**R6 config**:

Config t

ip route 0.0.0.0 0.0.0.0 192.168.129.1

Interface f0/0

Ip add 192.168.129.2 255.255.255.0

No shut

Ip nat outside

Interface f0/1

Ip add 192.168.132.1 255.255.255.0

No shut

Ip nat inside

Interface f1/0

Ip add 192.168.130.1 255.255.255.0

No shut

Ip nat inside

create an ip table: access-list 100 permit ip any any

add it to connection: ip nat inside source list 100 interface f0/0 overload

end

ping 192.168.129.1 and 1.1.1.1 to make sure everything works

**R7 config**:

Config t

ip route 0.0.0.0 0.0.0.0 192.168.132.1

Interface f0/0

Ip add 192.168.132.2 255.255.255.0

No shut

Ip nat outside

Interface f0/1

Ip add 192.168.133.1 255.255.255.0

No shut

Ip nat inside

Interface f1/0

Ip add 192.168.136.1 255.255.255.0

No shut

Ip nat inside

create an ip table: access-list 100 permit ip any any

add it to connection: ip nat inside source list 100 interface f0/0 overload

end

ping 192.168.129.1 and 1.1.1.1 to make sure everything works

**R8 config**:

Config t

ip route 0.0.0.0 0.0.0.0 192.168.130.1

Interface f0/0

Ip add 192.168.130.2 255.255.255.0

No shut

Ip nat outside

Interface f0/1

Ip add 192.168.131.1 255.255.255.0

No shut

Ip nat inside

Interface f1/0

Ip add 192.168.135.1 255.255.255.0

No shut

Ip nat inside

create an ip table: access-list 100 permit ip any any

add it to connection: ip nat inside source list 100 interface f0/0 overload

end

ping 192.168.124.1 and 1.1.1.1 to make sure everything works

**UbuntuGuest to database server**:

nano /etc/network/interfaces

auto eth0

iface eth0 inet static

address 192.168.131.2

netmask 255.255.255.0

gateway 192.168.131.1

up echo nameserver 8.8.8.8 nameserver 8.8.4.4 > /etc/resolv.conf

apt update

apt install mysql-server

service mssql start

mysql

ALTER USER 'root'@'localhost' IDENTIFIED WITH mysql\_native\_password BY 'SetRootPasswordHere';

Exit

mysql\_secure\_installation

mysql -u root -p 🡪 enter password

sudo apt install openssh-server

nano /etc/ssh/sshd\_config

* Port 22
* Allow PasswordAuthentification, PermitRootLogin

service ssh start

**To test the web server:** ssh 192.168.135.2

Note: make sure you know the password of the machine, if not use “passdw root” to change it and make sure to restart the machine.

**UbuntuGuest for web server**:

nano /etc/network/interfaces

auto eth0

iface eth0 inet static

address 192.168.135.2

netmask 255.255.255.0

gateway 192.168.135.1

up echo nameserver 8.8.8.8 nameserver 8.8.4.4 > /etc/resolv.conf

apt update

apt install apache2

nano /etc/ssh/sshd\_config

* Port 22
* Allow PasswordAuthentification, PermitRootLogin

service ssh start

**To test the web server:** ssh 192.168.131.2

Note: make sure you know the password of the machine, if not use “passdw root” to change it and make sure to restart the machine.

**UbuntuGuest FTP**:

apt update

apt install vsftpd

apt install ftp

apt install systemctl

nano /etc/vsftpd.conf

listen=NO

listen\_ipv6=YES

anonymous\_enable=NO

local\_enable=YES

write\_enable=YES

local\_umask=022

dirmessage\_enable=YES

use\_localtime=YES

xferlog\_enable=YES

connect\_from\_port\_20=YES

chroot\_local\_user=YES

secure\_chroot\_dir=/var/run/vsftpd/empty

pam\_service\_name=vsftpd

rsa\_cert\_file=/etc/ssl/certs/ssl-cert-snakeoil.pem

rsa\_private\_key\_file=/etc/ssl/private/ssl-cert-snakeoil.key

ssl\_enable=NO

pasv\_enable=Yes

pasv\_min\_port=10000

pasv\_max\_port=10100

allow\_writeable\_chroot=YES

systemctl restart vsfptd

useradd -m ftpuser

passwd ftpuser

bash -c “echo ftp > /home/ftpuser/test”

ftp 192.168. 133.2