

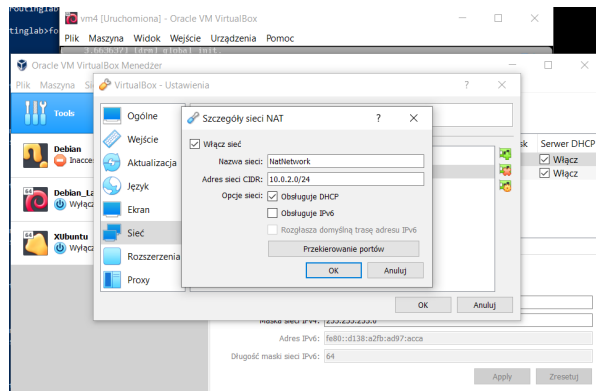
Lab 12 – Konfiguracja i zarządzanie serwerem plików (NFS, Samba, FTP)

1. Wymagania Wstępne:

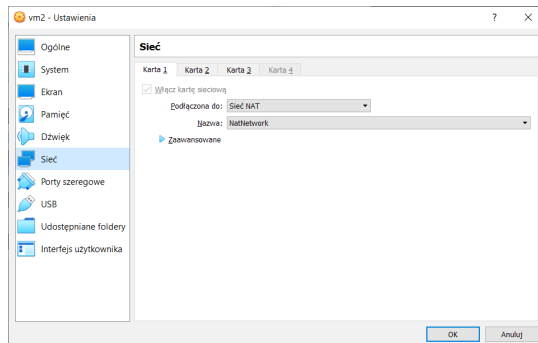
1. Do zadania zostały wykorzystane VM1 i VM2, po wcześniejszym użyciu:
 - i. cook.cmd.
 - ii. Vboxmanage modifyvm vm2 –nic3 nat
 - iii. Vboxmanage modifyvm vm1 –nic3 nat
 - iv. Zwiększeniu przestrzeni dysku dla wirtualnych maszyn z 2GB do 16GB
 - v. Zwiększeniu dostępnego RAM dla VM2 do 2GB

2. Sieć NAT:

- a. .
- b. .
- c. .

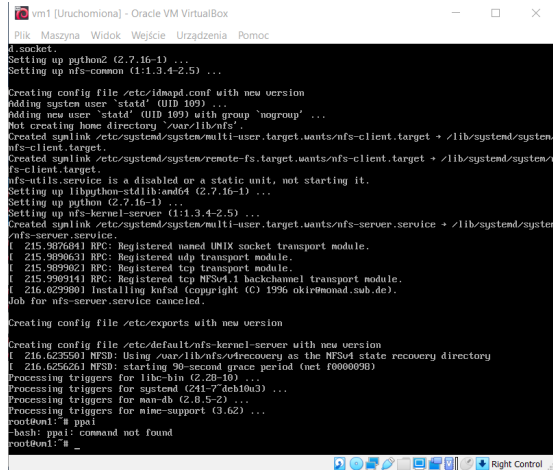


- d. Dla VM1 zostało zrobione analogicznie



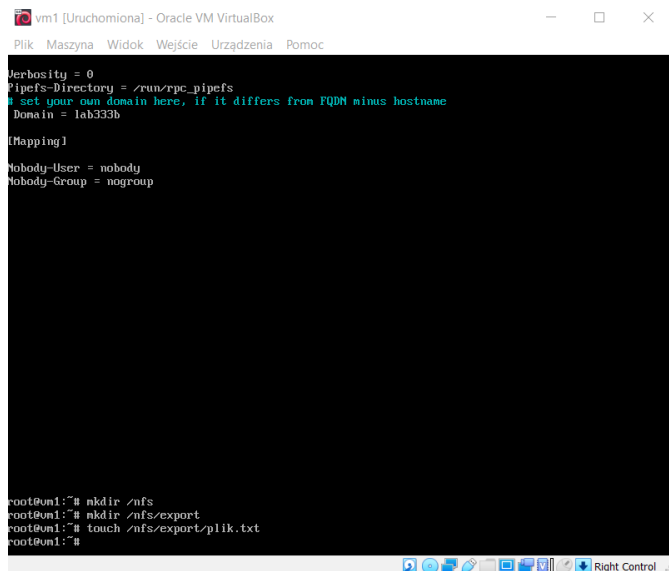
2. NFS:

1. Pomyślnie zainstalowano nfs-kernel-server



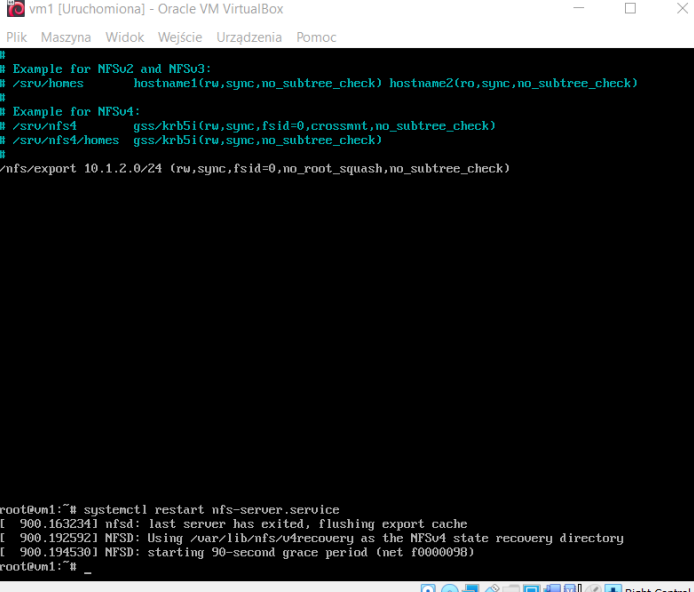
```
vm1 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
d.socket.
Setting up python2 (2.7.16-1) ...
Setting up nfs-common (1:1.3.4-2.5) ...
Creating config file /etc/idmapd.conf with new version
Adding system user 'nfsd' (UID 109) with group 'nogroup' ...
Adding new user 'nfsd' (UID 109) with group 'nogroup' ...
Not creating home directory '/var/lib/nfs'.
Created symlink /etc/systemd/system/multi-user.target.wants/nfs-client.target + /lib/systemd/system/nfs-client.target.
Created symlink /etc/systemd/system/remote-fs.target.wants/nfs-client.target + /lib/systemd/system/nfs-client.target.
nfs-utils.service is a disabled or a static unit, not starting it.
Setting up libpython-stdlib:amd64 (2.7.16-1) ...
Setting up python (2.7.16-1) ...
Setting up nfs-kernel-server (1:1.3.4-2.5) ...
Created symlink /etc/systemd/system/multi-user.target.wants/nfs-server.service + /lib/systemd/system/nfs-server.service.
( 215.987881) RPC: Registered named UNIX socket transport module.
( 215.989863) RPC: Registered udp transport module.
( 215.989862) RPC: Registered tcp transport module.
( 215.990914) RPC: Registered tcp NFSv4.1 backchannel transport module.
( 215.029980) Installing knfsd (copyright (C) 1996 okir@monad.sub.de).
Job for nfs-server.service canceled.
Creating config file /etc/exports with new version
Creating config file /etc/default/nfs-kernel-server with new version
( 216.623550) NFSv3: Using /var/lib/nfs/v4recovery as the NFSv4 state recovery directory
Processing triggers for libe-bn (2.28-10) ...
Processing triggers for systemd (241-7deb10a3) ...
Processing triggers for man-db (2.8.5-2) ...
Processing triggers for mime-support (3.62) ...
root@vm1:~# psai
-bash: psai: command not found
root@vm1:~#
```

2. konfiguracja domeny:
3. Stworzenie folderów i pliku:



```
vm1 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
Verbosity = 0
Pipefs-Directory = /run/rpc_pipefs
# set your own domain here, if it differs from FQDN minus hostname
Domain = lab333b
[Mapping]
Nobody-User = nobody
Nobody-Group = nogroup
root@vm1:~# mkdir /nfs
root@vm1:~# mkdir /nfs/export
root@vm1:~# touch /nfs/export/plik.txt
root@vm1:~#
```

4. Konfiguracja NFS:
5. Zrestartowanie usługi:

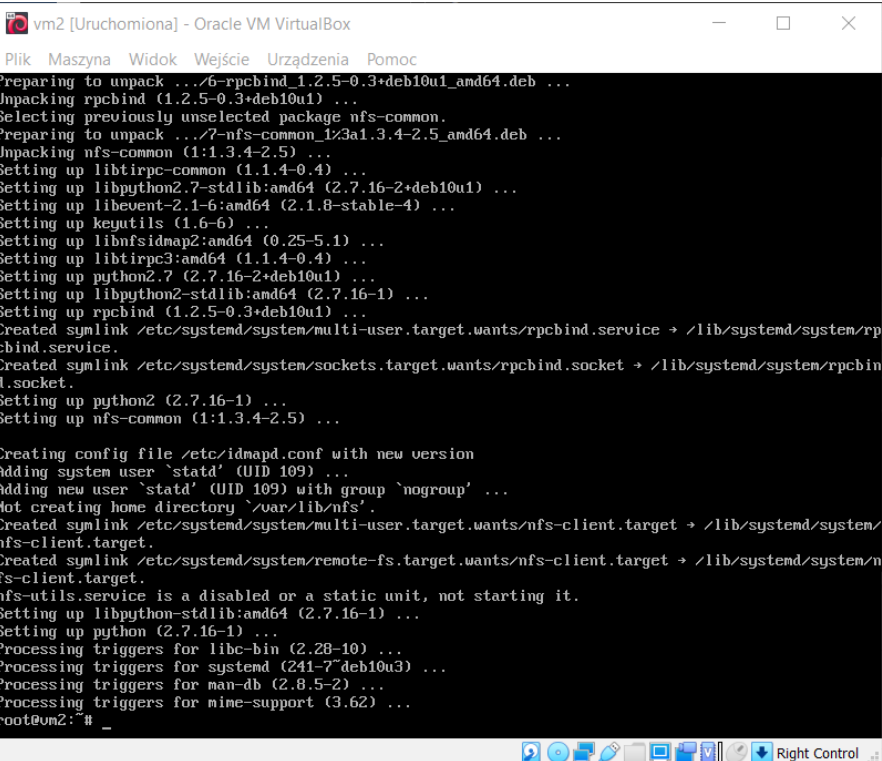


```
vm1 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc

# Example for NFSv2 and NFSv3:
# /srv/homes hostname1(rw,sync,no_subtree_check) hostname2(ro,sync,no_subtree_check)
#
# Example for NFSv4:
# /srv/nfs4 gss/krb5i(rw,sync,fsid=0,crossmnt,no_subtree_check)
# /srv/nfs4/homes gss/krb5i(rw,sync,no_subtree_check)
#
nfs/export 10.1.2.0/24 (rw,sync,fsid=0,no_root_squash,no_subtree_check)

root@vm1:~# systemctl restart nfs-server.service
[ 900.163234] nfsd: last server has exited, flushing export cache
[ 900.192592] NFSv4: Using /var/lib/nfs/v4recovery as the NFSv4 state recovery directory
[ 900.194530] NFSv4: starting 90-second grace period (net f0000098)
root@vm1:~#
```

6. Zainstalowanie na VM2 nfs-common:

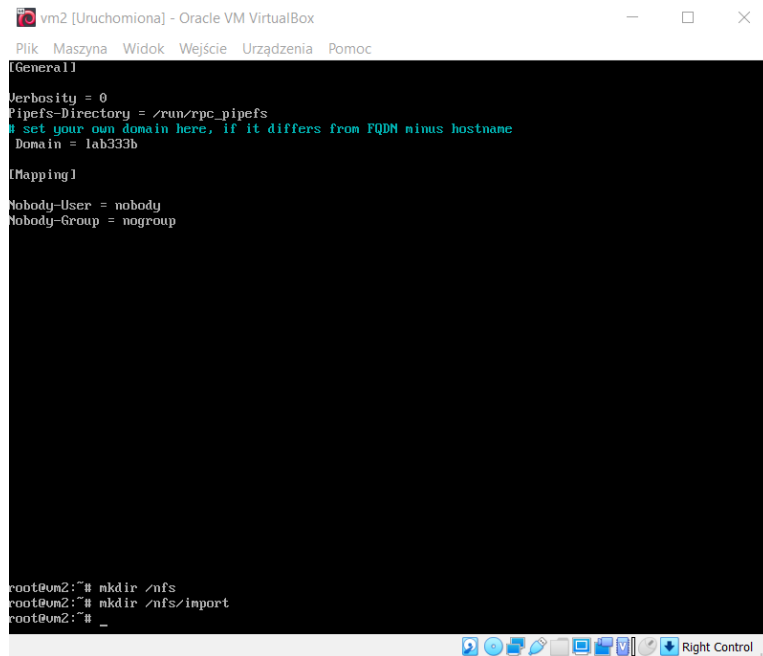


```
vm2 [Uruchomiona] - Oracle VM VirtualBox
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Preparing to unpack .../6-rpccbind_1.2.5-0.3+deb10u1_amd64.deb ...
Unpacking rpccbind (1.2.5-0.3+deb10u1) ...
Selecting previously unselected package nfs-common.
Preparing to unpack .../7-nfs-common_1.3.4-2.5_amd64.deb ...
Unpacking nfs-common (1.3.4-2.5) ...
Setting up libtirpc-common (1.1.4-0.4) ...
Setting up libpython2.7-stdlib:amd64 (2.7.16-2+deb10u1) ...
Setting up libevent-2.1-6:amd64 (2.1.8-stable-4) ...
Setting up keyutils (1.6-6) ...
Setting up libnfsidmap2:amd64 (0.25-5.1) ...
Setting up libtirpc3:amd64 (1.1.4-0.4) ...
Setting up python2.7 (2.7.16-2+deb10u1) ...
Setting up libpython2-stdlib:amd64 (2.7.16-1) ...
Setting up rpccbind (1.2.5-0.3+deb10u1) ...
Created symlink /etc/systemd/system/multi-user.target.wants/rpccbind.service → /lib/systemd/system/rpccbind.service.
Created symlink /etc/systemd/system/sockets.target.wants/rpccbind.socket → /lib/systemd/system/rpccbind.socket.
Setting up python2 (2.7.16-1) ...
Setting up nfs-common (1.3.4-2.5) ...

Creating config file /etc/idmapd.conf with new version
Adding system user `statd' (UID 109) ...
Adding new user `statd' (UID 109) with group `nogroup' ...
Not creating home directory `/var/lib/nfs'.
Created symlink /etc/systemd/system/multi-user.target.wants/nfs-client.target → /lib/systemd/system/nfs-client.target.
Created symlink /etc/systemd/system/remote-fs.target.wants/nfs-client.target → /lib/systemd/system/nfs-client.target.
nfs-utils.service is a disabled or a static unit, not starting it.
Setting up libpython-stdlib:amd64 (2.7.16-1) ...
Setting up python (2.7.16-1) ...
Processing triggers for libc-bin (2.28-10) ...
Processing triggers for systemd (241-7+deb10u3) ...
Processing triggers for man-db (2.8.5-2) ...
Processing triggers for mime-support (3.62) ...
root@vm2:~#
```

7. Konfiguracja domeny na VM2:
8. stworzenie folderów na VM2:



```
vm2 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
[General]
Verbosity = 0
Pipefs-Directory = /run/rpc_pipefs
# set your own domain here, if it differs from FQDN minus hostname
Domain = lab333b

[Mapping]
Nobody-User = nobody
Nobody-Group = nogroup

root@vm2:~# mkdir /nfs
root@vm2:~# mkdir /nfs/import
root@vm2:~#
```

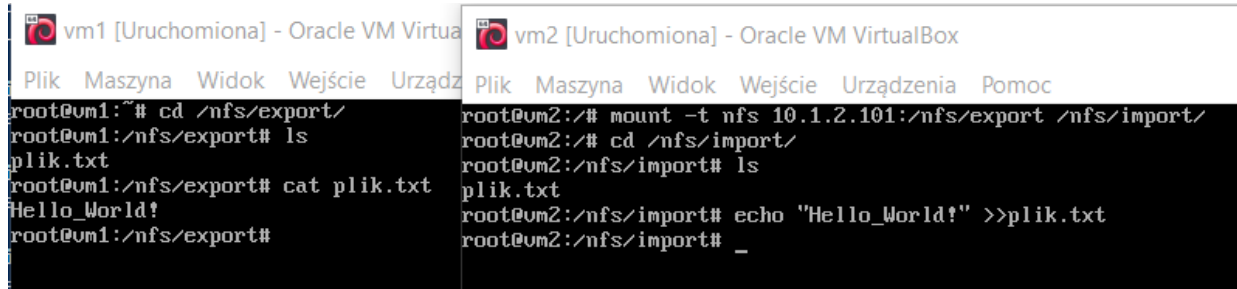
9. Zamontowanie katalogu export z VM1 na VM2:
10. Sprawdzenie zamontowania:

vm2 [Uruchomiona] - Oracle VM VirtualBox

Plik Maszyna Widok Wejście Urządzenia Pomoc

```
root@vm2:~# mount -t nfs 10.1.2.101:/nfs/export /nfs/import
[ 987.362357] FS-Cache: Loaded
[ 987.381552] FS-Cache: Netfs 'nfs' registered for caching
[ 987.385838] Key type dns_resolver registered
[ 987.410840] NFS: Registering the id_resolver key type
[ 987.411545] Key type id_resolver registered
[ 987.412510] Key type id_legacy registered
root@vm2:~# df -h
-bash: df -h: command not found
root@vm2:~# df -h
Filesystem                Size      Used Avail Use% Mounted on
udev                      165M         0   165M   0% /dev
tmpfs                     36M       2.0M    34M   6% /run
/dev/sda1                 1.9G     983M    763M  57% /
tmpfs                     179M         0   179M   0% /dev/shm
tmpfs                     5.0M         0    5.0M   0% /run/lock
tmpfs                     179M         0   179M   0% /sys/fs/cgroup
/dev/sda15                124M      262K   124M   1% /boot/efi
tmpfs                     36M         0    36M   0% /run/user/1000
10.1.2.101:/nfs/export    1.9G     984M    763M  57% /nfs/import
```

11. Próba wejścia do nfs/import:

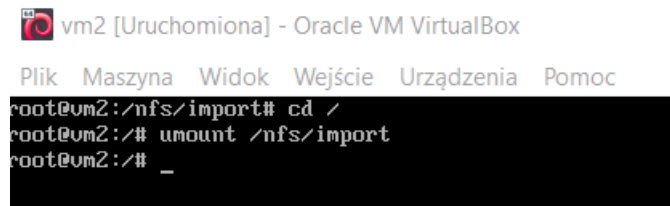


The image shows two terminal windows from Oracle VM VirtualBox. The left window, titled 'vm1 [Uruchomiona] - Oracle VM VirtualBox', shows the root user at vm1 navigating to /nfs/export, listing files (plik.txt), and displaying its content (Hello_World!). The right window, titled 'vm2 [Uruchomiona] - Oracle VM VirtualBox', shows the root user at vm2 mounting the export as /nfs/import, listing files (plik.txt), and writing 'Hello_World!' to it using the echo command.

```
vm1 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia
root@vm1:~# cd /nfs/export/
root@vm1:/nfs/export# ls
plik.txt
root@vm1:/nfs/export# cat plik.txt
Hello_World!
root@vm1:/nfs/export#

vm2 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
root@vm2:~# mount -t nfs 10.1.2.101:/nfs/export /nfs/import/
root@vm2:~# cd /nfs/import/
root@vm2:/nfs/import# ls
plik.txt
root@vm2:/nfs/import# echo "Hello_World!" >>plik.txt
root@vm2:/nfs/import# _
```

12. umount

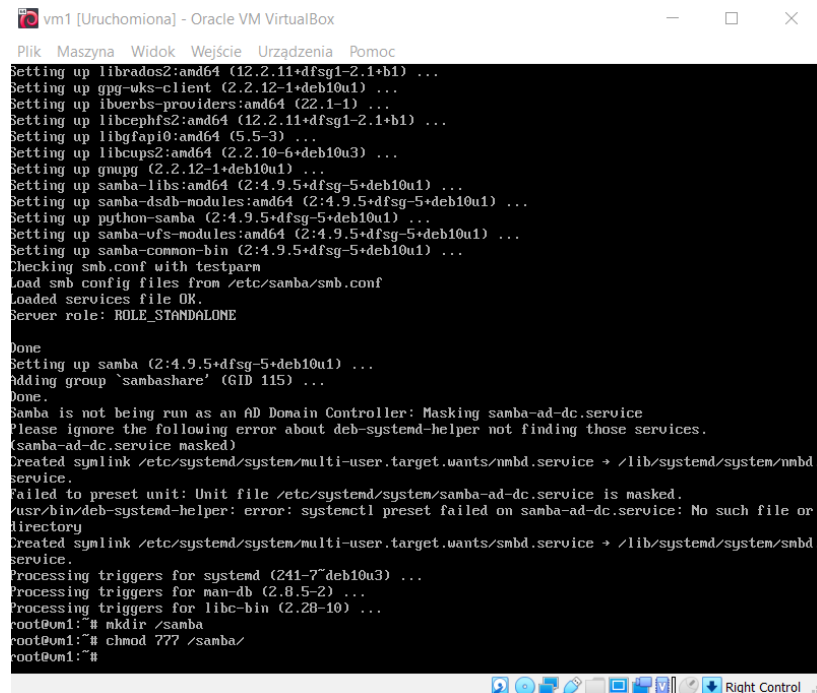


The image shows a terminal window titled 'vm2 [Uruchomiona] - Oracle VM VirtualBox'. The root user at vm2 is in the /nfs/import directory and runs 'cd /' followed by 'umount /nfs/import' to unmount the NFS share. The prompt returns to the root directory.

```
vm2 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
root@vm2:/nfs/import# cd /
root@vm2:~# umount /nfs/import
root@vm2:~# _
```

3. SAMBA

1. Instalacja Samby
2. Przygotowanie udziału:
 - a. .
 - b. .

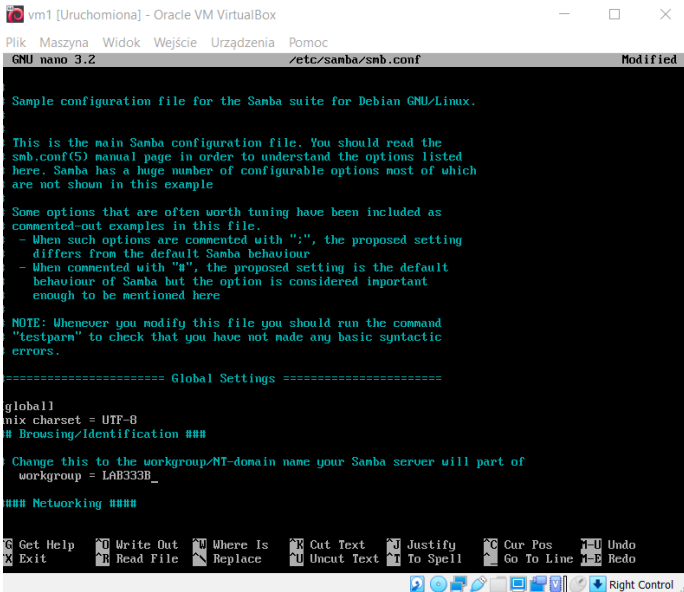


The image shows a terminal window titled 'vm1 [Uruchomiona] - Oracle VM VirtualBox' with a menu bar. It displays the output of the 'dpkg-reconfigure samba-common' command. The output shows the installation of Samba components (libs, dsdb-modules, python, ufs-modules, common-bin) and the configuration of the smb.conf file. It sets the server role to 'ROLE_STANDALONE' and masks the 'samba-ad-dc.service' because it's not an AD Domain Controller. It also shows the creation of symlinks for the multi-user target and the processing of systemd triggers. Finally, it shows the root user at vm1 running 'mkdir /samba' and 'chmod 777 /samba/'.

```
vm1 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
Setting up librados2:amd64 (12.2.11+dfsg1-2.1+b1) ...
Setting up gpg-wks-client (2.2.12-1+deb10u1) ...
Setting up ibverbs-providers:amd64 (22.1-1) ...
Setting up libcephfs2:amd64 (12.2.11+dfsg1-2.1+b1) ...
Setting up libgfapi0:amd64 (5.5-3) ...
Setting up libcups2:amd64 (2.2.10-6+deb10u3) ...
Setting up gnupg (2.2.12-1+deb10u1) ...
Setting up samba-libs:amd64 (2:4.9.5+dfsg-5+deb10u1) ...
Setting up samba-dsdb-modules:amd64 (2:4.9.5+dfsg-5+deb10u1) ...
Setting up python-samba (2:4.9.5+dfsg-5+deb10u1) ...
Setting up samba-ufs-modules:amd64 (2:4.9.5+dfsg-5+deb10u1) ...
Setting up samba-common-bin (2:4.9.5+dfsg-5+deb10u1) ...
Checking smb.conf with testparm
Load smb config files from /etc/samba/smb.conf
Loaded services file OK.
Server role: ROLE_STANDALONE

Done
Setting up samba (2:4.9.5+dfsg-5+deb10u1) ...
Adding group 'sambashare' (GID 115) ...
Done.
Samba is not being run as an AD Domain Controller: Masking samba-ad-dc.service
Please ignore the following error about deb-systemd-helper not finding those services.
(samba-ad-dc.service masked)
Created symlink /etc/systemd/system/multi-user.target.wants/nmbd.service → /lib/systemd/system/nmbd.service.
Failed to preset unit: Unit file /etc/systemd/system/samba-ad-dc.service is masked.
/usr/bin/deb-systemd-helper: error: systemctl preset failed on samba-ad-dc.service: No such file or directory
Created symlink /etc/systemd/system/multi-user.target.wants/smbd.service → /lib/systemd/system/smbd.service.
Processing triggers for systemd (241-7~deb10u3) ...
Processing triggers for man-db (2.8.5-2) ...
Processing triggers for libc-bin (2.28-10) ...
root@vm1:~# mkdir /samba
root@vm1:~# chmod 777 /samba/
root@vm1:~#
```

c. Modyfikacja smb.conf:



```
vm1 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
GNU nano 3.2 /etc/samba/smb.conf Modified

Sample configuration file for the Samba suite for Debian GNU/Linux.

This is the main Samba configuration file. You should read the
smb.conf(5) manual page in order to understand the options listed
here. Samba has a huge number of configurable options most of which
are not shown in this example

Some options that are often worth tuning have been included as
commented-out examples in this file.
- When such options are commented with ";", the proposed setting
differs from the default Samba behaviour
- When commented with "#", the proposed setting is the default
behaviour of Samba but the option is considered important
enough to be mentioned here

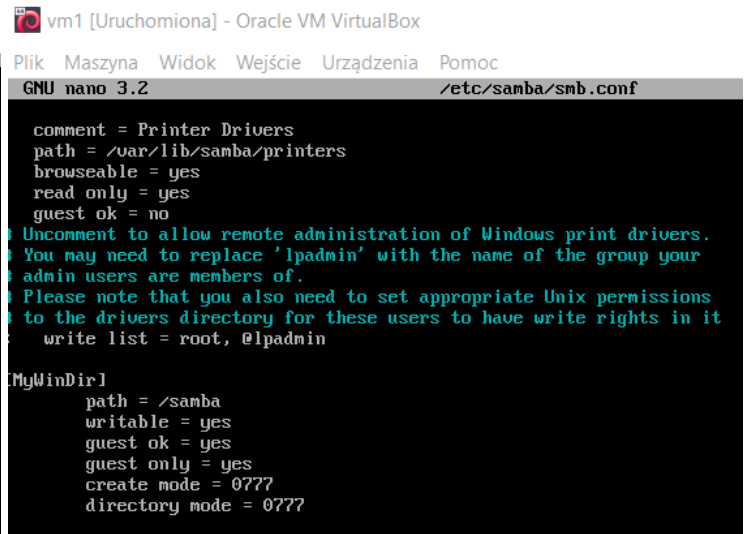
NOTE: Whenever you modify this file you should run the command
"testparm" to check that you have not made any basic syntactic
errors.

===== Global Settings =====

global
  unix charset = UTF-8
  # Browsing/Identification ###
  # Change this to the workgroup/NT-domain name your Samba server will part of
  workgroup = LAB333B_

  ### Networking ###

Get Help Write Out Where Is Cut Text Justify Cur Pos Undo
Exit Read File Replace Uncut Text To Spell Go To Line Redo
Right Control
```



```
vm1 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
GNU nano 3.2 /etc/samba/smb.conf

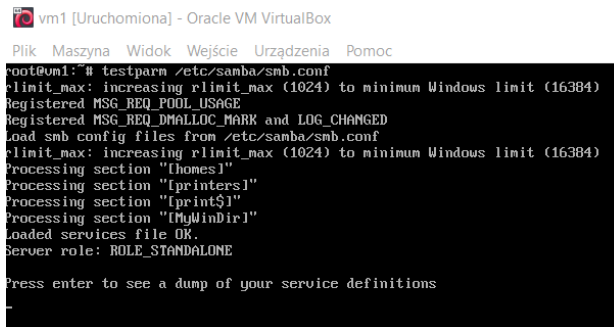
comment = Printer Drivers
path = /var/lib/samba/printers
browseable = yes
read only = yes
guest ok = no

Uncomment to allow remote administration of Windows print drivers.
You may need to replace 'lpadmin' with the name of the group your
admin users are members of.
Please note that you also need to set appropriate Unix permissions
to the drivers directory for these users to have write rights in it
write list = root, @lpadmin

[MyWinDir]
  path = /samba
  writable = yes
  guest ok = yes
  guest only = yes
  create mode = 0777
  directory mode = 0777
```

3. Test poprawności:

a.

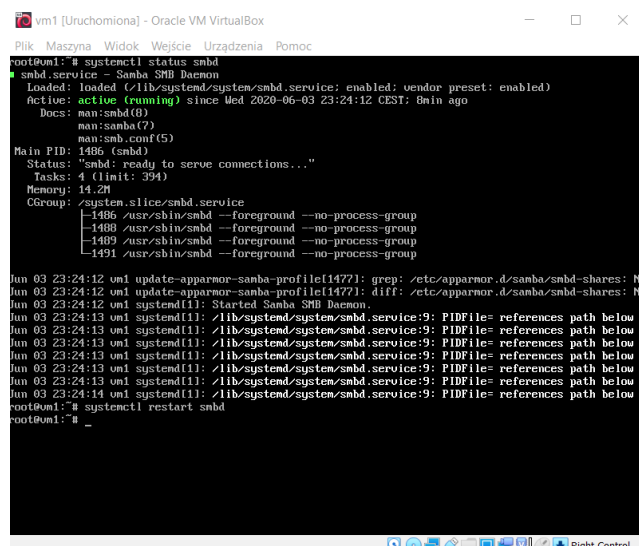


```
vm1 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
root@uml:~# testparm /etc/samba/smb.conf
rlimit_max: increasing rlimit_max (1024) to minimum Windows limit (16384)
Registered MSG_REQ_POOL_USAGE
Registered MSG_REQ_DMALLOC_MARK and LOG_CHANGED
Load smb config files from /etc/samba/smb.conf
rlimit_max: increasing rlimit_max (1024) to minimum Windows limit (16384)
Processing section "[homes]"
Processing section "[printers]"
Processing section "[print$]"
Processing section "[MyWinDir]"
Loaded services file OK.
Server role: ROLE_STANDALONE

Press enter to see a dump of your service definitions
```

b. .

c. .

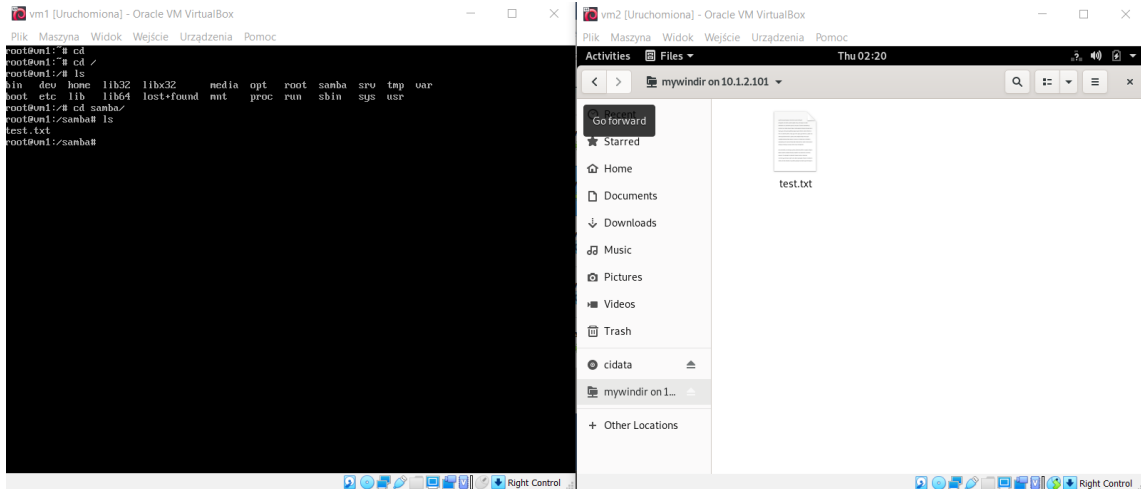


```
vm1 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
root@uml:~# systemctl status smbd
● smbd.service - Samba SMB Daemon
   Loaded: loaded (/lib/systemd/system/smbd.service; enabled; vendor preset: enabled)
   Active: active (running) since Wed 2020-06-03 23:24:12 CEST; 8min ago
     Docs: man:smbd(8)
           man:samba(7)
           man:smb.conf(5)
   Main PID: 1486 (smbd)
   Status: "smbd: ready to serve connections..."
     Tasks: 4 (limit: 394)
    Memory: 14.2M
   CGroup: /system.slice/smbd.service
           └─1486 /usr/sbin/smbd --foreground --no-process-group
             └─1488 /usr/sbin/smbd --foreground --no-process-group
               └─1489 /usr/sbin/smbd --foreground --no-process-group
                 └─1491 /usr/sbin/smbd --foreground --no-process-group

Jun 03 23:24:12 um1 update-apparmor-samba-profile[1477]: grep: /etc/apparmor.d/samba/smbd-shares: No
Jun 03 23:24:12 um1 update-apparmor-samba-profile[1477]: diff: /etc/apparmor.d/samba/smbd-shares: No
Jun 03 23:24:12 um1 systemd[1]: Started Samba SMB Daemon.
Jun 03 23:24:13 um1 systemd[1]: /lib/systemd/system/smbd.service:9: PIDfile= references path below
Jun 03 23:24:13 um1 systemd[1]: /lib/systemd/system/smbd.service:9: PIDfile= references path below
Jun 03 23:24:13 um1 systemd[1]: /lib/systemd/system/smbd.service:9: PIDfile= references path below
Jun 03 23:24:13 um1 systemd[1]: /lib/systemd/system/smbd.service:9: PIDfile= references path below
Jun 03 23:24:13 um1 systemd[1]: /lib/systemd/system/smbd.service:9: PIDfile= references path below
Jun 03 23:24:14 um1 systemd[1]: /lib/systemd/system/smbd.service:9: PIDfile= references path below
root@uml:~# systemctl restart smbd
root@uml:~#
```

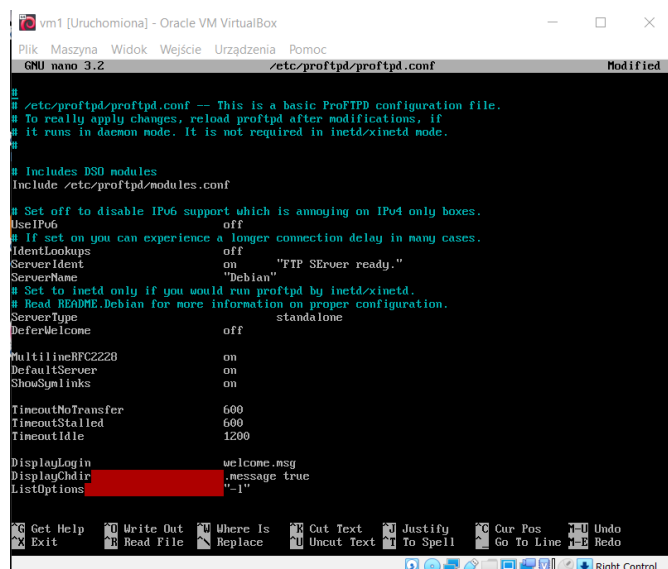
4. VM2 – Niezbędną modyfikację:
 - i. Instalacja nautilus
 - ii. instalacja tasksel
 - iii. instalacja za pomocą tasksel Debian environment (GUI)
 - iv. Reboot i uruchomienie z graficznym interfejsem

5. plik jest widoczny na obu maszynach

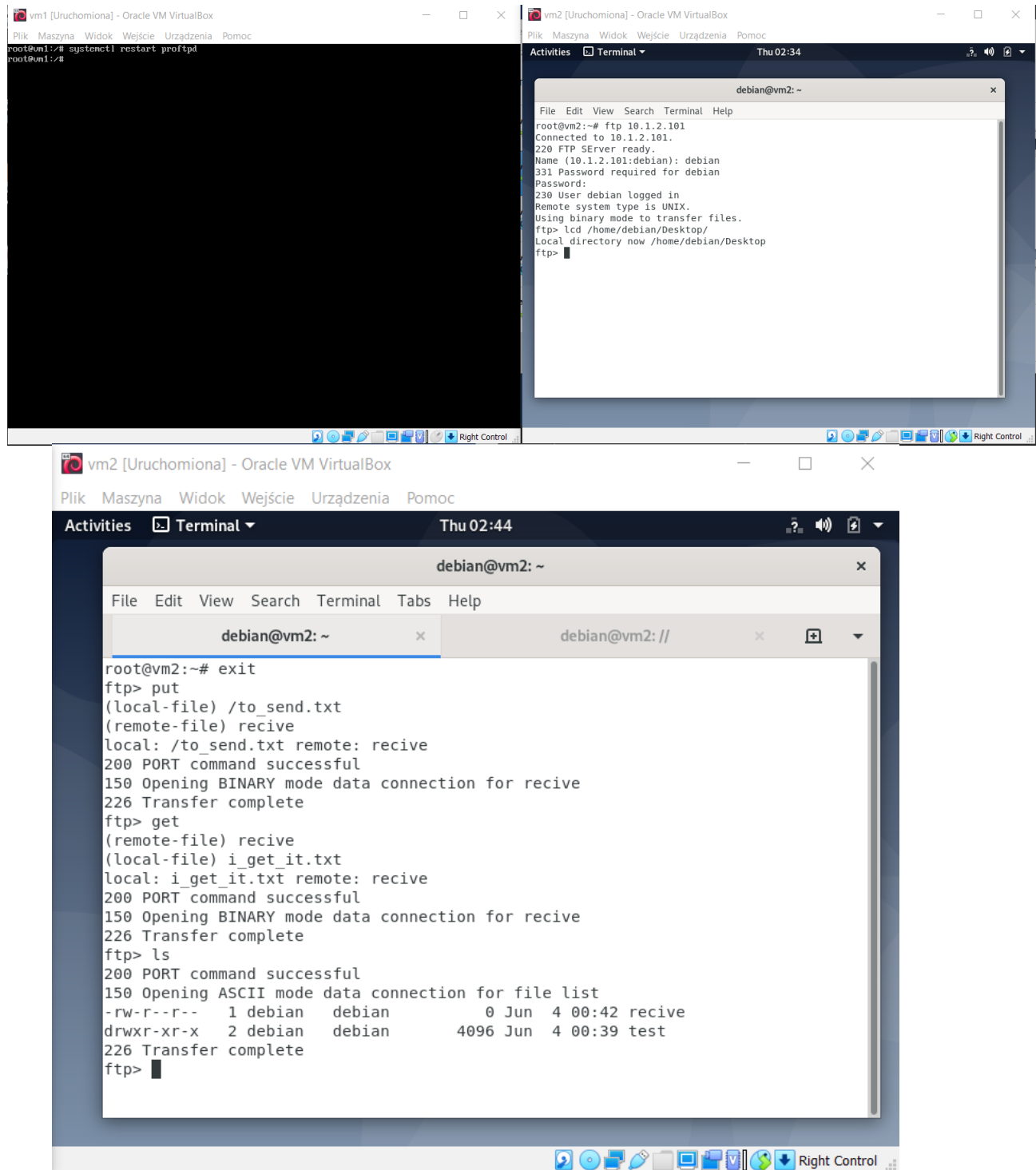


4. FTP

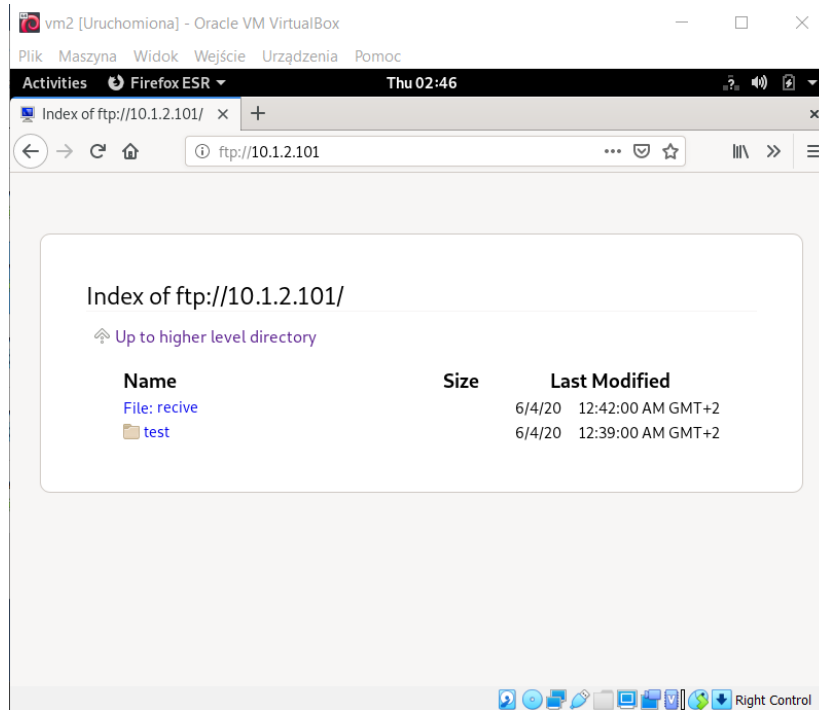
1. Instalacja proftpd i openssl
2. Konfiguracja FTP
 - a. .
 - b. .
 - c. .
 - d. . DefaultRoot ~ został odkomentowany



3. Restart proftpd.service odbył się bez zakłuceń
4. instalacja ftp na VM2
5. Nawiązanie połączenia VM2 z VM1
 - a. ftp 10.1.2.101
 - b. pobierane pliki zostały ustawione w home/debian/Desktop
 - c. plik to_send.txt został wysłany jako plik recived
 - d. plik recived został pobrany jako plik i_get_it.txt

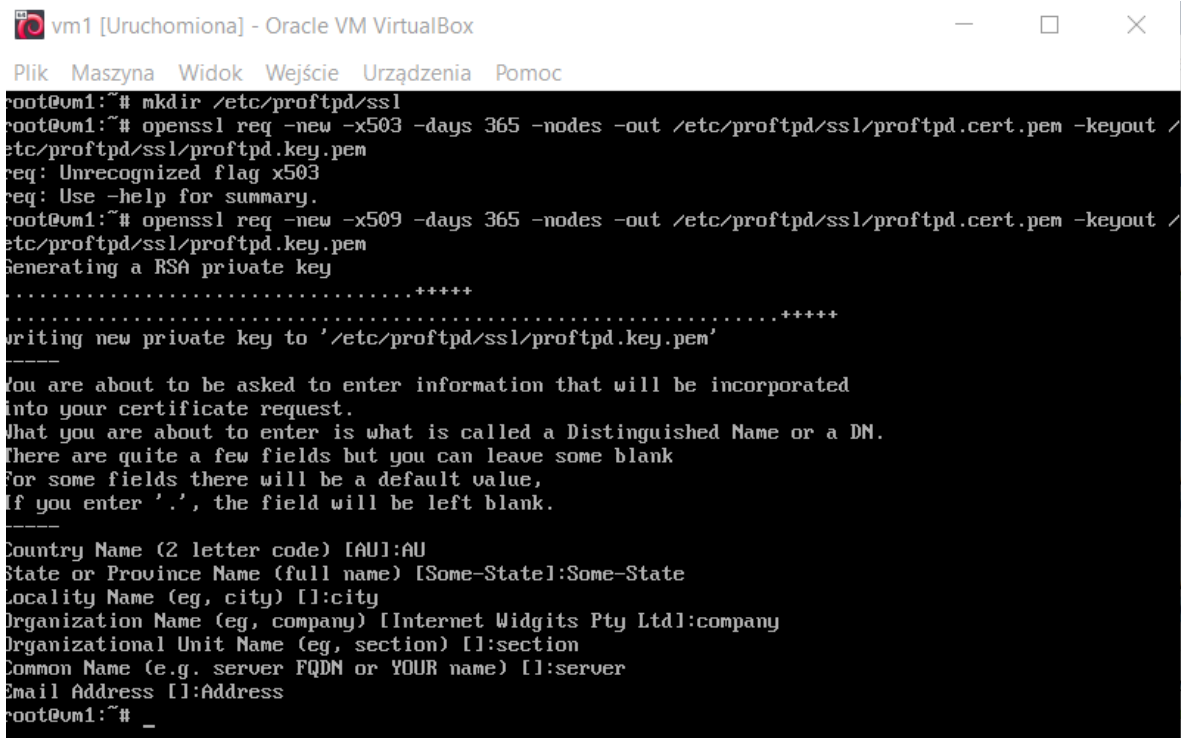


6. połączenie się poprzez przeglądarkę



7. Certyfikat SSL:

- a.
- b.



c.

```
vm1 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
GNU nano 3.2 /etc/proftpd/proftpd.conf

# http://www.securityfocus.com/bid/11430/discuss
# It is on by default.
<IfModule mod_delay.c>
DelayEngine on
</IfModule>

<IfModule mod_ctrls.c>
ControlsEngine off
ControlsMaxClients 2
ControlsLog /var/log/proftpd/controls.log
ControlsInterval 5
ControlsSocket /var/run/proftpd/proftpd.sock
</IfModule>

<IfModule mod_ctrls_admin.c>
AdminControlsEngine off
</IfModule>

#
# Alternative authentication frameworks
#
#Include /etc/proftpd/ldap.conf
#Include /etc/proftpd/sql.conf

#
# This is used for FTPS connections
#
Include /etc/proftpd/tls.conf

#
# Useful to keep VirtualHost/VirtualRoot directives separated
#
```

d.

e.

```
vm1 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
root@vm1:~# cp /etc/proftpd/tls.conf /etc/proftpd/tls.conf_orig
root@vm1:~# cat /dev/null >/etc/proftpd/tls.conf
root@vm1:~#
```

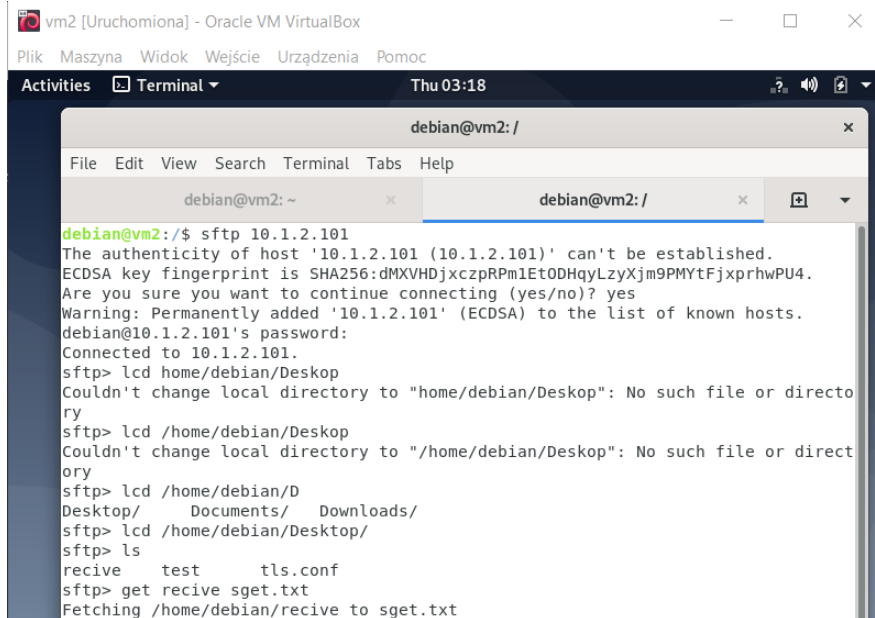
f.

```
vm1 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
GNU nano 3.2 /etc/proftpd/tls.conf

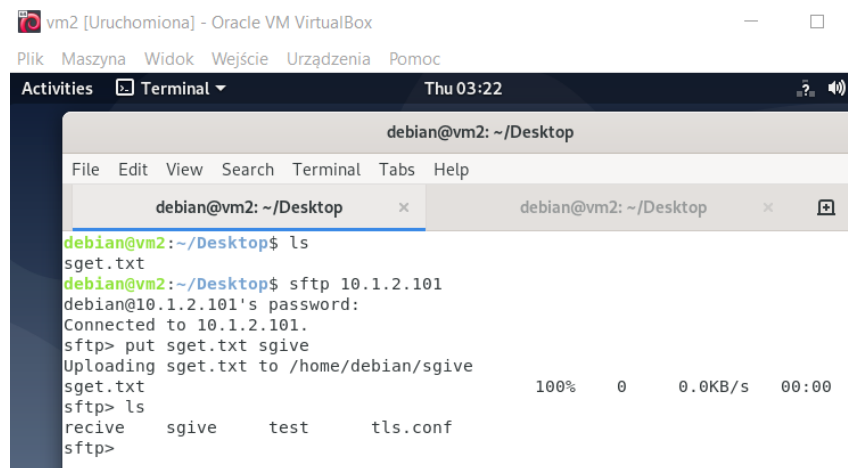
<IfModule mod_tls.c>
TLSEngine on
TLSLog /var/log/proftpd/tls.log
TLSProtocol SSLv23
TLSOptions NoCertRequest NoSessionReuseRequired
TLRSACertificateFile /etc/proftpd/ssl/proftpd.cert.pem
TLRSACertificateKeyFile /etc/proftpd/ssl/proftpd.key.pem
TLSVerifyClient off
TLSRequired on
</IfModule>
```

g. Restart odbył się bez zakłuceń

8.



```
vm2 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
Activities Terminal Thu 03:18
debian@vm2: /
File Edit View Search Terminal Tabs Help
debian@vm2: ~
debian@vm2: /
debian@vm2:/$ sftp 10.1.2.101
The authenticity of host '10.1.2.101 (10.1.2.101)' can't be established.
ECDSA key fingerprint is SHA256:dMXVHDjxczpRPm1Et0DHqyLzyXjm9PMYtFjxprhwPU4.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '10.1.2.101' (ECDSA) to the list of known hosts.
debian@10.1.2.101's password:
Connected to 10.1.2.101.
sftp> lcd home/debian/Desktop
Couldn't change local directory to "home/debian/Desktop": No such file or directory
sftp> lcd /home/debian/Desktop
Couldn't change local directory to "/home/debian/Desktop": No such file or directory
sftp> lcd /home/debian/D
Desktop/ Documents/ Downloads/
sftp> lcd /home/debian/Desktop/
sftp> ls
recvie test tls.conf
sftp> get recvie sget.txt
Fetching /home/debian/recvie to sget.txt
```



```
vm2 [Uruchomiona] - Oracle VM VirtualBox
Plik Maszyna Widok Wejście Urządzenia Pomoc
Activities Terminal Thu 03:22
debian@vm2: ~/Desktop
File Edit View Search Terminal Tabs Help
debian@vm2: ~/Desktop
debian@vm2: ~/Desktop
debian@vm2:~/Desktop$ ls
sget.txt
debian@vm2:~/Desktop$ sftp 10.1.2.101
debian@10.1.2.101's password:
Connected to 10.1.2.101.
sftp> put sget.txt sgive
Uploading sget.txt to /home/debian/sgive
sget.txt 100% 0 0.0KB/s 00:00
sftp> ls
recvie sgive test tls.conf
sftp>
```

9.

