

Informatika, 2. maila

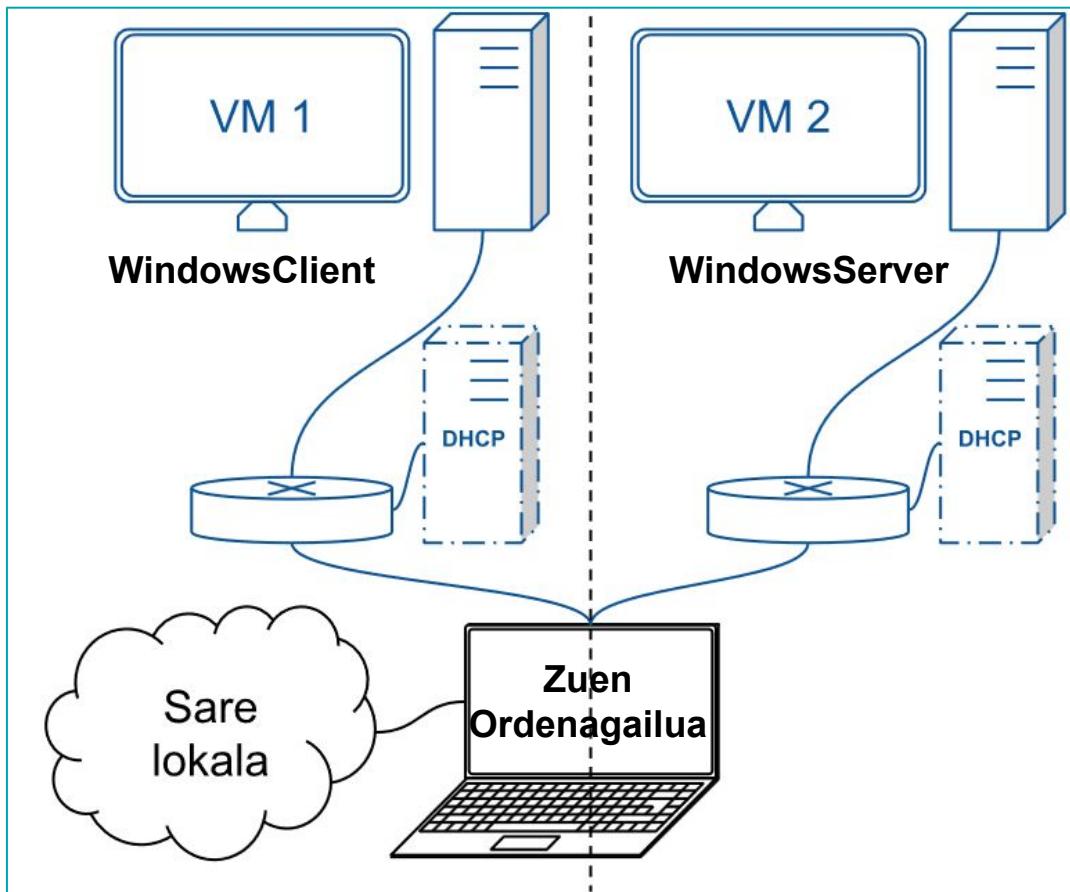
# Sare konfigurazioa

1

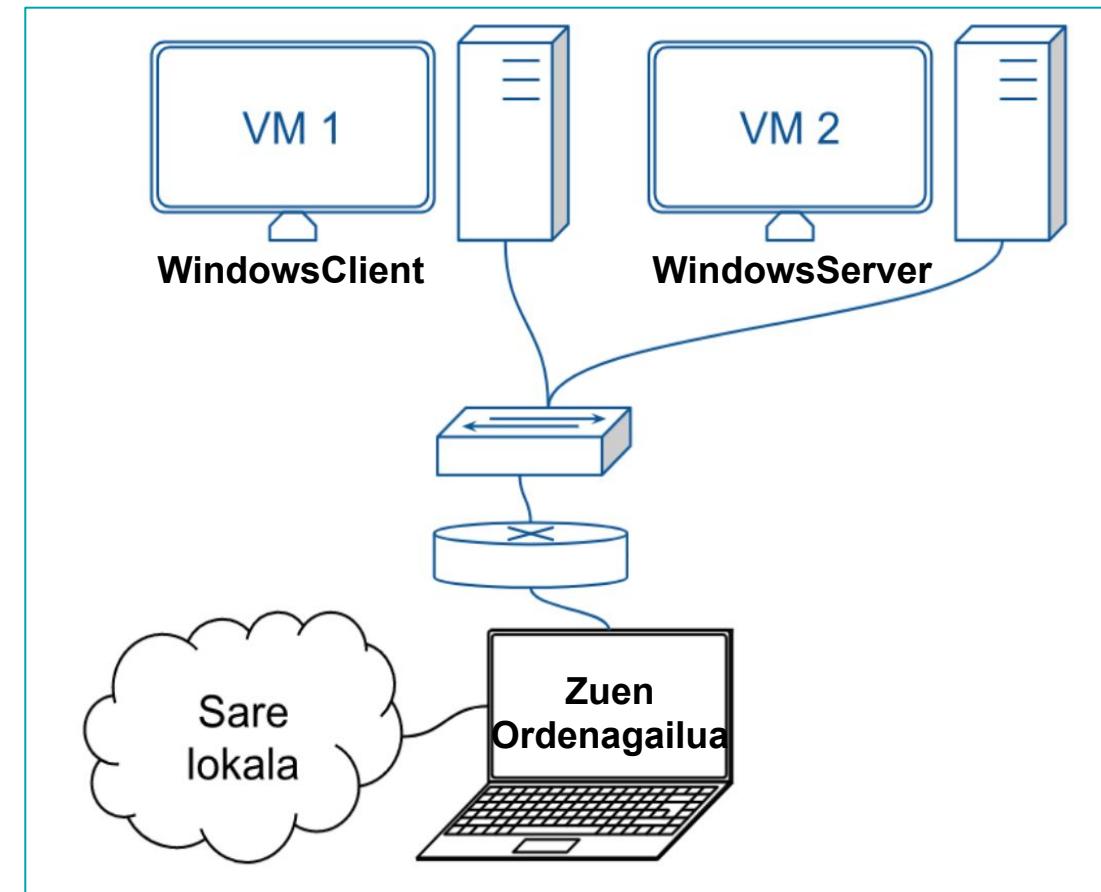
## **VirtualBox NAT sarea**

WindowsServer eta  
WindowsClient sare  
berdiean sartzen

# Helburua

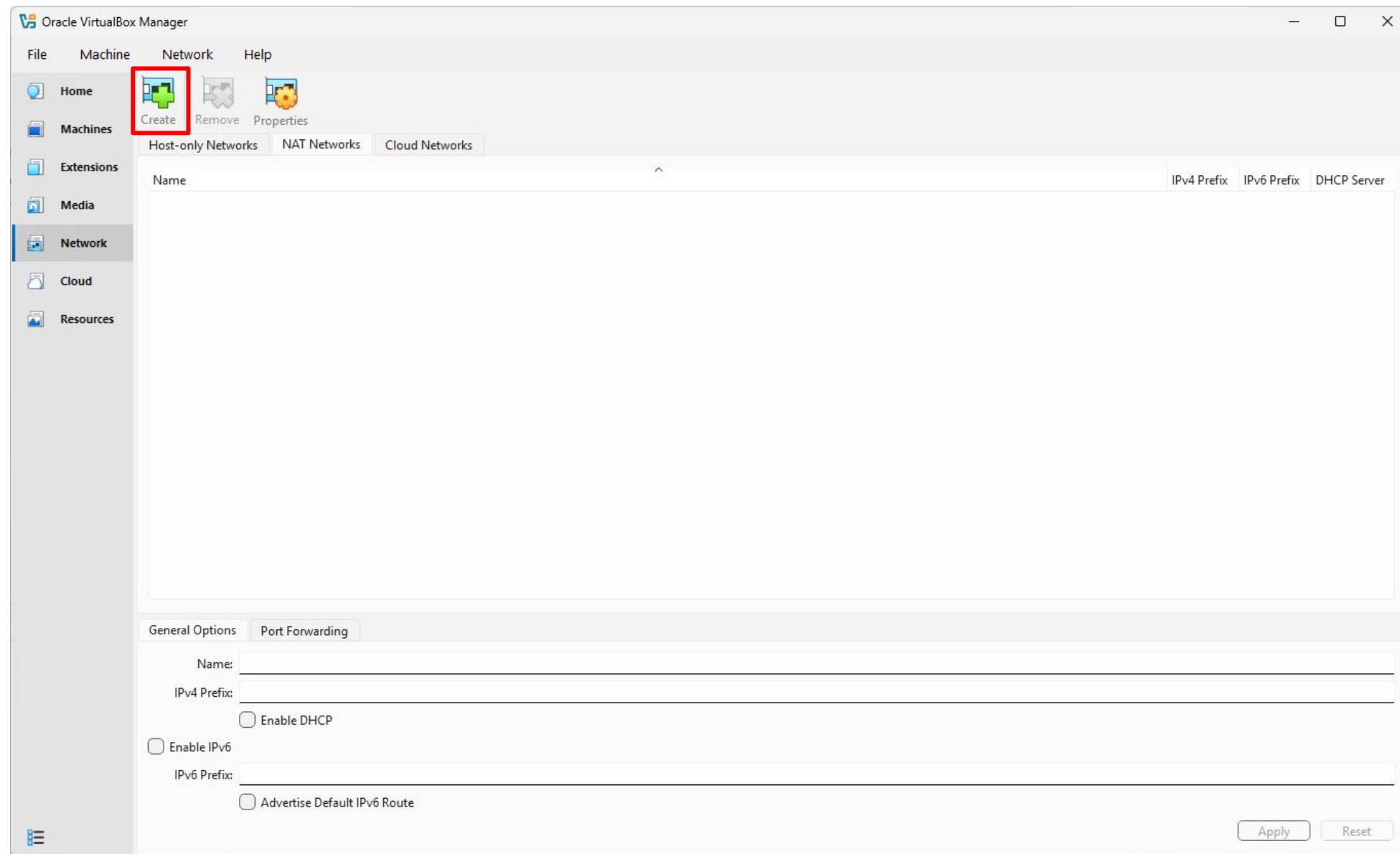


Hau da defektuzko konfigurazioa.

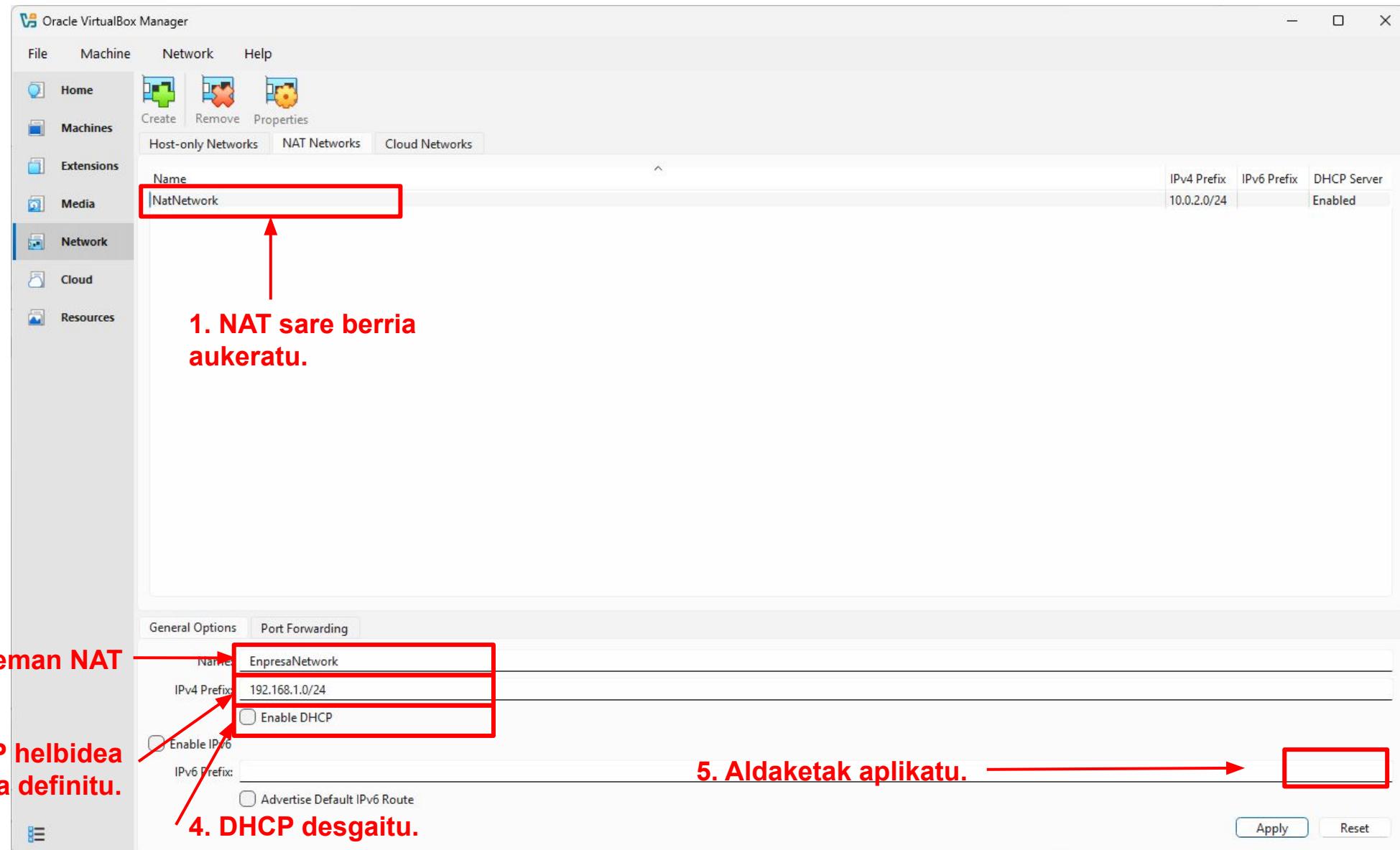


Hau da lortu nahi duguna.

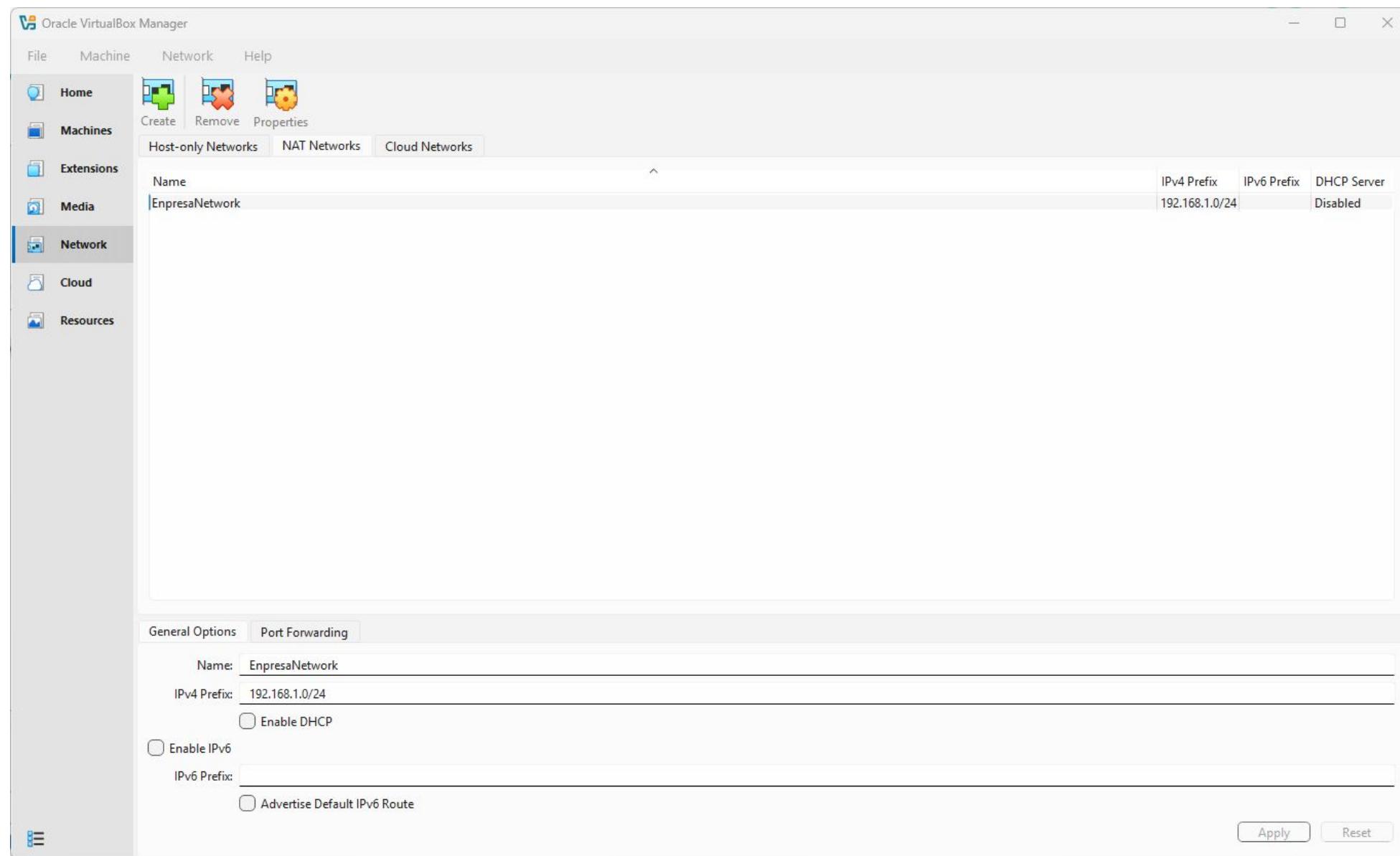
# NAT sarea sortu



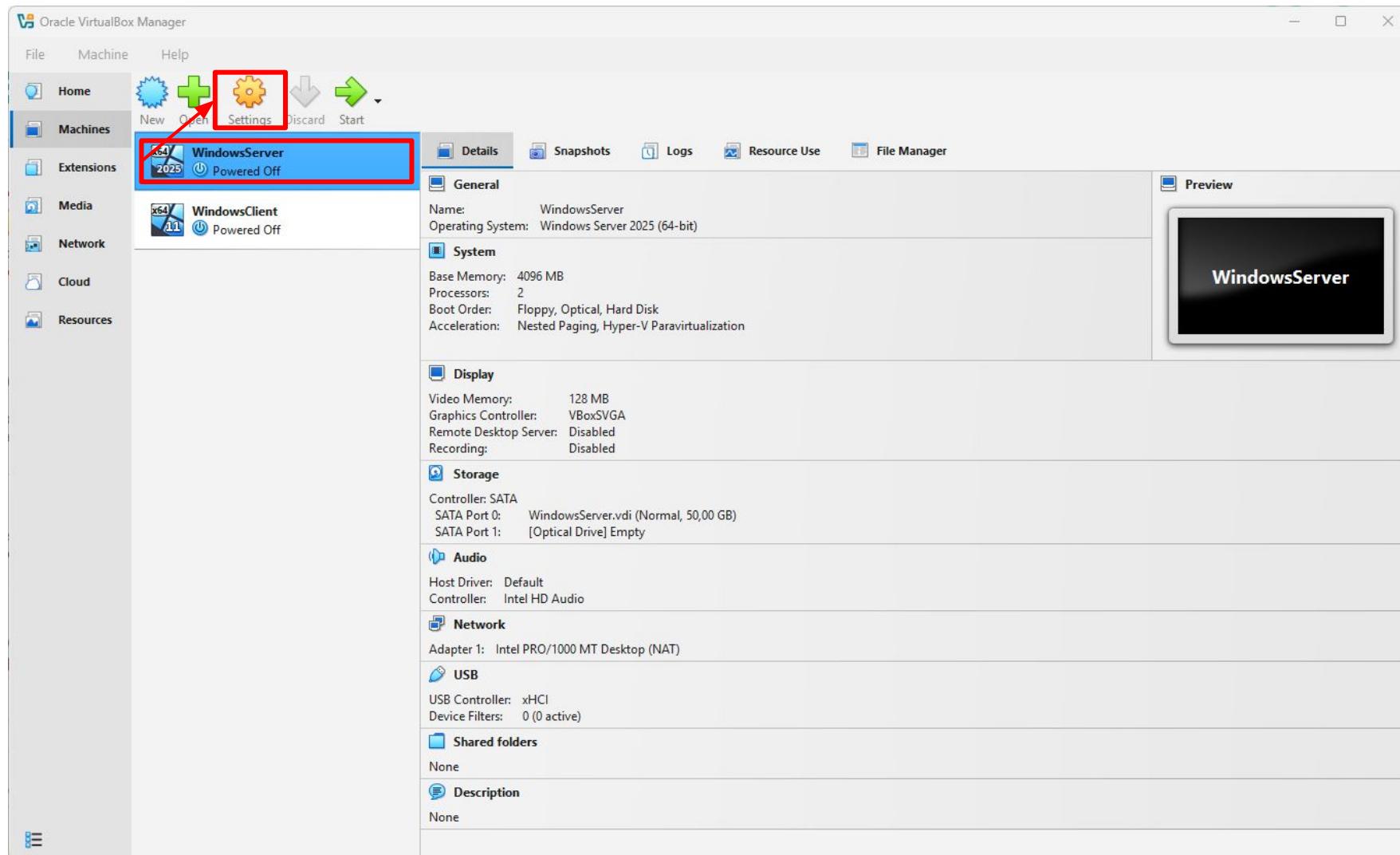
# NAT sarea sortu



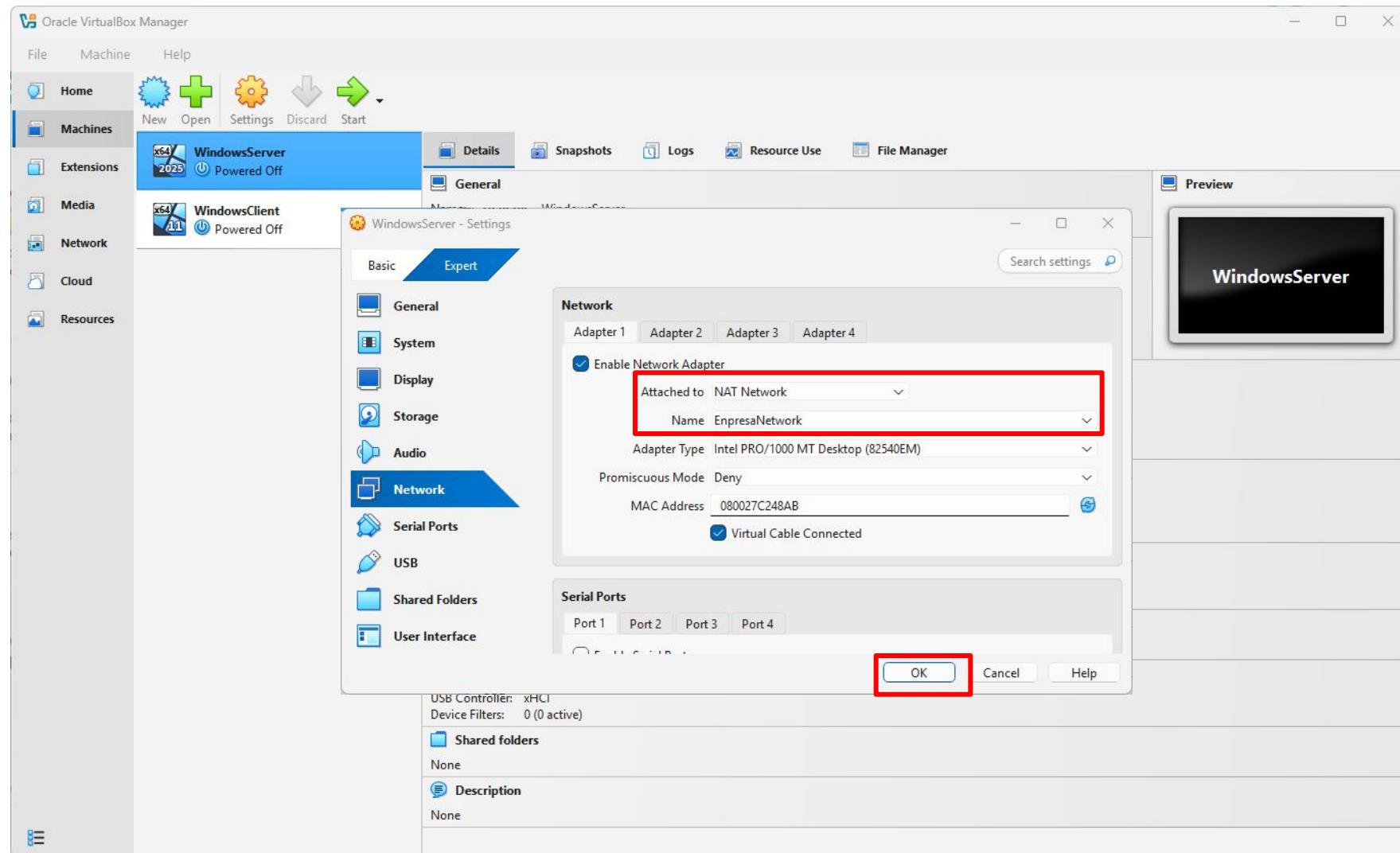
# NAT sarea sortu



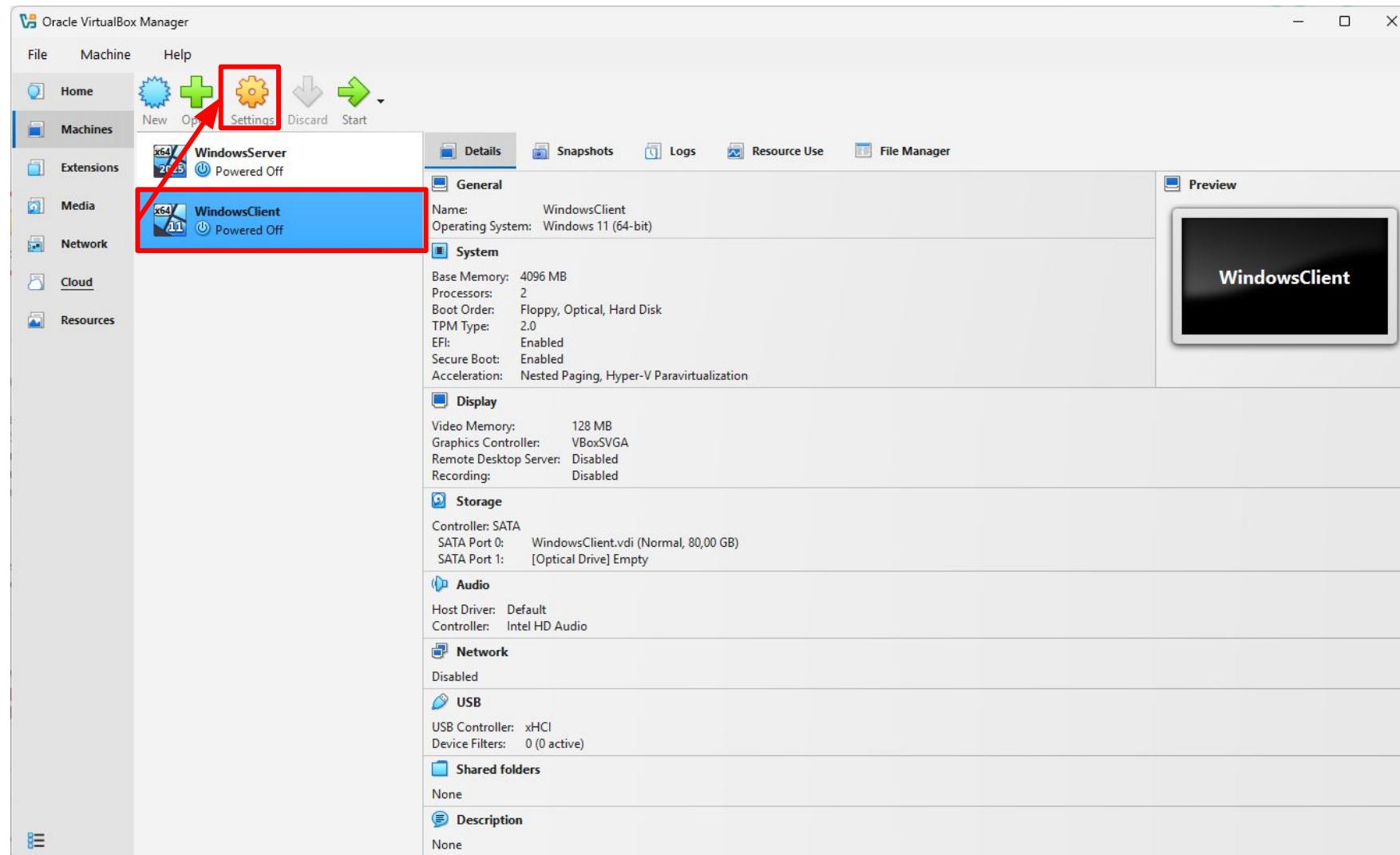
# WindowsServer NAT sarean sartu



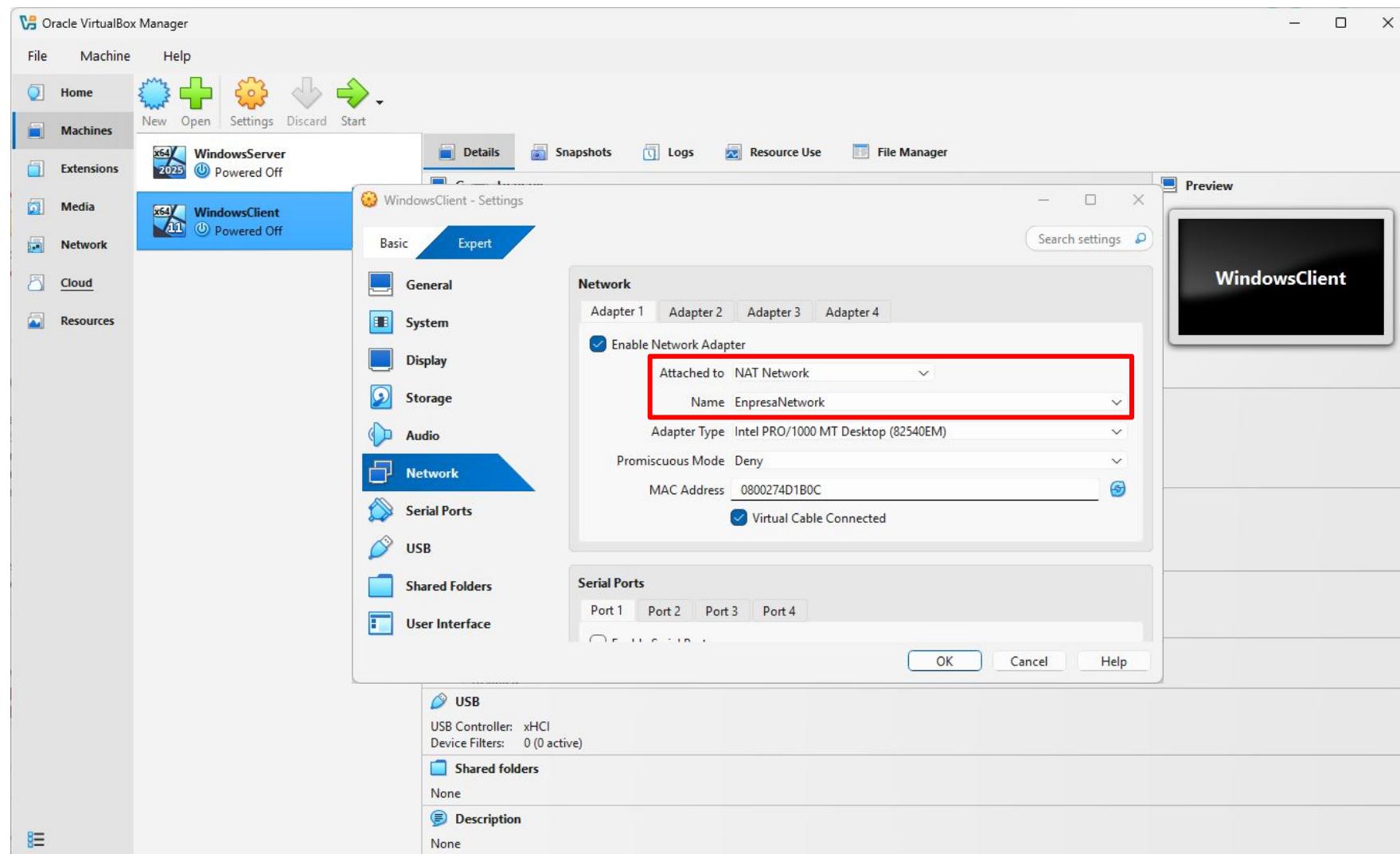
# WindowsServer NAT sarean sartu



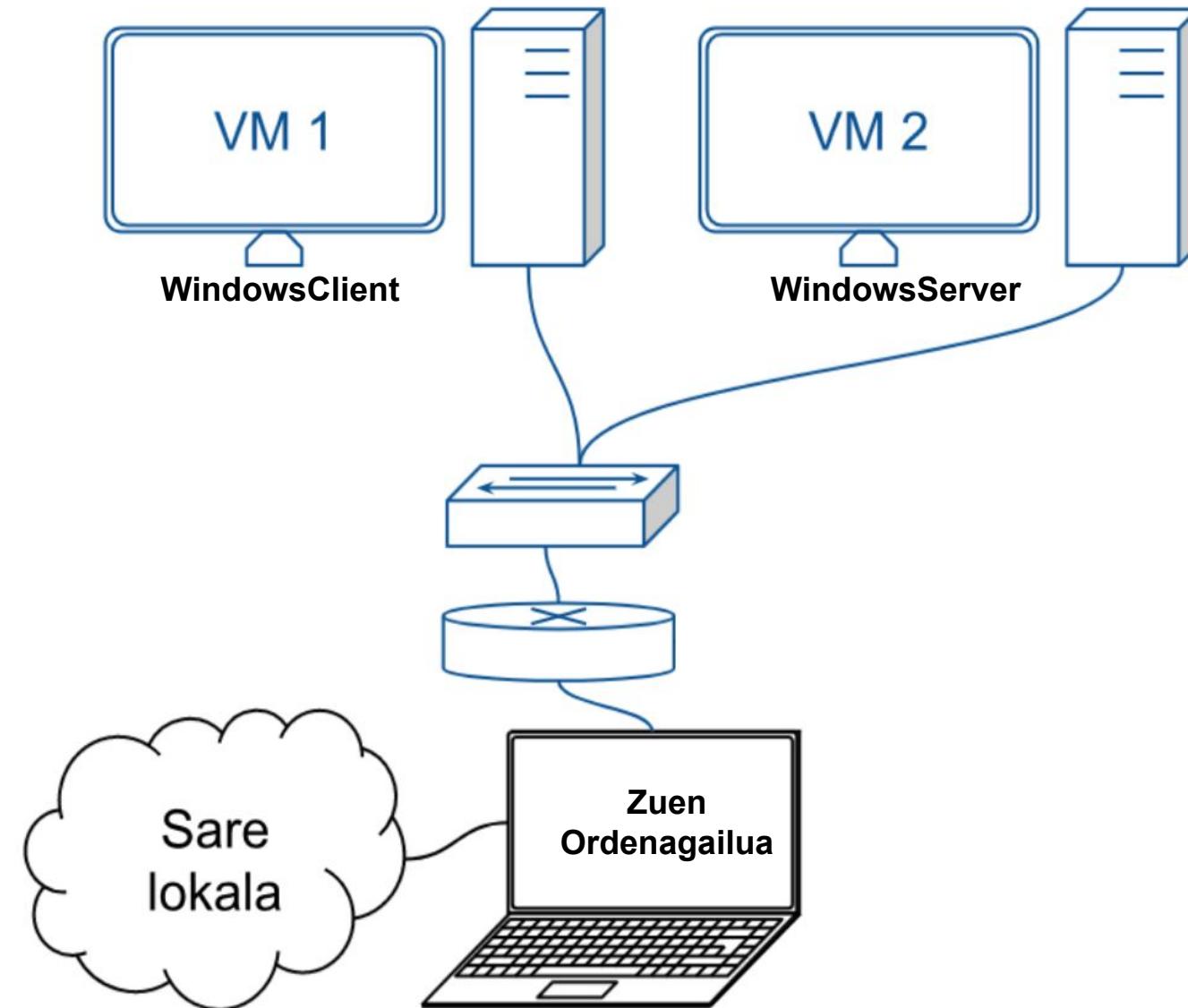
# WindowsClient NAT sarean sartu



# WindowsClient NAT sarean sartu



# Konfiguratu dugun sare topologia

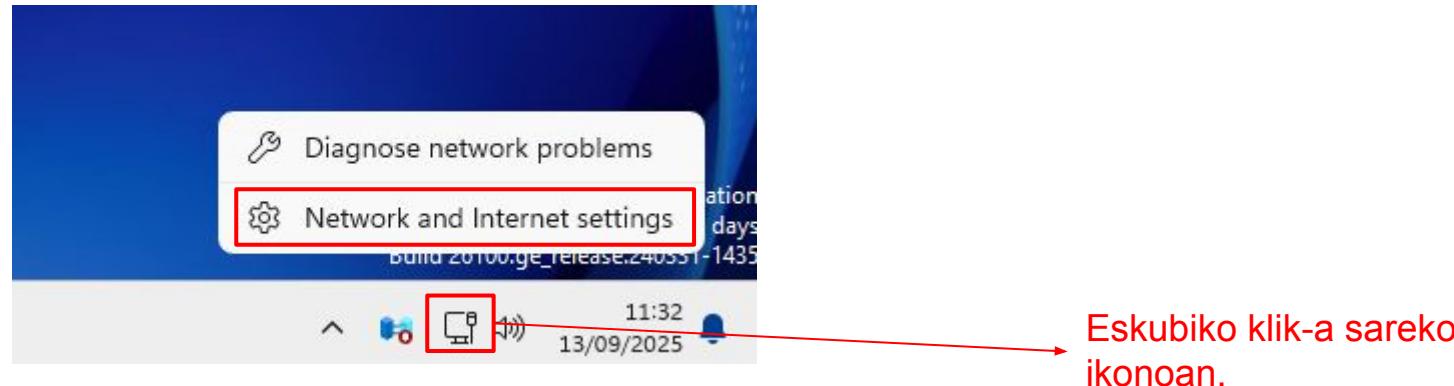


2

**Bi makina  
birtualei IP  
estatikoa  
konfiguratu**

# IP estatikoa konfiguratzeko

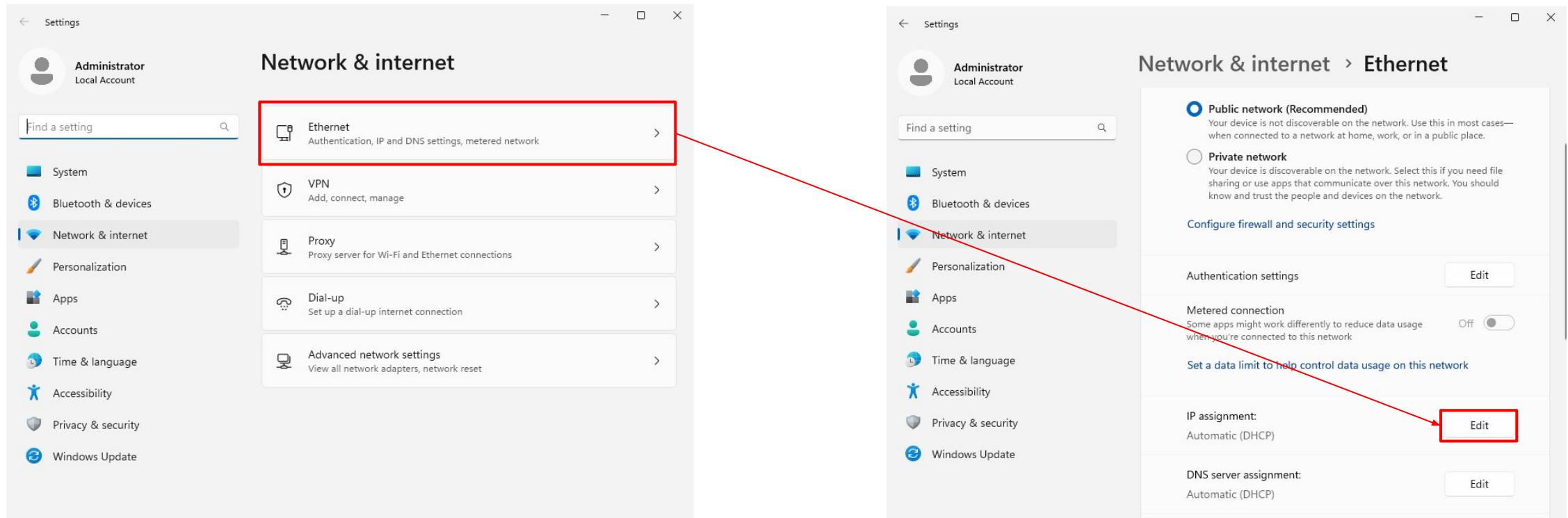
- WindowsServer makina birtualean **192.168.1.100/24** IP helbide estatikoa konfiguratu.
- WindowsClient makina birtualean **192.168.1.50/24** IP helbide estatikoa konfiguratu.
  - Zerbitzariek (ia) beti IP estatiko bat izaten dute. Gutxitan aldatzen da IP helbidea.



Eskubiko klik-a sareko  
ikonoan.

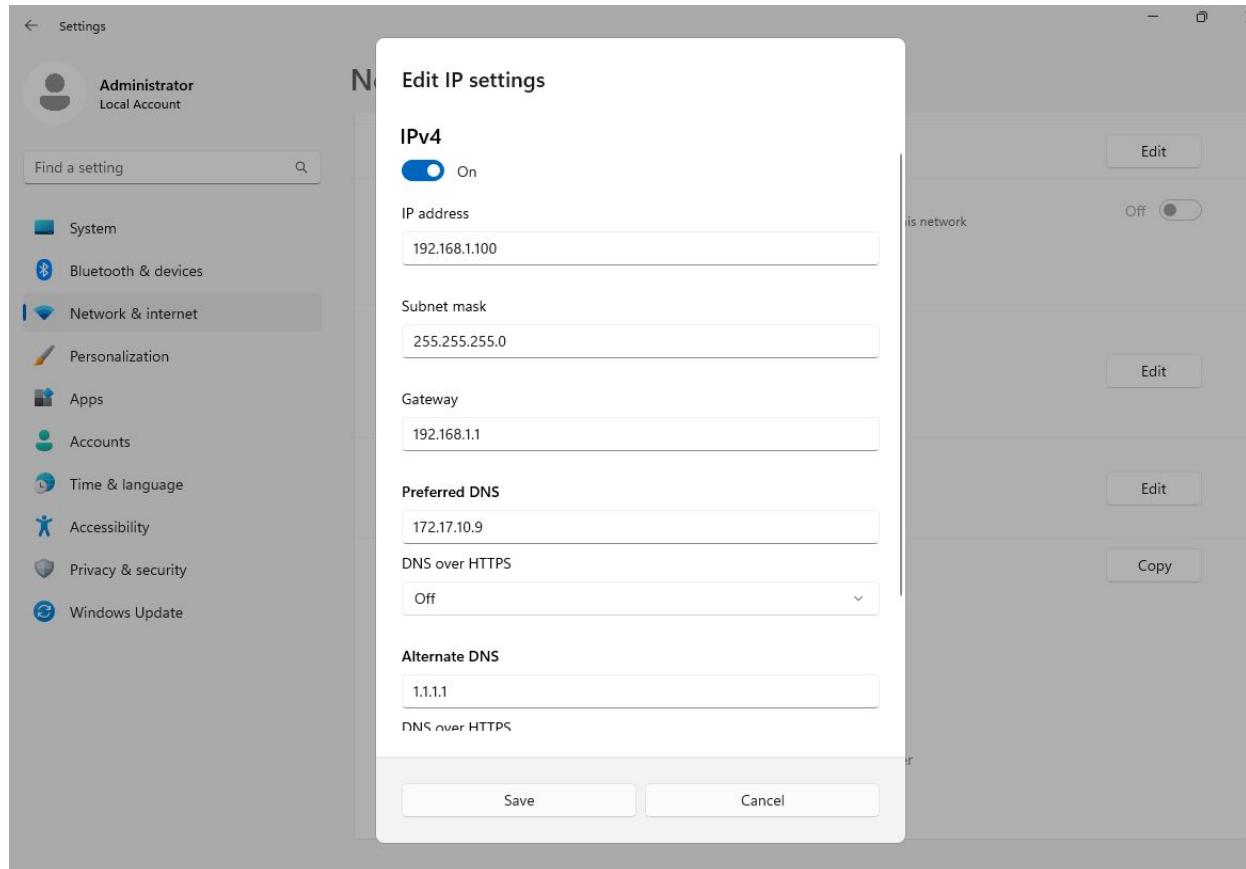
# IP estatikoa konfiguratzeko

- WindowsServer makina birtualean **192.168.1.100/24** IP helbide estatikoa konfiguratu.
- WindowsClient makina birtualean **192.168.1.50/24** IP helbide estatikoa konfiguratu.

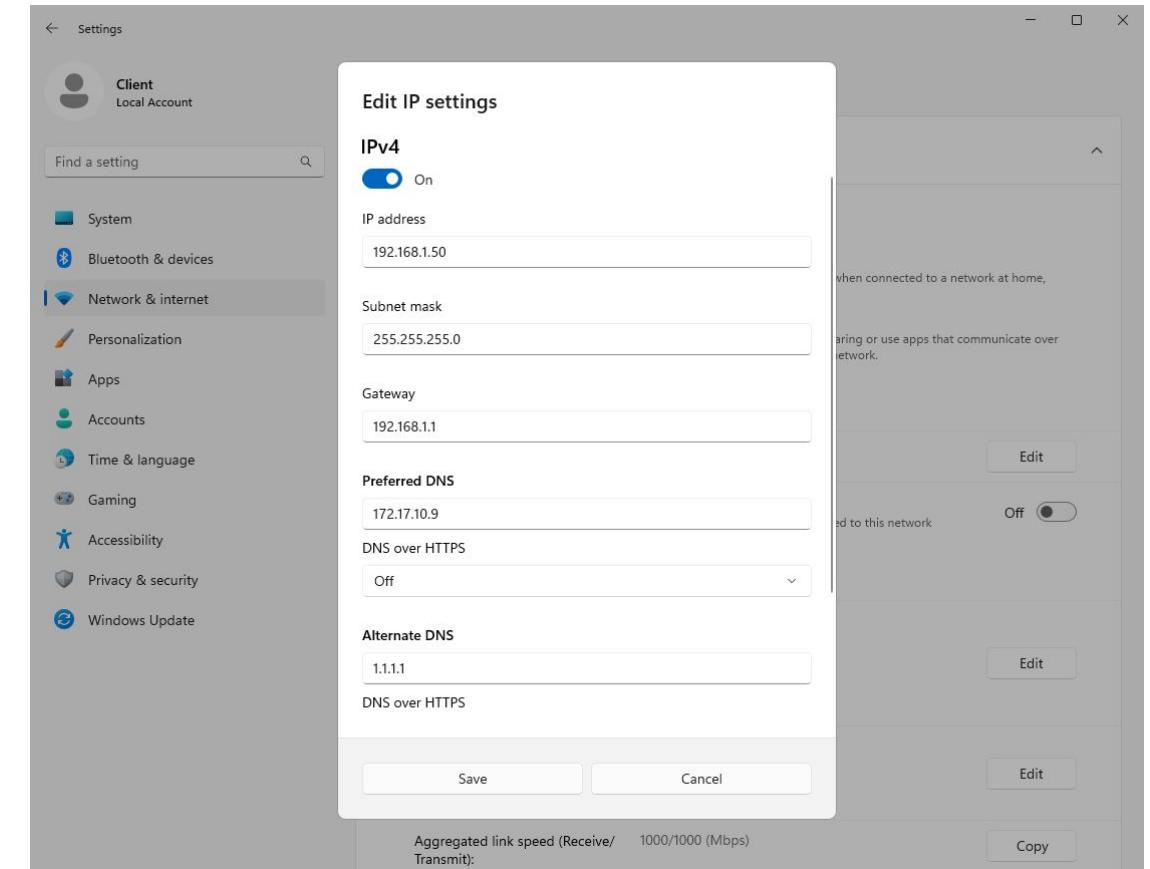


# IP estatikoa konfiguratzeko

- WindowsServer makina birtualean **192.168.1.100/24** IP helbide estatikoa konfiguratu.
- WindowsClient makina birtualean **192.168.1.50/24** IP helbide estatikoa konfiguratu.



**WindowsServer**



**WindowsClient**

# IP helbideak konprobatu

- Bi makina birtualak, guk NAT sarean definituriko sareko IP helbide barruan egon behar dira (192.168.1.0/24)
    - IP helbide estatikoak konfiguratu bi makina birtualetan
    - Makina birtual bakoitzean, **ipconfig /all** komandoarekin IP helbideak ikusiko ditugu.

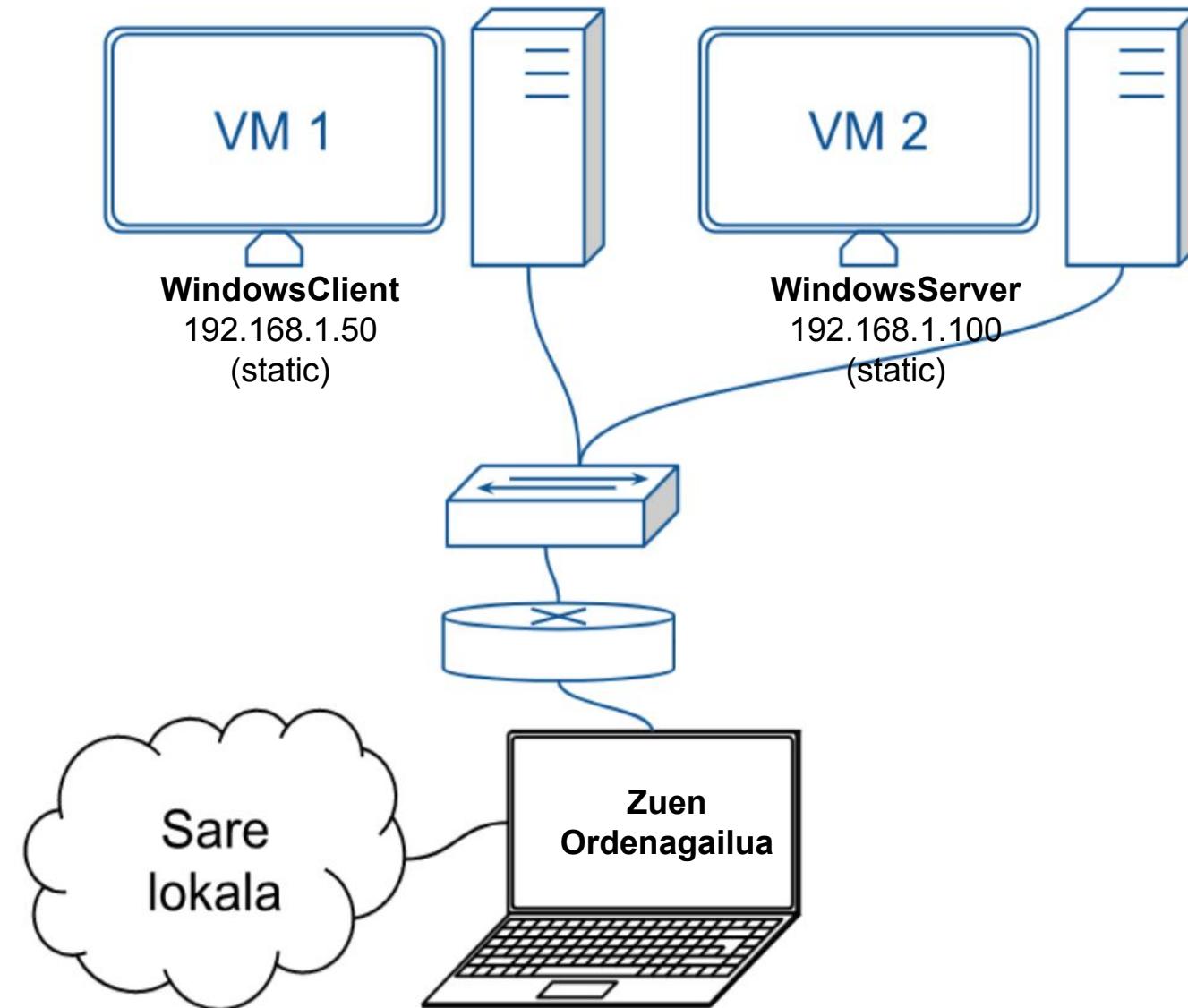
```
Ethernet adapter Ethernet:  
  
Connection-specific DNS Suffix . :  
Description . . . . . : Intel(R) PRO/1000 MT Desktop Adapter  
Physical Address. . . . . : 08-00-27-C2-48-AB  
DHCP Enabled. . . . . : No  
Autoconfiguration Enabled . . . . . : Yes  
Link-local IPv6 Address . . . . . : fe80::3283:2f4d:dd8c:eda3%3(PREFERRED)  
IPv4 Address. . . . . : 192.168.1.100(PREFERRED)  
Subnet Mask . . . . . : 255.255.255.0  
Default Gateway . . . . . : 192.168.1.1  
DHCPv6 IAID . . . . . : 101187623  
DHCPv6 Client DUID. . . . . : 00-01-00-01-30-56-55-6B-08-00-27-C2-48-A  
DNS Servers . . . . . : 172.17.10.9  
                           1.1.1.1  
NetBIOS over Tcpip. . . . . : Enabled
```

## Windows Server

```
Ethernet adapter Ethernet:  
  
Connection-specific DNS Suffix . . . :  
Description . . . . . : Intel(R) PRO/1000 MT Desktop Adapter  
Physical Address . . . . . : 08-00-27-4D-1B-0C  
DHCP Enabled. . . . . : No  
Autoconfiguration Enabled . . . . . : Yes  
Link-Local IPv6 Address . . . . . : fe80::d51d:dfb8%acc5%6228%3(Preferred)  
IPv4 Address. . . . . : 192.168.1.50(Preferred)  
Subnet Mask . . . . . : 255.255.255.0  
Default Gateway . . . . . : 192.168.1.1  
DHCPv6 IAID . . . . . : 235405351  
DHCPv6 Client DUID . . . . . : 00-01-00-01-30-55-D7-F9-08-00-27-4D-1B-0C  
DNS Servers . . . . . : 172.17.10.9  
                      1.1.1.1  
NetBIOS over Tcpip. . . . . : Enabled
```

## WindowsClient

# Konfiguratu dugun sare topologia



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## **Sare Konfigurazioa (PowerShell)**

# Sare Konfigurazioa (PowerShell)

Izena aldatzeko, powershell-a  
administratzaile bezala  
exekutatu behar da!

- Sare txartelak eta beraien konfigurazioak bistaratzeko komandoak:

```
# View network adapters
Get-NetAdapter

# Get network adapter configuration
Get-NetIPConfiguration -InterfaceAlias "YourAdapterName"
```

- Beste komando interesarri batzuk:

```
# Enable and disable netowrk adapter
Enable-NetAdapter -Name "YourAdapterName"
Disable-NetAdapter -Name "YourAdapterName" -Confirm:$false

# Rename network adapter
Rename-NetAdapter -Name "OldName" -NewName "NewName"
```

# Sare Konfigurazioa (PowerShell)

- IP eta DNS **estatikoak** konfiguratzeko komandoak:

```
# Set static IP address
New-NetIPAddress -InterfaceAlias "YourAdapterName" -IPAddress 192.168.1.100 -PrefixLength 24
-DefaultGateway 192.168.1.1

# Set static DNS server
Set-DnsClientServerAddress -InterfaceAlias "YourAdapterName" -ServerAddresses ("172.17.10.9","1.1.1.1")
```

# Sare Konfigurazioa (PowerShell)

- IP eta DNS automatikoki (DHCP erabiliz) konfiguratzeko komandoak:

```
# Set automatic IP address via DHCP
Set-NetIPInterface -InterfaceAlias "YourAdapterName" -Dhcp Enabled

# Remove the static IP address
Get-NetIPAddress -InterfaceAlias "YourNetworkAdapterName" | Remove-NetIPAddress

# Set automatic IP address via DHCP
Set-DnsClientServerAddress -InterfaceAlias "YourAdapterName" -ResetServerAddresses
```

# Sare Konfigurazioa (PowerShell)

- IP eta DNS **automatikoki** (DHCP erabiliz) konfiguratzeko komandoak
- Gateway-a mantentzen bada, ruta estatikoa ezabatu behar da:

ifIndex	DestinationPrefix	NextHop	RouteMetric	ifMetric	PolicyStore
15	255.255.255.255/32	0.0.0.0	256	25	ActiveStore
1	255.255.255.255/32	0.0.0.0	256	75	ActiveStore
15	224.0.0.0/4	0.0.0.0	256	25	ActiveStore
1	224.0.0.0/4	0.0.0.0	256	75	ActiveStore
1	127.255.255.255/32	0.0.0.0	256	75	ActiveStore
1	127.0.0.1/32	0.0.0.0	256	75	ActiveStore
1	127.0.0.0/8	0.0.0.0	256	75	ActiveStore
15	10.0.2.255/32	0.0.0.0	256	25	ActiveStore
15	10.0.2.15/32	0.0.0.0	256	25	ActiveStore
15	10.0.2.0/24	0.0.0.0	256	25	ActiveStore
15	0.0.0.0/0	10.0.2.2	0	25	ActiveStore
15	0.0.0.0/0	192.168.1.1	256	25	ActiveStore
15	ff00::/8	::	256	25	ActiveStore
1	ff00::/8	::	256	75	ActiveStore
15	fd17:625c:f037:2:472:9c7e:77cf:be17/128	::	256	25	ActiveStore
15	fd17:625c:f037:2::/64	::	256	25	ActiveStore
1	::1/128	::	256	75	ActiveStore
15	::/0	fe80::2	256	25	ActiveStore

```
# Remove the Old Route
Remove-NetRoute -NextHop "192.168.1.1" -InterfaceIndex "15"
```

4

## **Makinen artean ping egin**

# Makinen artean ping egin

- Windows-eko defektuzko konfigurazioak ICMP protokoloa (**ping**) blokeatzen du.

```
PS C:\Users\Client> ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

Connection-specific DNS Suffix . :
Link-local IPv6 Address . . . . . : fe80::d51d:dfb8:acc5:6228%3
IPv4 Address. . . . . : 192.168.1.50
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 192.168.1.1
PS C:\Users\Client>
```

```
PS C:\Users\Client> ping 192.168.1.100

Pinging 192.168.1.100 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.1.100:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

WindowsClient

```
PS C:\Users\Administrator> ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

Connection-specific DNS Suffix . :
Link-local IPv6 Address . . . . . : fe80::3283:2f4d:dd8c:eda3%3
IPv4 Address. . . . . : 192.168.1.100
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 192.168.1.1
PS C:\Users\Administrator>
```

```
PS C:\Users\Administrator> ping 192.168.1.50

Pinging 192.168.1.50 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.1.50:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

WindowsServer

# Makinen artean ping egin

- Windows-eko defektuzko konfigurazioak ICMP protokoloa (**ping**) blokeatzen du.

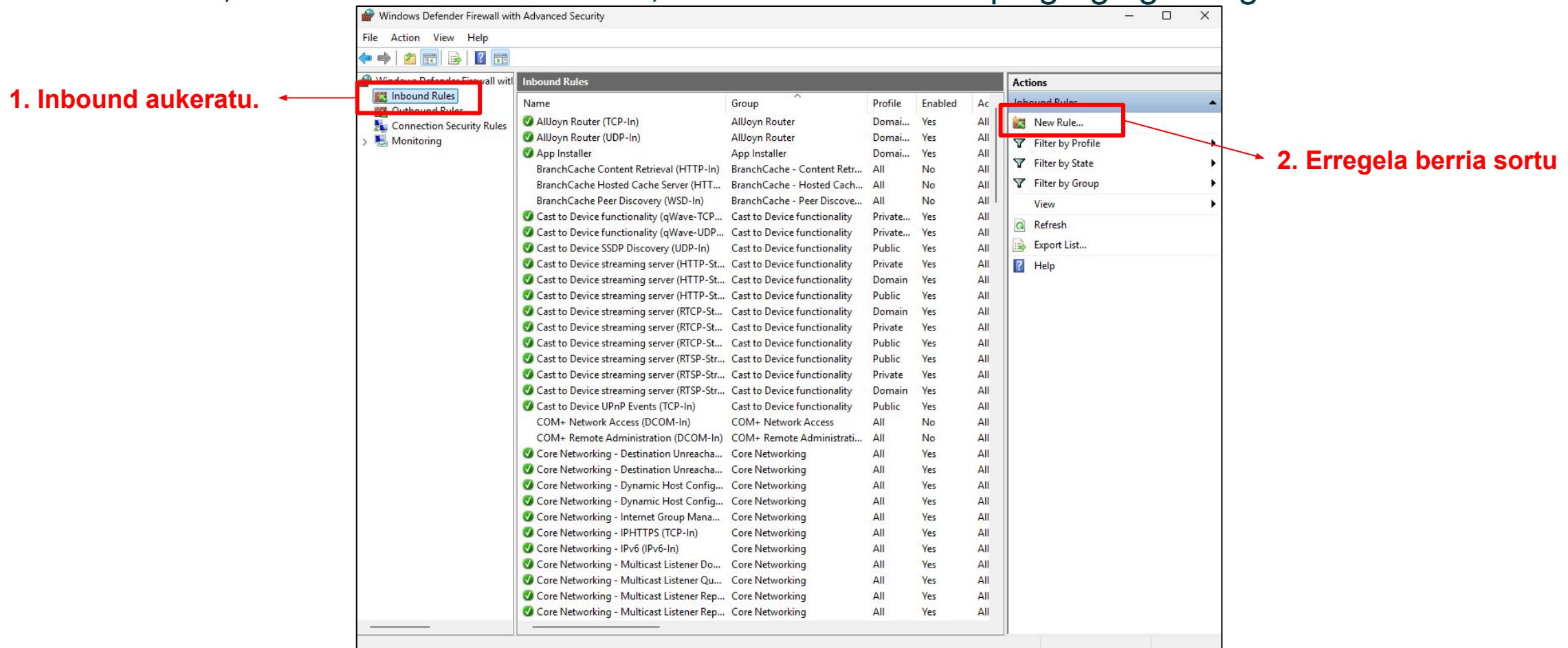
**Inbound-a** dago blokeatuta. Beste ordenagailu batzuek Windows duen ordenagailuetara ezin dute ping egin.

**Outbound-a** ez dago blokeatuta. Windows ordenagailu batek beste ordenagailu batzuei ping egitea ahalbidetuta dago.

- Beste ordenagailu batzuek Windows ordenagailu bati ping egiteko, Windows-eko firewallean inbound erregela bat sortu behar da.

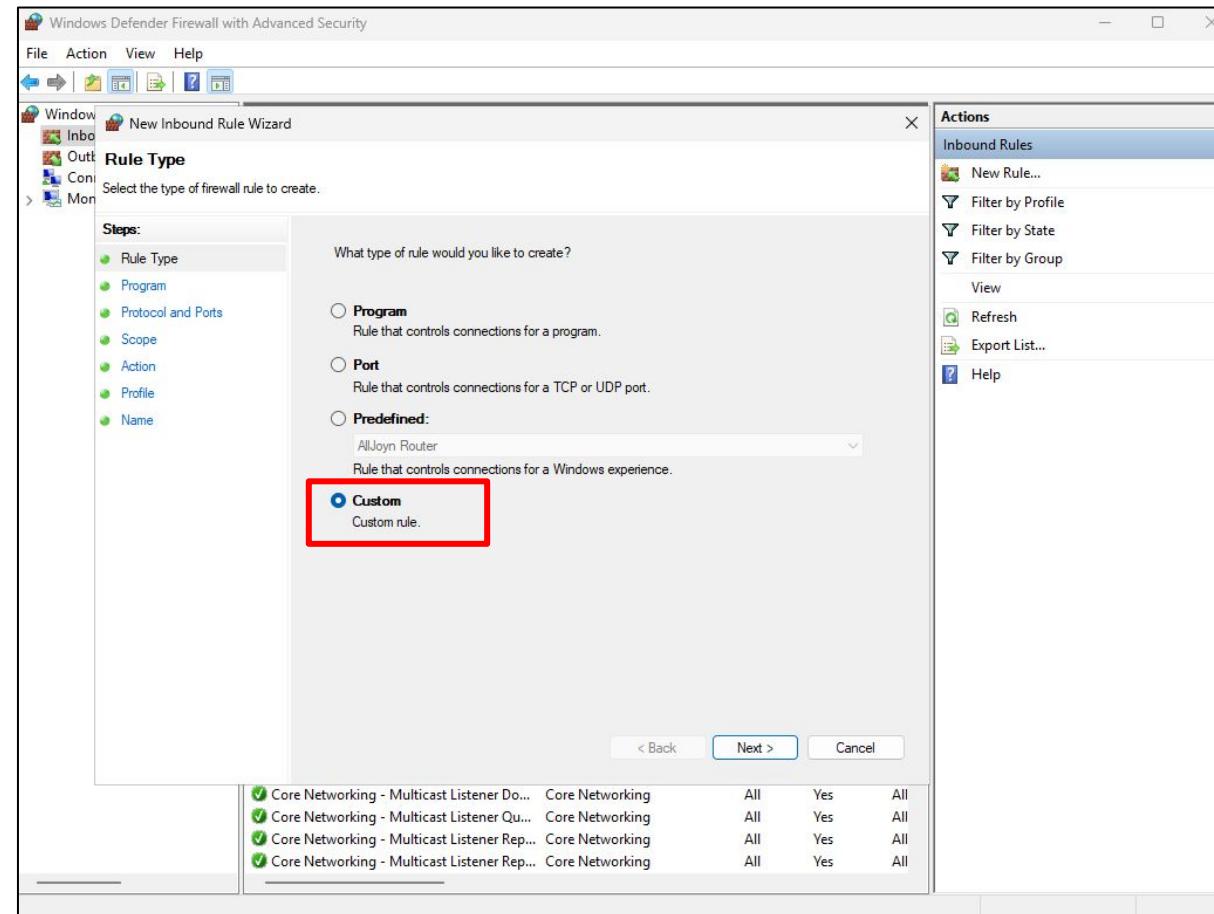
# Makinen artean ping egin

- Ping egiteko, firewallean erregela bat sortu behar da.
  - Proba egiteko, WindowsServer makinan sortuko dugu erregela.
  - Gero, WindowsClient makinatik, WindowsServer-ari ping egingo diogu.



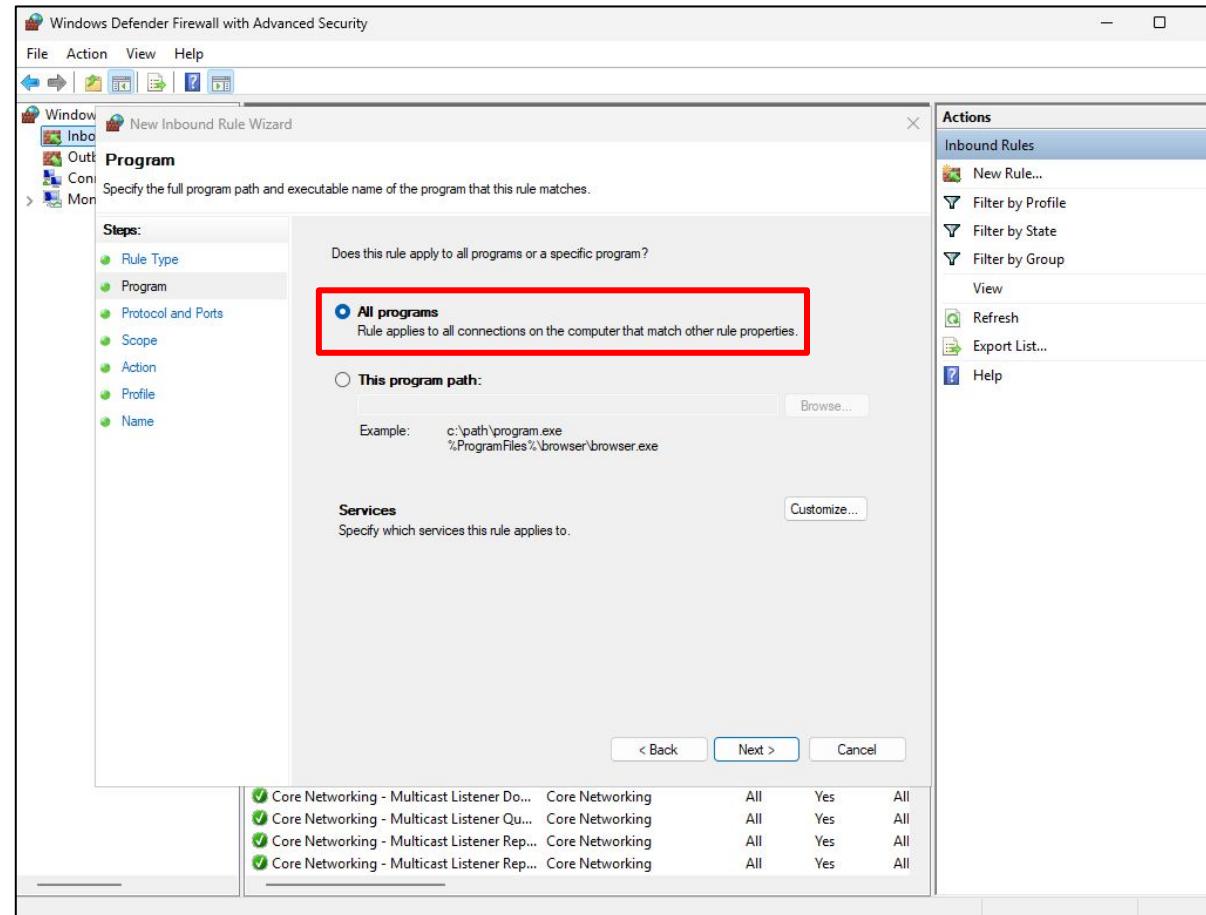
# Makinen artean ping egin

- Ping egiteko, firewallean erregela bat sortu behar da.
  - Proba egiteko, WindowsServer makinan sortuko dugu erregela.
  - Gero, WindowsClient makinatik, WindowsServer-ari ping egingo diogu.



# Makinen artean ping egin

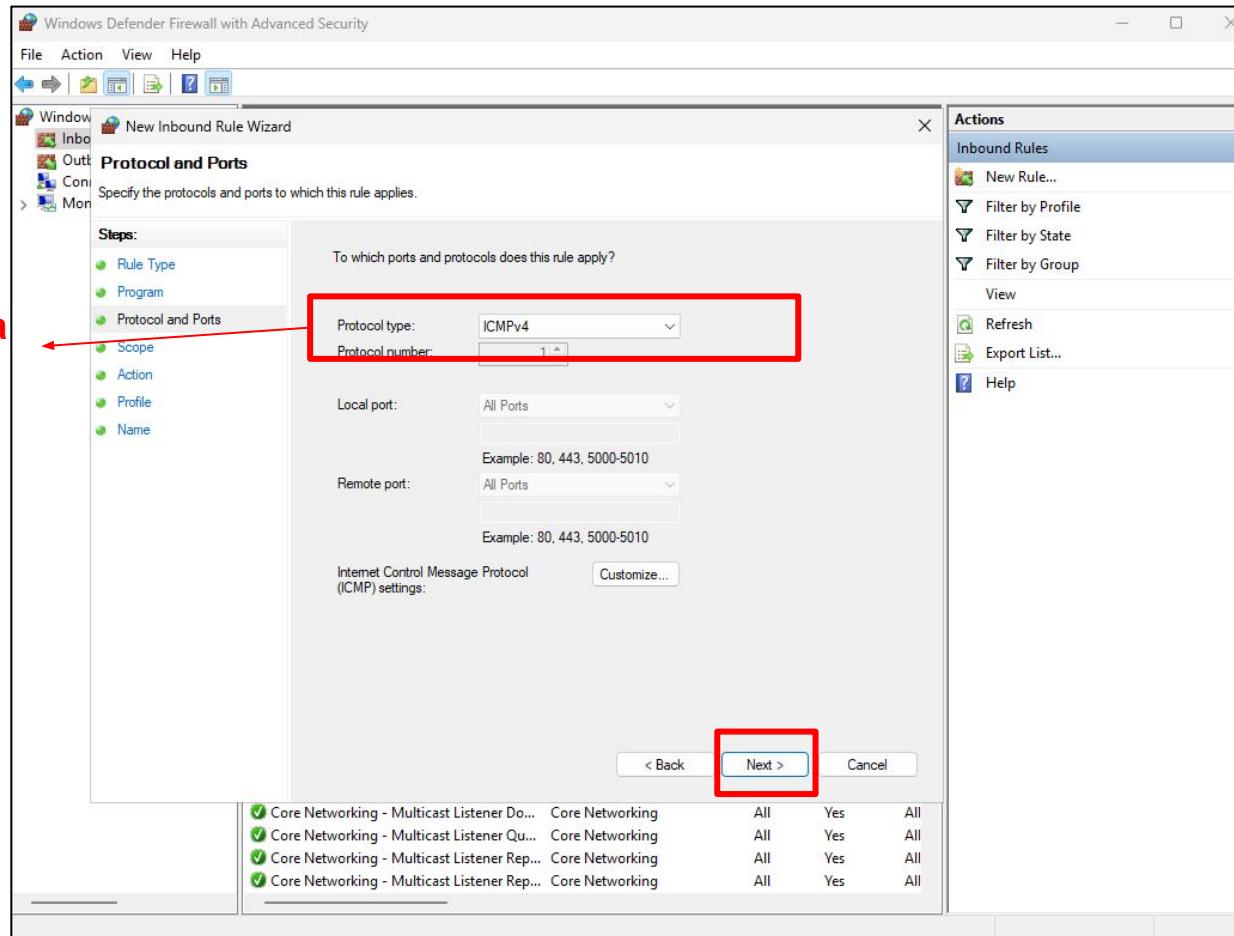
- Ping egiteko, firewallean erregela bat sortu behar da.
  - Proba egiteko, WindowsServer makinan sortuko dugu erregela.
  - Gero, WindowsClient makinatik, WindowsServer-ari ping egingo diogu.



# Makinen artean ping egin

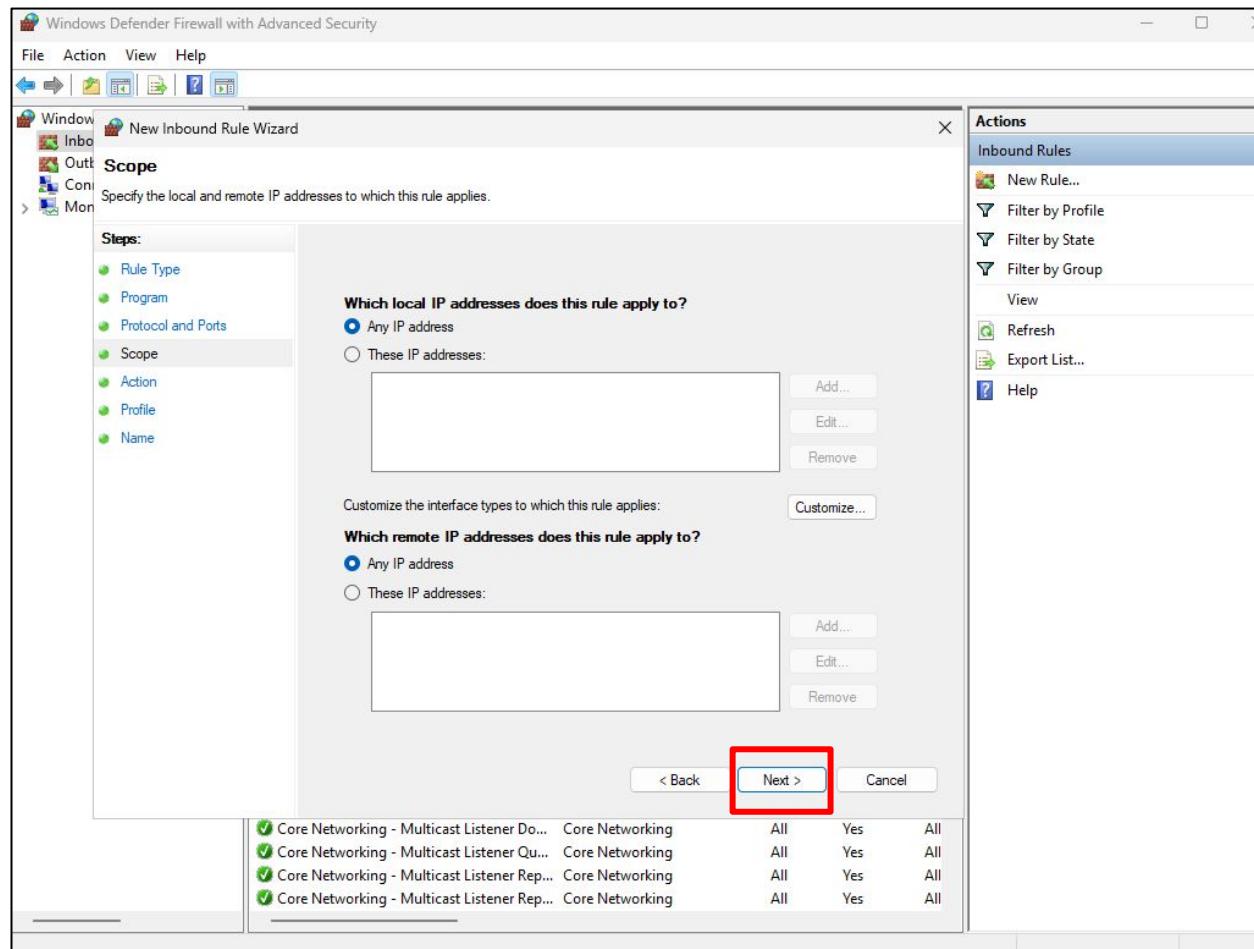
- Ping egiteko, firewallean erregela bat sortu behar da.
  - Proba egiteko, WindowsServer makinan sortuko dugu erregela.
  - Gero, WindowsClient makinatik, WindowsServer-ari ping egingo diogu.

**ICMPv4 protokoloa  
aukeratu.**



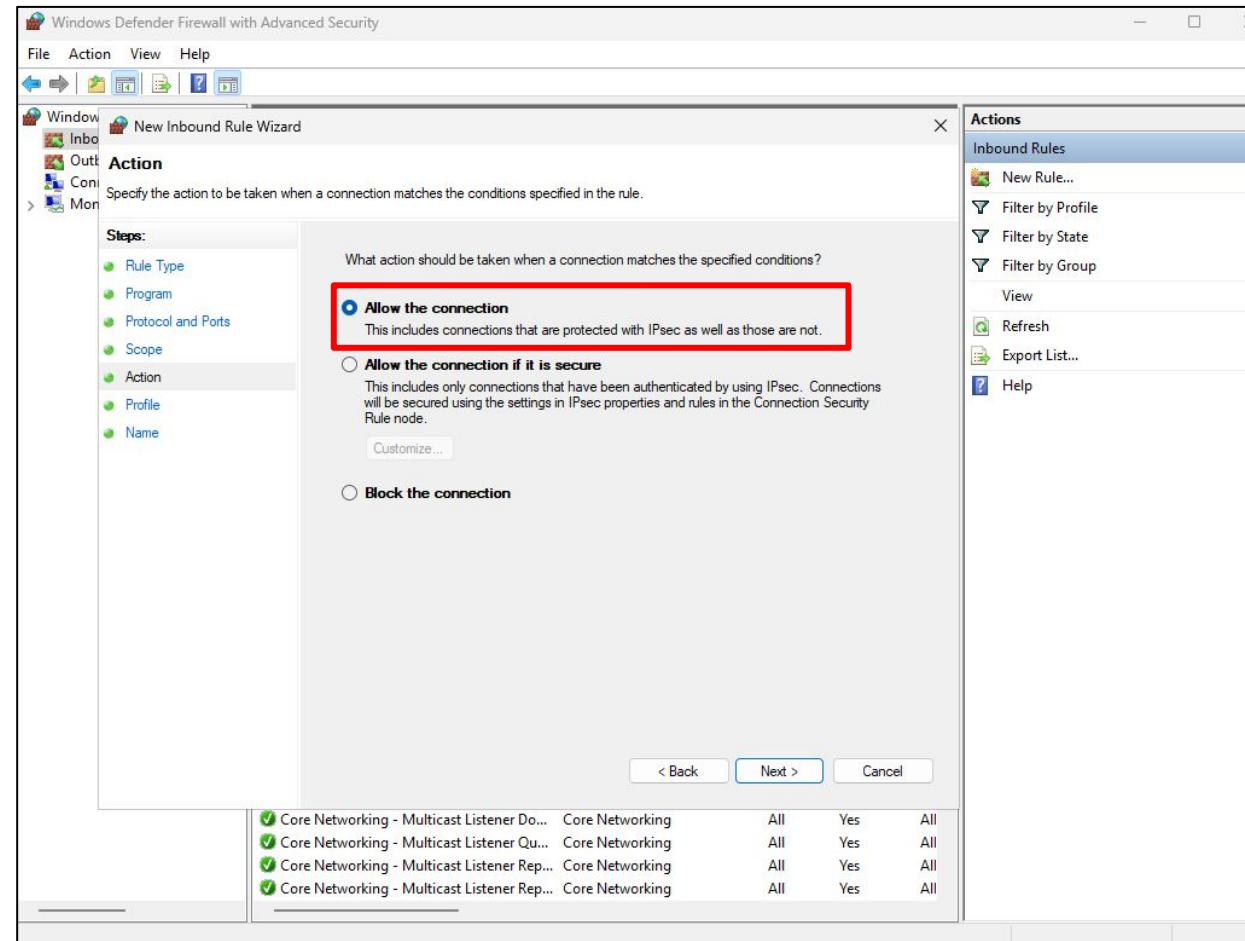
# Makinen artean ping egin

- Ping egiteko, firewallean erregela bat sortu behar da.
  - Proba egiteko, WindowsServer makinan sortuko dugu erregela.
  - Gero, WindowsClient makinatik, WindowsServer-ari ping egingo diogu.



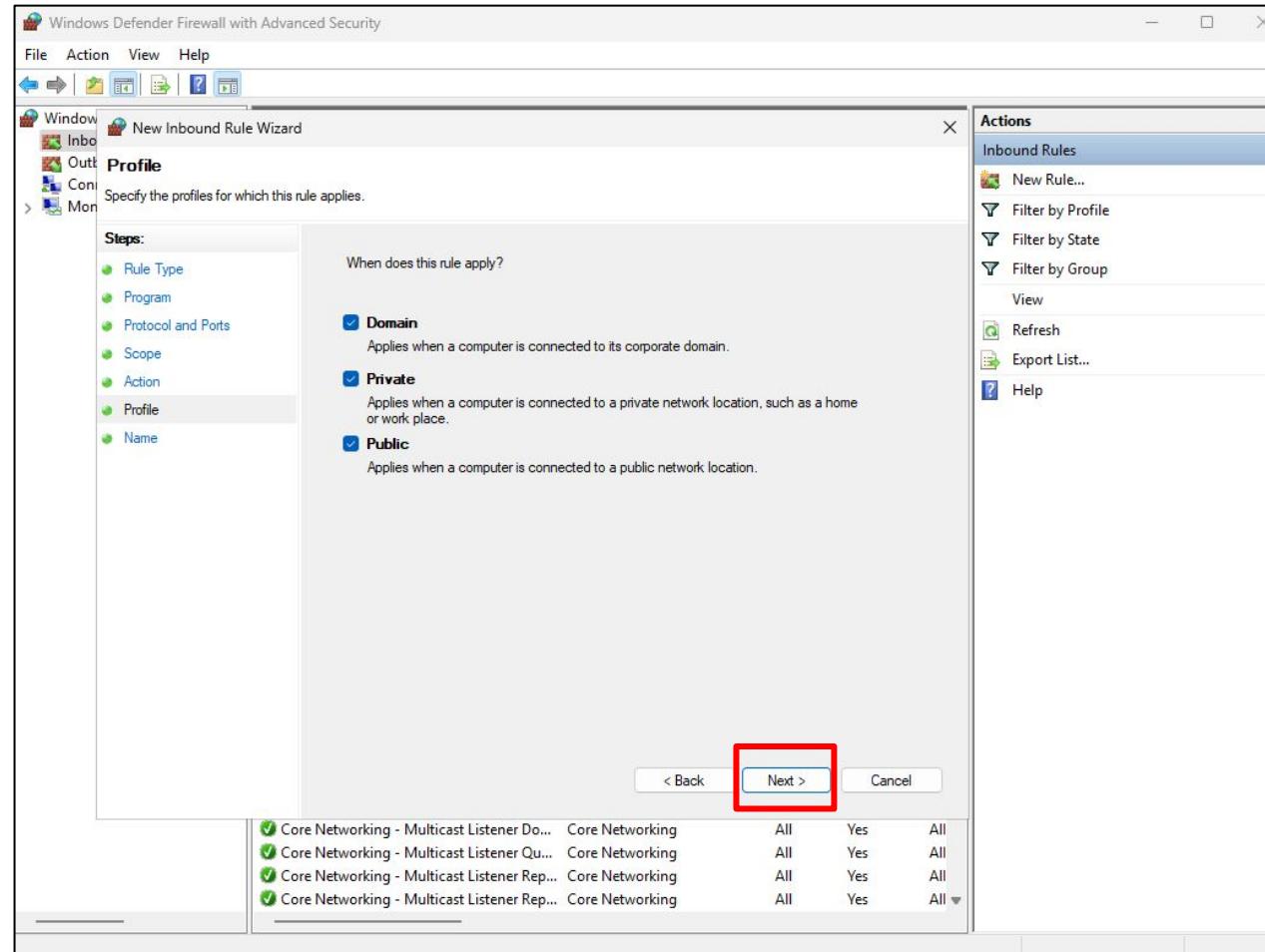
# Makinen artean ping egin

- Ping egiteko, firewallean erregela bat sortu behar da.
  - Proba egiteko, WindowsServer makinan sortuko dugu erregela.
  - Gero, WindowsClient makinatik, WindowsServer-ari ping egingo diogu.



# Makinen artean ping egin

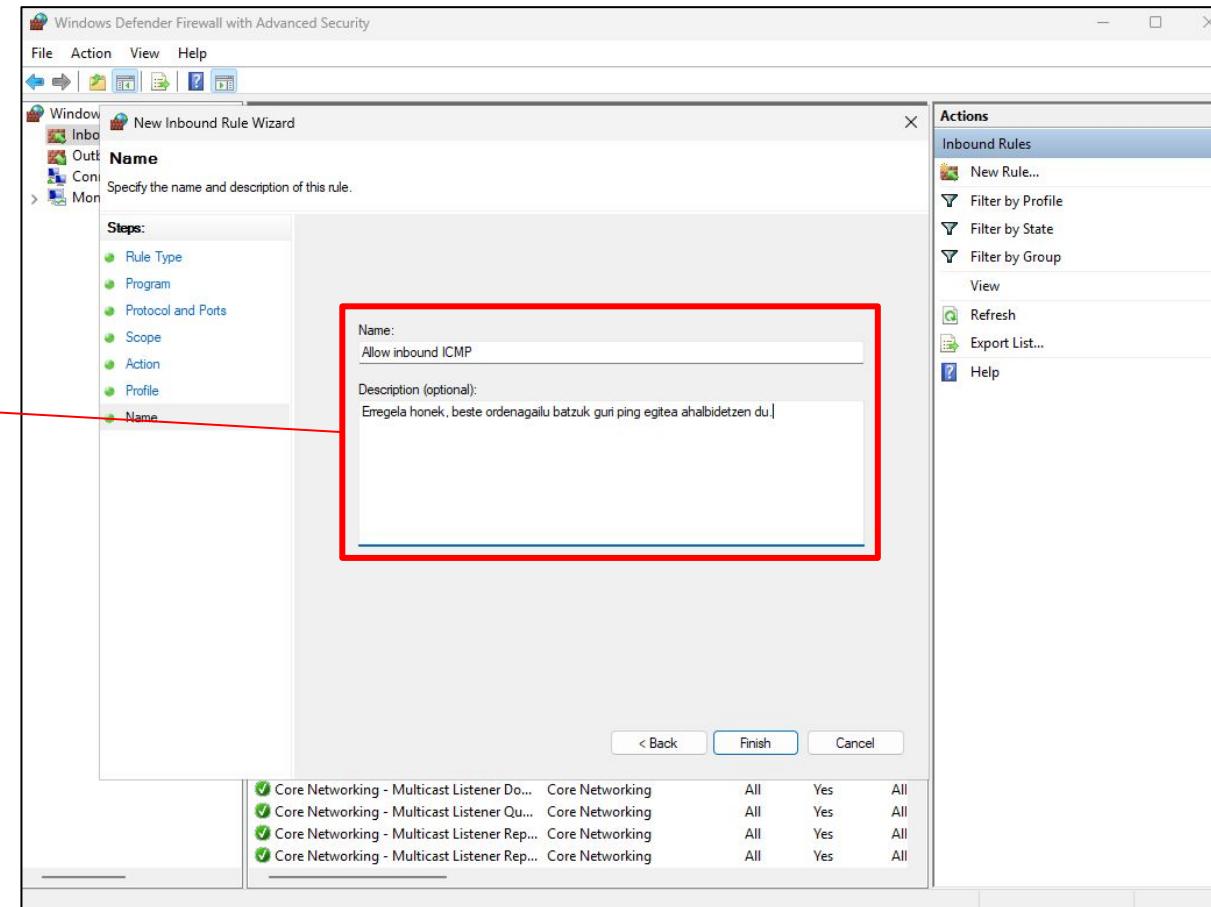
- Ping egiteko, firewallean erregela bat sortu behar da.
  - Proba egiteko, WindowsServer makinan sortuko dugu erregela.
  - Gero, WindowsClient makinatik, WindowsServer-ari ping egingo diogu.



# Makinan artean ping egin

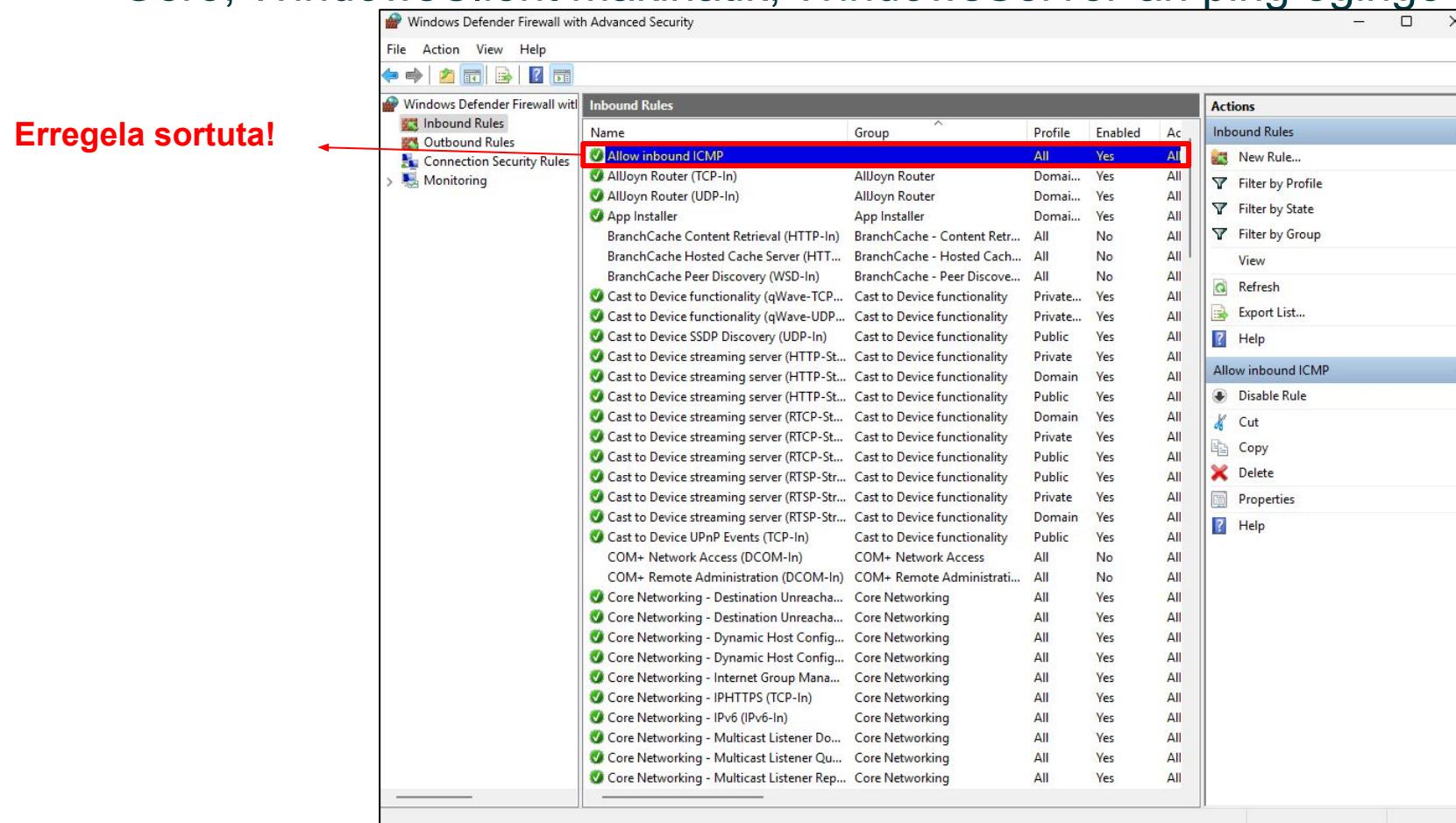
- Ping egiteko, firewallean erregela bat sortu behar da.
  - Proba egiteko, WindowsServer makinan sortuko dugu erregela.
  - Gero, WindowsClient makinatik, WindowsServer-ari ping egingo diogu.

Izen eta deskripzio bat  
ipini sortutako  
erregela berriari.



# Makinen artean ping egin

- Ping egiteko, firewallean erregela bat sortu behar da.
  - Proba egiteko, WindowsServer makinan sortuko dugu erregela.
  - Gero, WindowsClient makinatik, WindowsServer-ari ping egingo diogu.



# Makinen artean ping egin

- Windows-eko defektuzko konfigurazioak ICMP protokoloa (**ping**) blokeatzen du.

```
PS C:\Users\Client> ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

  Connection-specific DNS Suffix . :
  Link-local IPv6 Address . . . . . : fe80::d51d:dfb8:acc5:6228%3
  IPv4 Address. . . . . : 192.168.1.50
  Subnet Mask . . . . . : 255.255.255.0
  Default Gateway . . . . . : 192.168.1.1
PS C:\Users\Client>
```

```
PS C:\Users\Client> ping 192.168.1.100

Pinging 192.168.1.100 with 32 bytes of data:
Reply from 192.168.1.100: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.100:
  Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
  Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

WindowsClient

```
PS C:\Users\Administrator> ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

  Connection-specific DNS Suffix . :
  Link-local IPv6 Address . . . . . : fe80::3283:2f4d:dd8c:eda3%3
  IPv4 Address. . . . . : 192.168.1.100
  Subnet Mask . . . . . : 255.255.255.0
  Default Gateway . . . . . : 192.168.1.1
PS C:\Users\Administrator>
```

```
PS C:\Users\Administrator> ping 192.168.1.50

Pinging 192.168.1.50 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.1.50:
  Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

WindowsServer

# Ariketa: Sare konfigurazioa

1. Bi makina birtualak itzali
2. NAT sare berri bat sortu 192.168.1.0/24
  - a. DHCP desgaituta
3. Bi makina birtualak NAT sare berdinean sartu
4. Makina birtualak piztu
5. WindowsServer makina birtualean IP helbideak konfiguratu GUi erabiliz
6. WindowsClient makina birtualean IP helbideak konfiguratu PowerShell erabiliz
7. Konprobatu sare txartelaren konfigurazioa zuzena dela (bi makina birtualetan)
8. Firewall-a erabiliz, client→server ping-a aktibatu. Konprobatu ping-ak ondo egiten duela

Eskerrik asko

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info@mondragon.edu