

# Documentatie Apache Web Server opzetten in virtuele machine en deployment op ubuntu server

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Documentatie type	Link
Online markdown documentation	<a href="#">github.com</a>
Online pdf documentation	<a href="#">github.com</a>

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## Ubuntu desktop in Virtual box

Moet nog worden bijgewerkt

## Ubuntu server on Bare-metal

Nieuwe user aanmaken voor de webserver

```
su #login to root user
adduser webserverg56
```

```
$ cat /etc/passwd | grep webserverg56
webserverg56:x:1002:1002:,,,:/home/webserverg56:/bin/bash
```

```
usermod -aG sudo webserverg56
su - webserverg56
```

## Installatie Apache Web Server

```
sudo apt install apache2 -y
```

```
$ systemctl status apache2
```

- apache2.service - The Apache HTTP Server

```
Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)
```

```
Active: failed (Result: exit-code) since Fri 2022-03-18 16:32:58 UTC; 14s ago
```

```
Docs: https://httpd.apache.org/docs/2.4/
```

```

cplx webserv56@cplex:~
webserv56@cplex:~$ sudo apt install apache2 -y
[sudo] password for webserv56:
Sorry, try again.
[sudo] password for webserv56:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  at-spi2-core ca-certificates-java fonts-dejavu-extra java-common libatk-bridge2.0-0 libatk-wrapper-java libatk-wrapper-java-jni libatk1.0-0 libatk1.0-data
  libatspi2.0-0 libavahi-client3 libavahi-common-data libavahi-common3 libcups2 libfwpdplugin1 libgif7 libgraphite2-3 libharfbuzz0b liblcms2-2 libpccsclite1
  openjdk-11-jre openjdk-11-jre-headless python3-stem
Use 'sudo apt autoremove' to remove them.
Suggested packages:
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom www-browser
The following NEW packages will be installed:
  apache2
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 95.5 kB of archives.
After this operation, 543 kB of additional disk space will be used.
Get:1 http://nl.archive.ubuntu.com/ubuntu focal-updates/main amd64 apache2 amd64 2.4.41-4ubuntu3.10 [95.5 kB]
Fetched 95.5 kB in 0s (425 kB/s)
Selecting previously unselected package apache2.
(Reading database ... 157985 files and directories currently installed.)
Preparing to unpack .../apache2_2.4.41-4ubuntu3.10_amd64.deb ...
Unpacking apache2 (2.4.41-4ubuntu3.10) ...
Setting up apache2 (2.4.41-4ubuntu3.10) ...
Job for apache2.service failed because the control process exited with error code.
See "systemctl status apache2.service" and "journalctl -xe" for details.
invoke-rc.d: initscript apache2, action "restart" failed.
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)
   Active: failed (Result: exit-code) since Fri 2022-03-18 17:10:43 UTC; 10ms ago
   Docs: https://httpd.apache.org/docs/2.4/
   Process: 2453 ExecStart=/usr/sbin/apachectl start (code=exited, status=1/FAILURE)

Mar 18 17:10:43 cplex apachectl[2463]: AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.1.1. Set the 'ServerName' di
rective globally to suppress this message
Mar 18 17:10:43 cplex apachectl[2463]: (98)Address already in use: AH00072: make_sock: could not bind to address [::]:80
Mar 18 17:10:43 cplex apachectl[2463]: (98)Address already in use: AH00072: make_sock: could not bind to address 0.0.0.0:80
Mar 18 17:10:43 cplex apachectl[2463]: no listening sockets available, shutting down
Mar 18 17:10:43 cplex apachectl[2463]: AH00015: Unable to open logs
Mar 18 17:10:43 cplex apachectl[2453]: Action 'start' failed.
Mar 18 17:10:43 cplex apachectl[2453]: The Apache error log may have more information.
Mar 18 17:10:43 cplex systemd[1]: apache2.service: Control process exited, code=exited, status=1/FAILURE
Mar 18 17:10:43 cplex systemd[1]: apache2.service: Failed with result 'exit-code'.
Mar 18 17:10:43 cplex systemd[1]: Failed to start The Apache HTTP Server.
Processing triggers for systemd (245.4-4ubuntu3.15) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for ufw (0.36-6ubuntu1) ...
webserv56@cplex:~$

```

Na installatie en bij het runnen van systemctl status wordt duidelijk dat de server nog niet actief is. Het probleem kon verholpen worden door nginx te verwijderen, hierdoor kwam poort 80 vrij; en kon apache2 gewoon worden geïnstalleerd.

```
Mar 18 20:41:11 cplex apachectl[9167]: (98)Address already in use: AH00072:
make_sock: could not bind to address [::]:80
```

```
Mar 18 20:41:11 cplex apachectl[9167]: (98)Address already in use: AH00072:
make_sock: could not bind to address 0.0.0.0:80
```

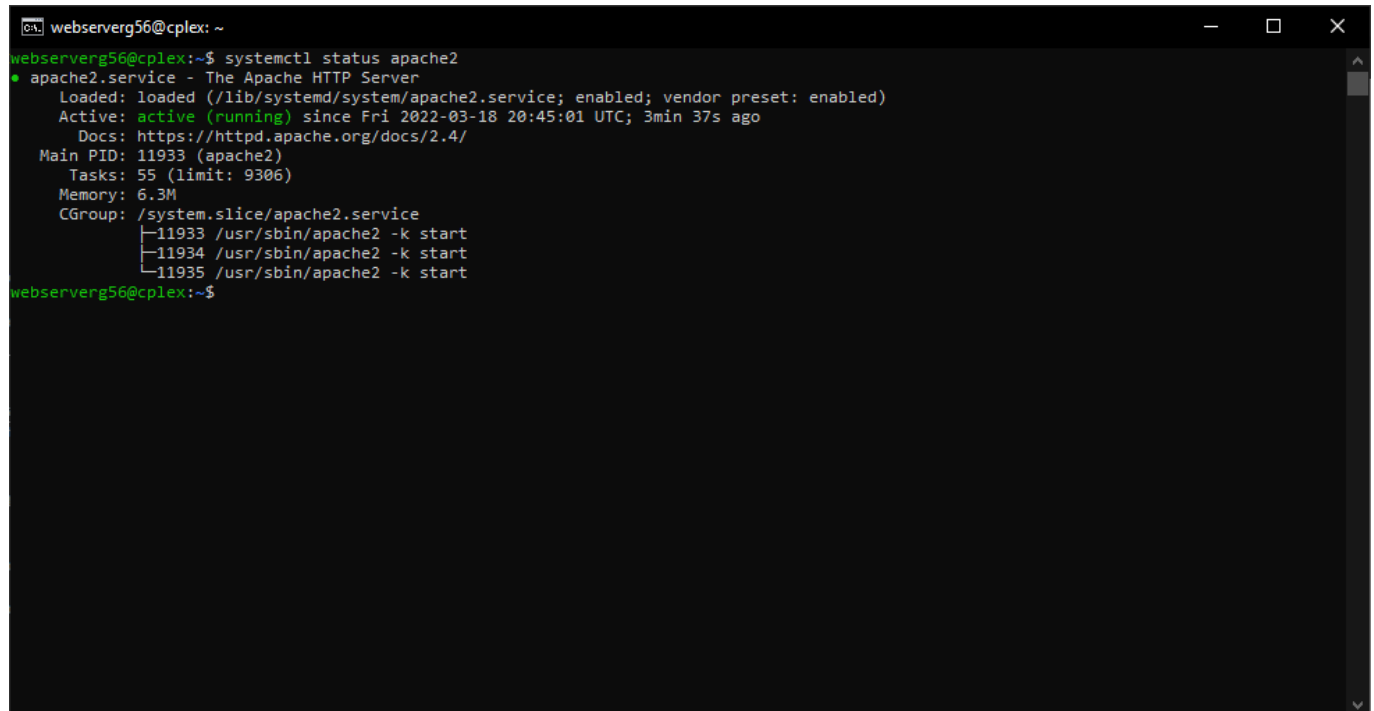
## Verwijderen van nginx

```
lsof -i :80 #see what application is using port 80
```

```
sudo apt purge nginx nginx-common #for me nginx was using port 80 (not in use
anymore)
```

```
systemctl stop apache2 #restart doesn't work
```

```
systemctl start apache2
systemctl status apache2
```



```
webserver56@cplex: ~
webserver56@cplex:~$ systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)
   Active: active (running) since Fri 2022-03-18 20:45:01 UTC; 3min 37s ago
     Docs: https://httpd.apache.org/docs/2.4/
   Main PID: 11933 (apache2)
    Tasks: 55 (limit: 9306)
   Memory: 6.3M
   CGroup: /system.slice/apache2.service
           └─11933 /usr/sbin/apache2 -k start
             └─11934 /usr/sbin/apache2 -k start
               └─11935 /usr/sbin/apache2 -k start
webserver56@cplex:~$
```

## Portforwarding Apache2

Apache2 gebruikt nu poort 80. Dus deze moeten we nu via onze ISP gaan open zetten.

```
$ lsof -i :80
COMMAND  PID    USER   FD   TYPE DEVICE SIZE/OFF NODE NAME
apache2 11933   root    4u    IPv6 131563      0t0  TCP *:http (LISTEN)
apache2 11934 www-data 4u    IPv6 131563      0t0  TCP *:http (LISTEN)
apache2 11935 www-data 4u    IPv6 131563      0t0  TCP *:http (LISTEN)
```

Opgelet: onderstaande poorten **kan je niet gebruiken!**

- TCP-poorten: 25, 53, 135, 137, 138, 139, 161, 162, 445 en 1080
- UDP-poorten: 53, 135, 137, 139, 161 en 162

Poortnummers mogen niet overlappen, de beginpoort moet lager zijn dan de eindpoort en de eindpoort mag niet hoger zijn dan 65535.

Lokaal IP-adres	Beginpoort (extern)	Eindpoort (extern)	Beginpoort (intern)	Eindpoort (intern)	Protocol	Status
192.168.0.252	22	22	22	22	TCP	Actief
192.168.0.252	3306	3306	3306	3306	TCP	Actief
192.168.0.252	80	80	80	80	TCP	Actief

**Regel toevoegen** ➔

**Wijzigingen opslaan** ➔

"Portforwarding van poort 80 voor apache2 (3306 en 22 voor sql-server en ssh)"

**Apache2 Ubuntu Default Page**

**It works!**

This is the default welcome page used to test the correct operation of the Apache2 server after installation on Ubuntu systems. It is based on the equivalent page on Debian, from which the Ubuntu Apache packaging is derived. If you can read this page, it means that the Apache HTTP server installed at this site is working properly. You should **replace this file** (located at `/var/www/html/index.html`) before continuing to operate your HTTP server.

If you are a normal user of this web site and don't know what this page is about, this probably means that the site is currently unavailable due to maintenance. If the problem persists, please contact the site's administrator.

**Configuration Overview**

Ubuntu's Apache2 default configuration is different from the upstream default configuration, and split into several files optimized for interaction with Ubuntu tools. The configuration system is **fully documented in `/usr/share/doc/apache2/README.Debian.gz`**. Refer to this for the full documentation. Documentation for the web server itself can be found by accessing the **manual** if the `apache2-doc` package was installed on this server.

The configuration layout for an Apache2 web server installation on Ubuntu systems is as follows:

```

/etc/apache2/
|-- apache2.conf
|   |-- ports.conf
|-- mods-enabled
|   |-- *.load
|   |-- *.conf
|-- conf-enabled
|   |-- *.conf
|-- sites-enabled
|   |-- *.conf

```

- `apache2.conf` is the main configuration file. It puts the pieces together by including all remaining configuration files when starting up the web server.
- `ports.conf` is always included from the main configuration file. It is used to determine the listening ports for incoming connections, and this file can be customized anytime.
- Configuration files in the `mods-enabled/`, `conf-enabled/` and `sites-enabled/` directories contain particular configuration snippets which manage modules, global configuration fragments, or virtual host configurations, respectively.
- They are activated by symlinking available configuration files from their respective

"Benaderen van jorisduyse.com"

## Installatie van website voorbeeld

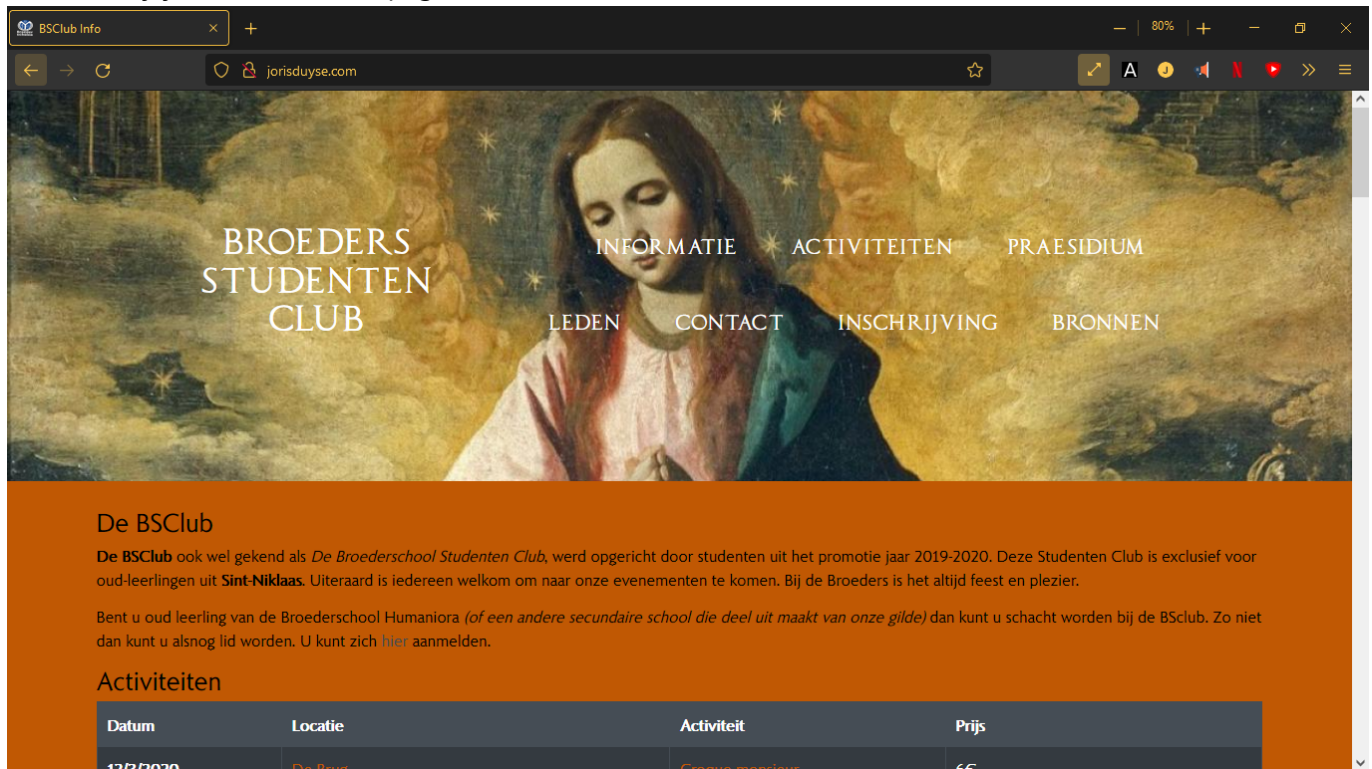
```
$ ls
index.html  index.nginx-debian.html
$ sudo rm index.html | sudo rm index.nginx-debian.html #remove autogenerated
index.html
```

```
$ sudo git clone https://github.com/bsclub/bsclub.github.io.git #clone old website
example
Cloning into 'bsclub.github.io'...
remote: Enumerating objects: 342, done.
remote: Counting objects: 100% (342/342), done.
remote: Compressing objects: 100% (294/294), done.
remote: Total 342 (delta 49), reused 341 (delta 48), pack-reused 0
Receiving objects: 100% (342/342), 2.98 MiB | 16.78 MiB/s, done.
Resolving deltas: 100% (49/49), done.
```

```
$ ls #oops forgot about folder creation with git
bsclub.github.io  design.css  Fonts  Images  index.html  register.html
$ cd bsclub.github.io/
webserverg56@cplex:/var/www/html/bsclub.github.io$ sudo mv .* ../
webserverg56@cplex:/var/www/html/bsclub.github.io$ cd ..
$ sudo rm -r ./bsclub.github.io/

$ ls #done!
bsclub.github.io  design.css  Fonts  Images  index.html  register.html
```

Eens een kijkje nemen naar de pagina die nu online staat!



## Http to Https with SSL

Http  to Https  with SSL

```
$ sudo a2enmod ssl #enable the ssl service if not already enabled
Considering dependency setenvif for ssl:
Module setenvif already enabled
Considering dependency mime for ssl:
Module mime already enabled
Considering dependency socache_shmcb for ssl:
Enabling module socache_shmcb.
Enabling module ssl.
See /usr/share/doc/apache2/README.Debian.gz on how to configure SSL and create
self-signed certificates.
To activate the new configuration, you need to run:
    systemctl restart apache2
```

```
sudo service apache2 restart #restart apache2 for changes to take effect
```

Eerst maken we een backup van `/etc/apache2/sites-available/default-ssl.conf`

```
sudo cp default-ssl.conf default-ssl.conf_back
```

We voegen volgende lijnen toe aan het configuratie bestand `/etc/apache2/sites-available/default-ssl.conf` onder **<VirtualHost \_default\_:443>**

```
ServerName jorisduyse.com
DocumentRoot /var/www/html
```

En onder **SSLEngine on** voegen we toe: (Deze bestanden moeten uiteraard nog aangemaakt worden)

```
SSLCertificateFile      /etc/apache2/ssl/jorisduyse.com.crt
SSLCertificateKeyFile   /etc/apache2/ssl/jorisduyse.com.key
```

```
$ sudo mkdir /etc/apache2/ssl/sudo openssl req -x509 -nodes -days 365 -newkey
rsa:2048 -
keyout /etc/apache2/ssl/jorisduyse.com.key -out
/etc/apache2/ssl/jorisduyse.com.crt
Generating a RSA private key
***removed**
***removed**
writing new private key to '/etc/apache2/ssl/jorisduyse.com.key'
-----
You are about to be asked to enter information that will be incorporated
into your certificate request.
What you are about to enter is what is called a Distinguished Name or a DN.
There are quite a few fields but you can leave some blank
For some fields there will be a default value,
If you enter '.', the field will be left blank.
-----
Country Name (2 letter code) [AU]:BE
State or Province Name (full name) [Some-State]:Oost-Vlaanderen
Locality Name (eg, city) []:Gent
Organization Name (eg, company) [Internet Widgits Pty Ltd]:jorisduyse
Organizational Unit Name (eg, section) []:jorisduyse
Common Name (e.g. server FQDN or YOUR name) []:jorisduyse.com
Email Address []:jorisduyse@protonmail.com
```

```
webserver56@cplex: /etc/apache2/ssl$ ls -l
total 8
-rw-r--r-- 1 root root 1505 Mar 18 23:01 jorisduyse.com.crt
-rw----- 1 root root 1700 Mar 18 22:56 jorisduyse.com.key
webserver56@cplex: /etc/apache2/ssl$ sudo a2ensite default-ssl.conf | sudo a2dissite 000-default.conf
Site 000-default disabled.
To activate the new configuration, you need to run:
systemctl reload apache2
webserver56@cplex: /etc/apache2/ssl$ sudo systemctl reload apache2
webserver56@cplex: /etc/apache2/ssl$
```

"We schakelen de custom config file in en de oud die we voor http gebruikten uit"

Lokaal IP-adres	Beginpoort (extern)	Eindpoort (extern)	Beginpoort (intern)	Eindpoort (intern)	Protocol	Status
192.168.0.252	22	22	22	22	TCP	Actief
192.168.0.252	3306	3306	3306	3306	TCP	Actief
192.168.0.252	80	80	80	80	TCP	Niet actief
192.168.0.252	443	443	443	443	TCP	Actief

Regel toevoegen >

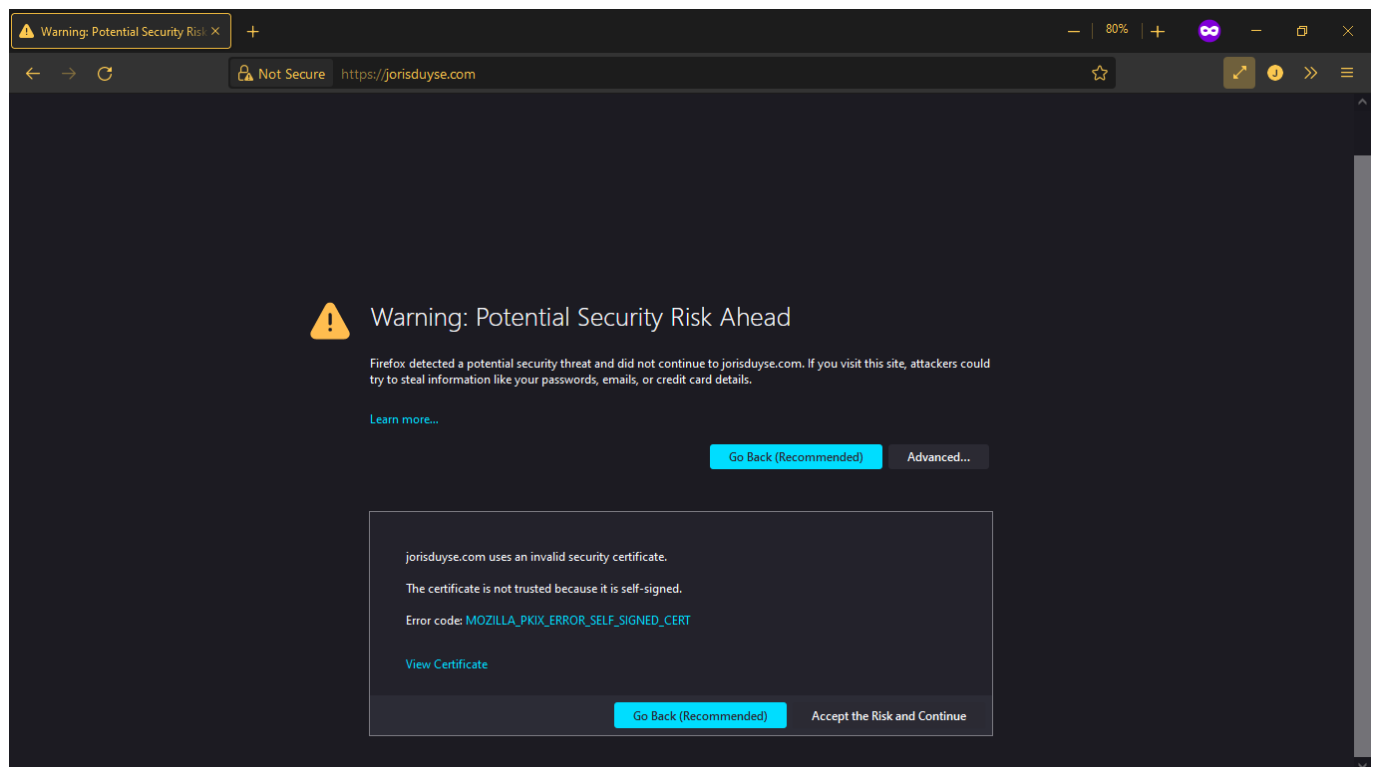
Wijzigingen opslaan >

"Aangezien we een https verbinding willen maken en de http willen laten vallen kunnen we poort 80 weer sluiten"

SSL verbinding testen

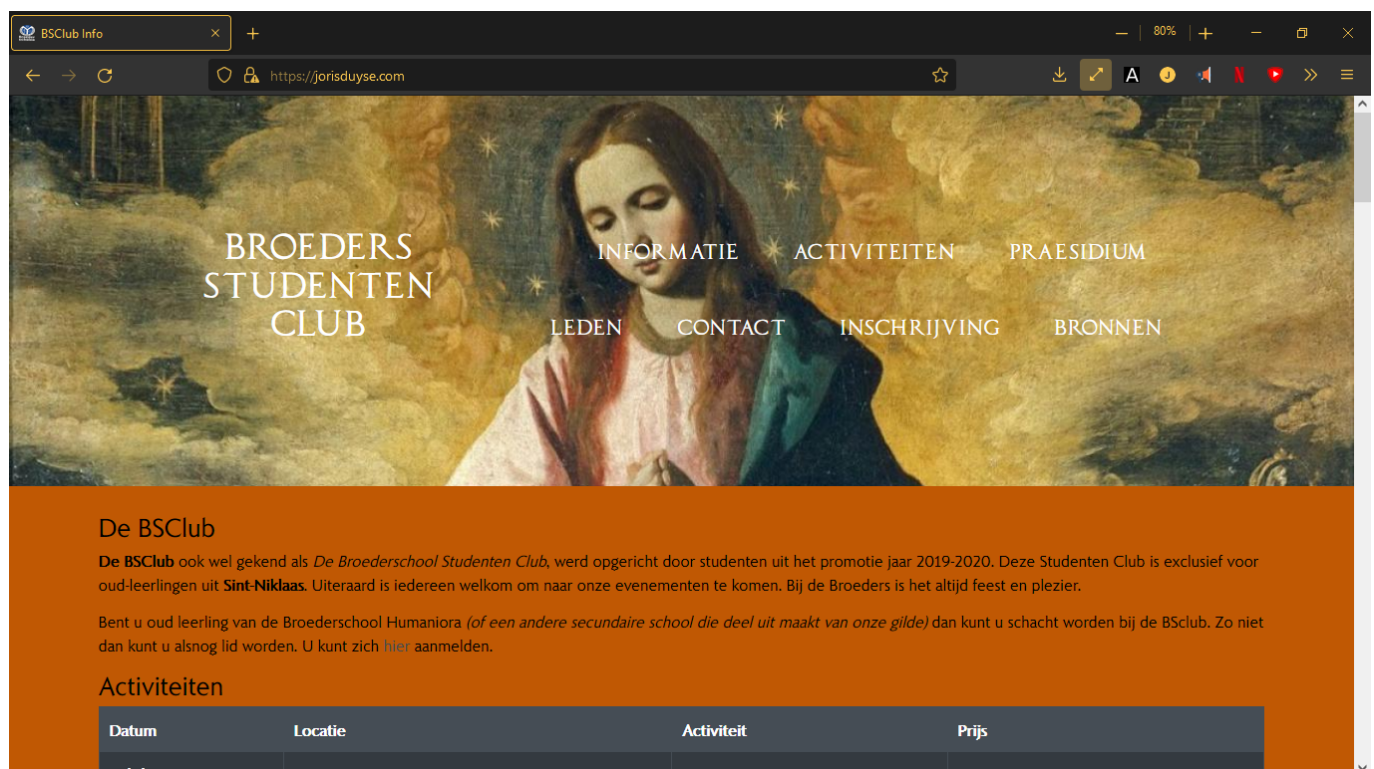


Helaas gaat de browser nogsteeds klagen aangezien de SSL self-sigend is en dus niet "officieel" herkent wordt maar https is wel ingeschakeld.

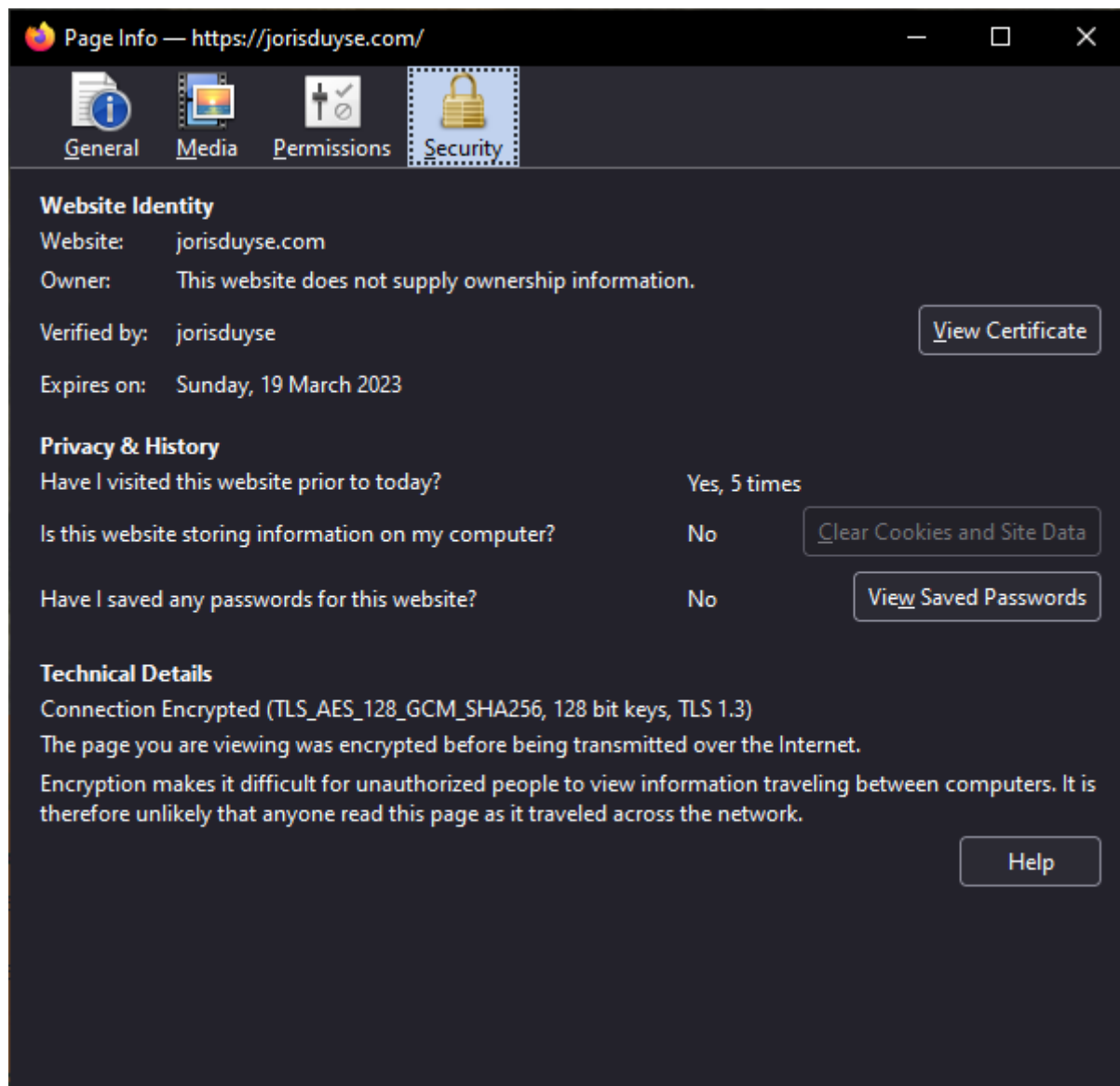


"Browser klaagt over self-signed site"

## Eindresultaat



## Extra informatie SSL certificaat



"SSL

*certificaat informatie"*

Certificate

jorisduyse.com

---

**Subject Name**

Country	BE
State/Province	Oost-Vlaanderen
Locality	Gent
Organization	jorisduyse
Organizational Unit	jorisduyse
Common Name	jorisduyse.com
Email Address	jorisduyse@protonmail.com

---

**Issuer Name**

Country	BE
State/Province	Oost-Vlaanderen
Locality	Gent
Organization	jorisduyse
Organizational Unit	jorisduyse
Common Name	jorisduyse.com
Email Address	jorisduyse@protonmail.com

---

**Validity**

Not Before	Fri, 18 Mar 2022 23:01:12 GMT
Not After	Sat, 18 Mar 2023 23:01:12 GMT

---

**Public Key Info**

Algorithm	RSA
Key Size	2048
Exponent	65537
Modulus	B9:F6:BC:27:35:B6:A0:40:F6:34:F4:E6:ED:5E:61:DB:FB:6E:32:40:E7:DD:FB:F2:EC...

---

Not Before Fri, 18 Mar 2022 23:01:12 GMT  
Not After Sat, 18 Mar 2023 23:01:12 GMT

---

**Public Key Info**

Algorithm	RSA
Key Size	2048
Exponent	65537
Modulus	B9:F6:BC:27:35:B6:A0:40:F6:34:F4:E6:ED:5E:61:DB:FB:6E:32:40:E7:DD:FB:F2:EC...

---

**Miscellaneous**

Serial Number	2D:BD:17:35:24:F9:05:7C:6C:98:7C:28:7A:F8:FB:87:F9:48:2C:55
Signature Algorithm	SHA-256 with RSA Encryption
Version	3
Download	<a href="#">PEM (cert)</a> <a href="#">PEM (chain)</a>

---

**Fingerprints**

SHA-256	44:E7:9A:C3:C4:7C:41:6F:D5:6E:CC:F2:0C:C0:82:D0:51:84:35:FD:9D:8C:52:90:03:3...
SHA-1	B7:E8:E7:A7:B5:04:30:AC:C9:22:3B:46:D7:C1:99:AE:3C:70:94:0E

---

**Basic Constraints**

Certificate Authority	Yes
-----------------------	-----

---

**Subject Key ID**

Key ID	CE:8D:8A:2E:ED:18:F7:33:65:E0:CD:DA:75:17:BC:8E:6D:68:E6:A7
--------	---

---

**Authority Key ID**

Key ID	CE:8D:8A:2E:ED:18:F7:33:65:E0:CD:DA:75:17:BC:8E:6D:68:E6:A7
--------	---

"Volledig SSL certificaat"