

Documentatie Database server opzetten in virtuele machine en deployment op ubuntu server

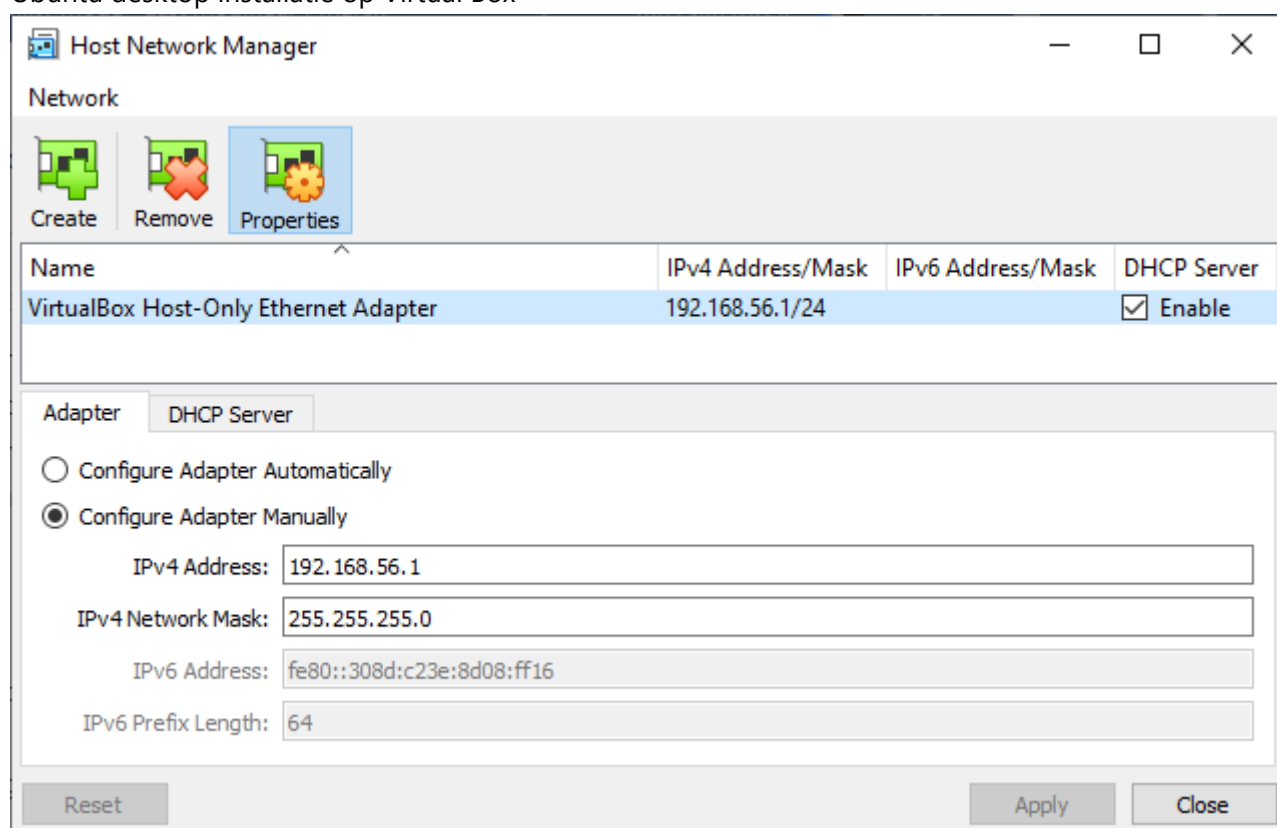
Documentatie type	Link
Online markdown documentation	github.com
Online pdf documentation	github.com

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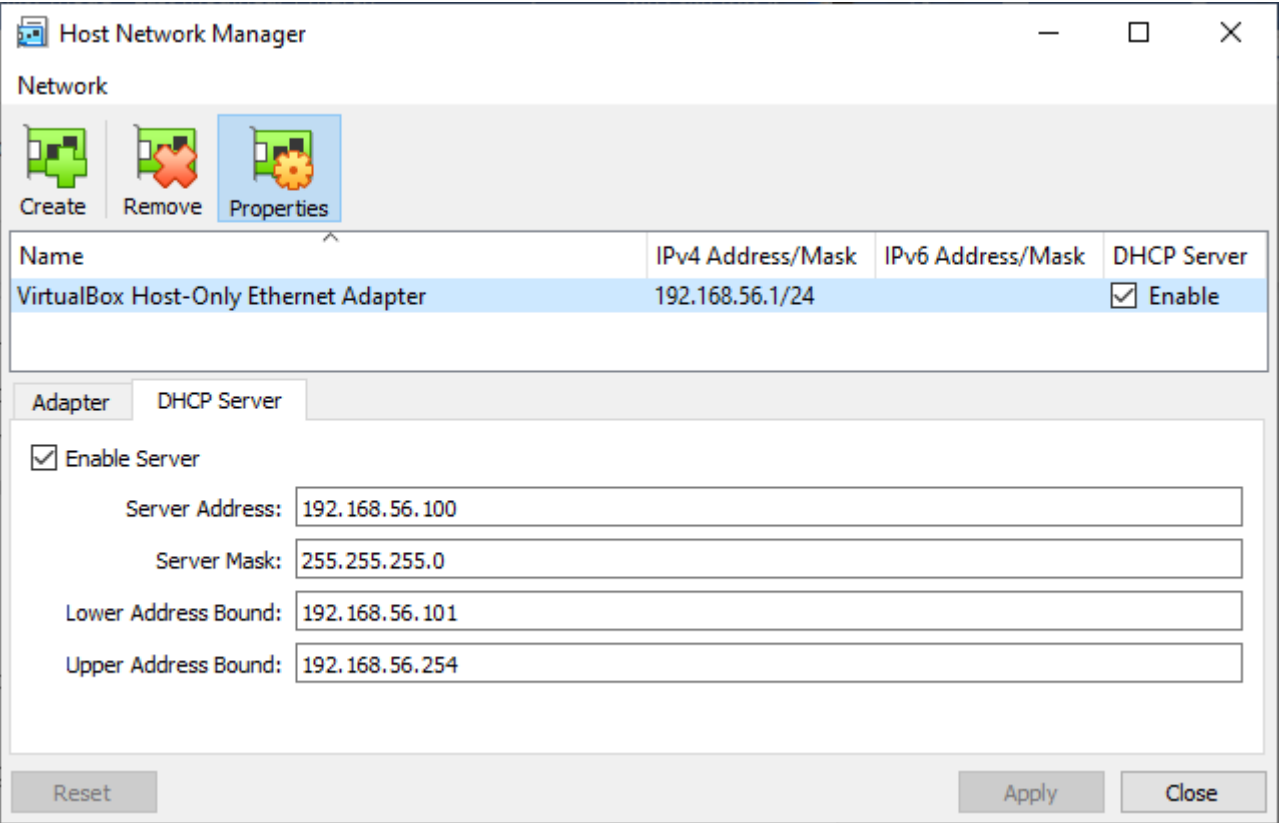
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Ubuntu desktop "Virtual Box"

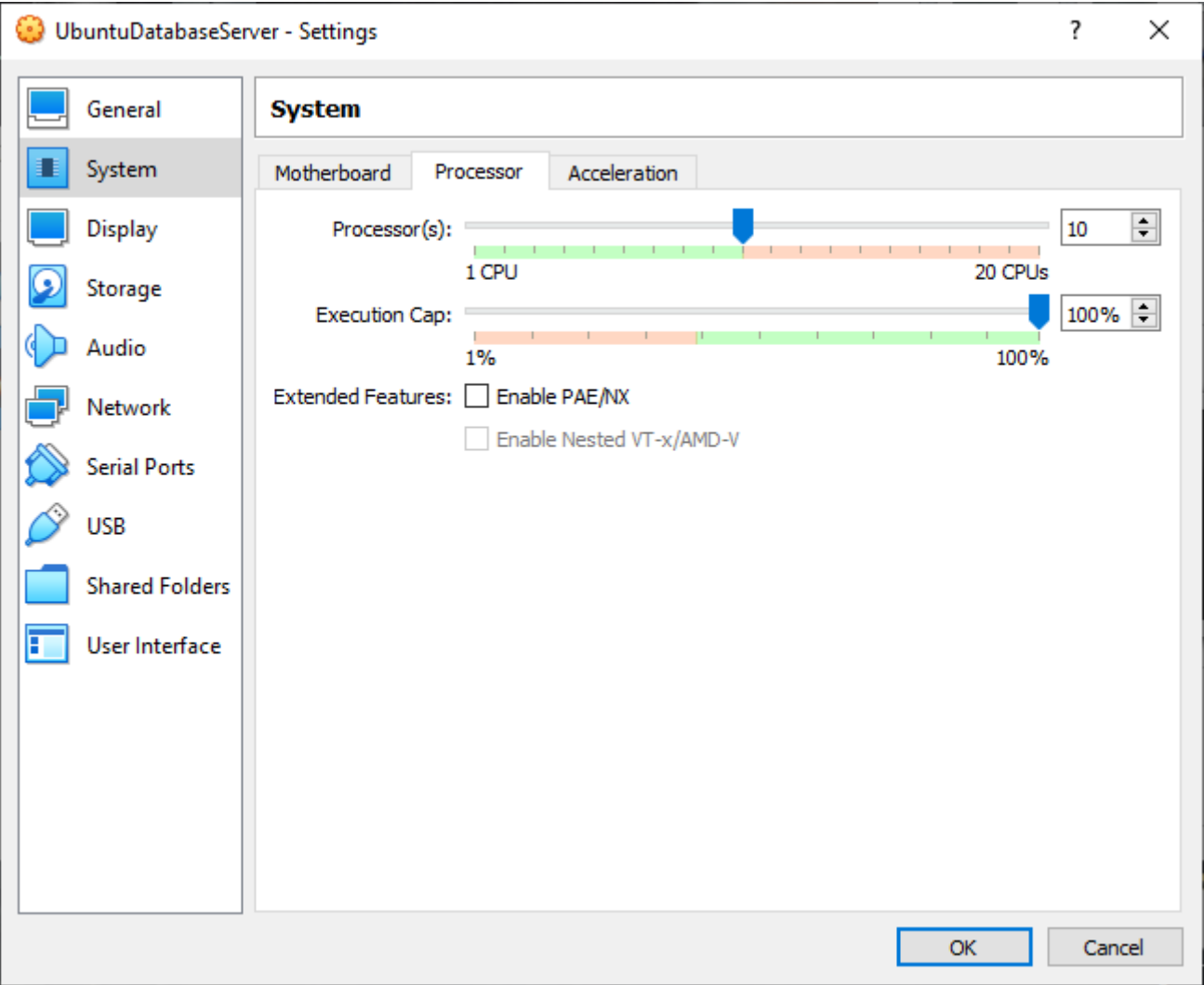
Ubuntu desktop installatie op Virtual Box



"Host Network instellingen"



"DHCP network instellingen"



"Virtual machine cpu core allocation"

? X

← Create Virtual Hard Disk

File location

E:\VirtualMachines\UbuntuDatabaseServer\UbuntuDatabaseServer.vdi



File size

4,00 MB 2,00 TB 16 GB

Hard disk file type

- ☒ **VDI (VirtualBox Disk Image)**
- ☐ **VHD (Virtual Hard Disk)**
- ☐ **VMDK (Virtual Machine Disk)**
- ☐ HDD (Parallels Hard Disk)
- ☐ QCOW (QEMU Copy-On-Write)
- ☐ QED (QEMU enhanced disk)

Storage on physical hard disk

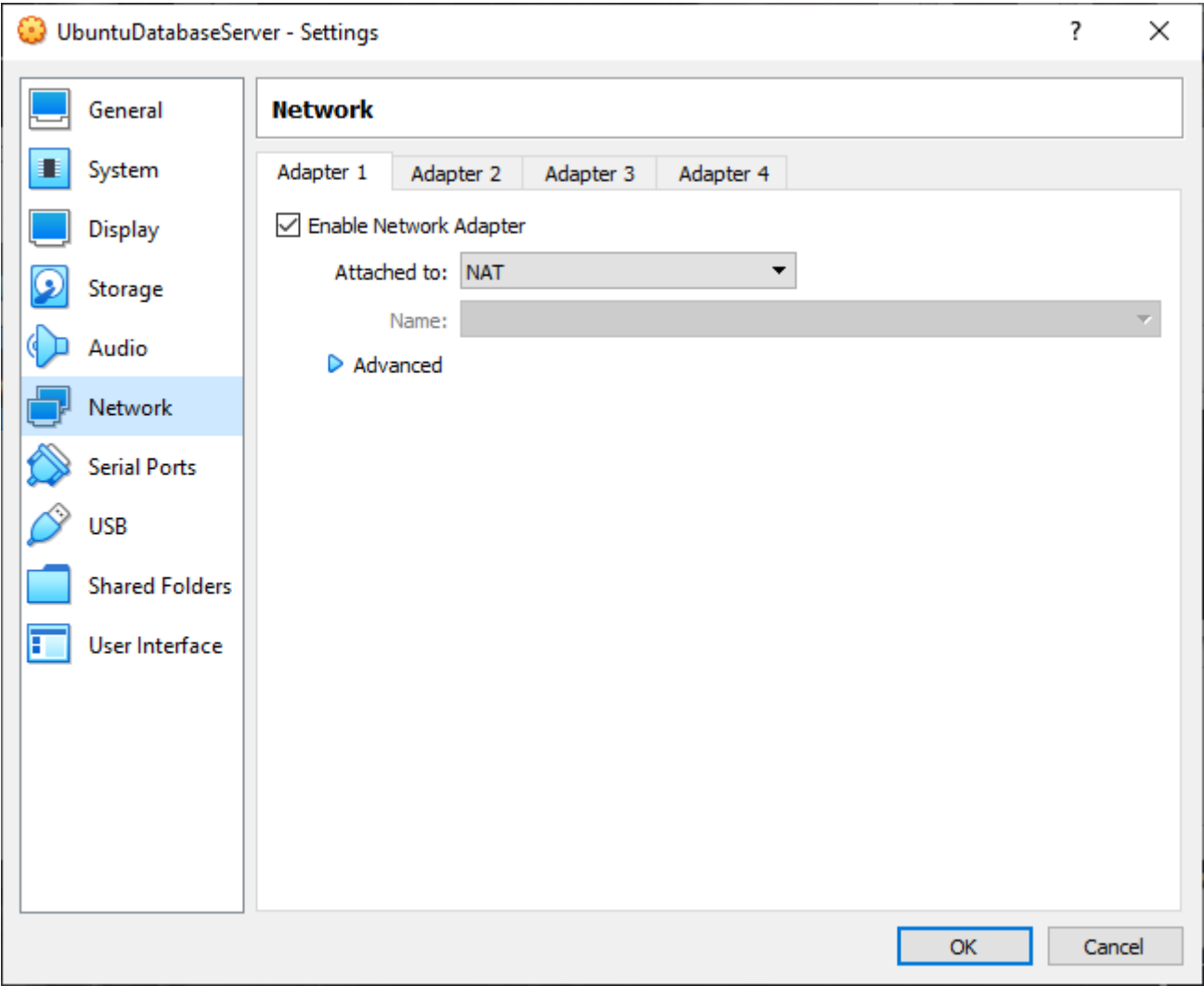
- ☐ Dynamically allocated
- ☒ **Fixed size**
- ☐ Split into files of less than 2GB

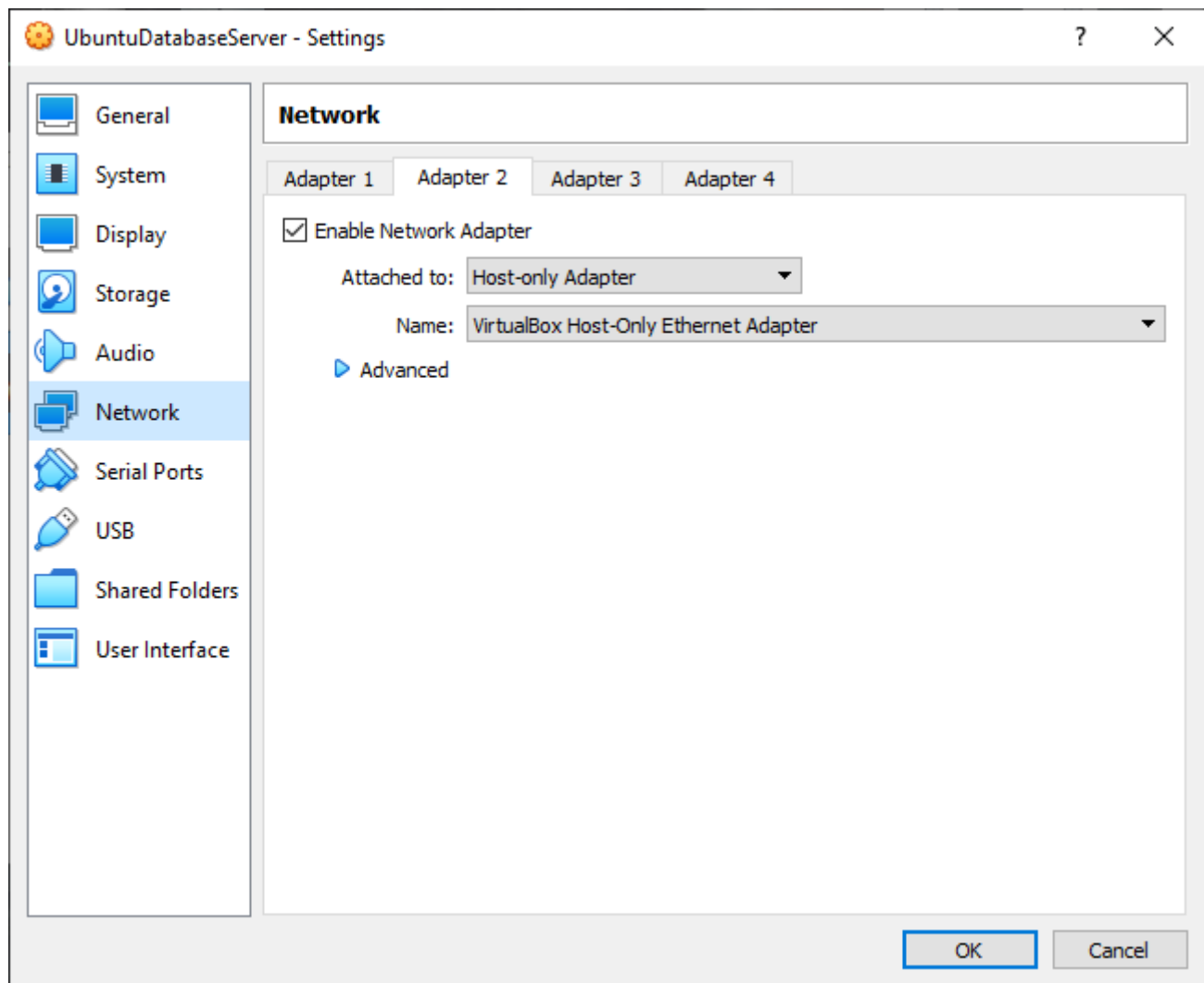
Guided Mode

Create

Cancel

"Disk allocation (fixed size voor betere performance)"





```
mysql -uadmin -h192.168.56.101 -pletmein
```

```
Command Prompt - mysql -uadmin -h192.168.56.101 -pletmein
C:\Users\Qwert>mysql -uadmin -h192.168.56.101 -pletmein
mysql: [Warning] Using a password on the command line interface can be insecure.
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 11
Server version: 8.0.28-0ubuntu0.20.04.3 (Ubuntu)

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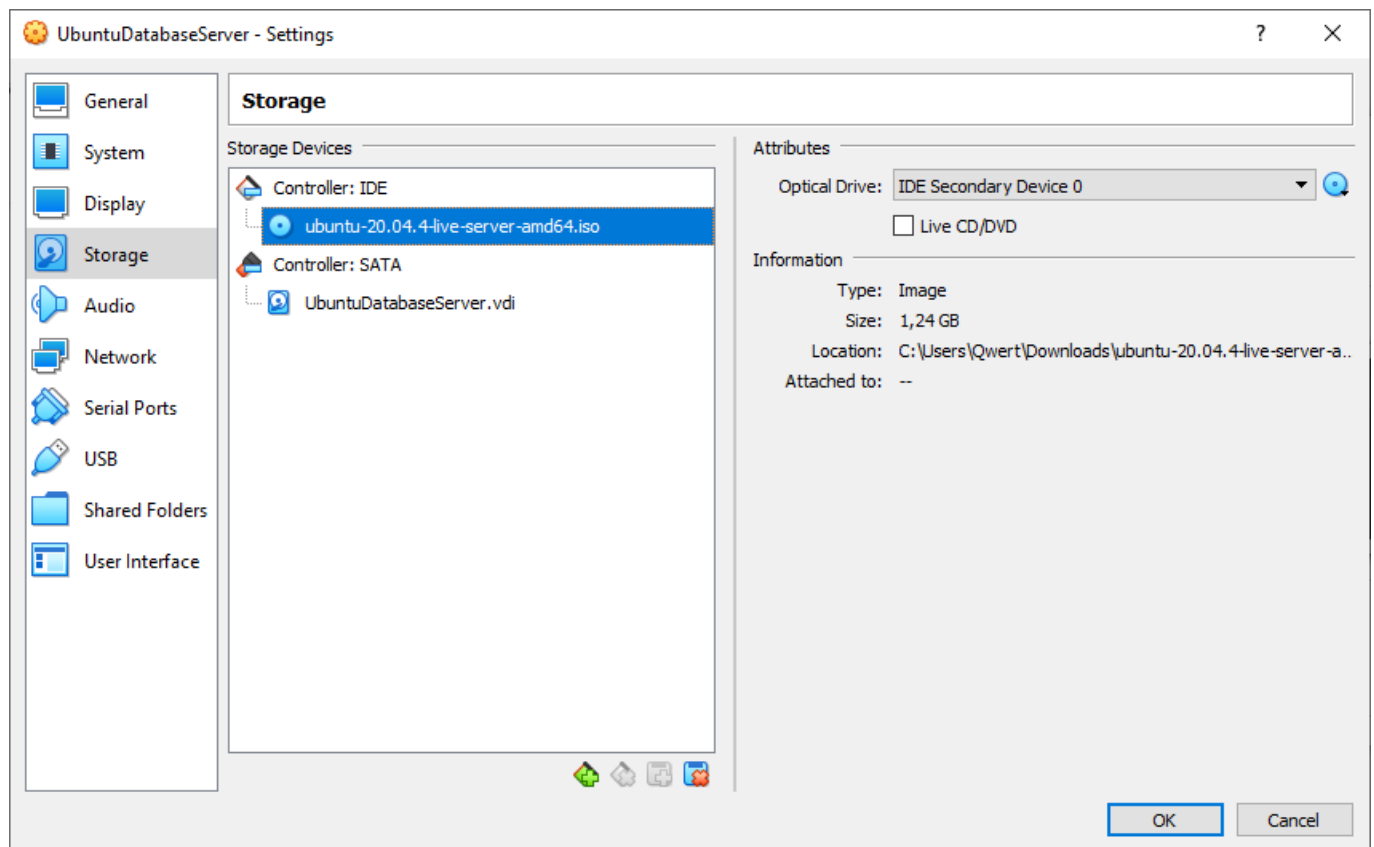
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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

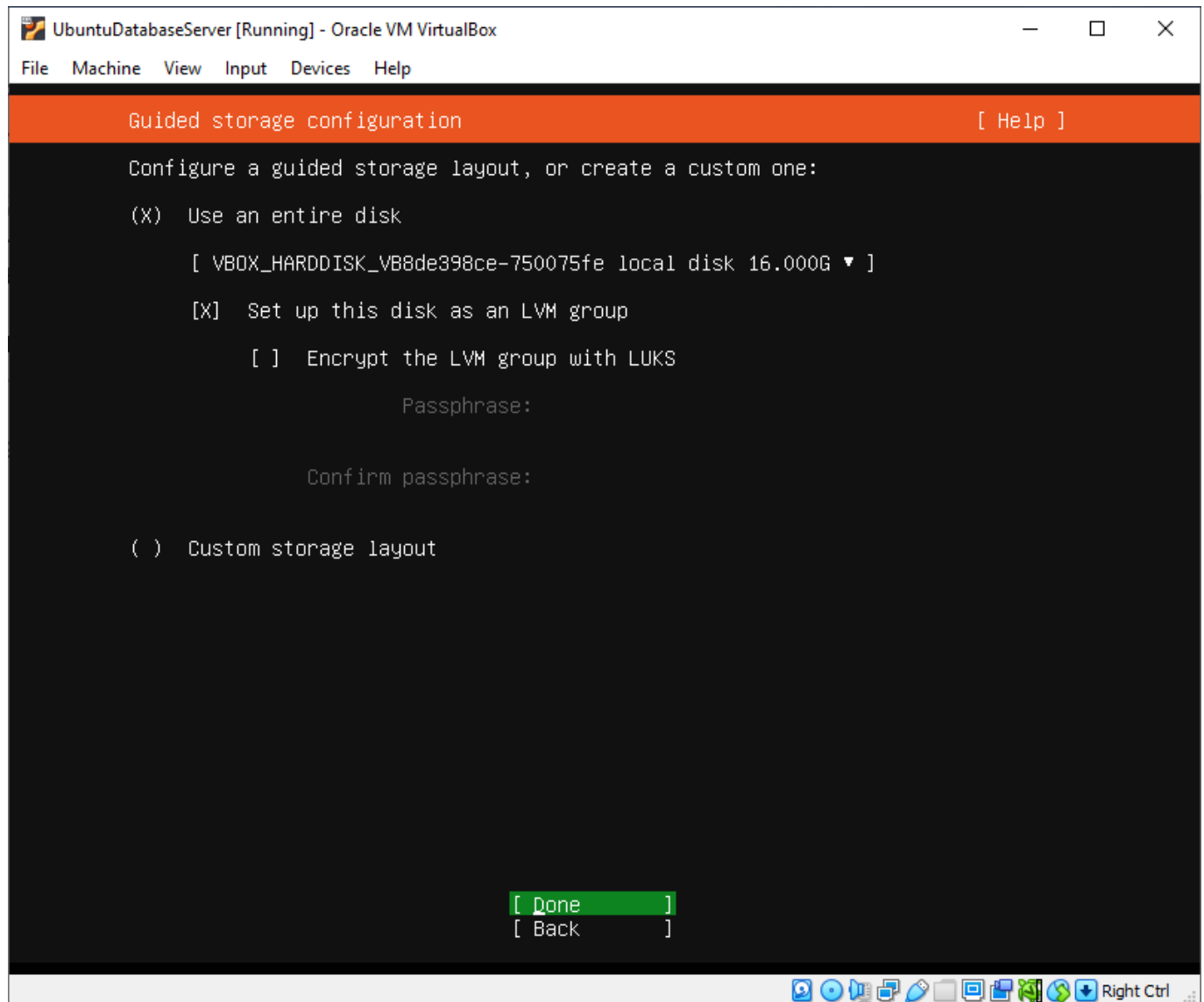
mysql>
```

"Verbinding met mysql-server via cmd op host pc naar virtuele machine."

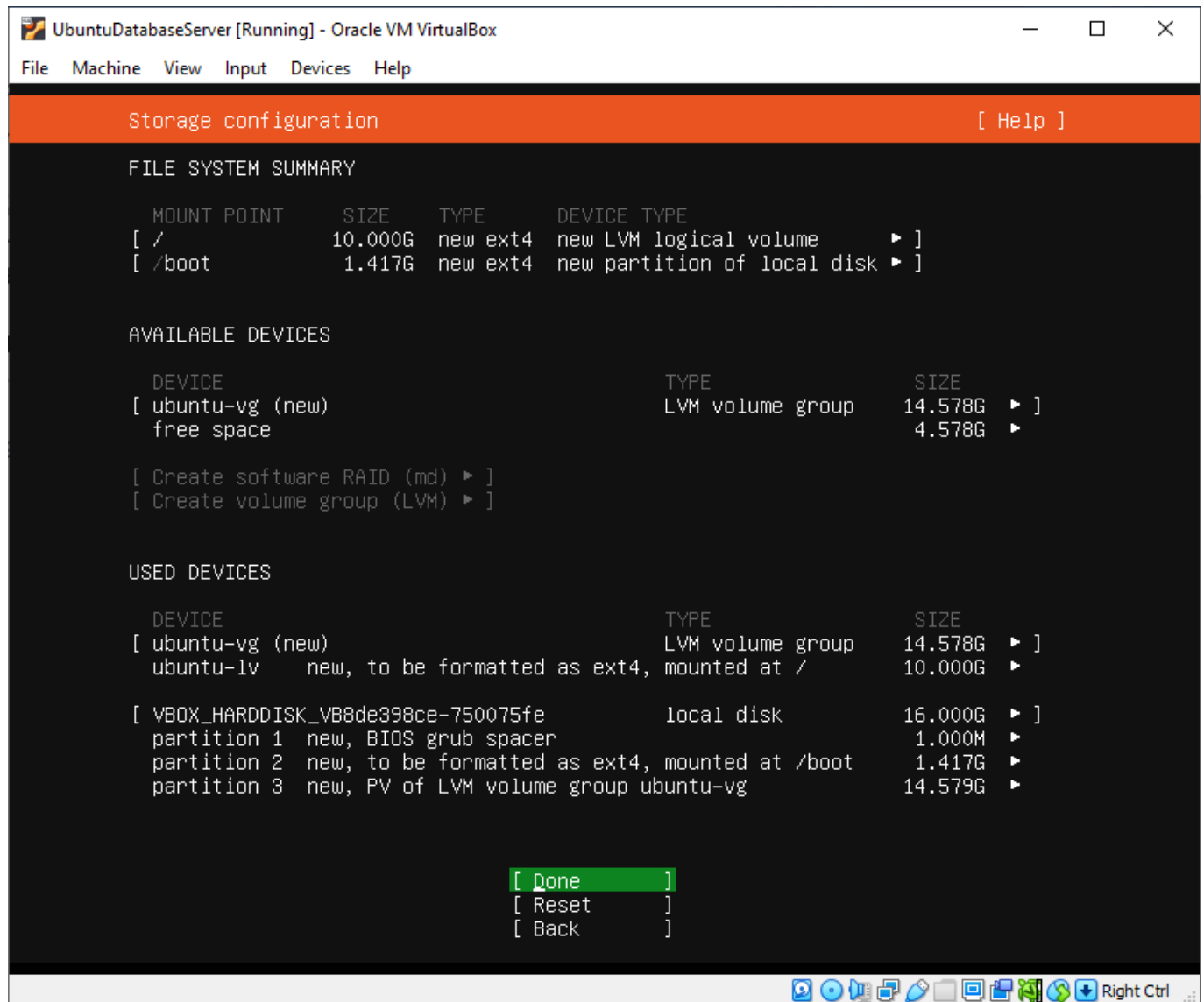
Ubuntu server "Virtual Box"



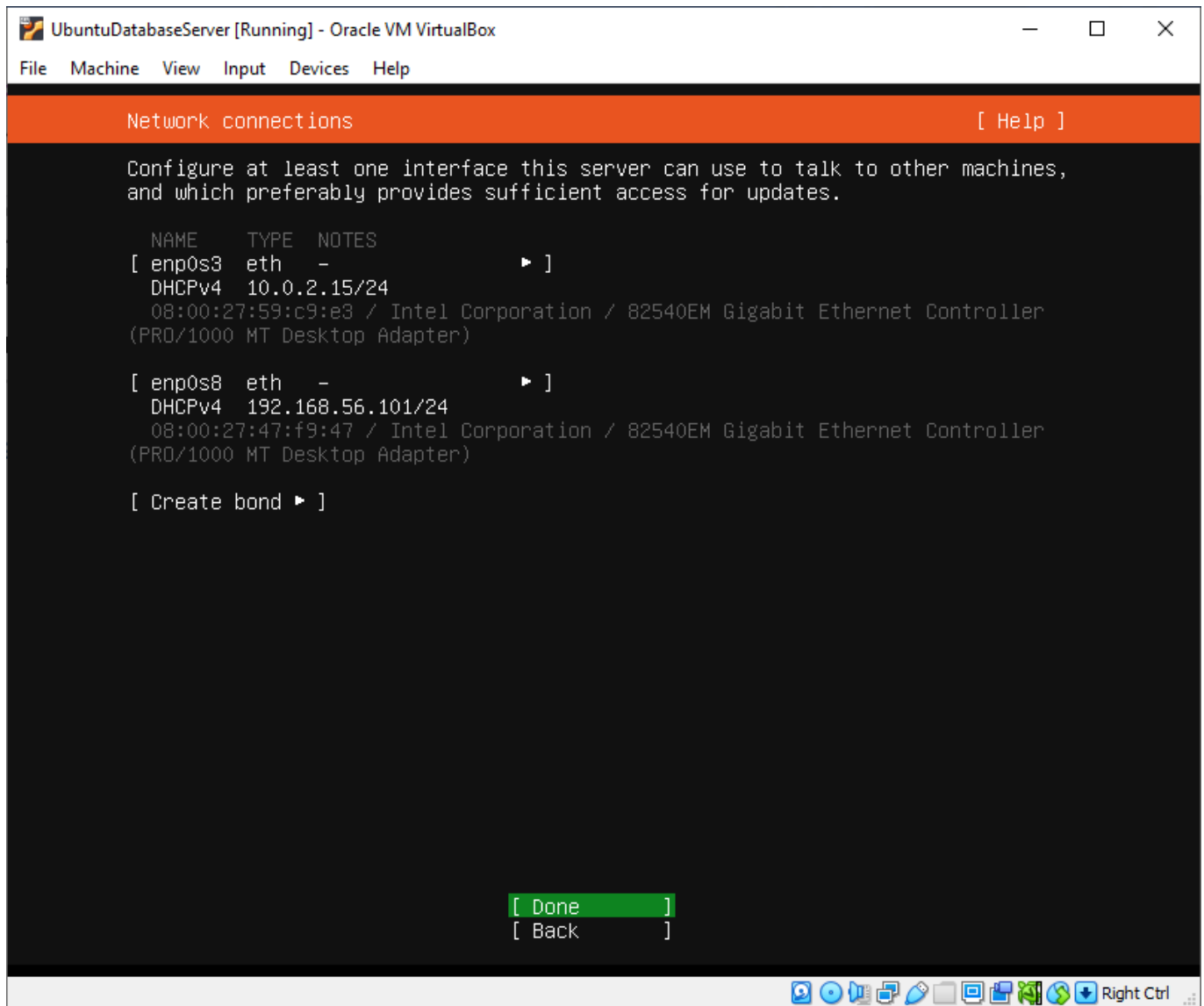
"Boot device voor Ubuntu Server"



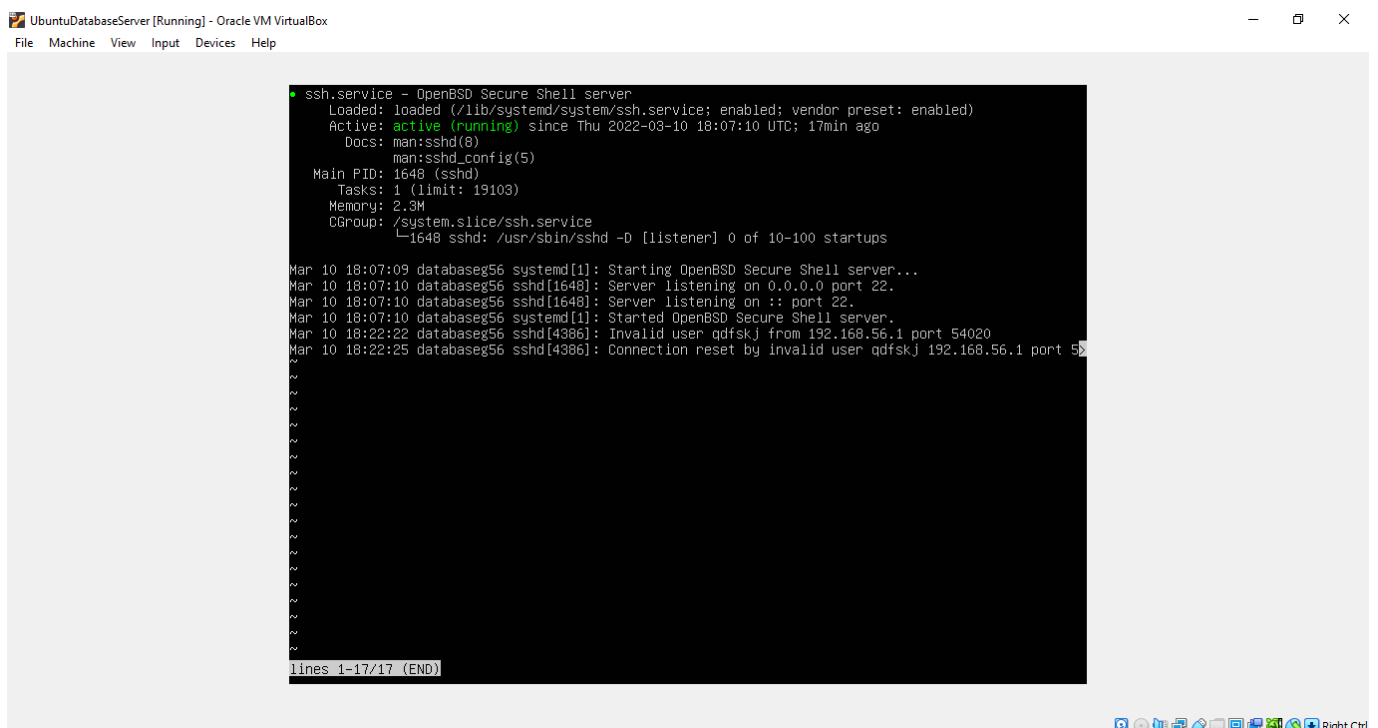
"Disk settings voor ubuntu server"



"File system instellingen"



"Network connections (werden automatisch ingevuld)"



"systemctl status ssh.service"

Commando ss -tlnp

Met het commando `sudo ss -tlnp` kunnen we de poorten laten zien waar processen gebruik van maken. Ook wordt het ip4 adres weergegeven die in verbinding staan met de aangewezen poort. `sudo ss -tlnp` Ook zichtbaar zijn de commando's die werden gebruikt voor de configuratie van de mysql server.

```
database56@database56:~$ sudo ss -tlnp
State      Home  Recv-Q  Send-Q  Local Address:Port  Peer Address:Port  Process
LISTEN     0      128     0.0.0.0:22        0.0.0.0:*           users:((("sshd",pid=1648,fd=3))sshd)
LISTEN     0      4096    0.0.0.0:22        0.0.0.0:*           users:((("sshd",pid=1648,fd=3))sshd)
LISTEN     0      128     0.0.0.0:22        0.0.0.0:*           users:((("sshd",pid=1648,fd=4))sshd)
LISTEN     0      128     0.0.0.0:22        0.0.0.0:*           users:((("sshd",pid=1648,fd=4))sshd)
database56@database56:~$ sudo mysql
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 8.0.28-0ubuntu0.20.04.3 (Ubuntu)

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Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> USE mysql;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> CREATE USER 'admin'@'%' IDENTIFIED BY 'letmein';
Query OK, 0 rows affected (0.04 sec)

mysql> GRANT ALL PRIVILEGES ON *.* TO 'admin'@'%' WITH GRANT OPTION;
Query OK, 0 rows affected (0.02 sec)

mysql> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.02 sec)

mysql> exit
Bye
database56@database56:~$
```

Ubuntu server "Bare-metal"

Na het uitvoeren van de opdracht in een virtuele omgeving besloten we om deze nu eens verder uit te werken op een ubuntu server omgeving die "bare-metal" draait. Deze server had ik al reeds gemaakt dus de installatie is niet gedocumenteerd.

Port forwarding

We openen twee tcp poorten naar de ubuntu server. Poort 22 voor de secure shell; poort 3306 voor de sql server.

Port forwarding ?

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

"tcp poort 22 en 3306 open"

Dynamic DNS Service

Door het ip4 adres van ISP te verbinden met een DNS kan de server makkelijker benadert worden.

The screenshot shows the Dynu Dynamic DNS Service control panel. The user is logged in as jorisduyse from IP address 145.224.97.193. The page displays a table with one entry for the domain jorisduyse.com, showing its IPv4 and IPv6 addresses and the last update time. The table has columns for Domain, IPv4, IPv6, Last Update, and Actions. The entry for jorisduyse.com shows an IPv4 address of 145.224.97.193 and an IPv6 address of 2a01:4f8:2b01:1000::1. The last update time is 2022/03/18 05:01:18. The Actions column contains icons for edit, delete, add, and other functions. The page also includes a search bar, navigation links (DDNS, DOMAINS, EMAIL, SERVICES, SUPPORT, RESOURCES), and a footer with download links for Excel, JSON, and XML.

"Gebruik DNS jorisduyse.com"

ssh database56@jorisduyse.com

```
Command Prompt
Microsoft Windows [Version 10.0.19043.1586]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Qwert>ssh database56@cplex.freedomns.org
```

"ssh commando naar database server (host adres reeds aangepast naar jorisduyse.com)"

```
database56@cplex: ~
Microsoft Windows [Version 10.0.19043.1586]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Qwert>ssh database56@cplex.freedomns.org
database56@cplex.freedomns.org's password:
Welcome to Ubuntu 20.04.4 LTS (GNU/Linux 5.4.0-91-generic x86_64)

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

System information as of Wed 09 Mar 2022 05:05:12 PM UTC

System load:          0.0
Usage of /:           8.2% of 144.96GB
Memory usage:         13%
Swap usage:           0%
Temperature:          49.0 C
Processes:            208
Users logged in:      0
IPv4 address for eno1: 192.168.0.252
IPv6 address for eno1: 2a02:1812:1127:a200:baca:3aff:fe93:d14f

 * Super-optimized for small spaces - read how we shrank the memory
   footprint of MicroK8s to make it the smallest full K8s around.

https://ubuntu.com/blog/microk8s-memory-optimisation

29 updates can be applied immediately.
26 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

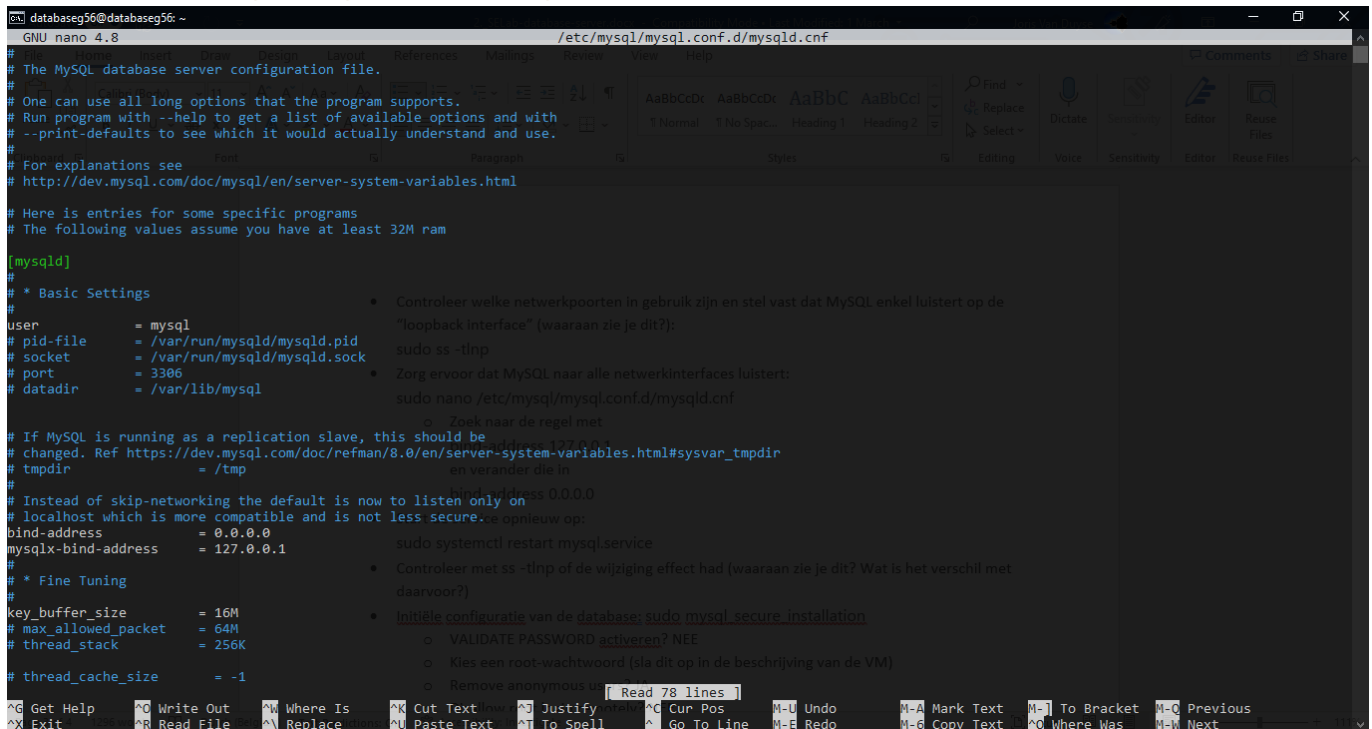
*** System restart required ***
Last login: Tue Mar  8 07:57:27 2022 from [REDACTED]
database56@cplex:~$
```

"Verbinding met ssh server"

Bind address config file

Door het bindaddress in te stellen op 0.0.0.0, luistert de mysql-server niet alleen naar een locale verbinding (127.0.0.1). Hierdoor kan de server benaderd worden door apparaten op het netwerk.

```
sudo nano /etc/mysql/mysql.conf.d/mysqld.cnf
```



```
# The MySQL database server configuration file.
#
# One can use all long options that the program supports.
# Run program with --help to get a list of available options and with
# --print-defaults to see which it would actually understand and use.
#
# For explanations see
# http://dev.mysql.com/doc/mysql/en/server-system-variables.html
#
# Here is entries for some specific programs
# The following values assume you have at least 32M ram

[mysqld]
#
# * Basic Settings
user          = mysql
pid-file      = /var/run/mysql/mysql.pid
socket        = /var/run/mysql/mysql.sock
port          = 3306
datadir       = /var/lib/mysql

# If MySQL is running as a replication slave, this should be
# changed. Ref https://dev.mysql.com/doc/refman/8.0/en/server-system-variables.html#sysvar_tmpdir
tmpdir        = /tmp

# Instead of skip-networking the default is now to listen only on
# localhost which is more compatible and is not less secure.
bind-address  = 0.0.0.0
mysqlx-bind-address = 127.0.0.1

# * Fine Tuning
key_buffer_size = 16M
max_allowed_packet = 64M
thread_stack    = 256K
thread_cache_size = -1

# Controleer welke netwerkpoorten in gebruik zijn en stel vast dat MySQL enkel luistert op de
# "loopback interface" (waaraan zie je dit?):
# sudo ss -tlnp
# Zorg ervoor dat MySQL naar alle netwerkinterfaces luistert:
# sudo nano /etc/mysql/mysql.conf.d/mysqld.cnf
#   o Zoek naar de regel met
#     bind-address 0.0.0.0
#   o verander die in
#     bind-address 0.0.0.0
#   o opnieuw op:
#     sudo systemctl restart mysql.service
# Controleer met ss -tlnp of de wijziging effect had (waaraan zie je dit? Wat is het verschil met
# daarvoor?)
# Initiele configuratie van de database: sudo mysql_secure_installation
#   o VALIDATE PASSWORD activeren? NEE
#   o Kies een root-wachtwoord (sla dit op in de beschrijving van de VM)
#   o Remove anonymous user

^G Get Help      ^O Write Out    ^W Where Is     ^K Cut Text line
^X Exit          ^R Read File    ^M Replace      ^U Paste Text
^_              ^I Tab         ^J To Spell    ^H To Spell
^C Cur Pos      ^F Find        ^B Go To Line  ^L Go To Line
^U Undo         ^A Mark Text   ^I To Bracket  ^Q Previous
^M Redo         ^6 Copy Text   ^Q Where Was   ^W Next
```

systemctl status mysql

```

database56@cplex: ~
database56@cplex:~$ systemctl status mysql
● mysql.service - MySQL Community Server
   Loaded: loaded (/lib/systemd/system/mysql.service; enabled; vendor preset: enabled)
   Active: active (running) since Tue 2022-03-01 17:25:55 UTC; 1 weeks 0 days ago
     Main PID: 57721 (mysqld)
       Status: "Server is operational"
        Tasks: 41 (limit: 9311)
       Memory: 389.9M
       CGroup: /system.slice/mysql.service
              └─57721 /usr/sbin/mysqld
database56@cplex:~$

```

"commando systemctl status mysql"

sudo ss -tlnp

```

database56@database56: ~
database56@database56:~$ sudo ss -tlnp
State      Recv-Q    Send-Q    Local Address:Port    Peer Address:Port    Process
LISTEN     0          128      127.0.0.1:33060        0.0.0.0:*             users:(("mysqld",pid=5917,fd=22))
LISTEN     0          151       0.0.0.0:33060         0.0.0.0:*             users:(("mysqld",pid=5917,fd=24))
LISTEN     0          4096      127.0.0.0:53         0.0.0.0:*             users:(("systemd-resolve",pid=889,fd=13))
LISTEN     0          128       0.0.0.0:22           0.0.0.0:*             users:(("sshd",pid=1648,fd=3))
LISTEN     0          128       :::22                :::*                   users:(("sshd",pid=1648,fd=4))

```

- Controleer welke netwerkpoeorten in gebruik zijn en stel vast dat MySQL enkel luistert op de "loopback interface" (waaraan zie je dit?):
`sudo ss -tlnp`
- Zorg ervoor dat MySQL naar alle netwerkkinterfaces luistert:
`sudo nano /etc/mysql/mysql.conf.d/mysqld.cnf`
 - Zoek naar de regel met
`bind-address 127.0.0.1`
en verander die in
`bind-address 0.0.0.0`
- Start de service opnieuw op:
`sudo systemctl restart mysql.service`
- Controleer met `ss -tlnp` of de wijziging effect had (waaraan zie je dit? Wat is het verschil met daarvoor?)
- Initieële configuratie van de database: [sudo mysql_secure_installation](#)
 - `VALIDATE PASSWORD activeren?` NEE
 - Kies een root-wachtwoord (sla dit op in de beschrijving van de VM)
 - Remove anonymous users? JA
 - Disallow root login remotely? NEE

"Commando ss -tlnp op bare-metal server"