INSTITUTO POLITÉCNICO DE BEJA

Escola Superior de Tecnologia e Gestão

Redes e Sistemas Informáticos

Nome do Projeto/Estágio

João Ribeiro

2021/2022

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Relatório de projeto de fim da disciplina apresentado na

Escola Superior de Tecnologia e Gestão do Instituto Politécnico de Beja

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Índice

1. Introdução

Pretende-se a elaboração de um projeto que visa a implementação de conhecimentos obtidos nas aulas de Administração de Sistemas Linux. O projeto consiste na instalação e configuração de serviços e realização de um ou mais scripts em servidor. Cada projeto deverá ser realizado individualmente.

2. PONTO 1

2.1. Exercício 1.3

Este paço foi feito na instalação do sistema operativo mas também pode ser feito pelo comando passwd root e depois escrever a passe

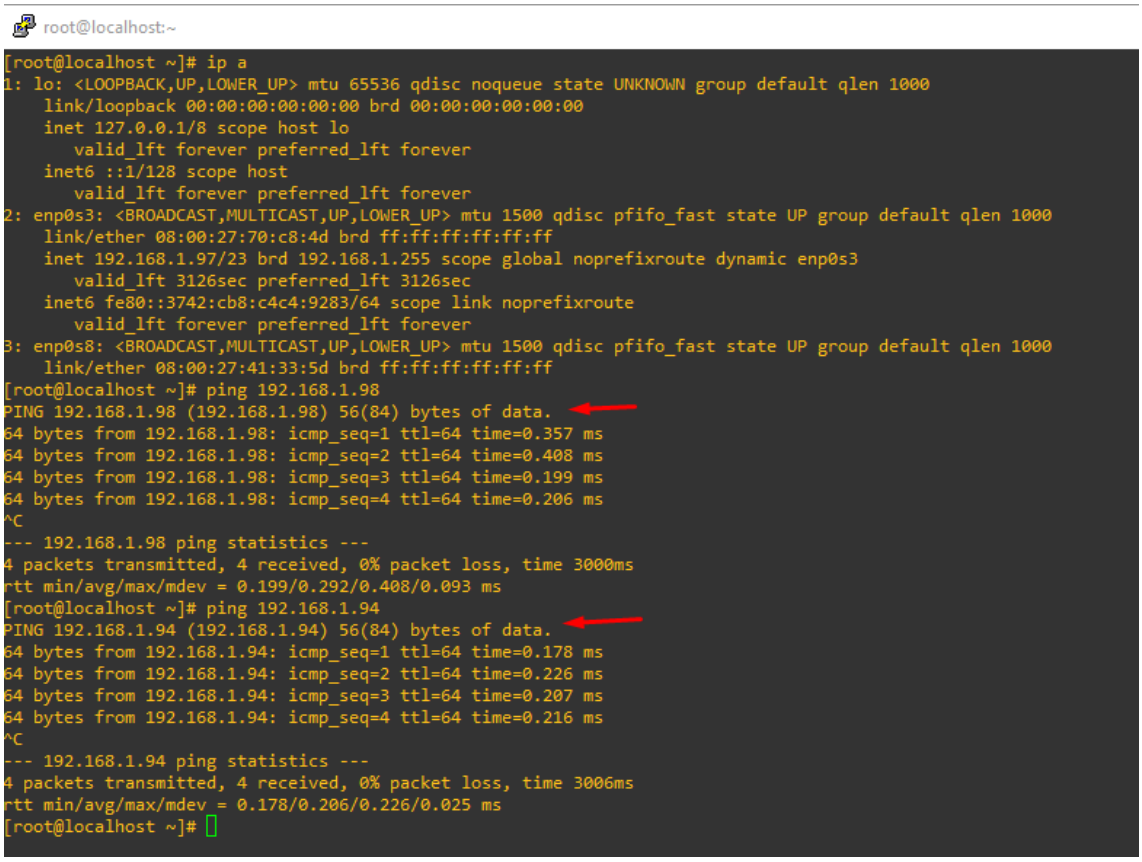
2.2. Exercício 1.4

Este paço foi feito na instalação do sistema operativo mas também pode ser feito pelo comando adduser joaoribeiro, passwd joaoribeiro e depois escrever a passe

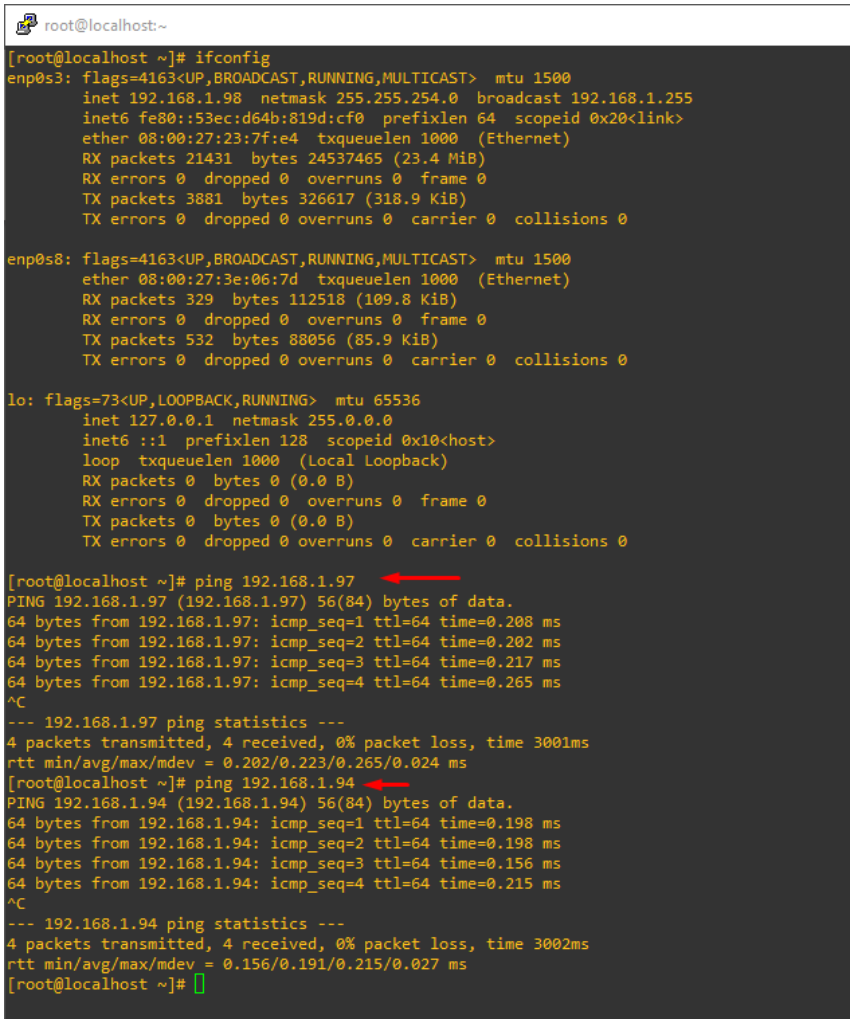
2.3. Exercício 1.5

O servidor DNS/BackupServer pinga o FTPServer e o UserPC pois os três estão na mesma rede interna.

DNS/BackupServer:



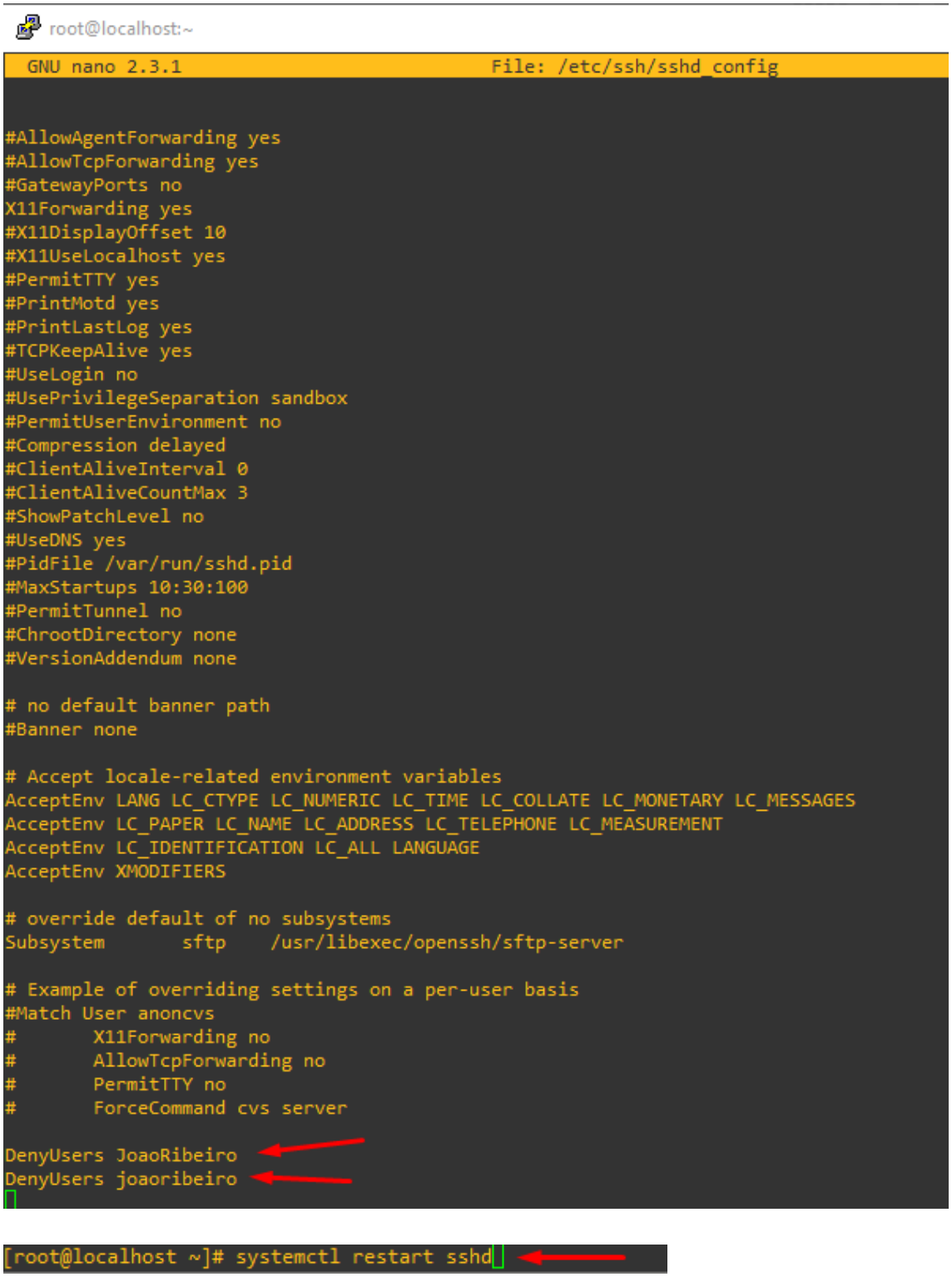
FTPServer

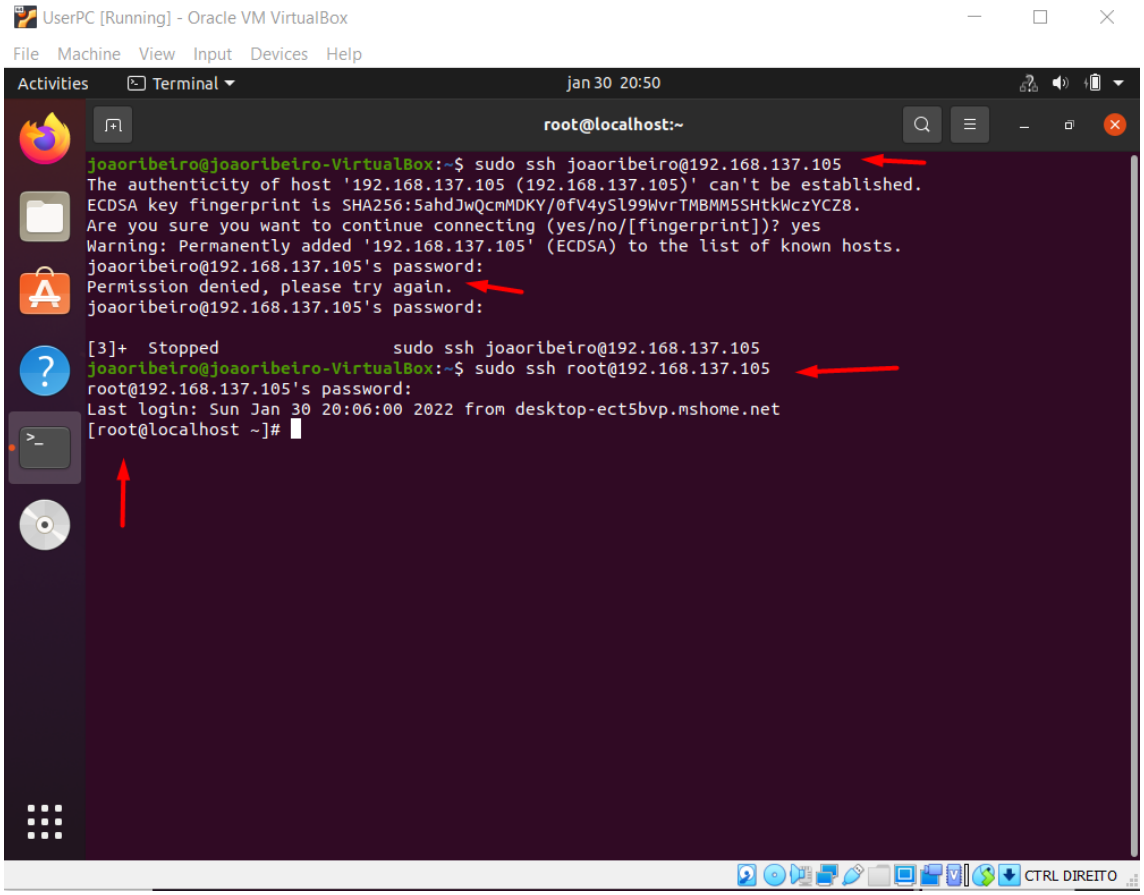

root@localhost:~
[root@localhost ~]# ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
inet 192.168.1.98 netmask 255.255.254.0 broadcast 192.168.1.255
inet6 fe80::53ec:d64b:819d:cf0 prefixlen 64 scopeid 0x20<link>
ether 08:00:27:23:7f:e4 txqueuelen 1000 (Ethernet)
RX packets 21431 bytes 24537465 (23.4 MiB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 3881 bytes 326617 (318.9 KiB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
enp0s8: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
ether 08:00:27:3e:06:7d txqueuelen 1000 (Ethernet)
RX packets 329 bytes 112518 (109.8 KiB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 532 bytes 88056 (85.9 KiB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
inet 127.0.0.1 netmask 255.0.0.0
inet6 ::1 prefixlen 128 scopeid 0x10<host>
loop txqueuelen 1000 (Local Loopback)
RX packets 0 bytes 0 (0.0 B)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 0 bytes 0 (0.0 B)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
[root@localhost ~]# ping 192.168.1.97
PING 192.168.1.97 (192.168.1.97) 56(84) bytes of data.
64 bytes from 192.168.1.97: icmp_seq=1 ttl=64 time=0.208 ms
64 bytes from 192.168.1.97: icmp_seq=2 ttl=64 time=0.202 ms
64 bytes from 192.168.1.97: icmp_seq=3 ttl=64 time=0.217 ms
64 bytes from 192.168.1.97: icmp_seq=4 ttl=64 time=0.265 ms
^C
--- 192.168.1.97 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3001ms
rtt min/avg/max/mdev = 0.202/0.223/0.265/0.024 ms
[root@localhost ~]# ping 192.168.1.94
PING 192.168.1.94 (192.168.1.94) 56(84) bytes of data.
64 bytes from 192.168.1.94: icmp_seq=1 ttl=64 time=0.198 ms
64 bytes from 192.168.1.94: icmp_seq=2 ttl=64 time=0.198 ms
64 bytes from 192.168.1.94: icmp_seq=3 ttl=64 time=0.156 ms
64 bytes from 192.168.1.94: icmp_seq=4 ttl=64 time=0.215 ms
^C
--- 192.168.1.94 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3002ms
rtt min/avg/max/mdev = 0.156/0.191/0.215/0.027 ms
[root@localhost ~]#

2.4. Exercício 1.6

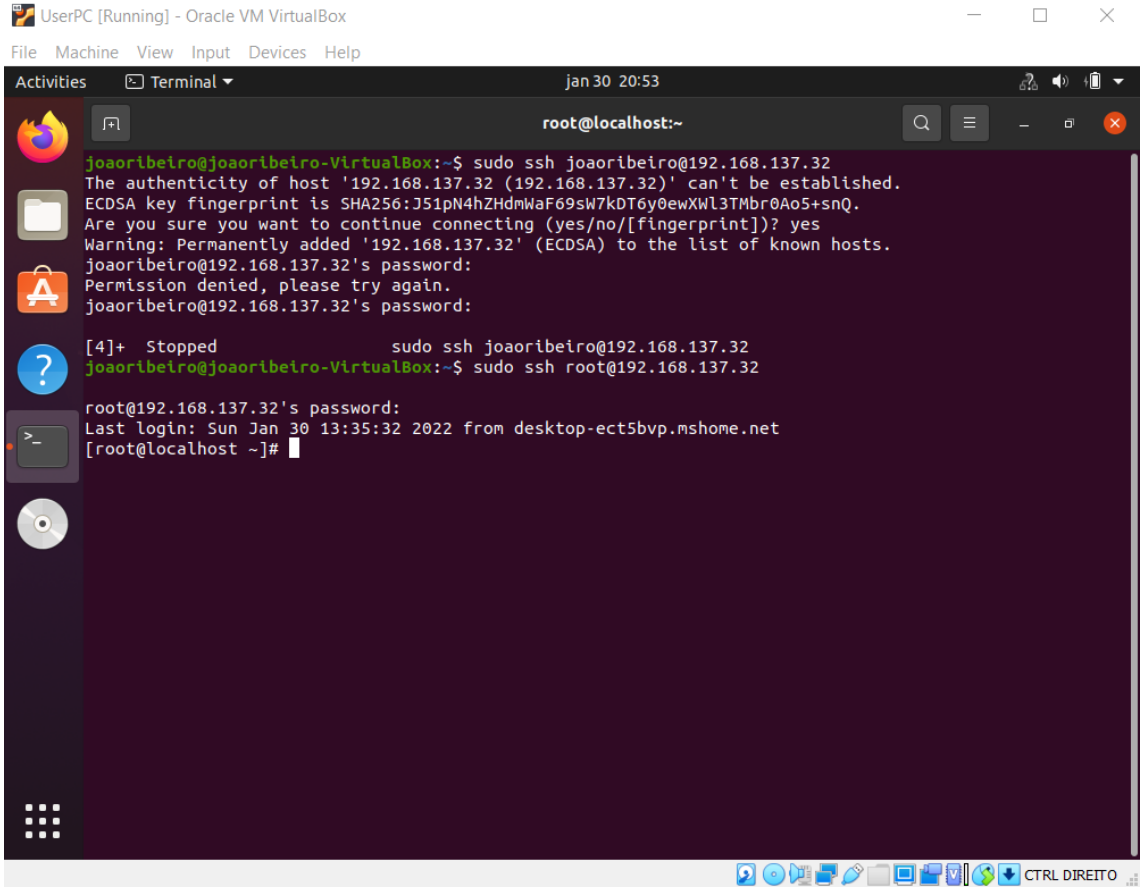
Instale e configure o acesso por ssh, apenas ao utilizador “root”

Aceder ao ficheiro de configuração do ssh e negar o utilizador





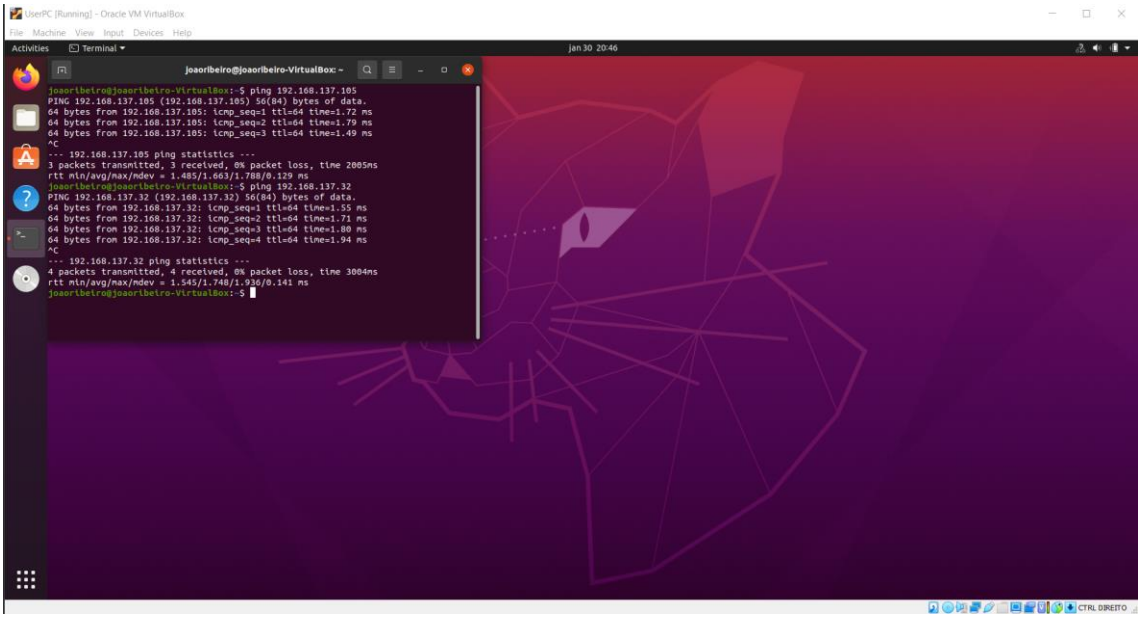
Fiz o mesmo para o outro servidor



3. PONTO 2

3.1. Exercicio 2.3

Configure a rede de modo a existir comunicação entre todos os equipamentos:



4. PONTO 3

4.1. Exercicio 3.1

Crie quatro utilizadores no ftp server, atribuindo a cada um a respetiva password.

NOTA IMPORTANTE, OS UTILIZADORES DEVERÃO TER AS SUAS HOME FOLDERS EM "/storage/home", os nomes deverão ser usera; userb; userc; userd. Respectivas passwords (usera; userb; userc; userd)

Instalar o vsftpd

```
[root@localhost ~]# yum install vsftpd
```

Permitir e habilitar o vsftpd

```
[root@localhost ~]# systemctl start vsftpd
[root@localhost ~]# systemctl enable vsftpd
Created symlink from /etc/systemd/system/multi-user.target.wants/vsftpd.service to /usr/lib/systemd/system/vsftpd.service.
[root@localhost ~]#
```

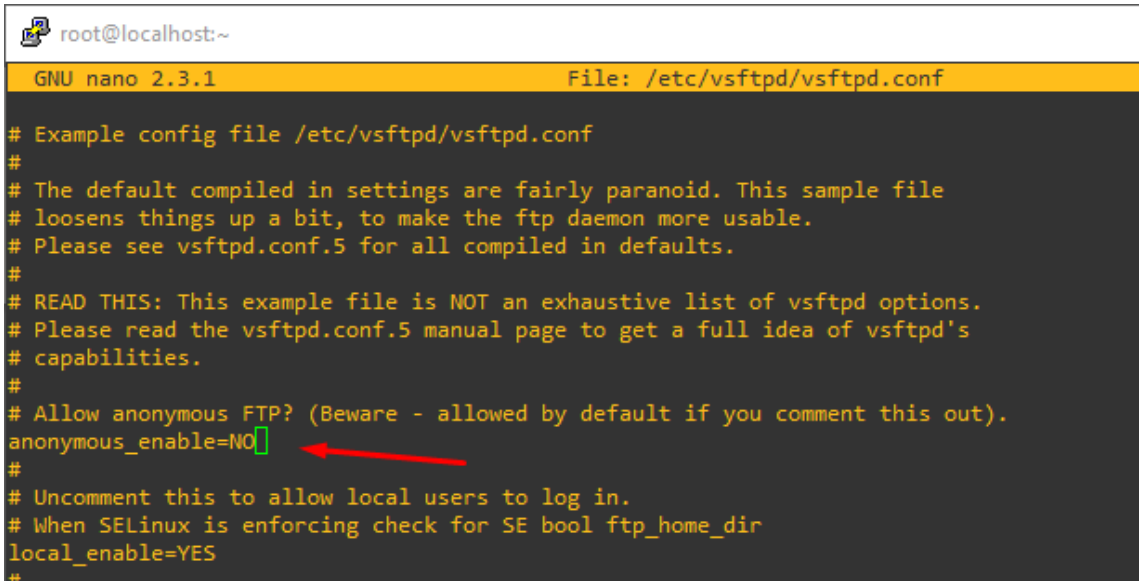
Permitar a firewall

```
[root@localhost ~]# firewall-cmd --zone=public --permanent --add-port=21/tcp
success
[root@localhost ~]# firewall-cmd --zone=public --permanent --add-service=ftp
success
[root@localhost ~]# firewall-cmd --reload
success
```

Fazer um backup do ficheiro de configuração do vsftp

```
[root@localhost ~]# cp /etc/vsftpd/vsftpd.conf /etc/vsftpd/vsftpd.conf.orig
```

Bloquear o acesso ao ftp anonimamente

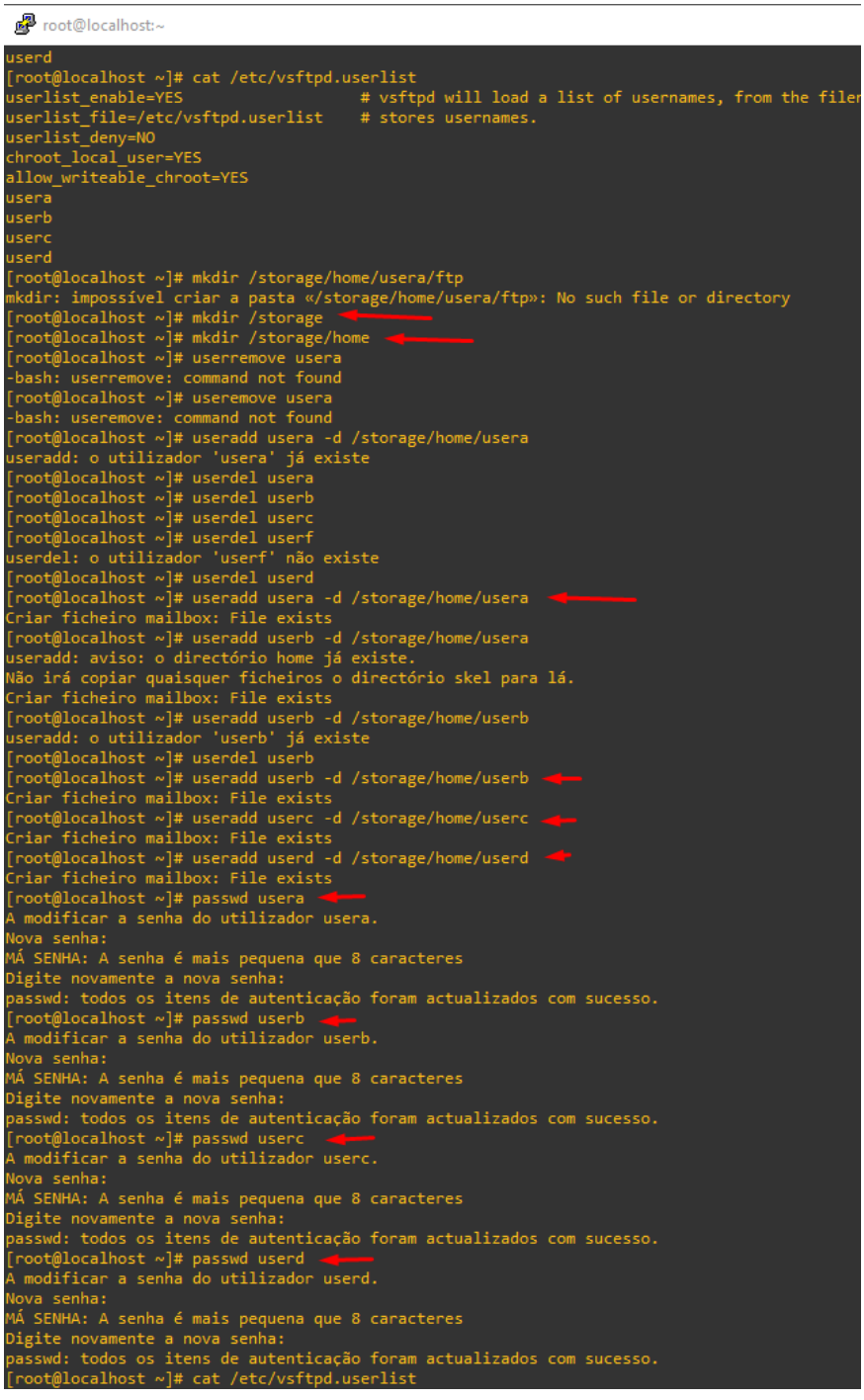


Editei o ficheiro de user do vsftpd

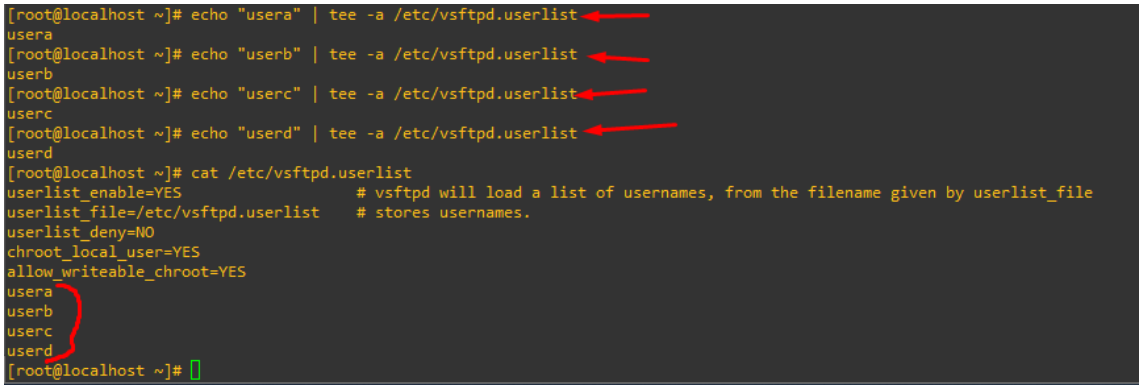
Reinicei o serviço

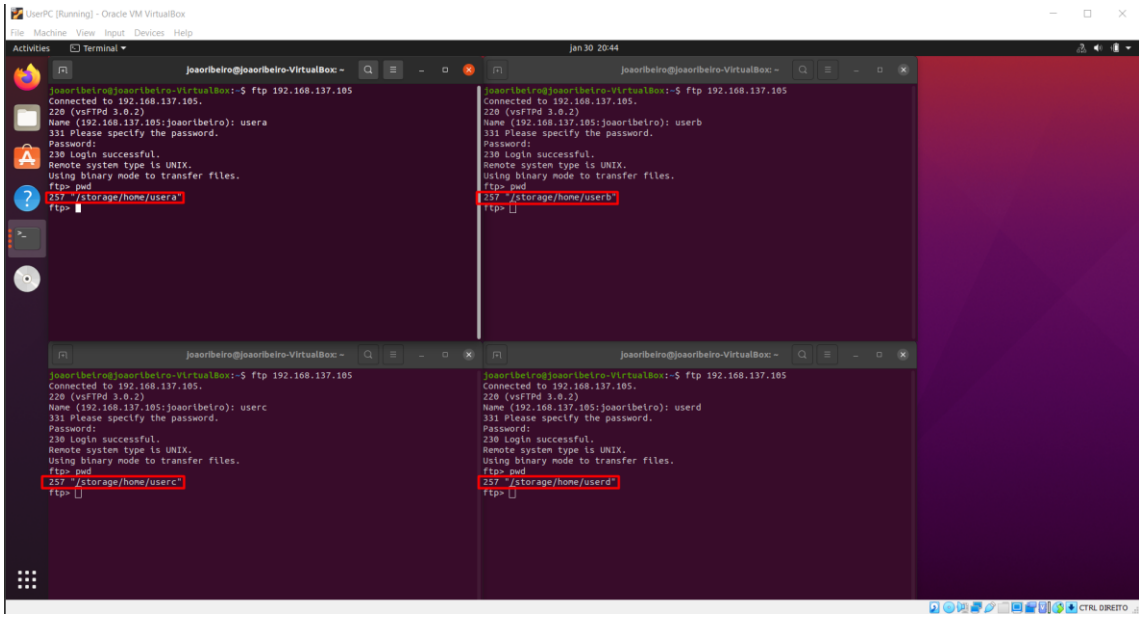
```
[root@localhost ~]# systemctl restart vsftpd
```

Criar a pasta, os users e definir as suas passwords



Adicionar os user à pasta dos user e ver o que está dentro da pasta dos users

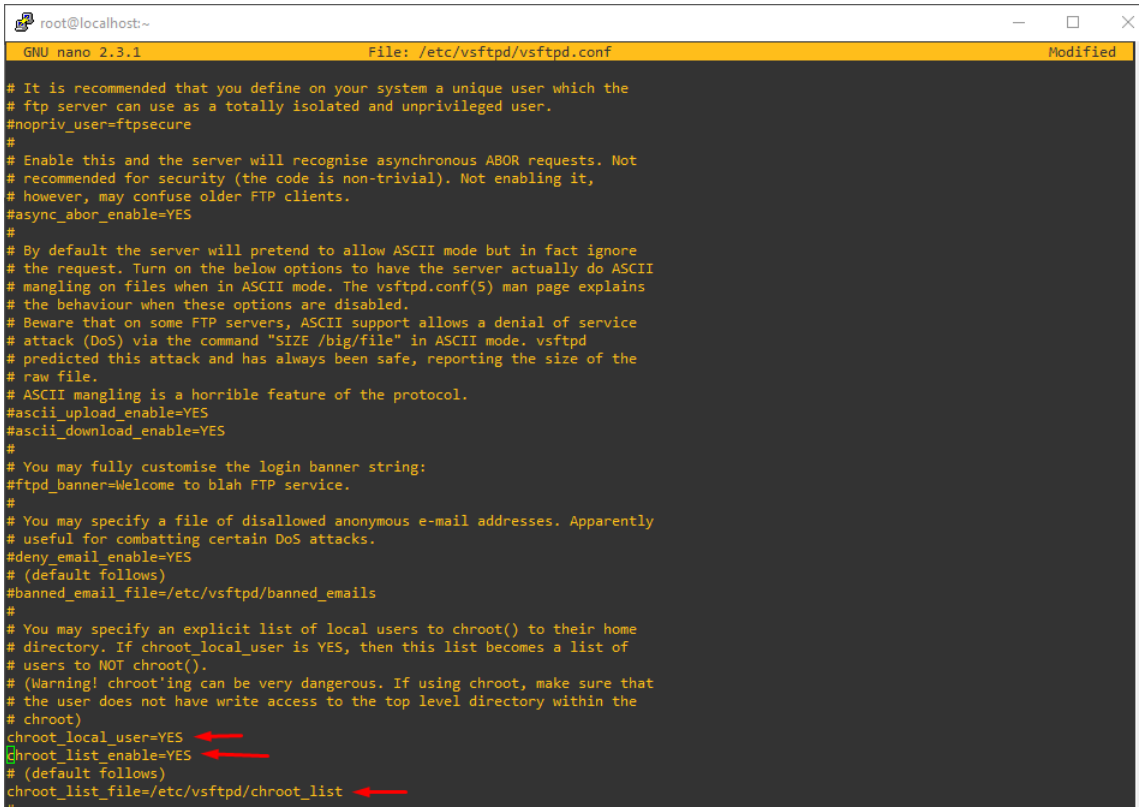




4.2. Exercicio 3.2

“Configure o serviço de FTP para permitir conexões remotas através dos utilizadores criados anteriormente. Enjaule as conexões de FTP apenas aos utilizadores usera e userb.”

Descomentar as linhas marcadas



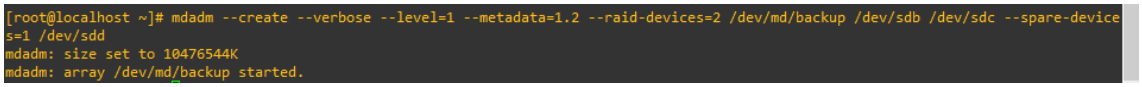
Aceder à chroot list e adicionar os user que se vai aplicar o jail

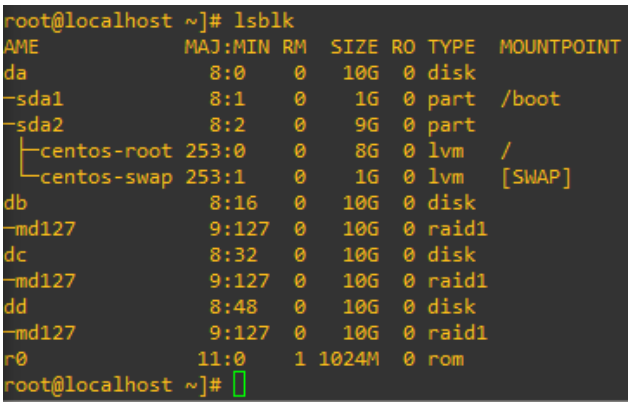
5. PONTO 4

"Crie um raid 1 + 1 disco Hotspare para segurança no armazenamento da informação. Deverá introduzir o nome da diretoria a montar a nova drive. NOTA: Deverá adicionar os discos necessários previamente no virtualbox de tamanho igual a 10 Gbytes para a criação deste tipo de raid."

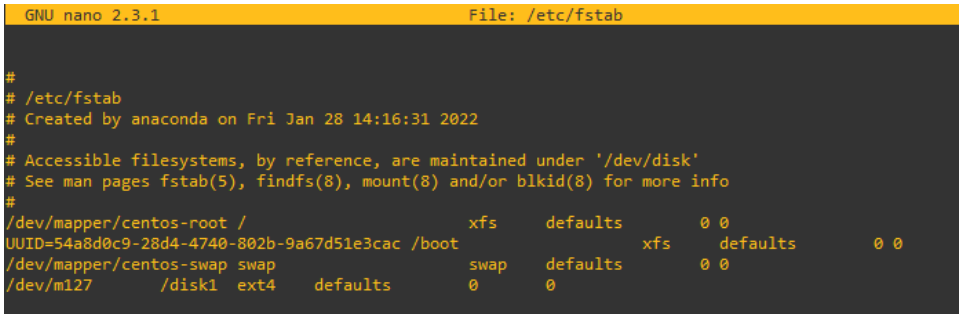
Instalar o mdadm

Selecionar 2 discos para o raid e 1 para o hot-spare





Adicionar a ultima linha ao /etc/fstab



```
[root@localhost ~]# mdadm --detail /dev/md127
/dev/md127:
           Version : 1.2
     Creation Time : Fri Jan 28 23:25:02 2022
        Raid Level : raid1
        Array Size : 10476544 (9.99 GiB 10.73 GB)
     Used Dev Size : 10476544 (9.99 GiB 10.73 GB)
      Raid Devices : 2
     Total Devices : 3
       Persistence : Superblock is persistent

       Update Time : Fri Jan 28 23:25:54 2022
             State : clean
    Active Devices : 2
   Working Devices : 3
    Failed Devices : 0
     Spare Devices : 1

Consistency Policy : resync

              Name : localhost.localdomain:backup  (local to host localhost.localdomain)
              UUID : cc14ecd4:e667234c:84bfa321:63a7e0fe
            Events : 17

    Number   Major   Minor   RaidDevice State
       0       8       16        0      active sync   /dev/sdb
       1       8       32        1      active sync   /dev/sdc

       2       8       48        -      spare   /dev/sdd
[root@localhost ~]#
```

6. PONTO 5

6.1. Exercício 5.1

"Crie dois utilizadores no Linux com as características descritas abaixo."

```
[root@localhost ~]# groupadd users
groupadd: o grupo 'users' já existe
[root@localhost ~]# useradd asuser1 -G users
[root@localhost ~]# useradd asuser2 -G users
[root@localhost ~]# passwd asuser1
A modificar a senha do utilizador asuser1.
Nova senha:
MÁ SENHA: A senha contém o nome do utilizador em alguma forma
Digite novamente a nova senha:
passwd: todos os itens de autenticação foram actualizados com sucesso.
[root@localhost ~]# passwd asuser2
A modificar a senha do utilizador asuser2.
Nova senha:
MÁ SENHA: A senha contém o nome do utilizador em alguma forma
Digite novamente a nova senha:
passwd: todos os itens de autenticação foram actualizados com sucesso.
[root@localhost ~]#
```

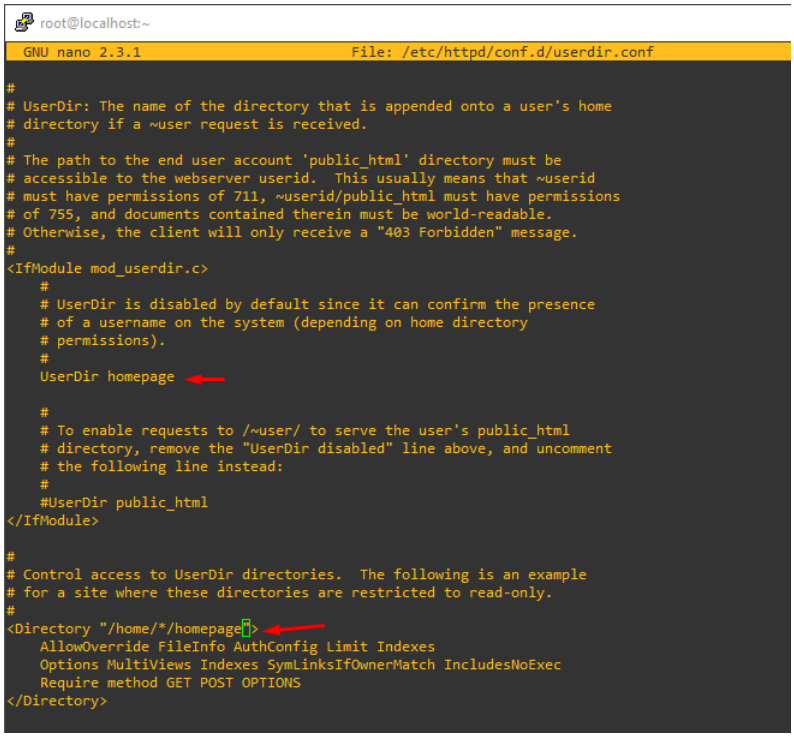
6.2. Exercicio 5.2

"Configure o Servidor Apache de modo que cada utilizador tenha de criar uma diretoria com o nome de "homepage" na sua diretoria home para poder exibir a sua página pessoal."

Instalar o Apache

```
[root@localhost ~]# yum install httpd*
```

Mudar a diretoria para “homepage”



Reiniciar o apache

```
[root@localhost ~]# systemctl restart httpd
```

Entrar dentro da pasta dos dois “asuser” e criar o pasta homepage

```
[root@localhost ~]# su asuser1
[asuser1@localhost root]$ ls
ls: impossível abrir a pasta .: Permission denied
[asuser1@localhost root]$ cd /home/asuser1
[asuser1@localhost ~]$ ls
[asuser1@localhost ~]$ pwd
/home/asuser1
[asuser1@localhost ~]$ mkdir homepage
[asuser1@localhost ~]$ ls
homepage
[asuser1@localhost ~]$ exit
exit
[root@localhost ~]# su asuser2
[asuser2@localhost root]$ cd /home/asuser2
[asuser2@localhost ~]$ mkdir homepage
[asuser2@localhost ~]$ ls
homepage
[asuser2@localhost ~]$
```

Dar as permissões

```
[root@localhost home]# chmod 755 asuser1 -R
[root@localhost home]# chmod 755 asuser2 -R
```

6.3. Exercício 5.3

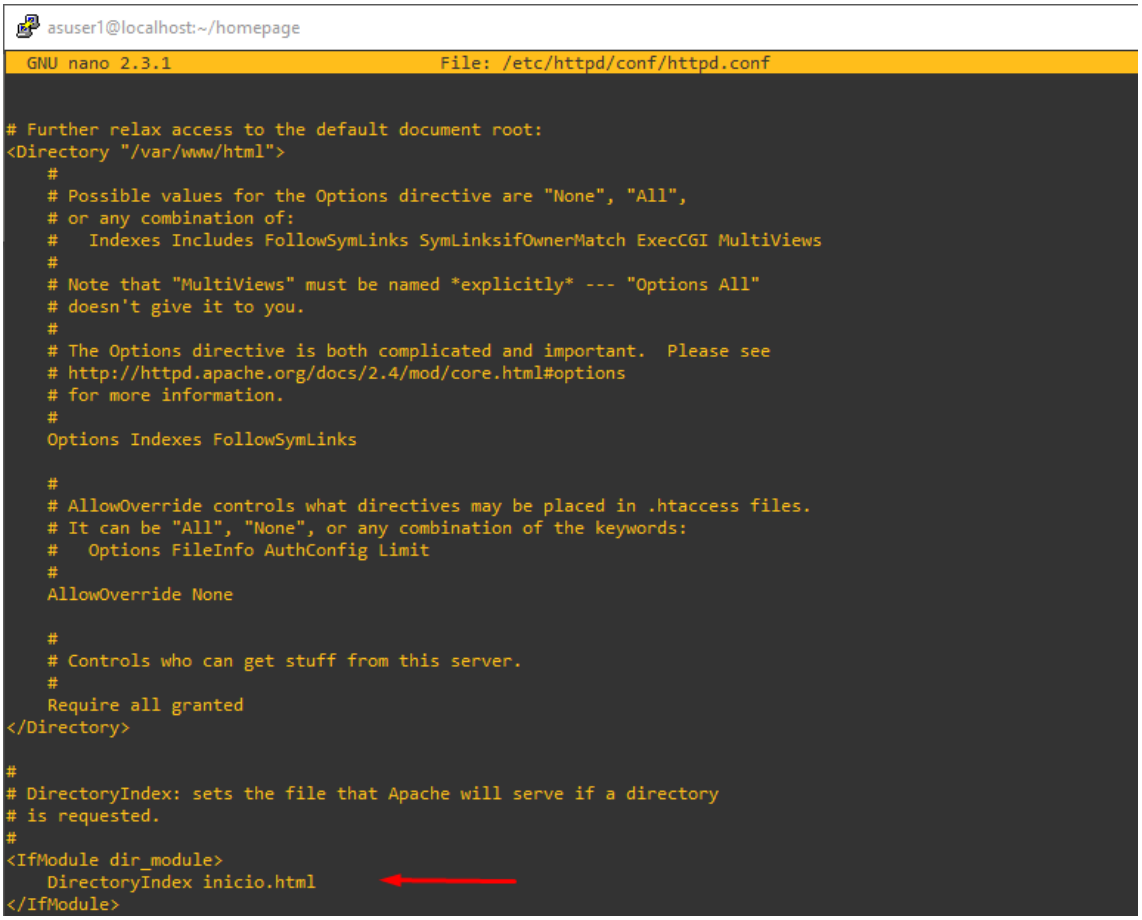
“Efetue uma pequena página em html (inicio.html) para cada utilizador. Sendo o ficheiro colocado dentro da diretoria “homepage” de cada utilizador. 4 A página apenas deverá mostrar o nome de cada utilizador. NOTA: O servidor apache deverá carregar automaticamente páginas com o ficheiro “inicio.html””

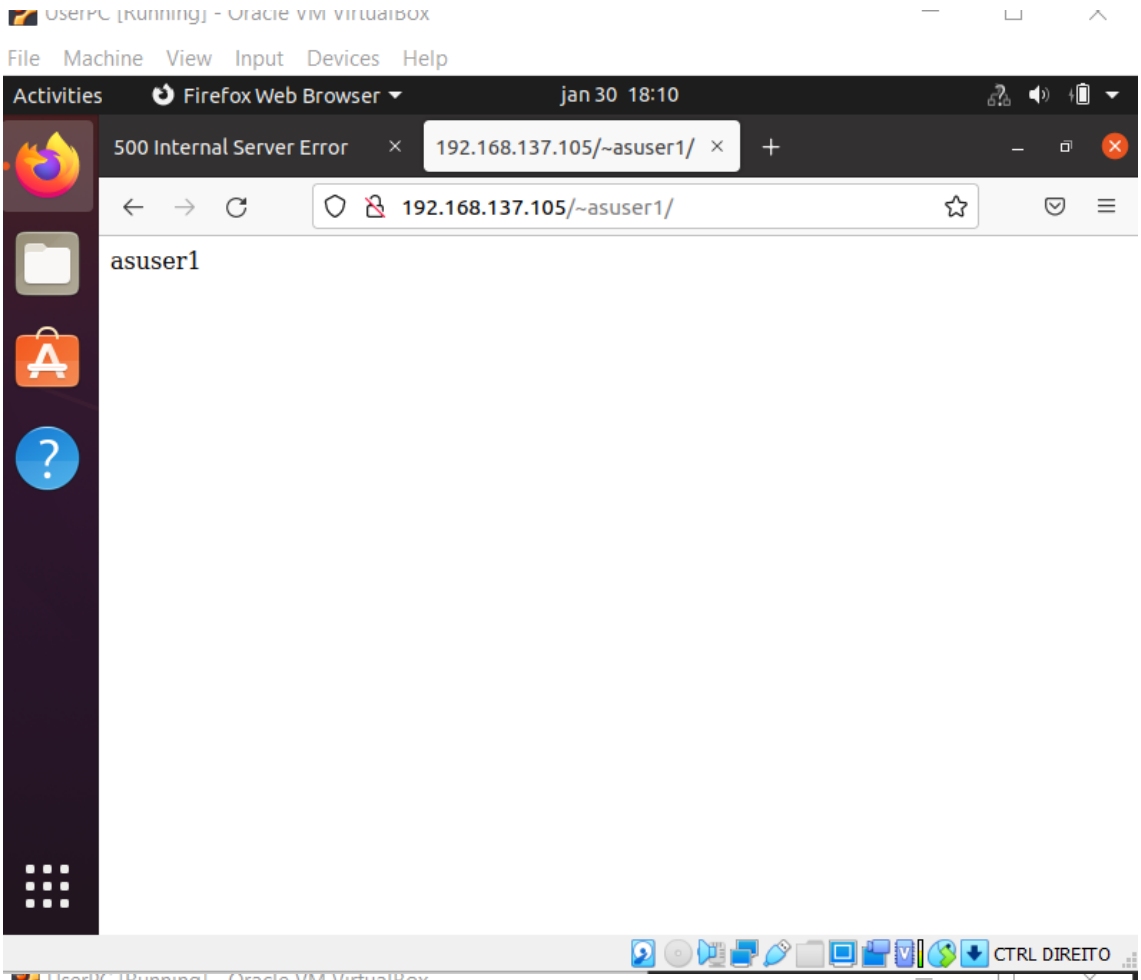
Criar os ficheiros inicio.html dentro da pasta homepage, dentro do inicio.html está o nome dos “asusers”

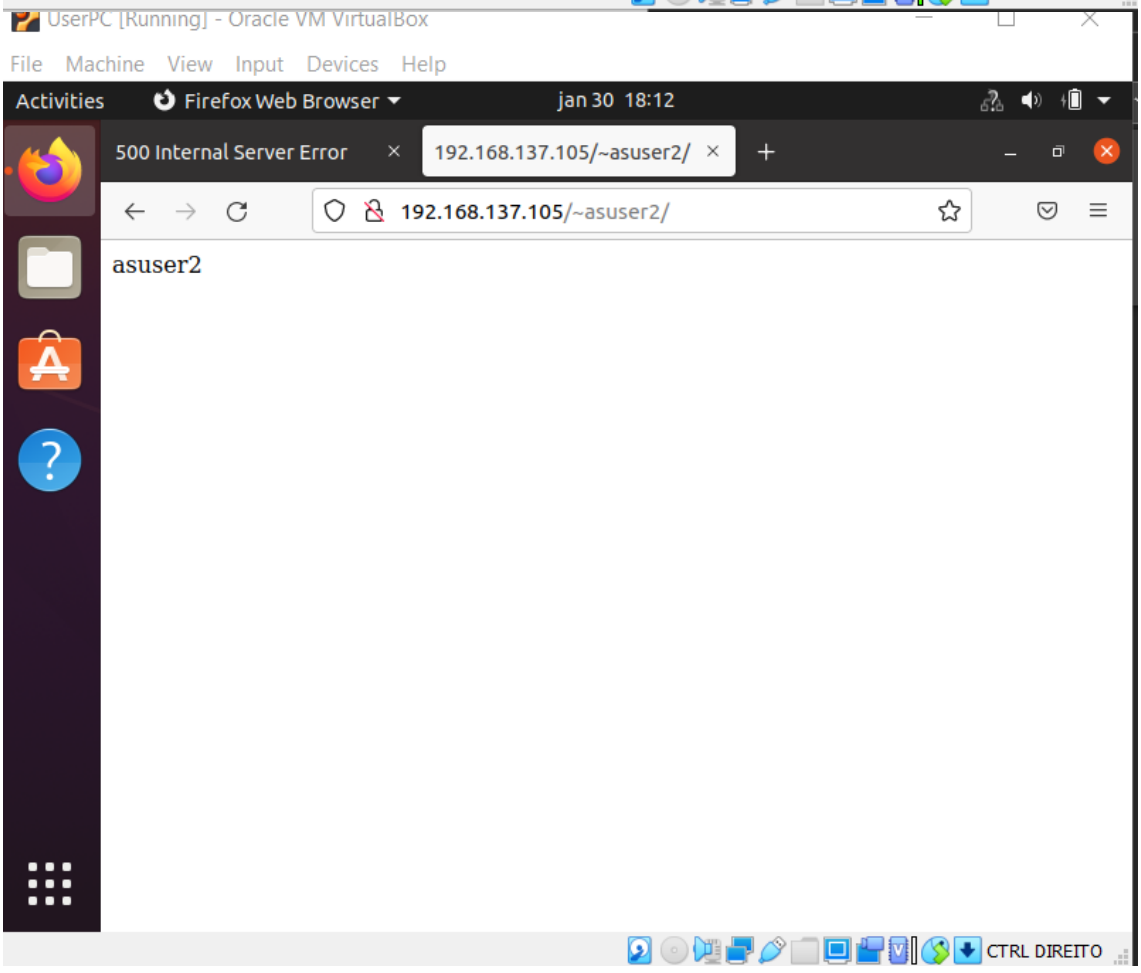
```
[asuser1@localhost root]$ cd /home/asuser1/homepage
[asuser1@localhost homepage]$ nano inicio.html
```

```
[root@localhost home]# su asuser2
[asuser2@localhost home]$ cd home/asuser2/homepage
bash: cd: home/asuser2/homepage: No such file or directory
[asuser2@localhost home]$ cd /home/asuser2/homepage
[asuser2@localhost homepage]$ nano inicio.html
```

Trocar index.html para inicio.html




UserPC [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities
Firefox Web Browser
jan 30 18:10
500 Internal Server Error
192.168.137.105/~asuser1/
192.168.137.105/~asuser1/
asuser1
CTRL DIREITO


UserPC [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities
Firefox Web Browser
jan 30 18:12
500 Internal Server Error
192.168.137.105/~asuser2/
192.168.137.105/~asuser2/
asuser2
CTRL DIREITO

6.4. Exercício 5.4

"Os utilizadores asuser1 e asuser2 deverão ter uma diretoria com o nome "private" onde esta deverá ter autenticação através do apache para a listagem do seu conteúdo."

Colocar autenticação

```
root@localhost:/home
  GNU nano 2.3.1                        File: /etc/httpd/conf/httpd.conf

# The directives in this section set up the values used by the 'main'
# server, which responds to any requests that aren't handled by a
# <VirtualHost> definition.  These values also provide defaults for
# any <VirtualHost> containers you may define later in the file.
#
# All of these directives may appear inside <VirtualHost> containers,
# in which case these default settings will be overridden for the
# virtual host being defined.
#

#
# ServerAdmin: Your address, where problems with the server should be
# e-mailed.  This address appears on some server-generated pages, such
# as error documents.  e.g. admin@your-domain.com
#
ServerAdmin root@localhost

#
# ServerName gives the name and port that the server uses to identify itself.
# This can often be determined automatically, but we recommend you specify
# it explicitly to prevent problems during startup.
#
# If your host doesn't have a registered DNS name, enter its IP address here.
#
#ServerName www.example.com:80

#
# Deny access to the entirety of your server's filesystem. You must
# explicitly permit access to web content directories in other
# <Directory> blocks below.
#
<Directory />
    AllowOverride AuthConfig
    Require all denied
</Directory>

#
# Note that from this point forward you must specifically allow
# particular features to be enabled - so if something's not working as
# you might expect, make sure that you have specifically enabled it
# below.
#
```

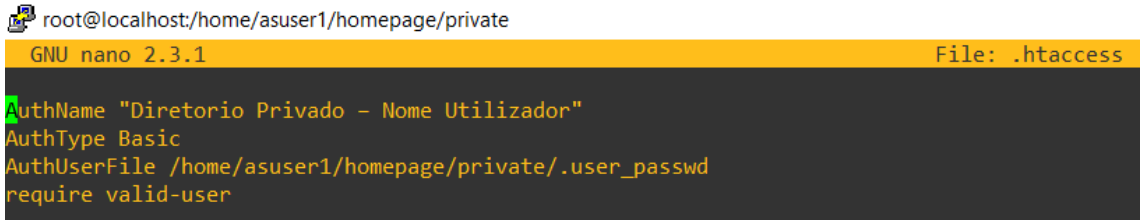
Criar as pastas "private"

```
[root@localhost home]# nano /etc/httpd/conf/httpd.conf
[root@localhost home]# cd /home/asuser1/homepage/
[root@localhost homepage]# mkdir private
[root@localhost homepage]# cd /home/asuser2/homepage/
[root@localhost homepage]# mkdir private
[root@localhost homepage]#
```

Criei um ficheiro inicio.html dentro das “private” dos user, dentro do inicio.html está o nome do respetivo utilizador

```
[root@localhost homepage]# cd /home/asuser2/homepage/private/
[root@localhost private]# nano inicio.html
[root@localhost private]# cd /home/asuser1/homepage/private/
[root@localhost private]# nano inicio.html
[root@localhost private]#
```

Dentro da pasta “private”, criar e configurar o ficheiro “.htaccess”



6.5. Exercício 5.5

“Permita que dois utilizadores listem a diretoria privada do utilizador asuser1, através dos seguintes users:

user: private pass: 123 / user: privado pass: 123”

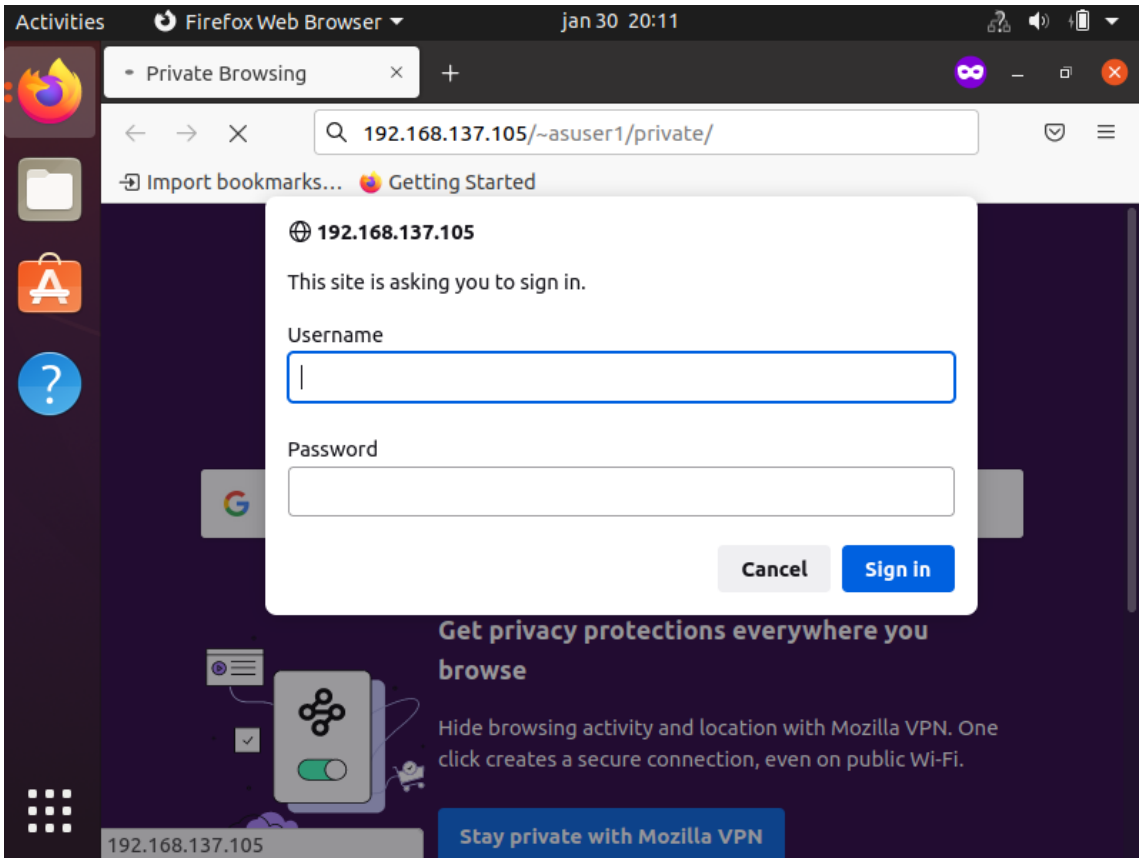
Adicionar o user: private e a pass: 123

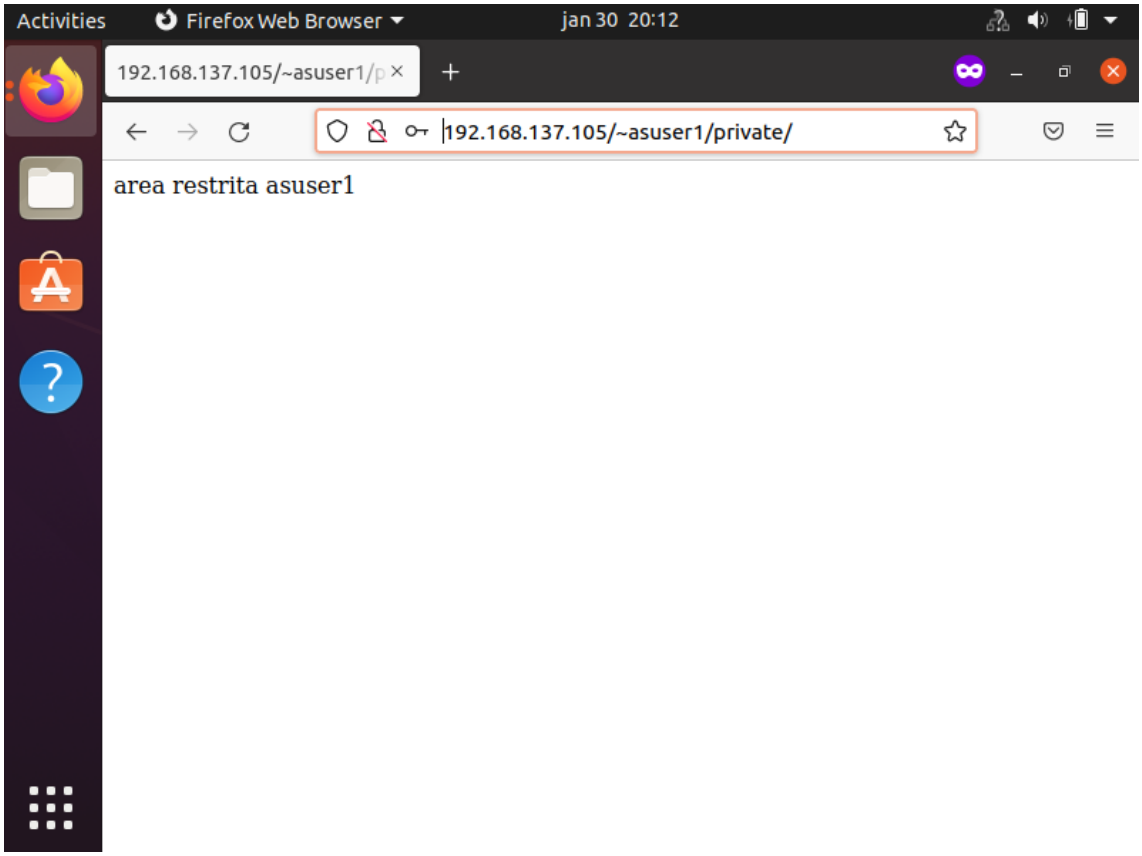
```
[root@localhost home]# htpasswd -c /home/.user_passwd private
New password:
Re-type new password:
Adding password for user private
[root@localhost home]#
```

Adicionar o usuário “privado” e a passe 123

```
[root@localhost home]# htpasswd /home/.user_passwd privado
New password:
Re-type new password:
Adding password for user privado
```

```
[root@localhost home]# cat .user_passwd
private:$apr1$tQtpLCpk$fIOrd.ZznV.KLFAjPdNXR0
privado:$apr1$4XWW8GMW$LOOpujPprbLAVHB3gLhuW.
[root@localhost home]#
```


Activities
Firefox Web Browser
jan 30 20:11
Private Browsing
192.168.137.105/~asuser1/private/
Import bookmarks...
Getting Started
192.168.137.105
This site is asking you to sign in.
Username
Password
Cancel
Sign in
Get privacy protections everywhere you browse
Hide browsing activity and location with Mozilla VPN. One click creates a secure connection, even on public Wi-Fi.
Stay private with Mozilla VPN
192.168.137.105


Activities
Firefox Web Browser
jan 30 20:12
192.168.137.105/~asuser1/p
192.168.137.105/~asuser1/private/
area restrita asuser1

7. Ponto 6

7.1. Exercício 6.1

"Defina no servidor DNS a possibilidade de receber os backups de ficheiros e configurações cruciais a ambos os servidores"

Fazer o update à cache e instalar o tftp

```
[root@localhost ~]# yum makecache
```

```
[root@localhost ~]# yum  install tftp tftp-server
```

Copiar os ficheiros por segurança

```
[root@localhost ~]# sudo cp -v /usr/lib/systemd/system/tftp.socket /etc/systemd/system/tftp-server.socket
«/usr/lib/systemd/system/tftp.socket» -> «/etc/systemd/system/tftp-server.socket»
[root@localhost ~]# sudo cp -v /usr/lib/systemd/system/tftp.service /etc/systemd/system/tftp-server.service
«/usr/lib/systemd/system/tftp.service» -> «/etc/systemd/system/tftp-server.service»
```

Editar o ficheiro de configuração tftp-server.service

```
root@localhost:~
  GNU nano 2.3.1                                  File: /etc/systemd/system/tftp-server.service

[Unit]
Description=Tftp Server
Requires=server.socket
Documentation=man:in.tftpd

[Service]
ExecStart=/usr/sbin/in.tftpd -c -p -s /var/lib/tftpboot
StandardInput=socket

[Install]
WantedBy=multi-user.target
Also=tftp-server.socket
```

Editar o ficheiro de configuração tftp-server.socket

```
root@localhost:~
  GNU nano 2.3.1                                  File: /etc/systemd/system/tftp-server.socket

[Unit]
Description=Tftp Server Activation Socket

[Socket]
ListenDatagram=69
BindIPv6Only=both

[Install]
WantedBy=sockets.target
```

Instalar o policycoreutils-python

```
[root@localhost ~]# yum install policycoreutils-python
```

```
[root@localhost ~]# sudo setsebool -P tftp_anon_write 1
```

```
[root@localhost ~]# sudo systemctl start tftp-server
[root@localhost ~]# systemctl status tftp-server
● tftp-server.service - Tftp Server
   Loaded: loaded (/etc/systemd/system/tftp-server.service; enabled; vendor pres
et: disabled)
   Active: active (running) since Sáb 2022-01-29 19:43:24 WET; 17s ago
     Docs: man:in.tftpd
 Main PID: 9751 (in.tftpd)
   CGroup: /system.slice/tftp-server.service
           └─9751 /usr/sbin/in.tftpd -c -p -s /var/lib/tftpboot

Jan 29 19:43:24 localhost.localdomain systemd[1]: Started Tftp Server.
[root@localhost ~]#
```

Dar permissões na pasta

```
[root@localhost ~]# sudo chmod 777 /var/lib/tftpboot
```

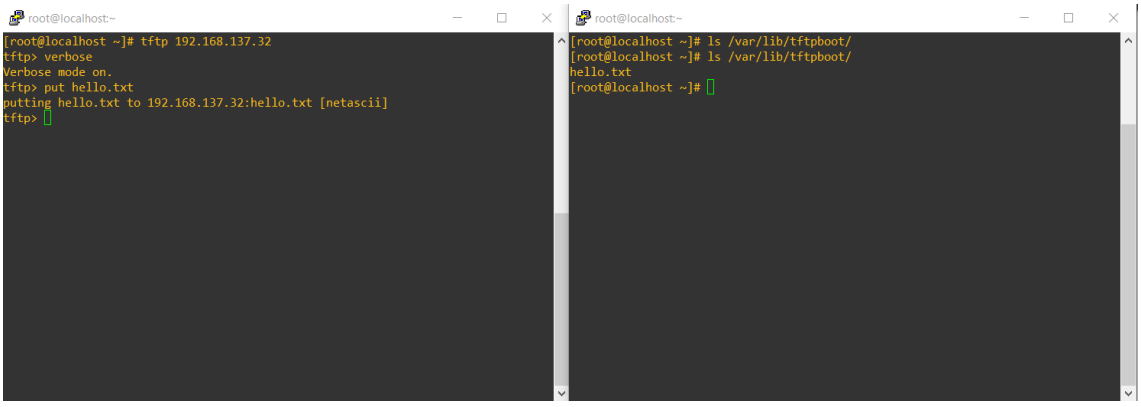
Criar o ficheiro hello.txt

FTPServer 1 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

```
[root@localhost ~]# systemctl stop firewalld
[root@localhost ~]# touch hello.txt
[root@localhost ~]# ls
anaconda-ks.cfg  hello.txt
[root@localhost ~]#
```

Aceder ao servidor DNS/BackupServer via tftp e colocar



7.2. Exercício 6.2

8. Ponto 7

8.1. Exercício 7.1

"No servidor de DNS crie 3 zonas master (IPV4) para o domínio gules.org, 300emfrente.eu e then.com com os seguintes registos do tipo A:"

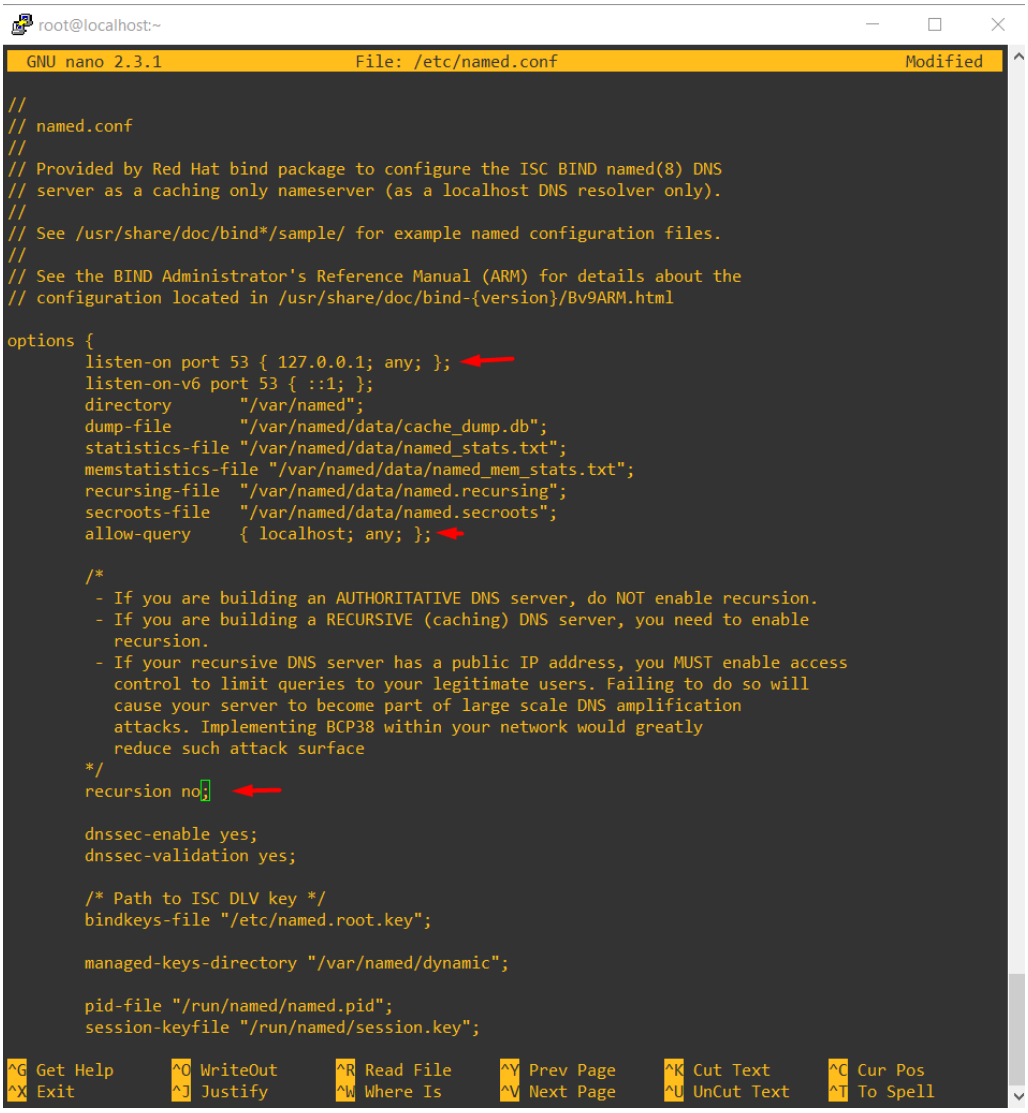
Instalar o DNS

```
[root@localhost ~]# yum -y install bind-utils
```

Permitir a firewall

```
[root@localhost ~]# firewall-cmd --permanent --add-port=53/udp
success
[root@localhost ~]# firewall-cmd --reload
success
```

Alterar os IPs



root@localhost:~

```
  GNU nano 2.3.1                          File: /etc/named.conf

};

logging {
        channel default_debug {
                file "data/named.run";
                severity dynamic;
        };
};

zone "." IN {
        type hint;
        file "named.ca";
};

zone "gules.org" IN {

        type master;

        file "/var/named/gules.org.db";
};

zone "300emfrente.eu" IN {

        type master;

        file "/var/named/300emfrente.eu.db";
};

zone "then.com" IN {

        type master;

        file "/var/named/then.com.db";
};
```

```
[root@localhost ~]# systemctl restart named
```

8.2. Exercício 7.2

"O servidor responsável para receber os mails dos 3 domínios é o servidor com o nome de as-smtp.300emfrente.eu, adicione os registos que considere necessário para o correcto funcionamento em cada domínio."

Configurar para cada server

root@localhost:~

```
 GNU nano 2.3.1                File: /var/named/gules.org.db

@   IN  SOA     ns1.gules.org. root.gules.org. (
                                              1001    ;Serial
                                              3H      ;Refresh
                                              15M     ;Retry
                                              1W      ;Expire
                                              1D      ;Minimum TTL
                                              )

;Name Server Information
@       IN  NS      ns1.gules.org.

;IP address of Name Server
ns1 IN  A       192.168.137.142

;Mail exchanger
gules.org       IN  MX 10   as-smtp.300emfrente.eu.

;A - Record HostName To IP Address
gules.org.      IN      A       8.3.2.14
ftp     IN      A       8.3.2.15
webmail IN      A        8.3.2.16
```

root@localhost:~

```
  GNU nano 2.3.1                File: /var/named/300emfrente.eu.db

@   IN  SOA     ns1.300emfrente.eu. root.300emfrente.eu. (
                                              1001    ;Serial
                                              3H      ;Refresh
                                              15M     ;Retry
                                              1W      ;Expire
                                              1D      ;Minimum TTL
                                              )

;Name Server Information
@       IN  NS      ns1.300emfrente.eu.

;IP address of Name Server
ns1 IN  A       192.168.137.142

;Mail exchanger
300emfrente.eu       IN  MX 10   as-smtp.300emfrente.eu.

;A - Record HostName To IP Address
300emfrente.eu.      IN      A       14.21.1.14
www     IN      A       77.8.90.1
webmail IN      A       11.21.1.16
as-smtp     IN      A       11.0.0.1
```

root@localhost:~

```
  GNU nano 2.3.1                File: /var/named/then.com.db

@   IN  SOA     ns1.then.com. root.then.com. (
                                              1001    ;Serial
                                              3H      ;Refresh
                                              15M     ;Retry
                                              1W      ;Expire
                                              1D      ;Minimum TTL
                                              )

;Name Server Information
@       IN  NS      ns1.then.com.

;IP address of Name Server
ns1 IN  A       192.168.137.142

;Mail exchanger
then.com       IN  MX 10   as-smtp.300emfrente.eu.

;A - Record HostName To IP Address
webmail IN      A       194.168.22.16
@       IN      A       191.200.22.14
ftp     IN      A        92.147.45.1
```

8.3. Exercício 7.3

“Crie as zonas reverse do domínio then.com para todos os registos existentes na zona forward em IPV4.”

Adicionar as 3 zonas reversas

root@localhost:~

```
 GNU nano 2.3.1                          File: /etc/named.conf

        file "/var/named/300emfrente.eu.db";
};

zone "then.com" IN {

        type master;

        file "/var/named/then.com.db";
};

zone "1.22.200.191.in-addr.arpa" IN {

        type master;

        file "/var/named/14.22.200.191.db";

        allow-update { none; };
};

zone "1.45.147.92.in-addr.arpa" IN {

        type master;

        file "/var/named/1.45.147.92.db";

        allow-update { none; };
};

zone "16.22.168.194.in-addr.arpa" IN {

        type master;

        file "/var/named/16.22.168.194.db";

        allow-update { none; };
};
```

root@localhost:~

```
 GNU nano 2.3.1                File: /var/named/14.22.200.191.db

@   IN  SOA     ns1.then.com. root.then.com. (
                                              1001    ;Serial
                                              3H      ;Refresh
                                              15M     ;Retry
                                              1W      ;Expire
                                              1D      ;Minimum TTL
                                              )

;Name Server Information
@ IN  NS      ns1.then.com.

;PTR Record IP address to HostName
@       IN PTR  then.com.
```

root@localhost:~

```
 GNU nano 2.3.1                File: /var/named/1.45.147.92.db

@   IN  SOA     ns1.ftp.then.com. root.ftp.then.com. (
                                              1001    ;Serial
                                              3H      ;Refresh
                                              15M     ;Retry
                                              1W      ;Expire
                                              1D      ;Minimum TTL
                                              )

;Name Server Information
@ IN  NS      ns1.then.com.

;PTR Record IP address to HostName
@       IN PTR  ftp.then.com.
```

root@localhost:~

```
 GNU nano 2.3.1          File: /var/named/16.22.168.194.db

@   IN  SOA     ns1.webmail.then.com. root.webmail.then.com. (
                                              1001    ;Serial
                                              3H      ;Refresh
                                              15M     ;Retry
                                              1W      ;Expire
                                              1D      ;Minimum TTL
                                              )

;Name Server Information
@ IN  NS      ns1.then.com.

;PTR Record IP address to HostName
@       IN PTR  webmail.then.com.
```

Prova que o site 300emfrente está a funcionar

```
[root@localhost ~]# dig 300emfrente.eu

; <<>> DiG 9.11.4-P2-RedHat-9.11.4-26.P2.el7_9.8 <<>> 300emfrente.eu
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 20643
;; flags: qr aa rd; QUERY: 1, ANSWER: 1, AUTHORITY: 1, ADDITIONAL: 2
;; WARNING: recursion requested but not available

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 4096
;; QUESTION SECTION:
;300emfrente.eu.                        IN      A

;; ANSWER SECTION:
300emfrente.eu.         86400   IN      A       14.21.1.14

;; AUTHORITY SECTION:
300emfrente.eu.         86400   IN      NS      ns1.300emfrente.eu.

;; ADDITIONAL SECTION:
ns1.300emfrente.eu.     86400   IN      A       192.168.137.32

;; Query time: 0 msec
;; SERVER: 192.168.137.32#53(192.168.137.32)
;; WHEN: Dom Jan 30 03:15:42 WET 2022
;; MSG SIZE  rcvd: 93
```

```
[root@localhost ~]# dig gules.org

; <<>> DiG 9.11.4-P2-RedHat-9.11.4-26.P2.el7_9.8 <<>> gules.org
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 59613
;; flags: qr aa rd; QUERY: 1, ANSWER: 1, AUTHORITY: 1, ADDITIONAL: 2
;; WARNING: recursion requested but not available

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 4096
;; QUESTION SECTION:
;gules.org.                     IN      A

;; ANSWER SECTION:
gules.org.              86400   IN      A       8.3.2.14

;; AUTHORITY SECTION:
gules.org.              86400   IN      NS      ns1.gules.org.

;; ADDITIONAL SECTION:
ns1.gules.org.          86400   IN      A       192.168.137.32

;; Query time: 0 msec
;; SERVER: 192.168.137.32#53(192.168.137.32)
;; WHEN: Dom Jan 30 03:17:18 WET 2022
;; MSG SIZE  rcvd: 88
```

9. Ponto 8

9.1. Exercício 8.1

"O seu servidor necessita de alojar 3 domínios sendo eles: allow.org; circle360.pt; festas.pt. Crie os VirtualHosts na porta tcp 25000 e 28000 para que todos estes domínios respondam corretamente."

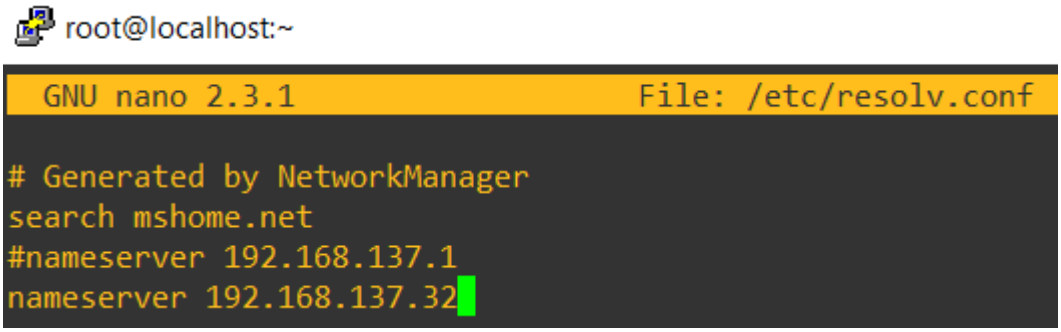
Instalar o apache

```
[root@localhost ~]# yum install httpd
```

Permitir na firewall

```
[root@localhost ~]# sudo firewall-cmd --permanent --zone=public --add-service=http
success
[root@localhost ~]# sudo firewall-cmd --permanent --zone=public --add-service=https
success
[root@localhost ~]# sudo firewall-cmd --reload
success
[root@localhost ~]#
```

Trocar o nameserver do servidor



Criar as zonas

root@localhost:~

```
 GNU nano 2.3.1                File: /etc/named.conf

        file "/var/named/1.45.147.92.db";

        allow-update { none; };
};

zone "16.22.168.194.in-addr.arpa" IN {

        type master;

        file "/var/named/16.22.168.194.db";

        allow-update { none; };
};

zone "allow.org" IN {

        type master;

        file "/var/named/allow.org";

        allow-update { none; };
};

zone "circle360.pt" IN {

        type master;

        file "/var/named/circle360.pt";

        allow-update { none; };
};

zone "festas.pt" IN {

        type master;

        file "/var/named/festas.pt";

        allow-update { none; };
};


include "/etc/named.rfc1912.zones";
include "/etc/named.root.key";
```

Configurar o virtual host do site allow.org

root@localhost:~

```
  GNU nano 2.3.1                File: /etc/httpd/conf.d/allow.org.conf

<VirtualHost *:25000 *:28000>
    ServerName allow.org
    ServerAlias www.allow.org
    ServerAdmin webmaster@allow.org
    DocumentRoot /var/www/allow.org/public_html

    <Directory /var/www/allow.org/public_html>
        Options -Indexes +FollowSymLinks
        AllowOverride All
    </Directory>

    ErrorLog /var/log/httpd/allow.org.log
    CustomLog /var/log/httpd/allow.org-access.log combined
</VirtualHost>
```

Adicionar as portas referidas no enunciado

root@localhost:~

```
  GNU nano 2.3.1                File: /etc/httpd/conf/httpd.conf

#
# This is the main Apache HTTP server configuration file.  It contains the
# configuration directives that give the server its instructions.
# See <URL:http://httpd.apache.org/docs/2.4/> for detailed information.
# In particular, see
# <URL:http://httpd.apache.org/docs/2.4/mod/directives.html>
# for a discussion of each configuration directive.
#
# Do NOT simply read the instructions in here without understanding
# what they do.  They're here only as hints or reminders.  If you are unsure
# consult the online docs. You have been warned.
#
# Configuration and logfile names: If the filenames you specify for many
# of the server's control files begin with "/" (or "drive:/" for Win32), the
# server will use that explicit path.  If the filenames do *not* begin
# with "/", the value of ServerRoot is prepended -- so 'log/access_log'
# with ServerRoot set to '/www' will be interpreted by the
# server as '/www/log/access_log', where as '/log/access_log' will be
# interpreted as '/log/access_log'.

#
# ServerRoot: The top of the directory tree under which the server's
# configuration, error, and log files are kept.
#
# Do not add a slash at the end of the directory path.  If you point
# ServerRoot at a non-local disk, be sure to specify a local disk on the
# Mutex directive, if file-based mutexes are used.  If you wish to share the
# same ServerRoot for multiple httpd daemons, you will need to change at
# least PidFile.
#
ServerRoot "/etc/httpd"

#
# Listen: Allows you to bind Apache to specific IP addresses and/or
# ports, instead of the default. See also the <VirtualHost>
# directive.
#
# Change this to Listen on specific IP addresses as shown below to
# prevent Apache from glomming onto all bound IP addresses.
#
#Listen 12.34.56.78:80
Listen 80
Listen 25000
Listen 28000
```

Configurar o ficheiro mencionado do site allow.org na criação das zonas

root@localhost:~

```
  GNU nano 2.3.1                File: /var/named/allow.org

@   IN  SOA     ns1.allow.org. root.allow.org. (
                                              1001    ;Serial
                                              3H      ;Refresh
                                              15M     ;Retry
                                              1W      ;Expire
                                              1D      ;Minimum TTL
                                              )

;Name Server Information
@       IN  NS      ns1.allow.org.

;IP address of Name Server
ns1 IN  A       192.168.137.32

;A - Record HostName To IP Address
allow.org.      IN  A       192.168.137.32
```

Criar a pasta do site circle360.pt e configurar o index.html

```
[root@localhost ~]# mkdir -p /var/www/circle360.pt/public_html/
[root@localhost ~]# nano /var/www/circle360.pt/public_html/index.html
```

Dar permissões na pasta do site

```
[root@localhost ~]# chown -R apache: /var/www/circle360.pt/
```

Configurar o ficheiro definido na criação das zonas do site circle360.pt

```
  GNU nano 2.3.1                File: /var/named/circle360.pt

@   IN  SOA     ns1.circle360.pt. root.circle360.pt. (
                                              1001    ;Serial
                                              3H      ;Refresh
                                              15M     ;Retry
                                              1W      ;Expire
                                              1D      ;Minimum TTL
                                              )

;Name Server Information
@       IN  NS      ns1.circle360.pt.

;IP address of Name Server
ns1 IN  A       192.168.137.32

;A - Record HostName To IP Address
circle360.pt.      IN  A       192.168.137.32
```

Configurar a virtual host do site circle360.pt

```
  GNU nano 2.3.1                File: /etc/httpd/conf.d/circle360.pt.conf

<VirtualHost *:25000 *:28000>
    ServerName circle360.pt
    ServerAlias www.circle360.pt
    ServerAdmin webmaster@circle360.pt
    DocumentRoot /var/www/circle360.pt/public_html

    <Directory /var/www/circle360.pt/public_html>
        Options -Indexes +FollowSymLinks
        AllowOverride All
    </Directory>

    ErrorLog /var/log/httpd/circle360.pt.log
    CustomLog /var/log/httpd/circle360.pt-access.log combined
</VirtualHost>
```

Configurar o virtual host do site festas.pt

root@localhost:~

```
  GNU nano 2.3.1                File: /etc/httpd/conf.d/festas.pt.conf

<VirtualHost *:25000 *:28000>
    ServerName festas.pt
    ServerAlias www.festas.pt
    ServerAdmin webmaster@festas.pt
    DocumentRoot /var/www/festas.pt/public_html

    <Directory /var/www/allow.org/public_html>
        Options -Indexes +FollowSymLinks
        AllowOverride All
    </Directory>

    ErrorLog /var/log/httpd/festas.pt-error.log
    CustomLog /var/log/httpd/festas.pt-access.log combined
</VirtualHost>
```

root@localhost:~

```
 GNU nano 2.3.1                File: /var/named/festas.pt

@   IN  SOA     ns1.festas.pt. root.festas.pt. (
                                              1001    ;Serial
                                              3H      ;Refresh
                                              15M     ;Retry
                                              1W      ;Expire
                                              1D      ;Minimum TTL
                                              )

;Name Server Information
@       IN  NS      ns1.festas.pt.

;IP address of Name Server
ns1 IN  A       192.168.137.32

;A - Record HostName To IP Address
festas.pt.      IN  A       192.168.137.32
```

```
[root@localhost ~]# semanage port -a -t http_port_t -p tcp 25000
[root@localhost ~]# semanage port -a -t http_port_t -p tcp 28000
[root@localhost ~]# sudp systemctl restart httpd
-bash: sudp: command not found
[root@localhost ~]# systemctl restart httpd
[root@localhost ~]# systemctl start httpd
[root@localhost ~]# systemctl enable httpd
[root@localhost ~]# sudo firewall-cmd --zone=public --add-port=25000/tcp --permanent
success
[root@localhost ~]# sudo firewall-cmd --zone=public --add-port=28000/tcp --permanent
success
[root@localhost ~]# systemctl restart httpd
[root@localhost ~]# firewall-cmd --reload
success
```

9.2. Exercício 8.2

"Crie páginas html em cada um dos domínios a dizer o nome do próprio domínio."

Criar a pasta do site allow.org

```
[root@localhost ~]# mkdir -p /var/www/allow.org/public_html/
```

Configurar o ficheiro index.html do site allow.org

root@localhost:~

```
 GNU nano 2.3.1          File: /var/www/allow.org/public_html/index.html

<body> allow.org </body>
```

```
[root@localhost ~]# chown -R apache: /var/www/allow.org/
```

Criar a pasta do site circle360.pt

```
[root@localhost ~]# mkdir -p /var/www/circle360.pt/public_html/
[root@localhost ~]# nano /var/www/circle360.pt/public_html/index.html
```

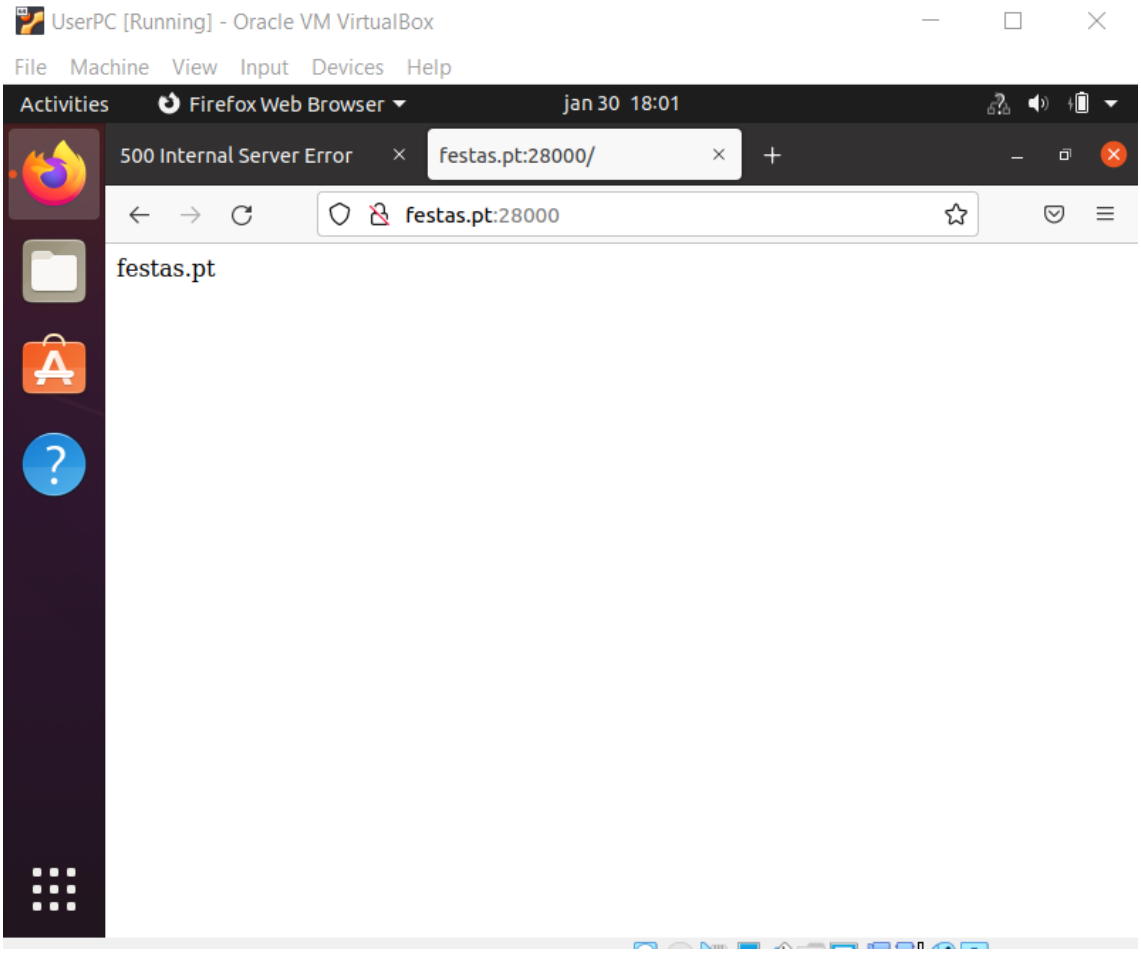
Configurar o ficheiro index.html do circle360.pt

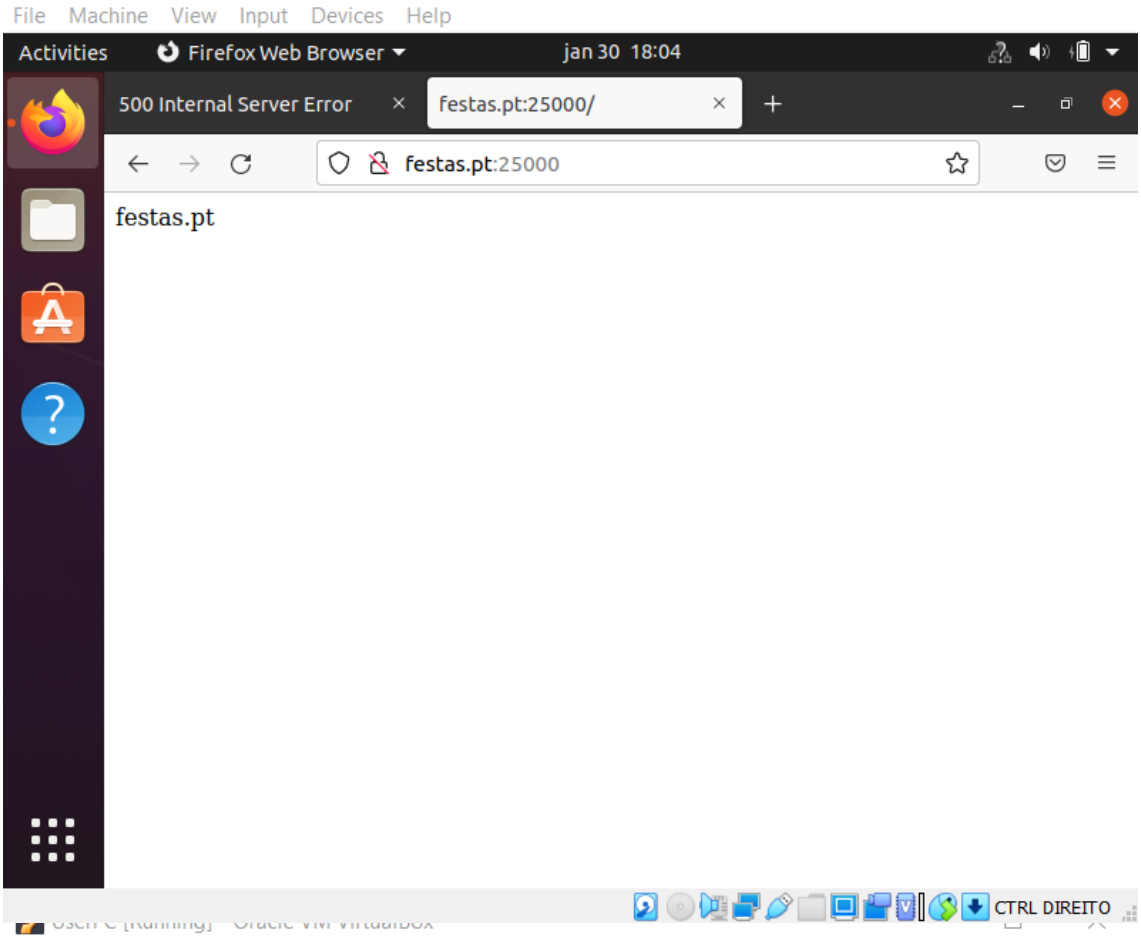
```
  GNU nano 2.3.1          File: /var/www/circle360.pt/public_html/index.html

<body> circle360.pt </body>
```

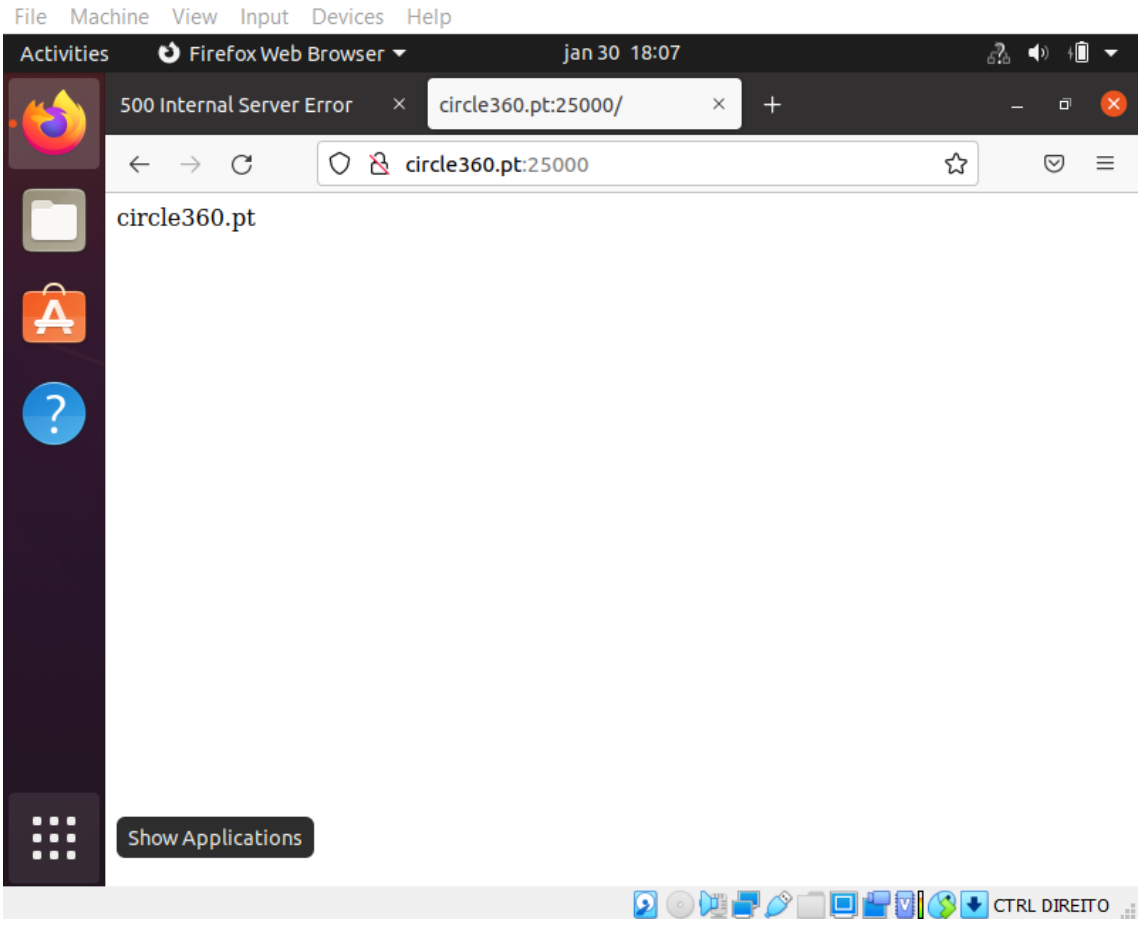
Criar a pasta do site festas.pt

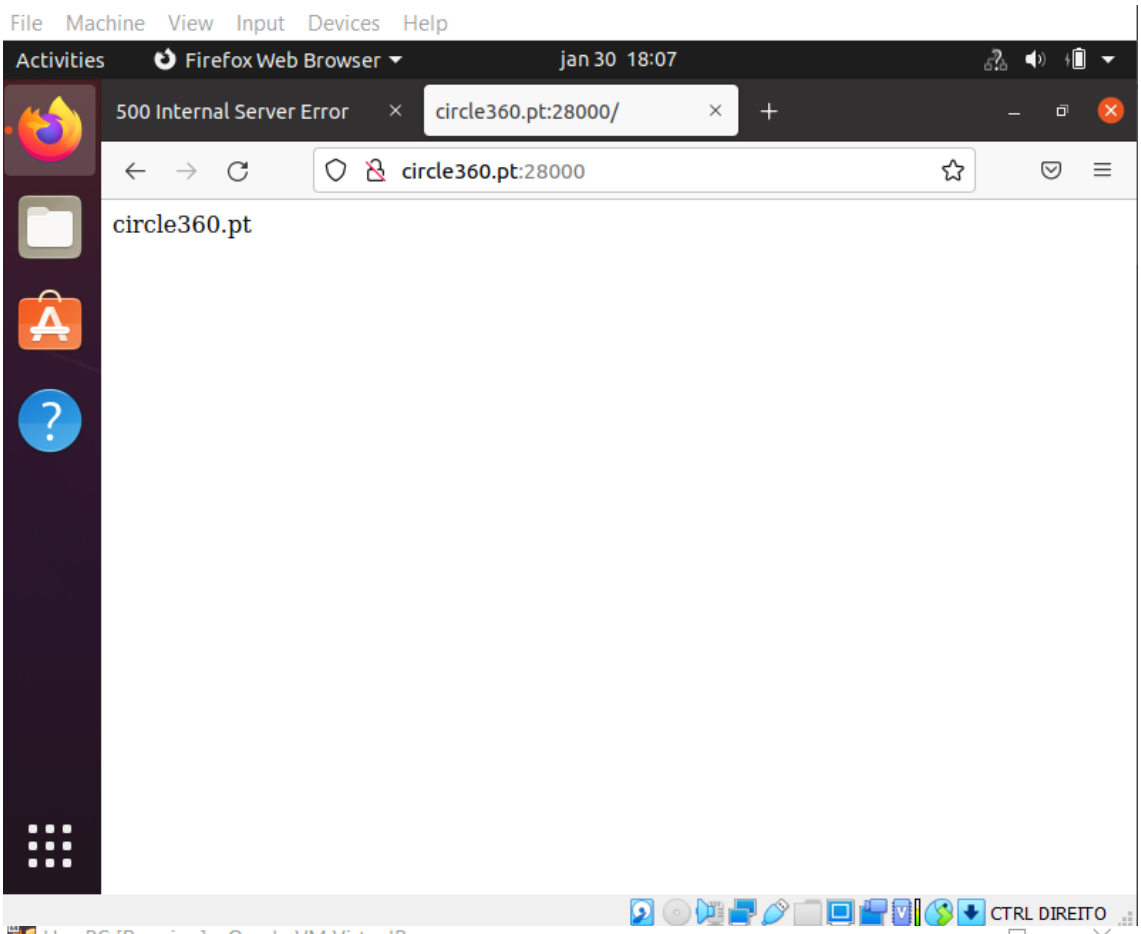
Configurar o ficheiro index.html do festas.pt

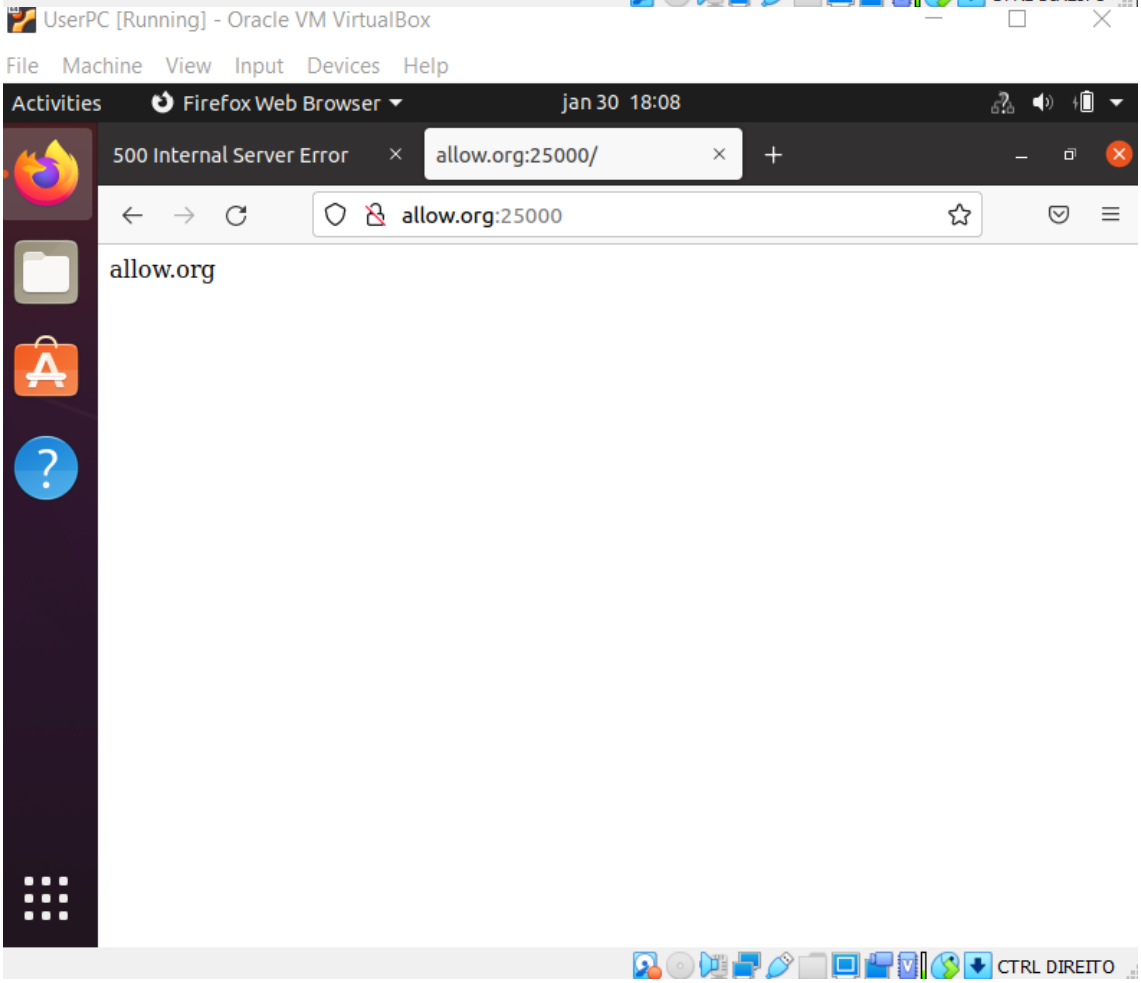
```
[root@localhost ~]# mkdir -p /var/www/festas.pt/public_html/
[root@localhost ~]# nano /var/festas.pt/public_html/index.html
[root@localhost ~]# nano /var/www/festas.pt/public_html/index.html
[root@localhost ~]# cat /var/www/festas.pt/public_html/index.html
<body> festas.pt </body>
[root@localhost ~]#
```

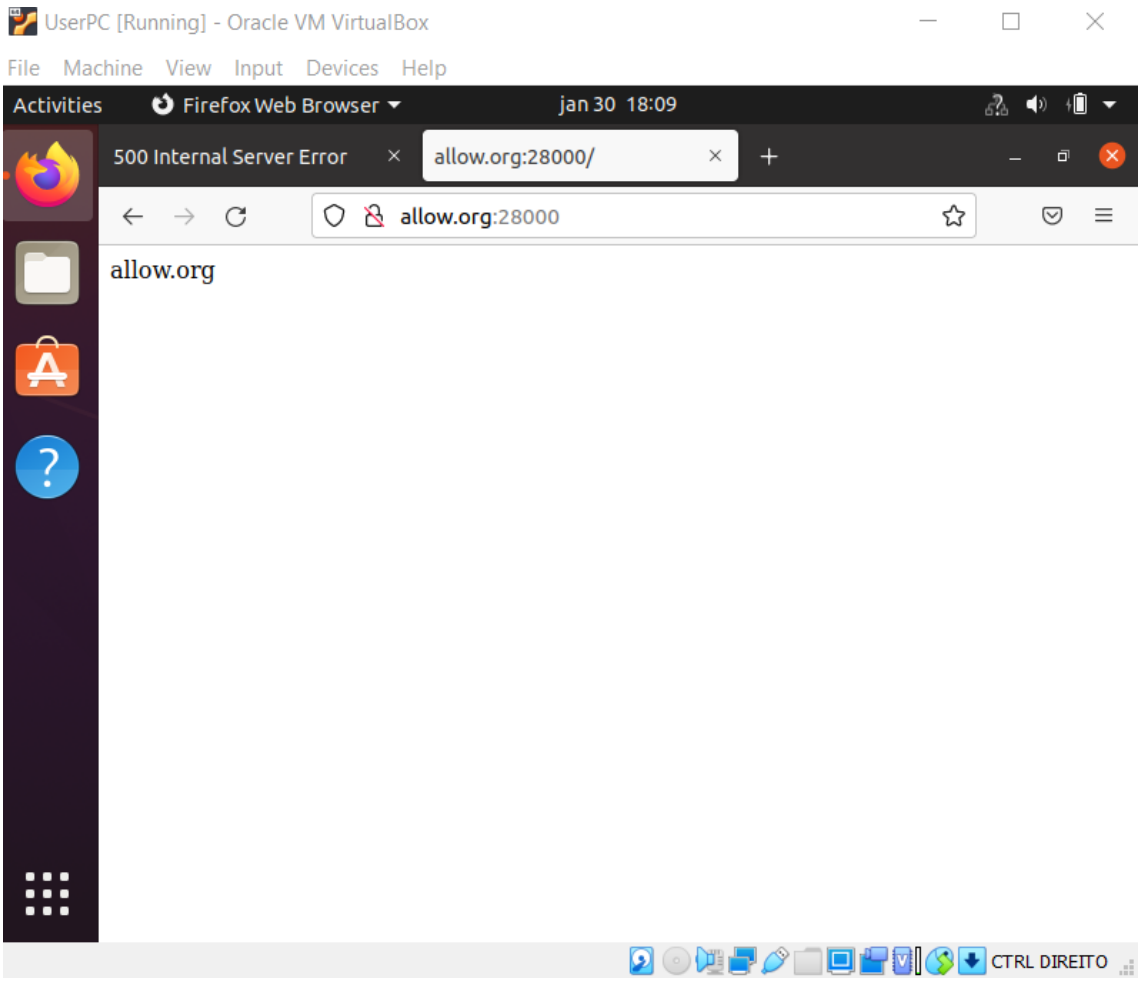



File Machine View Input Devices Help
Activities
Firefox Web Browser
jan 30 18:04
500 Internal Server Error
festas.pt:25000/
festas.pt:25000
festas.pt
CTRL DIREITO


File Machine View Input Devices Help
Activities
Firefox Web Browser
jan 30 18:07
500 Internal Server Error
circle360.pt:25000/
circle360.pt:25000
circle360.pt
Show Applications
CTRL DIREITO


File Machine View Input Devices Help
Activities
Firefox Web Browser
jan 30 18:07
500 Internal Server Error
circle360.pt:28000/
circle360.pt:28000
circle360.pt
CTRL DIREITO


UserPC [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities
Firefox Web Browser
jan 30 18:08
500 Internal Server Error
allow.org:25000/
allow.org:25000
allow.org
CTRL DIREITO


UserPC [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities
Firefox Web Browser
jan 30 18:09
500 Internal Server Error
allow.org:28000/
allow.org:28000
allow.org
CTRL DIREITO

10. Conclusões

Com este trabalho fui capaz de instalar alguns serviços que costumam estar em Data Centers de empresas nomeadamente DNS, FTP, APACHE, SSH… Também fui capaz de criar um raid com mais um disco Hotspare.

Após a conclusão do trabalho refleti sobre o que foi feito e cheguei na conclusão que este trabalho foi uma mais valia para mim pois enquadra-se 100% na área do curso e ensina-me e prepara-me bastante não só para próximos trabalhos de escola como trabalhos a nível profissional.