Template Week 5 – Operating Systems

Student number:

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Assignment 5.1: Unix-like

a) Find out what the difference is between UNIX and unix-like operating systems?

b) Study the image above named UNIX timeline. Find out who Ken Thompson, Dennis Ritchie, Bill Joy, Richard Stallman, and Linus Torvalds are and what they have contributed to the development of UNIX or unix-like systems and to IT in general. **TIP!** English-language sources often contain more detailed information about these individuals.

c) What is the philosophy of the GNU movement?

d) Does Ubuntu as a Linux operating system conform to the philosophy of the GNU movement? Please explain your answer.

e) Find out what is the Windows Subsystem for Linux?

f) Find out, which operating system family belongs to Android, iOS and ChromeOS?

Assignment 5.2: Supercomputers and gameconsoles

a) Research on this site what supercomputers are used for and write a short summary of it:
https://www.computerhistory.org/timeline/search/?q=Supercomputer

b) IBM is a company that has already built a number of supercomputers. One of them is IBM's Roadrunner. The CPU developed for this supercomputer was further developed at a later stage as the CPU for the PlayStation 3 console. Find out what a **PlayStation 3 cluster** is and what it was used for?

c) You can build a supercomputer by putting a few computers together in a cluster. Here's what Oracle did with a collection of Raspberry Pi's, for example:
https://blogs.oracle.com/developers/post/building-the-worlds-largest-raspberry-pi-cluster
What specific operating system is running on this cluster?

d) Does Oracle's Raspberry Pi supercomputer appear in the list of the 500 fastest supercomputers in the world? Make a logical decision for this, without going through the entire list.
https://www.top500.org/lists/top500/list/2023/06/

e) What CPU architecture is used for the PlayStation 5 and Xbox Series X?
What operating systems run on these consoles?
What conclusion can you draw from the answer to the previous question?

Assignment 5.3: Working with Windows

Take relevant screenshots of the assignments below

a) Practice for about 10 minutes with the ⊞ keyboard shortcuts combinations, skip the general shortcuts in this exercise. Take a look at which screens are opened.

b) The file explorer can be opened with ⊞ + E, Which key combination could you also use?

c) Open the system properties with a ⊞ key combination, take a screenshot of the open screen. Paste this screenshot into this template.

d) Open task manager with a key combination. Take screenshots of the tabs: processes (shows active processes), performance, and users. Place these three screenshots in this template.

e) If you're giving a PowerPoint presentation and you connect your laptop to a projector, Windows can use the projector as a second screen. For example, you may have Outlook open on your first screen that you don't show over the projector, while the PowerPoint presentation is displayed on the projector, or the second screen. Which key combination should you use for this?

f) If you leave the classroom for a while and you leave your laptop behind, it is wise to lock the screen. Your Apps will continue to run in the background. So, for example, if you're waiting for a download that takes a while, lock the screen and get a cup of coffee. Which key combination do you use for this?

g) Open the Run screen with a key combination. On this screen, type CMD and press <enter>. Take a screenshot of this result and paste it into this template.

Working in the File Explorer

Relevant screenshots **copy** command:

Relevant screenshots **tree** command:

Relevant screenshots in the file explorer of the folder c:\Saxion + created zip file.

Terminating Processes

Relevant Screenshots Task Manager Window:

Install Software

Relevant screenshots that the following software is installed:

- WinSCP
- Notepad++
- 7zip

Assignment 5.4: Working with Linux

Relevant screenshots + motivation

Assignment 5.5: Users and permissions on Linux

Relevant screenshots + motivation

Assignment 5.6: View the contents of files

Relevant screenshots + motivation

Assignment 5.7: Digital forensics

Relevant screenshots + motivation

Assignment 5.8: Steganography

Relevant screenshots + motivation

Bonus point assignment – week 5

Make relevant screenshots + motivation:

- Proof that the FOG server is installed and is functioning correctly.
- Proof that the FOG server has made a back-up of the Windows11 VM or the Ubuntu 24.04 Desktop VM.

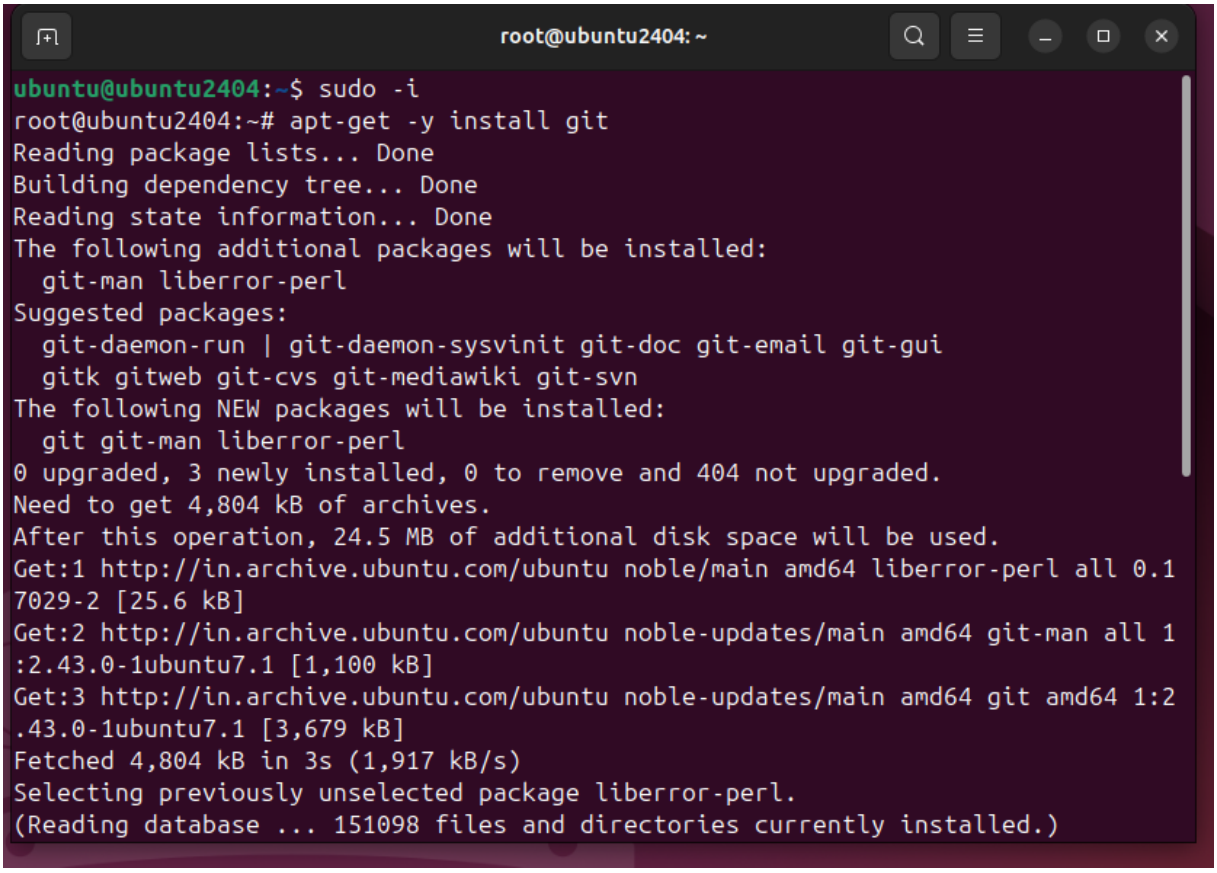
Deze opdracht is mij niet gelukt helaas

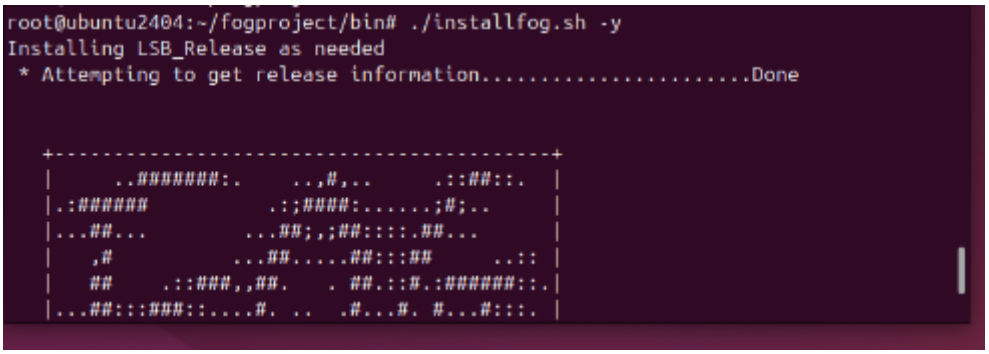
Waar ik denk dat het fout is gegaan:

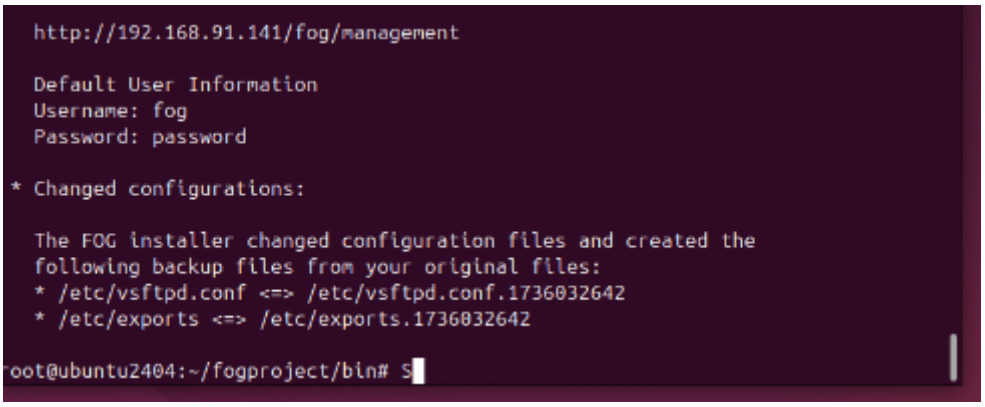
- Ik heb de FOG server eerst af geïnstalleerd en daarna pas PXE boot ingesteld. Hier had de FOG server nog het oude DHCP ip adres van de NAT, dit zorgde ervoor dat het niet werkte.

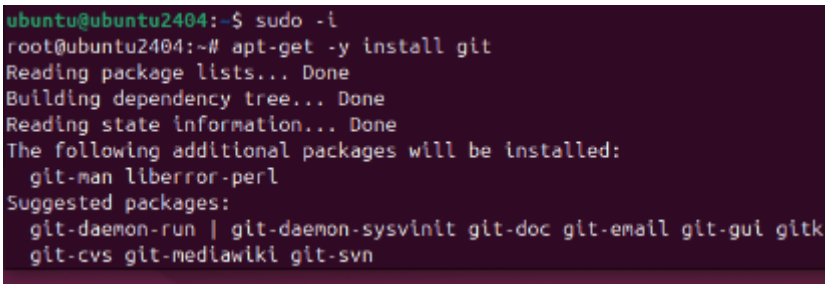
- Verder heb ik ook met de router geen internetverbinding kunnen maken, maar de DHCP werkt wel(?).
  De netwerkadapters werken, en ik heb het zover ik weet ook juist ingesteld op de servers.

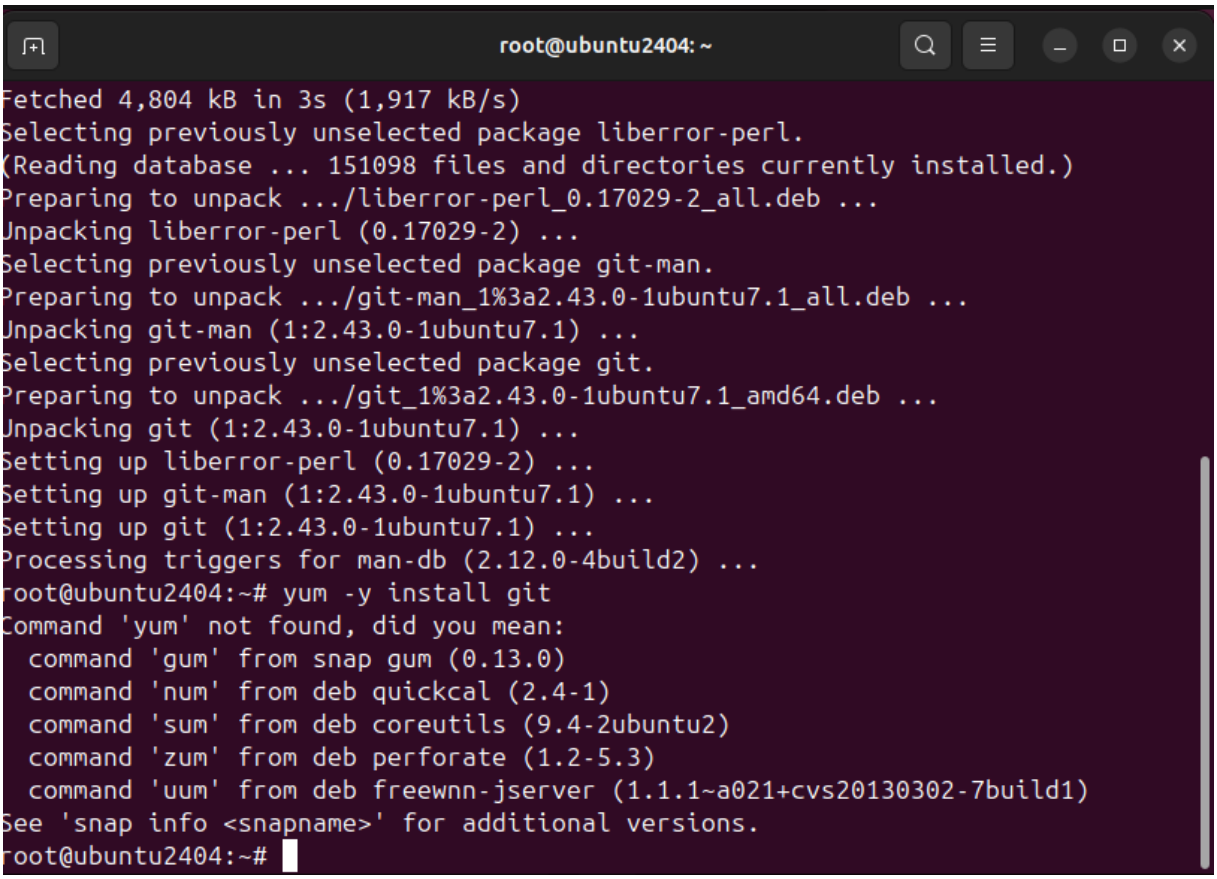
Snapshot maken van de VM:

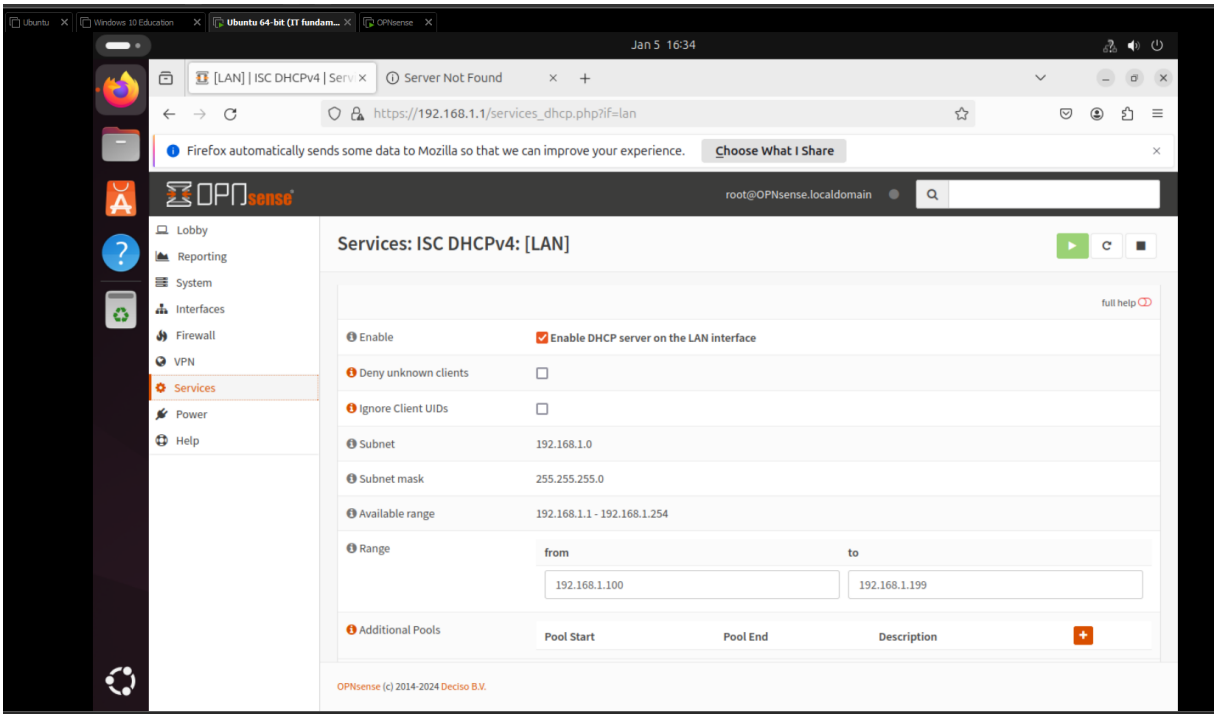


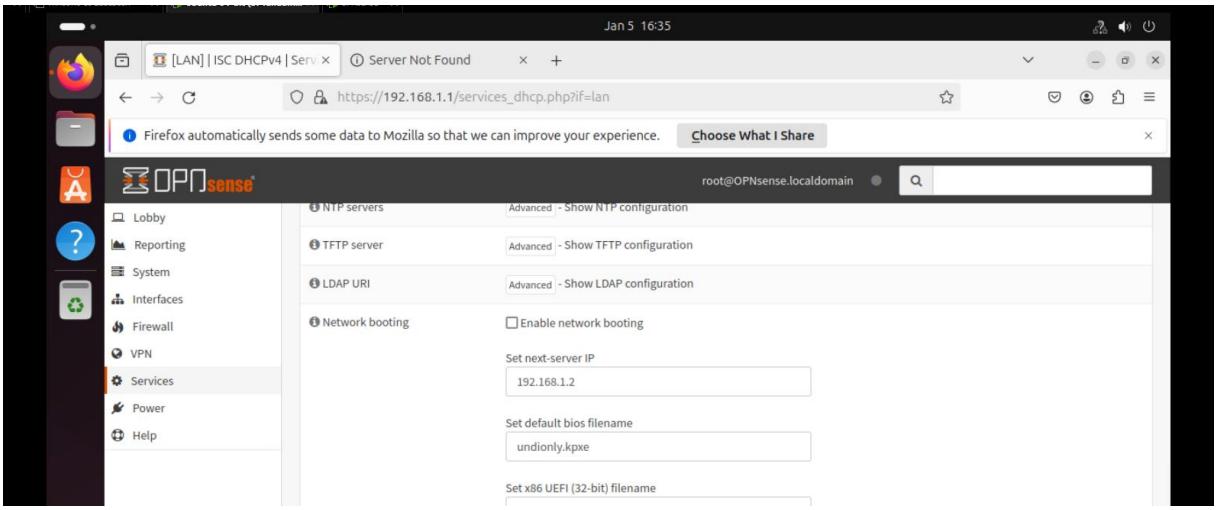

root@ubuntu2404:~/fogproject/bin# ./installfog.sh -y
Installing LSB_Release as needed
* Attempting to get release information.....Done

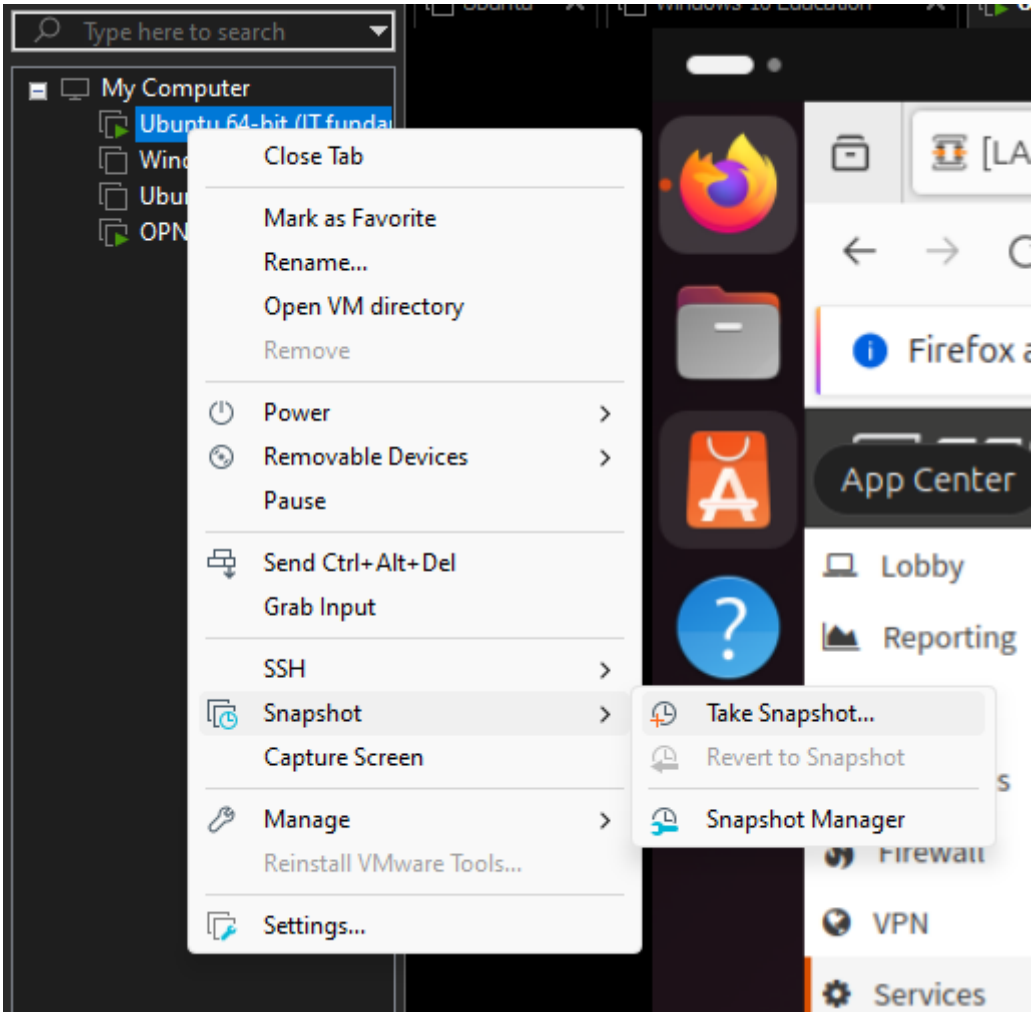

http://192.168.91.141/fog/management
Default User Information
Username: fog
Password: password
* Changed configurations:
The FOG installer changed configuration files and created the
following backup files from your original files:
* /etc/vsftpd.conf <=> /etc/vsftpd.conf.1736032642
* /etc/exports <=> /etc/exports.1736032642
root@ubuntu2404:~/fogproject/bin# S

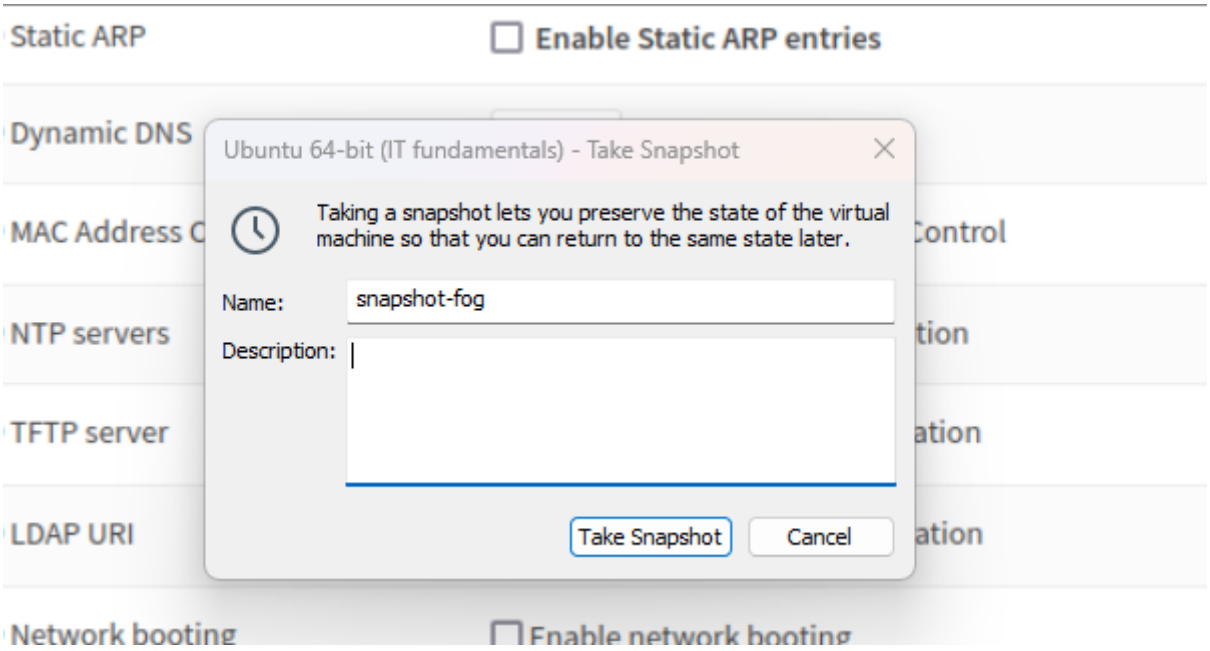

ubuntu@ubuntu2404:~$ sudo -i
root@ubuntu2404:~# apt-get -y install git
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
git-man liberror-perl
Suggested packages:
git-daemon-run | git-daemon-sysvinit git-doc git-email git-gui gitk
git-cvs git-mediawiki git-svn

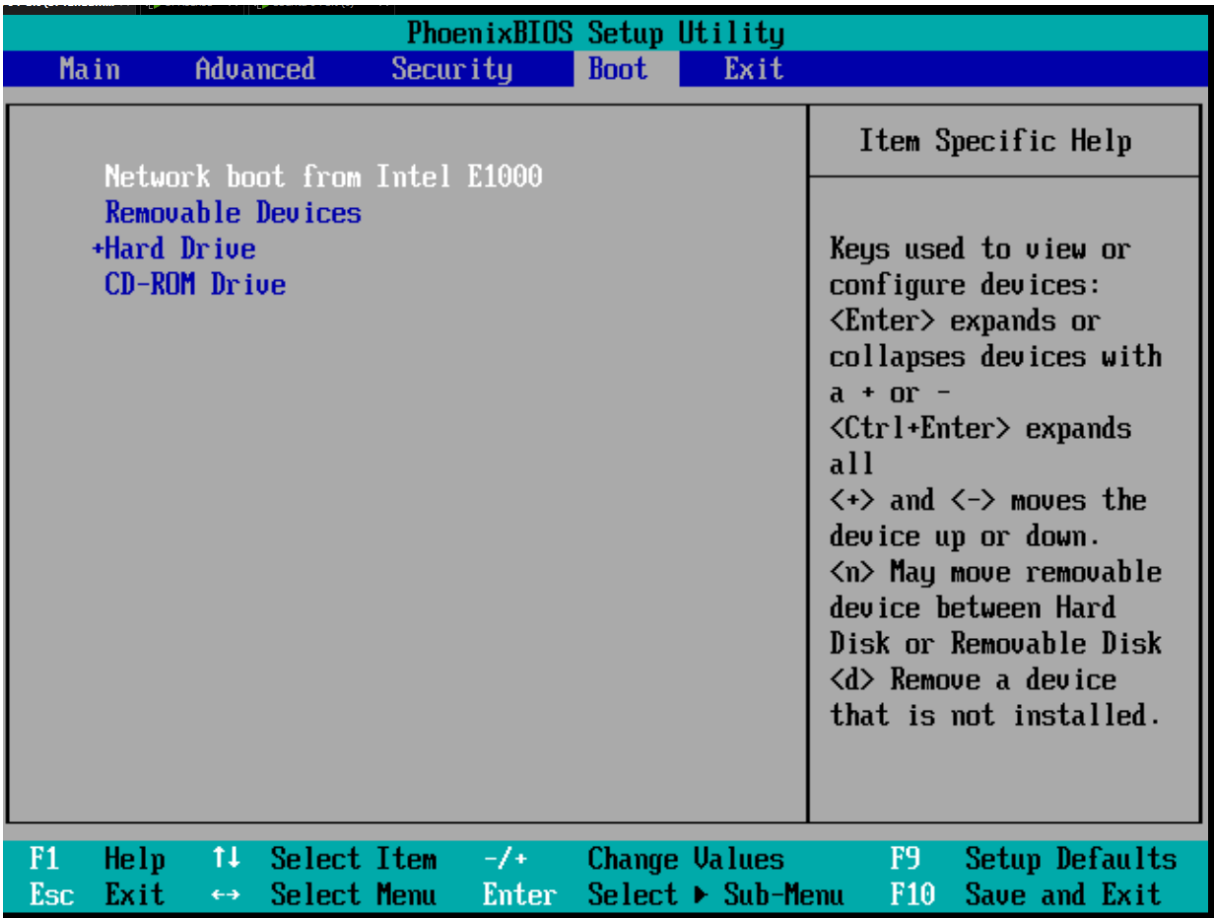

root@ubuntu2404: ~
Fetched 4,804 kB in 3s (1,917 kB/s)
Selecting previously unselected package liberror-perl.
(Reading database ... 151098 files and directories currently installed.)
Preparing to unpack .../liberror-perl_0.17029-2_all.deb ...
Unpacking liberror-perl (0.17029-2) ...
Selecting previously unselected package git-man.
Preparing to unpack .../git-man_1%3a2.43.0-1ubuntu7.1_all.deb ...
Unpacking git-man (1:2.43.0-1ubuntu7.1) ...
Selecting previously unselected package git.
Preparing to unpack .../git_1%3a2.43.0-1ubuntu7.1_amd64.deb ...
Unpacking git (1:2.43.0-1ubuntu7.1) ...
Setting up liberror-perl (0.17029-2) ...
Setting up git-man (1:2.43.0-1ubuntu7.1) ...
Setting up git (1:2.43.0-1ubuntu7.1) ...
Processing triggers for man-db (2.12.0-4build2) ...
root@ubuntu2404:~# yum -y install git
Command 'yum' not found, did you mean:
command 'gum' from snap gum (0.13.0)
command 'num' from deb quickcal (2.4-1)
command 'sum' from deb coreutils (9.4-2ubuntu2)
command 'zum' from deb perforate (1.2-5.3)
command 'uum' from deb freewnn-jserver (1.1.1~a021+cvs20130302-7build1)
See 'snap info <snapname>' for additional versions.
root@ubuntu2404:~#

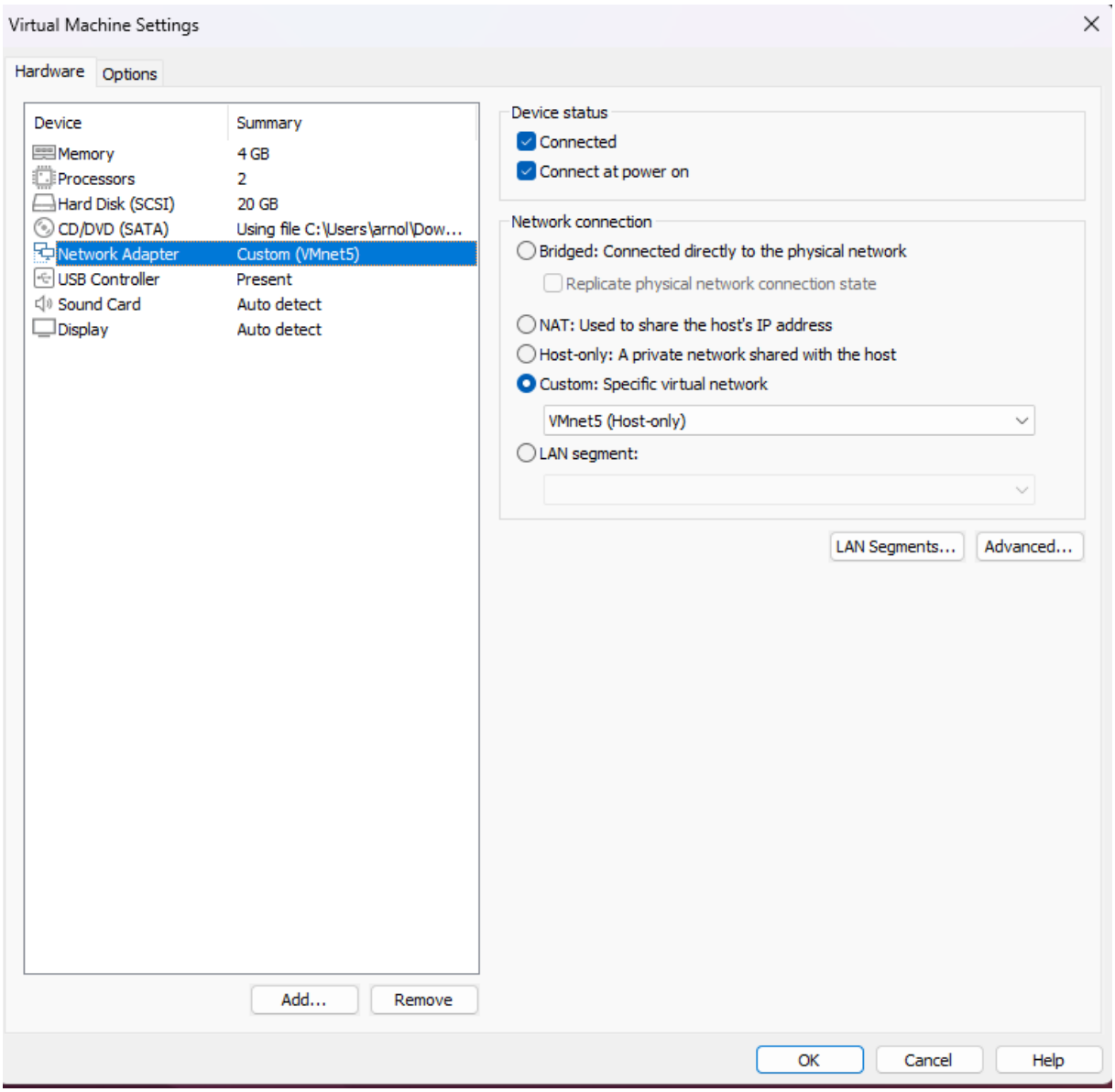

Jan 5 16:34
[LAN] | ISC DHCPv4 | Serv
Server Not Found
https://192.168.1.1/services_dhcp.php?if=lan
Firefox automatically sends some data to Mozilla so that we can improve your experience.
Choose What I Share
root@OPNsense.localdomain
Lobby
Reporting
System
Interfaces
Firewall
VPN
Services
Power
Help
Services: ISC DHCPv4: [LAN]
full help
Enable
Enable DHCP server on the LAN interface
Deny unknown clients
Ignore Client UIDs
Subnet
192.168.1.0
Subnet mask
255.255.255.0
Available range
192.168.1.1 - 192.168.1.254
Range
from
to
192.168.1.100
192.168.1.199
Additional Pools
Pool Start
Pool End
Description
OPNsense (c) 2014-2024 Deciso B.V.

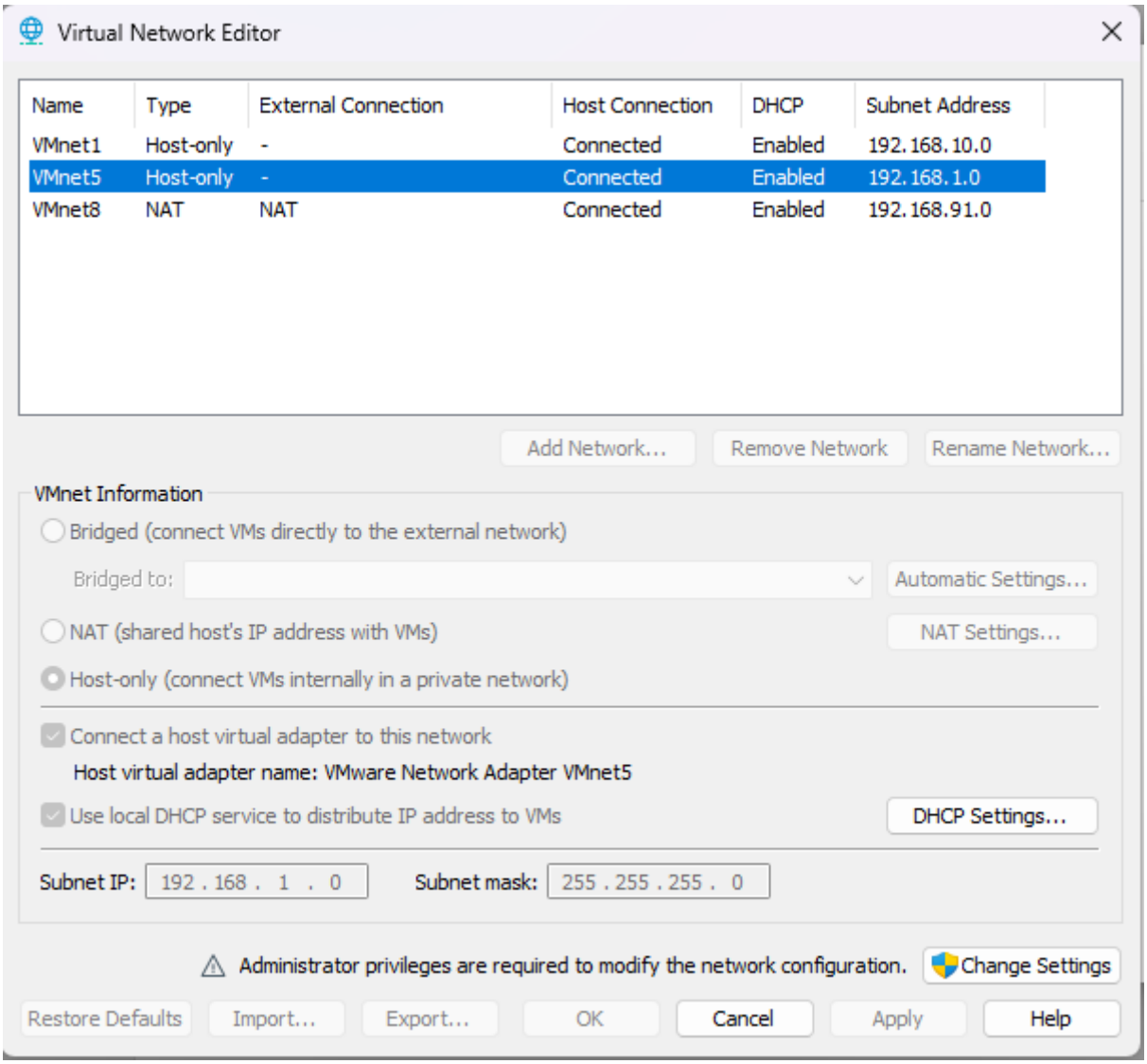

Jan 5 16:35
[LAN] | ISC DHCPv4 | Serv
Server Not Found
https://192.168.1.1/services_dhcp.php?if=lan
Firefox automatically sends some data to Mozilla so that we can improve your experience.
Choose What I Share
root@OPNsense.localdomain
Lobby
Reporting
System
Interfaces
Firewall
VPN
Services
Power
Help
NTP servers
Advanced - Show NTP configuration
TFTP server
Advanced - Show TFTP configuration
LDAP URI
Advanced - Show LDAP configuration
Network booting
Enable network booting
Set next-server IP
192.168.1.2
Set default bios filename
undionly.kpxe
Set x86 UEFI (32-bit) filename


Type here to search
My Computer
Close Tab
Mark as Favorite
Rename...
Open VM directory
Remove
Power
Removable Devices
Pause
Send Ctrl+Alt+Del
Grab Input
SSH
Snapshot
Capture Screen
Manage
Reinstall VMware Tools...
Settings...
Take Snapshot...
Revert to Snapshot
Snapshot Manager
App Center
Lobby
Reporting
VPN
Services

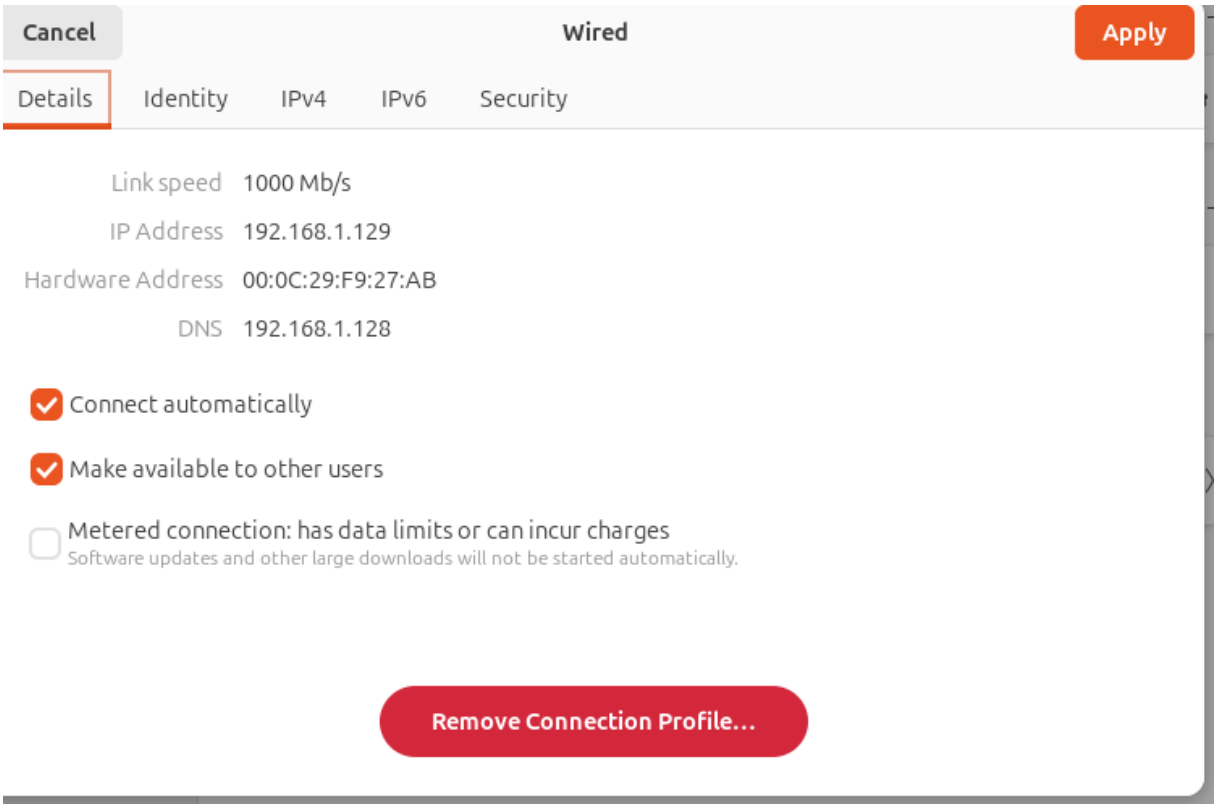

Static ARP
Enable Static ARP entries
Dynamic DNS
MAC Address C
Control
NTP servers
tion
TFTP server
ation
LDAP URI
ation
Network booting
Enable network booting
Ubuntu 64-bit (IT fundamentals) - Take Snapshot
Taking a snapshot lets you preserve the state of the virtual machine so that you can return to the same state later.
Name:
snapshot-fog
Description:
Take Snapshot
Cancel


PhoenixBIOS Setup Utility
Main
Advanced
Security
Boot
Exit
Network boot from Intel E1000
Removable Devices
+Hard Drive
CD-ROM Drive
Item Specific Help
Keys used to view or configure devices:
<Enter> expands or collapses devices with a + or -
<Ctrl+Enter> expands all
<+> and <-> moves the device up or down.
<n> May move removable device between Hard Disk or Removable Disk
<d> Remove a device that is not installed.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

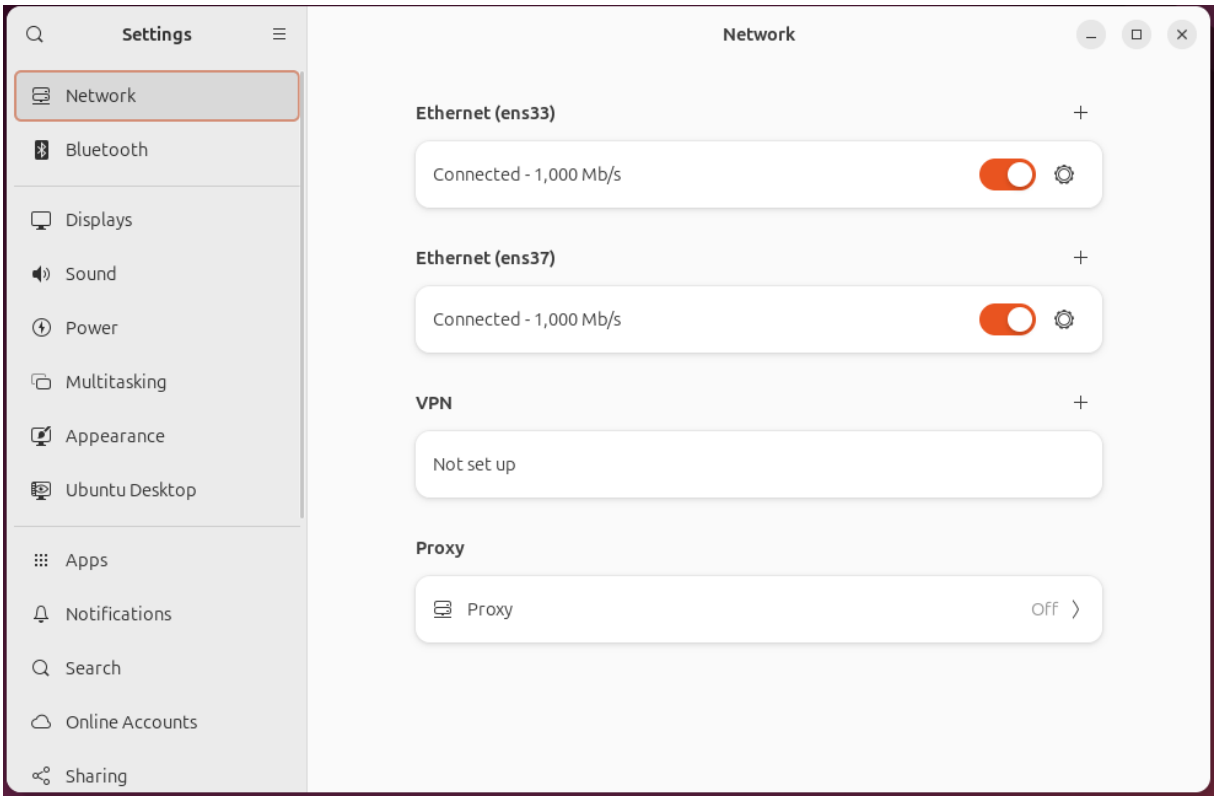

Virtual Machine Settings
Hardware
Options
Device
Summary
Memory
4 GB
Processors
2
Hard Disk (SCSI)
20 GB
CD/DVD (SATA)
Using file C:\Users\arnol\Dow...
Network Adapter
Custom (VMnet5)
USB Controller
Present
Sound Card
Auto detect
Display
Auto detect
Add...
Remove
Device status
Connected
Connect at power on
Network connection
Bridged: Connected directly to the physical network
Replicate physical network connection state
NAT: Used to share the host's IP address
Host-only: A private network shared with the host
Custom: Specific virtual network
VMnet5 (Host-only)
LAN segment:
LAN Segments...
Advanced...
OK
Cancel
Help


Virtual Network Editor
Name
Type
External Connection
Host Connection
DHCP
Subnet Address
VMnet1
Host-only
-
Connected
Enabled
192.168.10.0
VMnet5
Host-only
-
Connected
Enabled
192.168.1.0
VMnet8
NAT
NAT
Connected
Enabled
192.168.91.0
Add Network...
Remove Network
Rename Network...
VMnet Information
Bridged (connect VMs directly to the external network)
Bridged to:
Automatic Settings...
NAT (shared host's IP address with VMs)
NAT Settings...
Host-only (connect VMs internally in a private network)
Connect a host virtual adapter to this network
Host virtual adapter name: VMware Network Adapter VMnet5
Use local DHCP service to distribute IP address to VMs
DHCP Settings...
Subnet IP: 192 . 168 . 1 . 0
Subnet mask: 255 . 255 . 255 . 0
Administrator privileges are required to modify the network configuration.
Change Settings
Restore Defaults
Import...
Export...
OK
Cancel
Apply
Help

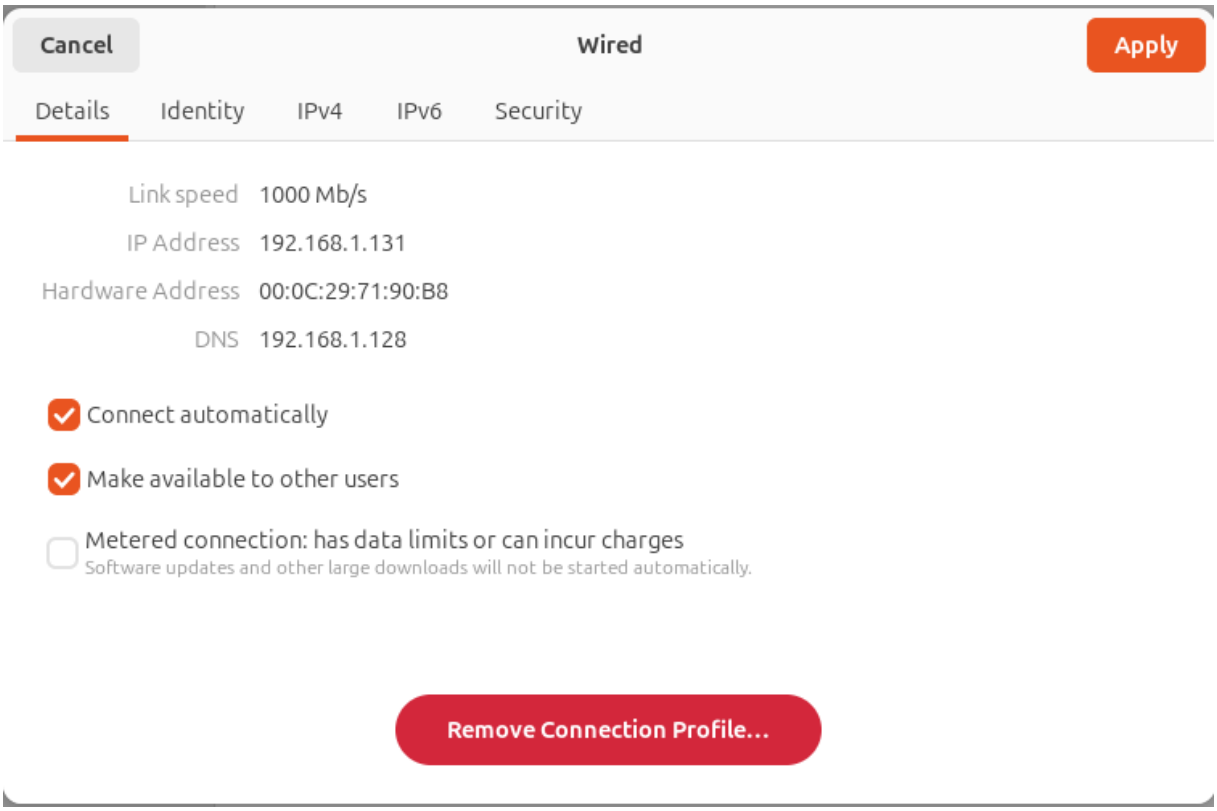
Netwerkaart van de tweede ubuntu server



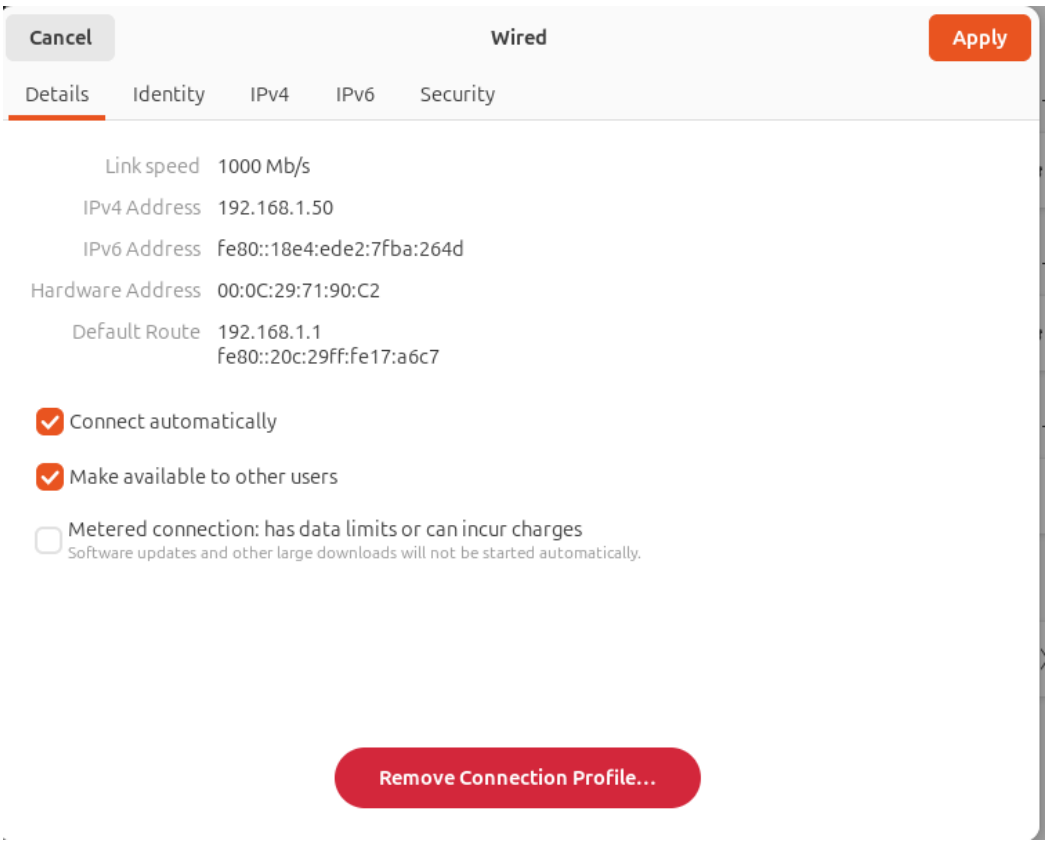
Netwerkkaarten van de FOG server (1x NAT, 1x VMNET5):



VMNET5:


Cancel
Wired
Apply
Details
Identity
IPv4
IPv6
Security
Link speed 1000 Mb/s
IP Address 192.168.1.131
Hardware Address 00:0C:29:71:90:B8
DNS 192.168.1.128
Connect automatically
Make available to other users
Metered connection: has data limits or can incur charges
Software updates and other large downloads will not be started automatically.
Remove Connection Profile...

NAT:


Cancel
Wired
Apply
Details
Identity
IPv4
IPv6
Security
Link speed 1000 Mb/s
IPv4 Address 192.168.1.50
IPv6 Address fe80::18e4:ede2:7fba:264d
Hardware Address 00:0C:29:71:90:C2
Default Route 192.168.1.1
fe80::20c:29ff:fe17:a6c7
Connect automatically
Make available to other users
Metered connection: has data limits or can incur charges
Software updates and other large downloads will not be started automatically.
Remove Connection Profile...