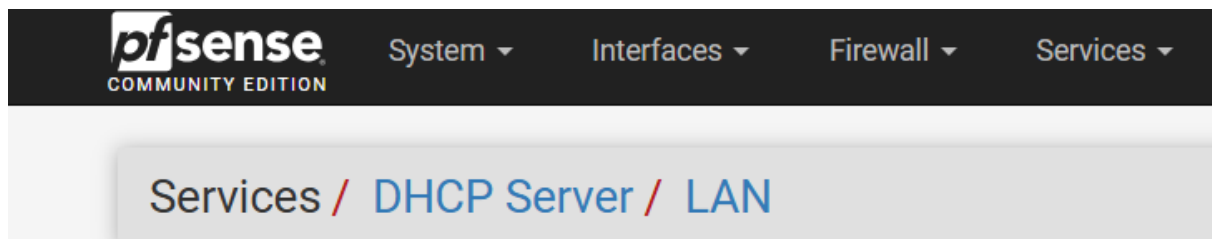


# LAN y DMZ

Para esta práctica nos descargaremos y crearemos un windows server 2025 y un ubuntu server.

Pondremos un adaptador para la red interna de la DMZ en la máquina virtual de PfSense.

Entramos en PfSense y lo que haremos es habilitar el servicio de DHCP. Nos vamos a services y DHCP Server.



Habilitamos en el checkbox.

General DHCP Options	
DHCP Backend	ISC DHCP
Enable	<input checked="" type="checkbox"/> Enable DHCP server on LAN interface
BOOTP	<input type="checkbox"/> Ignore BOOTP queries
Deny Unknown Clients	<div>Allow all clients</div> <p>When set to <b>Allow all clients</b>, any DHCP client will get an IP address within this scope. <b>interface</b>, any DHCP client with a MAC address listed in a static mapping on <b>any</b> scope <b>clients from only this interface</b>, only MAC addresses listed in static mappings on the</p>
Ignore Denied Clients	<input type="checkbox"/> Ignore denied clients rather than reject

Primary Address Pool	
Subnet	192.168.10.0/24
Subnet Range	192.168.10.1 - 192.168.10.254
Address Pool Range	<div> <input type="text" value="192.168.10.10"/> <input type="text" value="192.168.10.50"/> </div> <div>From To</div> <p>The specified range for this pool must not be within the range configured on any other address pool for this interface.</p>
Additional Pools	<div>+ Add Address Pool</div> <p>If additional pools of addresses are needed inside of this subnet outside the above range, they may be specified here.</p>
Server Options	
WINS Servers	<input type="text" value="WINS Server 1"/> <input type="text" value="WINS Server 2"/>
DNS Servers	<input type="text" value="192.168.10.1"/> <input type="text" value="192.168.10.2"/> <input type="text" value="DNS Server 3"/> <input type="text" value="DNS Server 4"/>
OMAPI	

Pondremos el rango y el DNS.

Guardamos y aplicamos los cambios.

Nos saldrá un mensaje:

The changes have been applied successfully.

ISC DHCP has reached end-of-life and will be removed in a future version of pfSense. Visit [System > Advanced > Networking](#) to switch DHCP backend.

WAN LAN

Le damos

System / Advanced / Networking

Admin Access Firewall & NAT **Networking** Miscellaneous System Tunables Notifica

DHCP Options

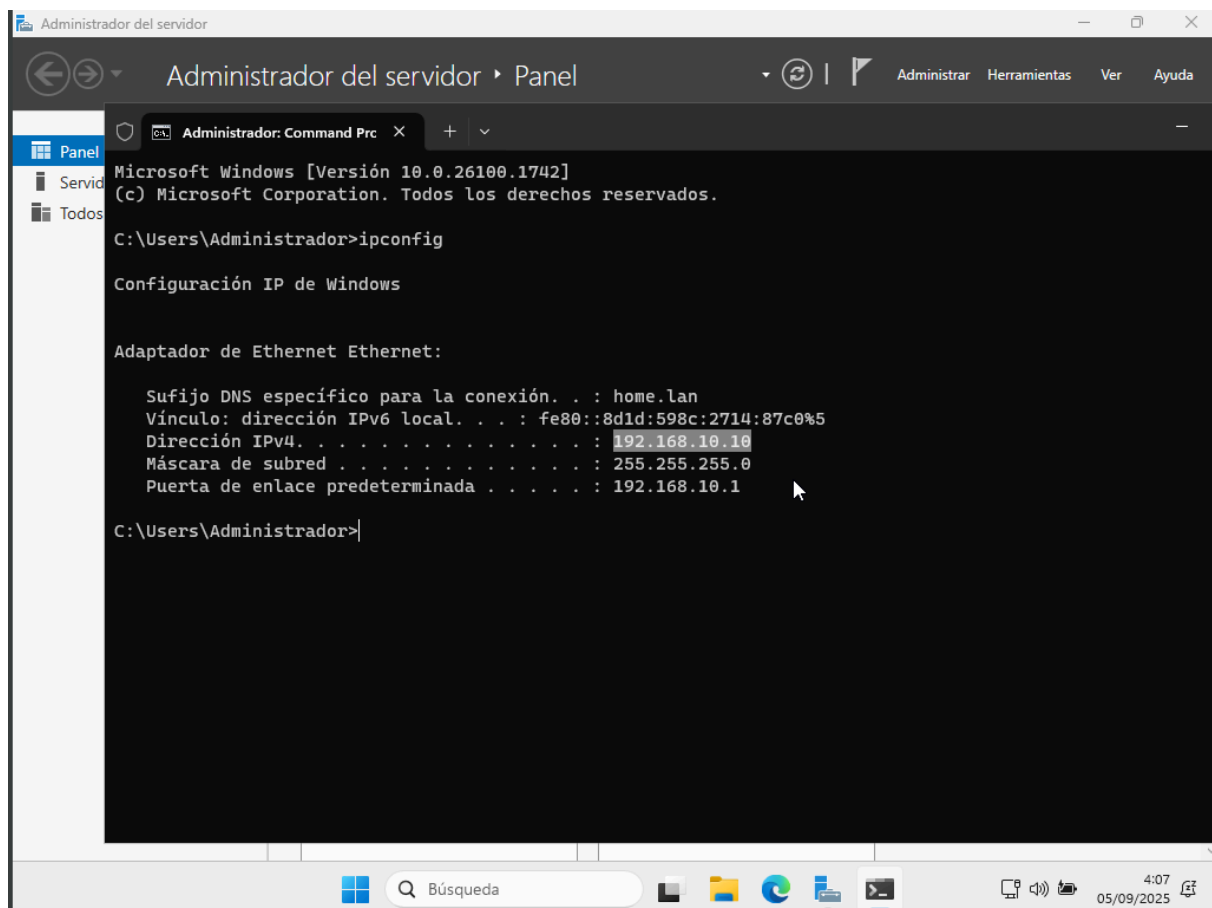
Server Backend

☒ Kea DHCP
☐ ISC DHCP (Deprecated)

ISC DHCP has reached end-of-life and will be removed from a future version of pfSense that includes the most-requested features.

Y cliclamos en Kea DHCP y guardamos.

Ahora nos vamos al windows server de la máquina virtual que tendríamos que tener y hacemos un ipconfig.



The screenshot shows a Windows Server Administrator console window titled 'Administrador del servidor'. The left sidebar shows 'Panel', 'Servicio', and 'Todos'. The main window has a tab 'Administrador: Command Prc'. The command prompt shows the following output:

```
Microsoft Windows [Versión 10.0.26100.1742]
(c) Microsoft Corporation. Todos los derechos reservados.

C:\Users\Administrador>ipconfig

Configuración IP de Windows

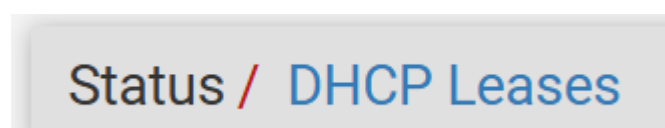
Adaptador de Ethernet Ethernet:

    Sufijo DNS específico para la conexión. . . : home.lan
    Vínculo: dirección IPv6 local. . . : fe80::8d1d:598c:2714:87c0%5
    Dirección IPv4. . . . . : 192.168.10.10
    Máscara de subred. . . . . : 255.255.255.0
    Puerta de enlace predeterminada. . . . . : 192.168.10.1

C:\Users\Administrador>
```

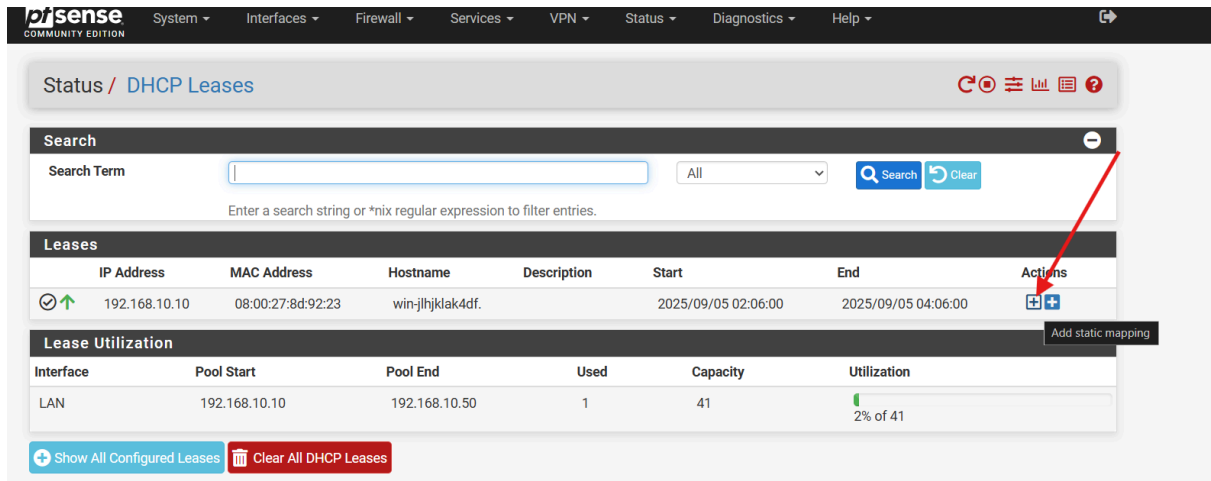
Como podemos comprobar se nos ha asignado por vía DHCP en el rango que nosotros le pusimos.

Ahora nos vamos a PfSense y buscamos lo siguiente:



Y veremos nuestro windows server ahí.

Ahora lo que haremos es otorgarle una ip estática para que el DHCP no esté cambiando cuando lo apaguemos y encendamos.

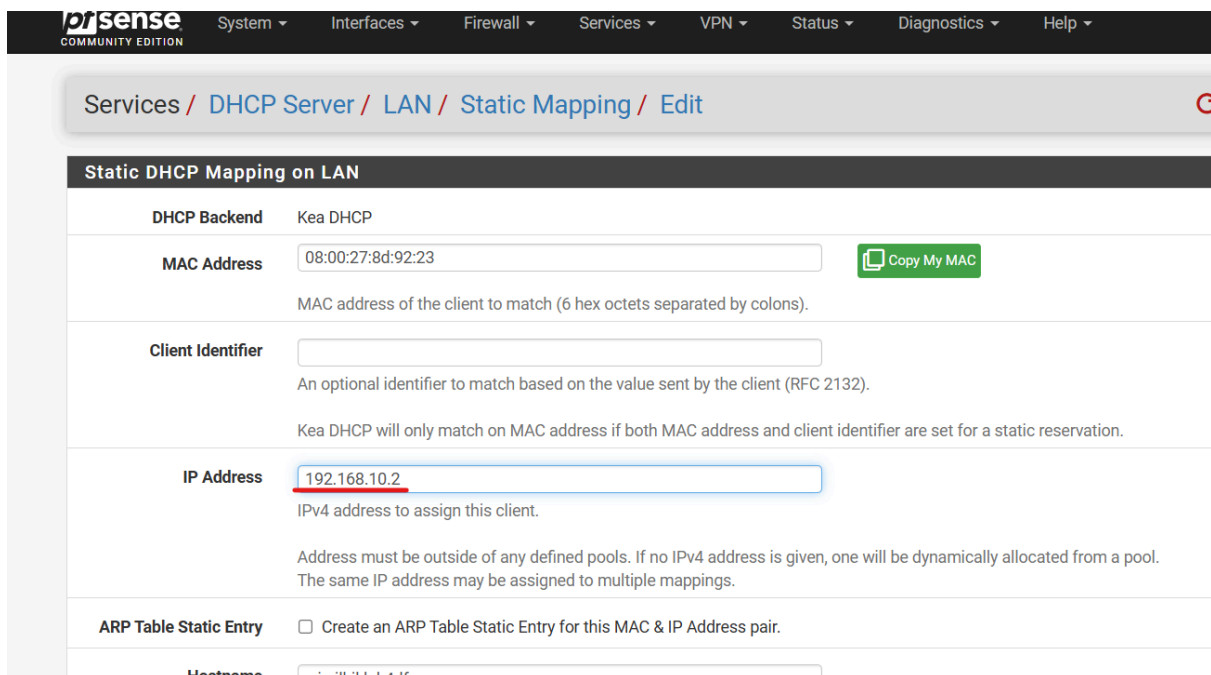


The screenshot shows the Mikrotik WinBox interface for the DHCP Leases page. The top navigation bar includes System, Interfaces, Firewall, Services, VPN, Status, Diagnostics, and Help. The main header shows 'Status / DHCP Leases'. Below this is a search bar with a 'Search Term' input field and a 'Search' button. The 'Leases' table has columns for IP Address, MAC Address, Hostname, Description, Start, End, and Actions. A red arrow points to the 'Add static mapping' button in the Actions column. Below the table is a 'Lease Utilization' section showing the interface, pool start/end, used capacity, and utilization. At the bottom are buttons for 'Show All Configured Leases' and 'Clear All DHCP Leases'.

IP Address	MAC Address	Hostname	Description	Start	End	Actions
192.168.10.10	08:00:27:8d:92:23	win-jlhjklak4df.		2025/09/05 02:06:00	2025/09/05 04:06:00	<a href="#">Add static mapping</a>

Interface	Pool Start	Pool End	Used	Capacity	Utilization
LAN	192.168.10.10	192.168.10.50	1	41	2% of 41

Le damos a add static mapping.



The screenshot shows the Mikrotik WinBox interface for the Static DHCP Mapping on LAN page. The top navigation bar includes System, Interfaces, Firewall, Services, VPN, Status, Diagnostics, and Help. The main header shows 'Services / DHCP Server / LAN / Static Mapping / Edit'. The page title is 'Static DHCP Mapping on LAN'. The form includes fields for DHCP Backend (Kea DHCP), MAC Address (08:00:27:8d:92:23), Client Identifier, IP Address (192.168.10.2), and ARP Table Static Entry (Create an ARP Table Static Entry for this MAC & IP Address pair). The IP Address field is highlighted with a red box. The Hostname field is also visible at the bottom.

Field	Value
DHCP Backend	Kea DHCP
MAC Address	08:00:27:8d:92:23
Client Identifier	
IP Address	192.168.10.2
ARP Table Static Entry	<input type="checkbox"/> Create an ARP Table Static Entry for this MAC & IP Address pair.
Hostname	win-jlhjklak4df

Y le ponemos esa IP estática.

Ahora nos vamos a windows server y podremos comprobar que se nos otorga la que hemos puesto

```
todos los compartimientos

C:\Users\Administrador>ipconfig /renew

Configuración IP de Windows

Error al renovar la interfaz Ethernet: El nombre especificado en el bloque de control de red (NCB) es
en un adaptador remoto.
El NCB son los datos.

C:\Users\Administrador>ipconfig

Configuración IP de Windows

Adaptador de Ethernet Ethernet:

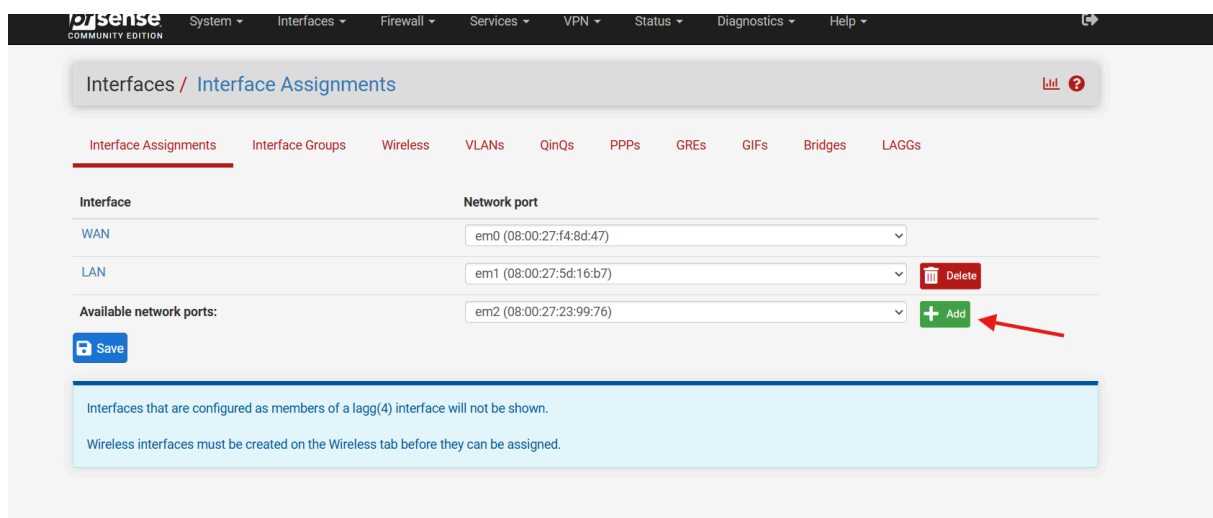
    Sufijo DNS específico para la conexión. . . : home.lan
    Vínculo: dirección IPv6 local. . . . : fe80::8d1d:598c:2714:87c0%5
    Dirección IPv4. . . . . : 192.168.10.2
    Máscara de subred . . . . . : 255.255.255.0
    Puerta de enlace predeterminada . . . . : 192.168.10.1

C:\Users\Administrador>
```

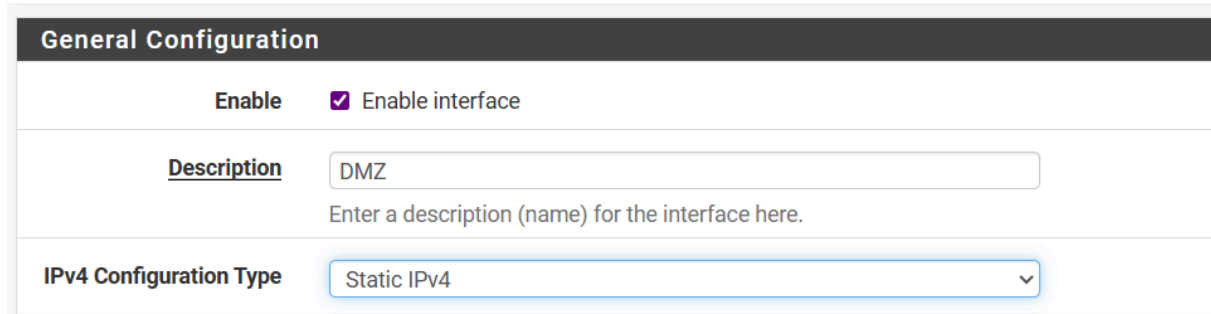
Ahora tendríamos que tener el windows server como controlador de dominio.  
Una búsqueda por google saldrá cómo poder hacerlo, es fácil.

Ahora lo que haremos es configurar la DMZ.

Nos vamos a PfSense, a Interfaces>Interfaces assignments



Le daremos a añadir una nueva interfaces, que será la DMZ.



The screenshot shows the 'General Configuration' section of a network device's web interface. It includes an 'Enable' section with a checked 'Enable interface' checkbox. Below is a 'Description' field containing the text 'DMZ' and a placeholder instruction 'Enter a description (name) for the interface here.' At the bottom, the 'IPv4 Configuration Type' is set to 'Static IPv4' via a dropdown menu.

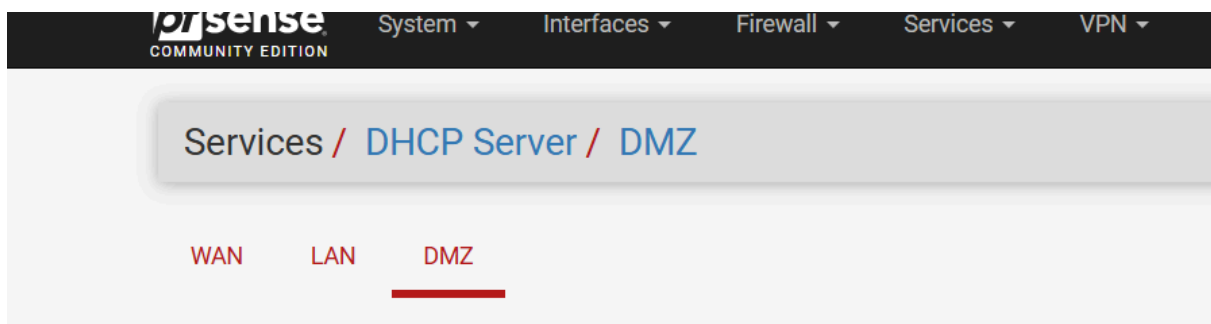
Y pondremos la ip de esa interfaz que será 192.168.20.1



The screenshot shows the 'Static IPv4 Configuration' section. The 'IPv4 Address' field is set to '192.168.20.1'. To the right, there is a field for the subnet mask, currently showing '24' with a dropdown arrow.

Lo guardamos y aplicamos los cambios.

Ahora vamos a servicio a DHCP server.



The screenshot shows the 'Services / DHCP Server / DMZ' configuration page. The breadcrumb trail at the top reads 'Services / DHCP Server / DMZ'. Below this, there are three tabs: 'WAN', 'LAN', and 'DMZ'. The 'DMZ' tab is currently selected and highlighted with a red underline.

Y vamos a habilitarlo. y pondremos los rangos :

**General DHCP Options**

DHCP Backend: Kea DHCP

Enable: ☒ Enable DHCP server on DMZ interface

Deny Unknown Clients: Allow all clients

Ignore Client Identifiers: ☐ Do not record a unique identifier (UID) in client lease data if present in the client DHCP request

**Primary Address Pool**

Subnet: 192.168.20.0/24

Subnet Range: 192.168.20.1 - 192.168.20.254

Address Pool Range: 192.168.20.10 192.168.20.5

Additional Pools: + Add Address Pool

**Server Options**

Guardamos y aplicamos los cambios.

Ahora, una vez que creamos nuestra máquina de ubuntu server, no vamos a ella y ponemos "ip a" para ver su ip

```
valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
link/ether 08:00:27:de:1e:d0 brd ff:ff:ff:ff:ff:ff
inet 192.168.20.10/24 metric 100 brd 192.168.20.255 scope global dynamic enp0s3
    valid_lft 7177sec preferred_lft 7177sec
inet6 fe80::a00:27ff:fed0:1ed0/64 scope link
    valid_lft forever preferred_lft forever
```

Pero como lo que queremos nosotros es una ip estática, nos vamos a PfSense y nos vamos a :

Ahora aparece las dos ip y le daríamos a add static mapping

Leases							
	IP Address	MAC Address	Hostname	Description	Start	End	Actions
	192.168.10.2	08:00:27:8d:92:23	win-jlhjklak4df		n/a	n/a	
	192.168.20.10	08:00:27:de:1e:d0	ubuntuserver		2025/09/05 03:59:50	2025/09/05 05:59:50	

IP Address

192.168.20.2

IPv4 address to assign this client.

Address must be outside of any defined pools. If no IPv4 address is given, one v

Pondremos la ip estática y guardamos y aplicamos los cambios.

```

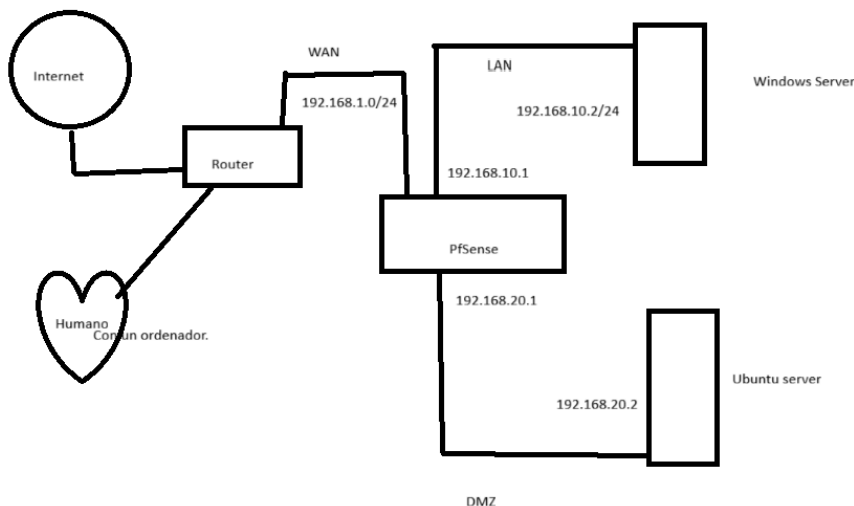
Listening on LPF/enp0s3/08:00:27:de:1e:d0
Sending on   LPF/enp0s3/08:00:27:de:1e:d0
Sending on   Socket/fallback
xid: warning: no netdev with useable HWADDR found for seed's uniqueness enforcement
xid: rand init seed (0x68c56086) built using gethostid
DHCPREQUEST for 10.0.2.15 on enp0s3 to 255.255.255.255 port 67 (xid=0x5888920a)
DHCNACK from 192.168.20.1 (xid=0xa928858)
DHCPDISCOVER on enp0s3 to 255.255.255.255 port 67 interval 3 (xid=0xefc43974)
DHCPOFFER of 192.168.20.2 from 192.168.20.1
DHCPREQUEST for 192.168.20.2 on enp0s3 to 255.255.255.255 port 67 (xid=0x7439c4ef)
DHCNACK of 192.168.20.2 from 192.168.20.1 (xid=0xefc43974)
Setting LLNMR support level "yes" for "2", but the global support level is "no".
bound to 192.168.20.2 -- renewal in 3217 seconds.
carlos@ubuntuserver:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host noprefixroute
        valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:de:1e:d0 brd ff:ff:ff:ff:ff:ff
    inet 192.168.20.2/24 brd 192.168.20.255 scope global dynamic enp0s3
        valid_lft 7195sec preferred_lft 7195sec
    inet6 fe80::a00:27ff:fede:1ed0/64 scope link
        valid_lft forever preferred_lft forever
carlos@ubuntuserver:~$

```

Y tenemos la ip estática.

Por lo que ahora la máquina DMZ tenemos la ip fija.

Si ahora quisiésemos hacer un ping a google, no saldría por el firewall habría que permitirselo con una nueva regla.





Esta sería la estructura.