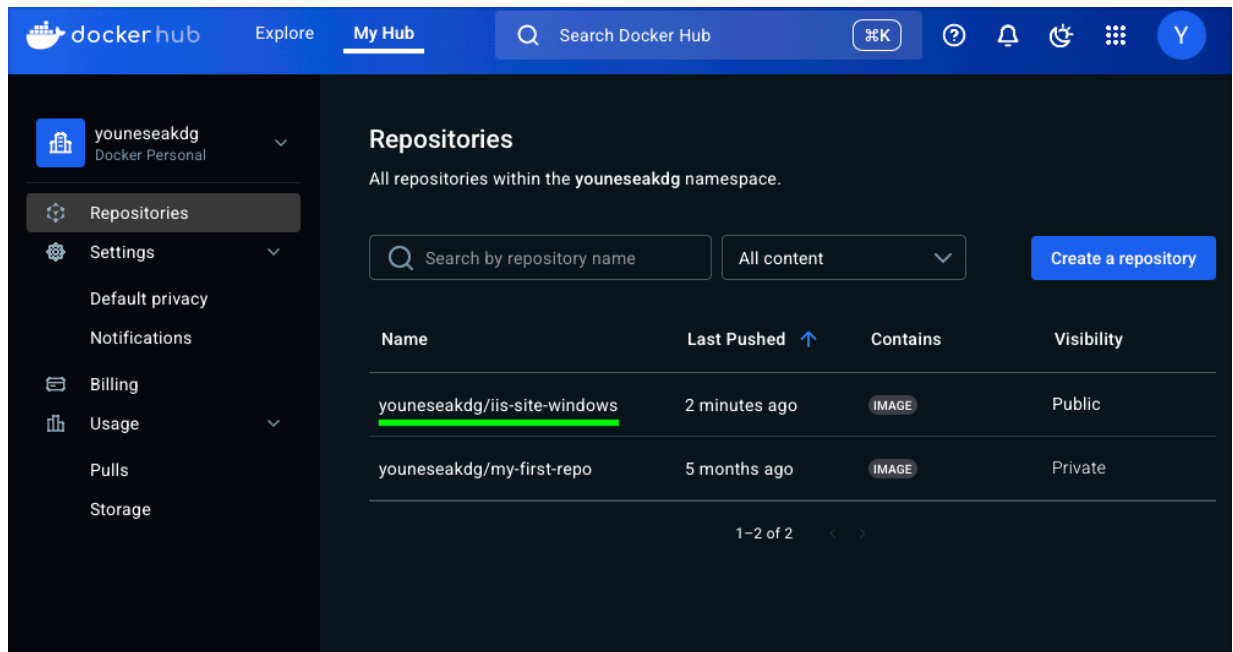
Image uploaden naar Docker Registry

Hiervoor gebruik ik de volgende commando's:

- ☐ docker images (om te zien naar de naam)
- ☐ docker tag youneselazzouzi/iis-site-windows:v1.0 youneseakdg/iis-site-windows:v1.0
- ☐ docker push youneseakdg/iis-site-windows:v1.0

```
PS C:\my-windows-app> docker tag youneselazzouzi/iis-site-windows:v1.0 youneseakdg/iis-site-windows:v1.0
PS C:\my-windows-app> docker push youneseakdg/iis-site-windows:v1.0
The push refers to repository [docker.io/youneseakdg/iis-site-windows]
0ffd5ad31d65: Pushed
47587e5d4866: Pushed
fcc944eec808: Pushing [>] 17.99MB/1.053GB
189e610b66c2: Pushing [>] 44.04MB/3.819GB
```

En ga ik dan naar de docker website om te zien of ie er komt te staan.



⚠️ **Schrijf een PowerShell script om de container te deployen in de Cloud**

- ☐ younes_elazzouzi@cloudshell:~ (cs2-elazzouzi-younes)\$ pwsh
- ☐ PowerShell 7.4.6
- ☐ PS>nano deploy.ps1
- ☐ param (
- ☐ [string]\$Action = ""
- ☐)
- ☐
- ☐ \$instanceName = "win-docker-iis"
- ☐ \$zone = "europe-west1-b"
- ☐ \$machineImage = "win-docker-server"

- ☐ \$dockerImage = "youneseakdg/iis-site-windows:v1.0"
- ☐
- ☐ if (\$Action -eq "") {
- ☐ gcloud compute instances create \$instanceName `
- ☐ --zone=\$zone `
- ☐ --machine-type=n1-standard-1 `
- ☐ --source-machine-image=\$machineImage `
- ☐ --boot-disk-size=50GB `
- ☐ --tags=http-server `
- ☐ --metadata="windows-startup-script-ps1=docker pull
\$dockerImage; docker run -d -p 80:80 \$dockerImage"
- ☐ }
- ☐ elseif (\$Action -eq "-delete") {
- ☐ gcloud compute instances delete \$instanceName --zone=\$zone --
quiet
- ☐ }
- ☐ else {
- ☐ Write-Host "Foute optie. Gebruik geen argument of gebruik '-delete'."
- ☐ }
- ☐
- ☐ PS>.\deploy.ps1