# Сетевые технологии

## Лабораторная работа №6

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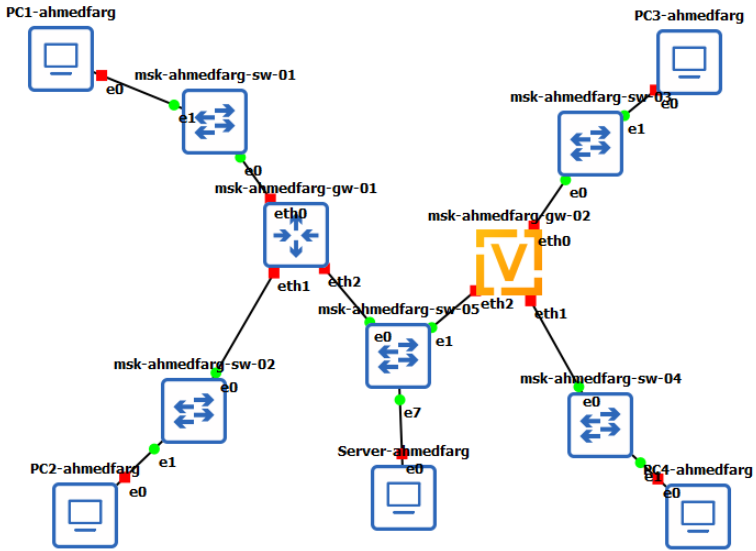
# Цель работы

# Постановка задачи

- Построить топологии
- Настроить IPv4 / IPv6
- Проверить связность
- Проанализировать трафик Wireshark

# Выполнение

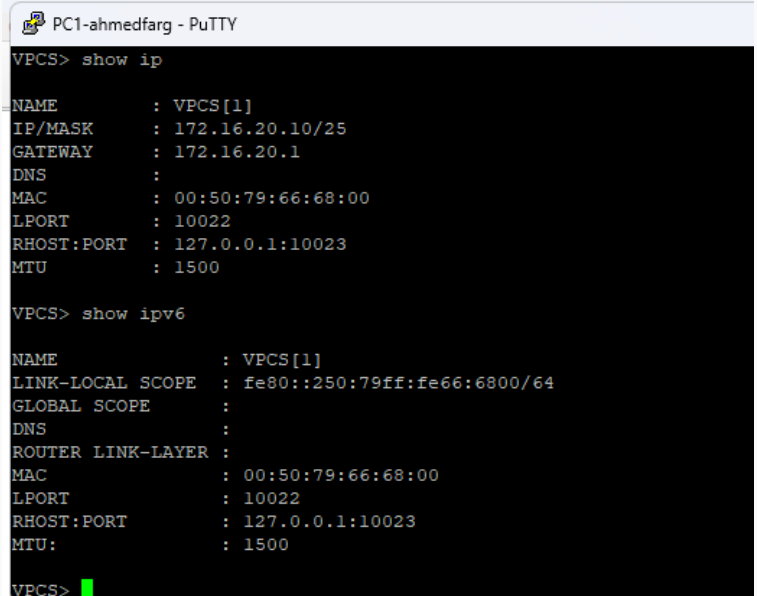
# Топология


PC1-ahmedfarg
e0
msk-ahmedfarg-sw-01
e1
e0
msk-ahmedfarg-gw-01
eth0
eth1
eth2
msk-ahmedfarg-sw-02
e0
e1
PC2-ahmedfarg
e0
msk-ahmedfarg-sw-05
e0
e1
e7
Server-ahmedfarg
e0
PC3-ahmedfarg
e0
msk-ahmedfarg-sw-03
e1
e0
msk-ahmedfarg-gw-02
eth0
eth2
eth1
msk-ahmedfarg-sw-04
e0
PC4-ahmedfarg
e0

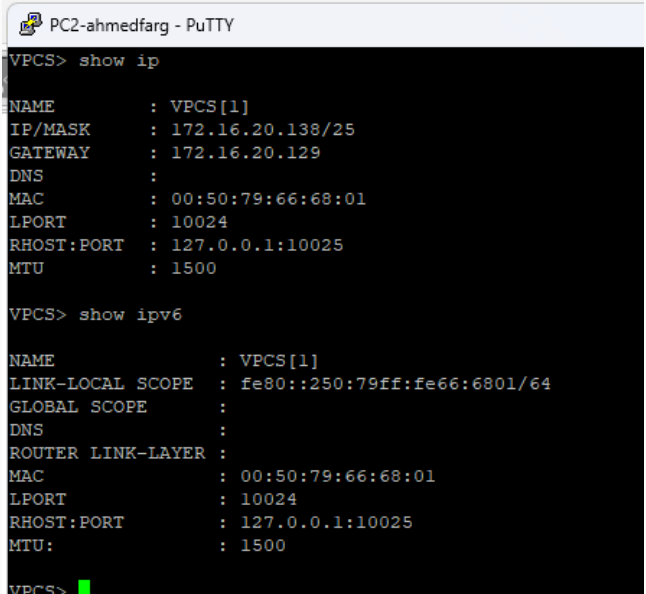
# Адресация IPv4

| Устройство | IP / Mask | Gateway |
|---|---|---|
| PC1 | 172.16.20.10/25 | 172.16.20.1 |
| PC2 | 172.16.20.138/25 | 172.16.20.129 |
| Server | 64.100.1.10/24 | 64.100.1.1 |

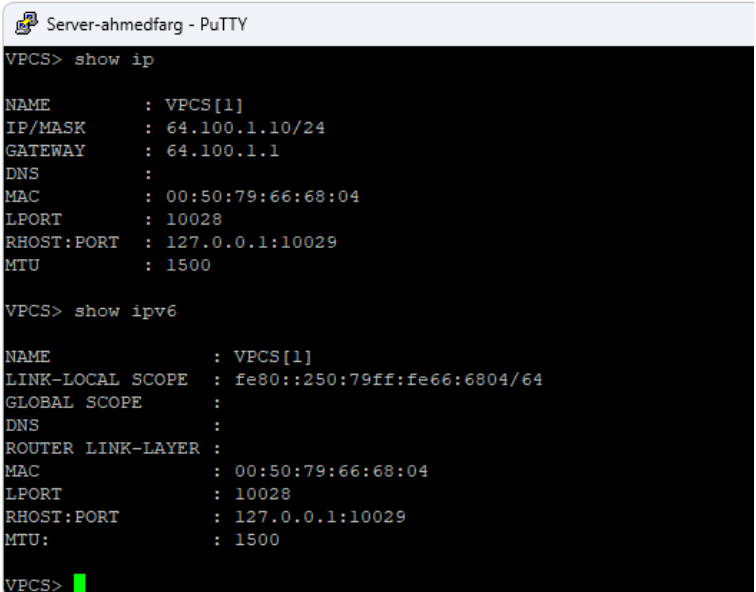
# Настройка IPv4 на PC1



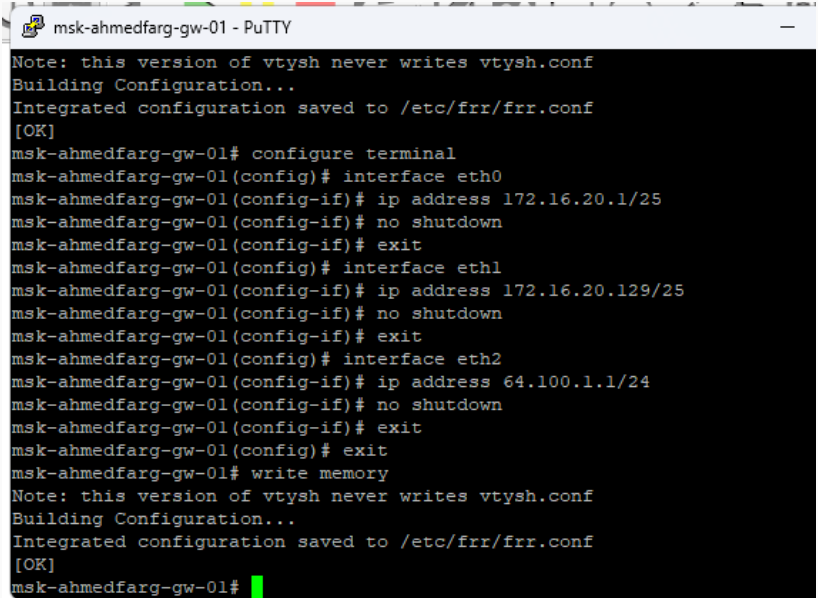
# Настройка IPv4 на PC2



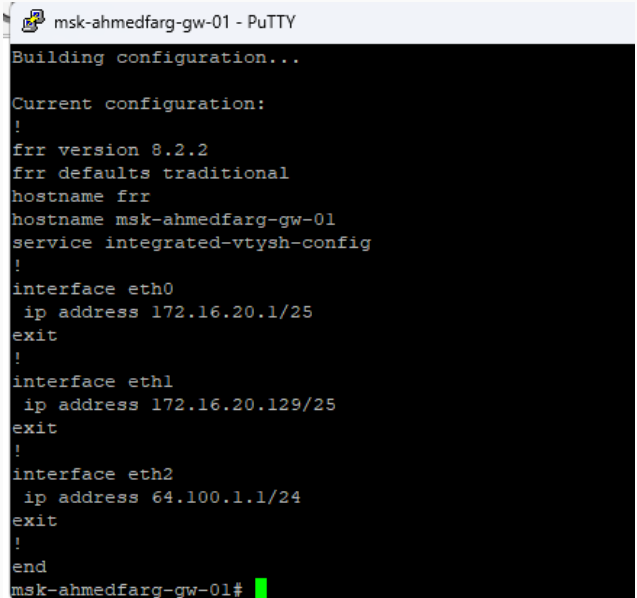
# Настройка IPv4 на сервере



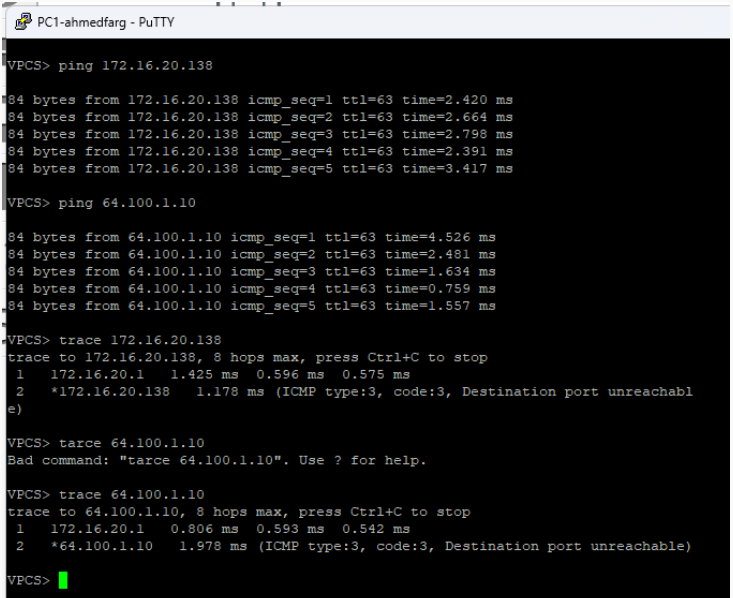
# Настройка IPv4 на маршрутизаторе FRR



# Просмотр конфигурации FRR



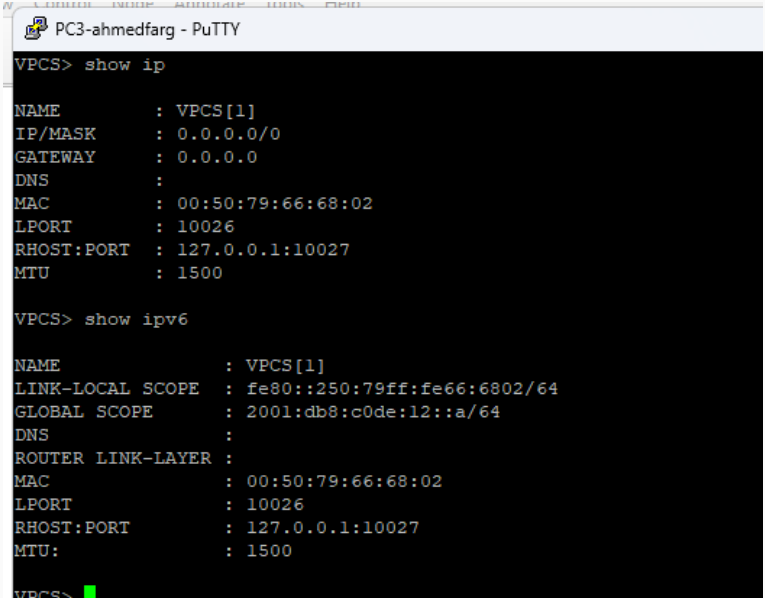
# Проверка связности IPv4



# Адресация IPv6

| Устройство | IPv6 / Prefix |
|---|---|
| PC3 | 2001:db8:c0de:12::a/64 |
| PC4 | 2001:db8:c0de:13::a/64 |
| Server | 2001:db8:c0de:11::a/64 |

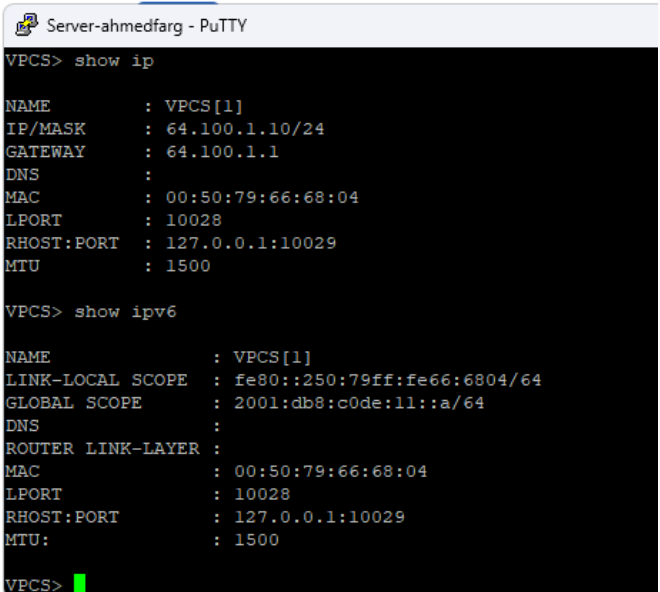
# IPv6 на PC3


PC3-ahmedfarg - PuTTY
VPCS> show ip
NAME : VPCS[1]
IP/MASK : 0.0.0.0/0
GATEWAY : 0.0.0.0
DNS :
MAC : 00:50:79:66:68:02
LPORT : 10026
RHOST:PORT : 127.0.0.1:10027
MTU : 1500
VPCS> show ipv6
NAME : VPCS[1]
LINK-LOCAL SCOPE : fe80::250:79ff:fe66:6802/64
GLOBAL SCOPE : 2001:db8:c0de:12::a/64
DNS :
ROUTER LINK-LAYER :
MAC : 00:50:79:66:68:02
LPORT : 10026
RHOST:PORT : 127.0.0.1:10027
MTU: : 1500
VPCS>

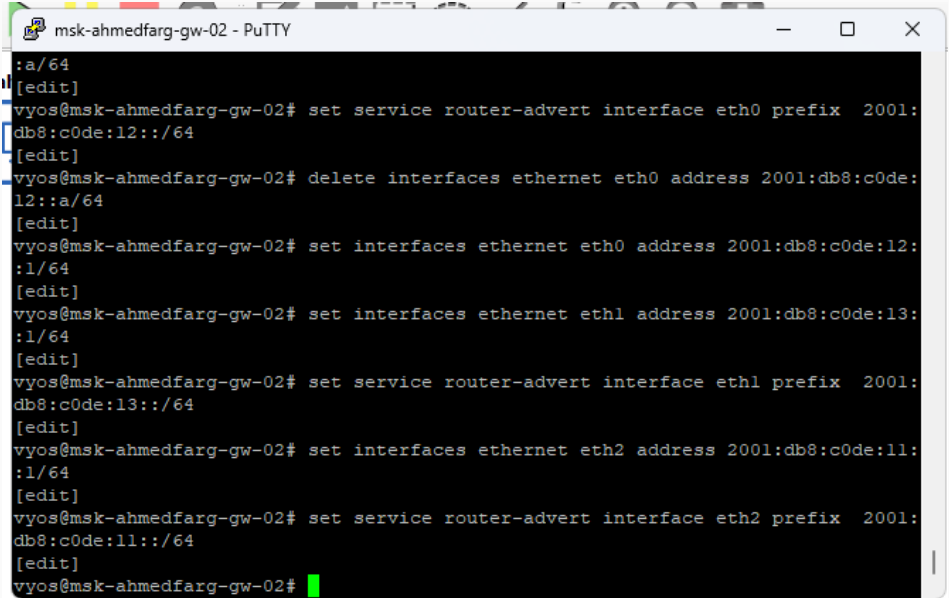
# IPv6 на PC4


PC4-ahmedfarg - PuTTY
VPCS> show ip
NAME : VPCS[1]
IP/MASK : 0.0.0.0/0
GATEWAY : 0.0.0.0
DNS :
MAC : 00:50:79:66:68:03
LPORT : 10030
RHOST:PORT : 127.0.0.1:10031
MTU : 1500
VPCS> show ipv6
NAME : VPCS[1]
LINK-LOCAL SCOPE : fe80::250:79ff:fe66:6803/64
GLOBAL SCOPE : 2001:db8:c0de:13::a/64
DNS :
ROUTER LINK-LAYER :
MAC : 00:50:79:66:68:03
LPORT : 10030
RHOST:PORT : 127.0.0.1:10031
MTU: : 1500
VPCS>

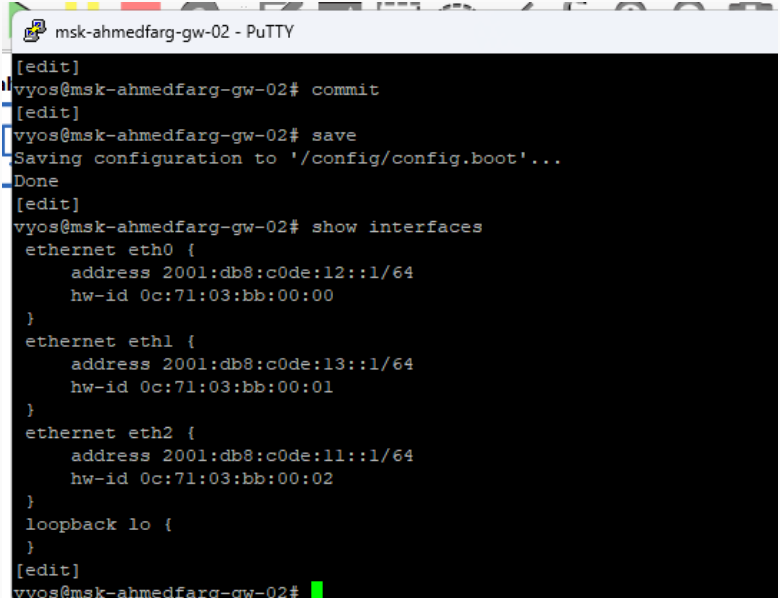
# IPv6 на сервере



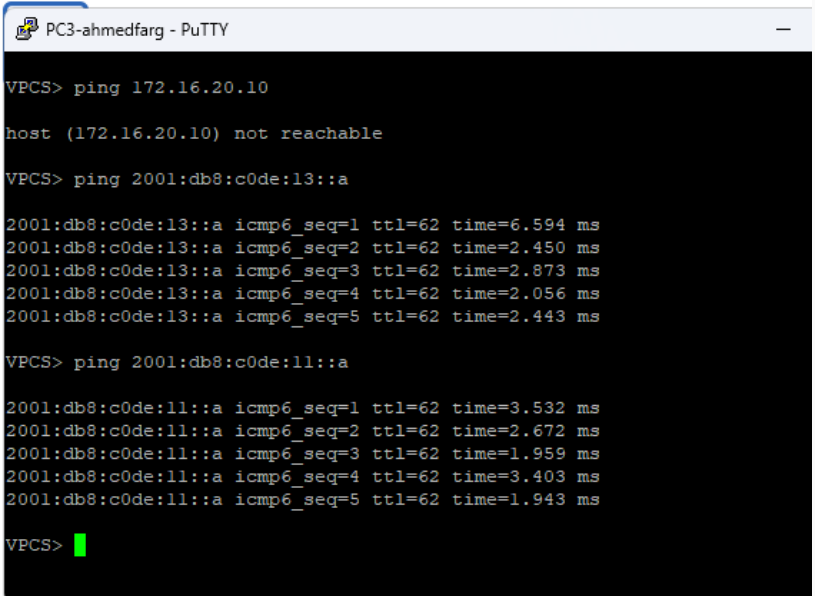
# IPv6 настройка на VyOS



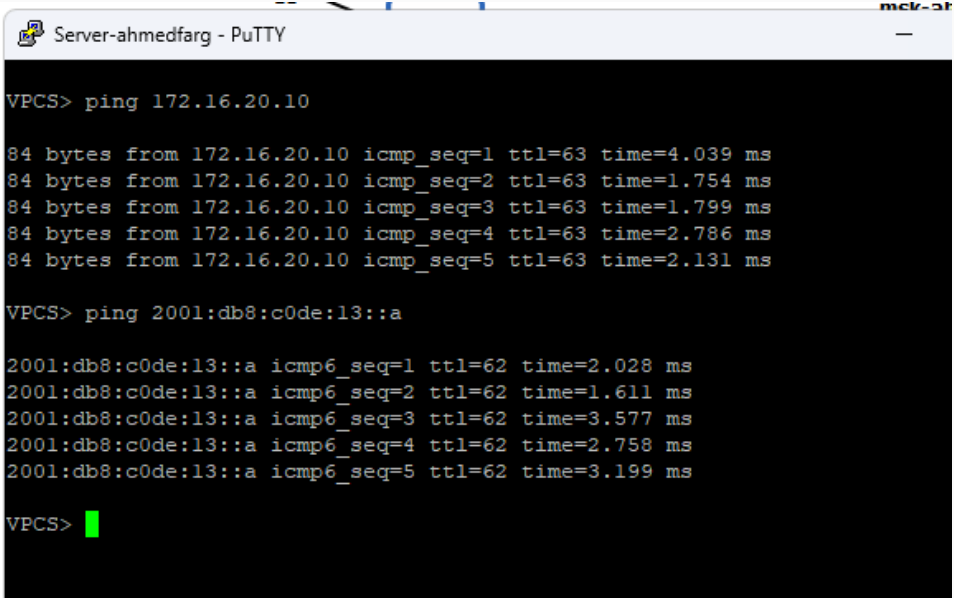
# Проверка интерфейсов VyOS



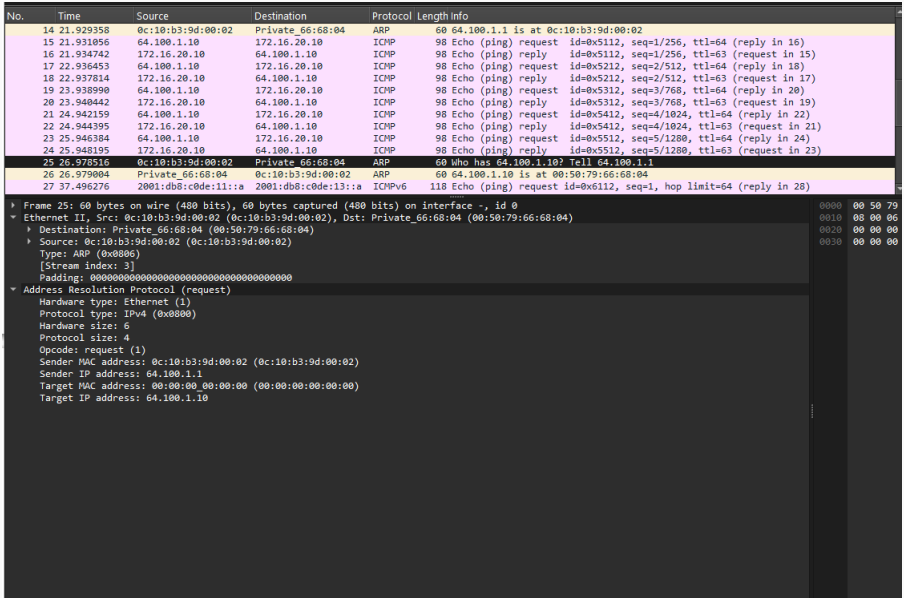
# Проверка связности IPv6



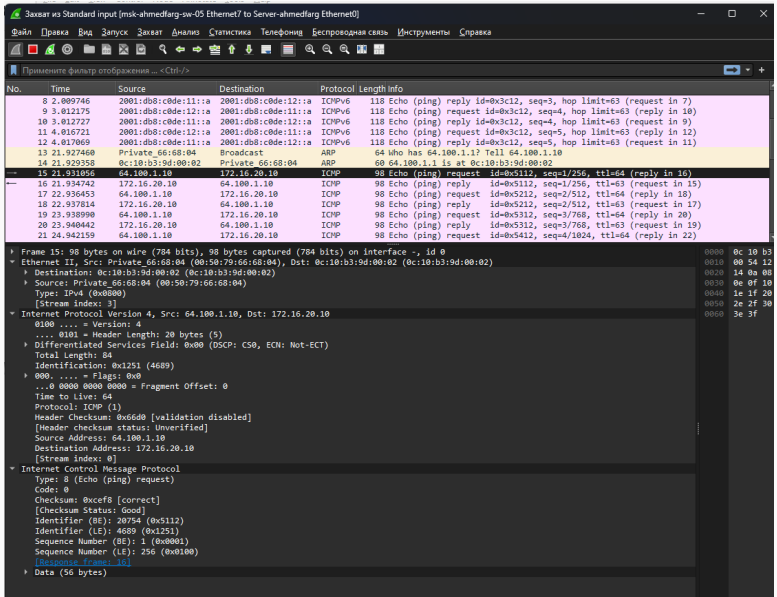
# Ping IPv4 и IPv6 на сервере Dual Stack



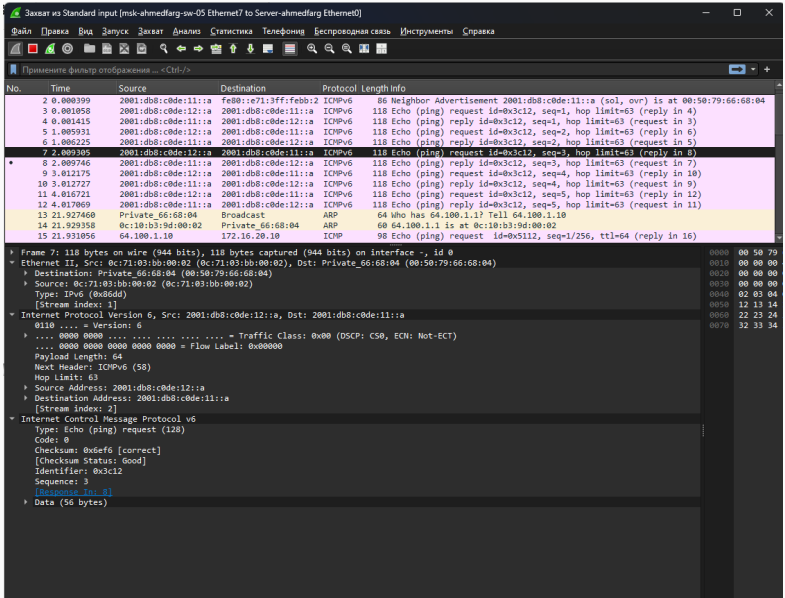
# Wireshark — ARP / ICMP / ICMPv6



# Wireshark — ICMP IPv4



# Wireshark — ICMPv6 + RA



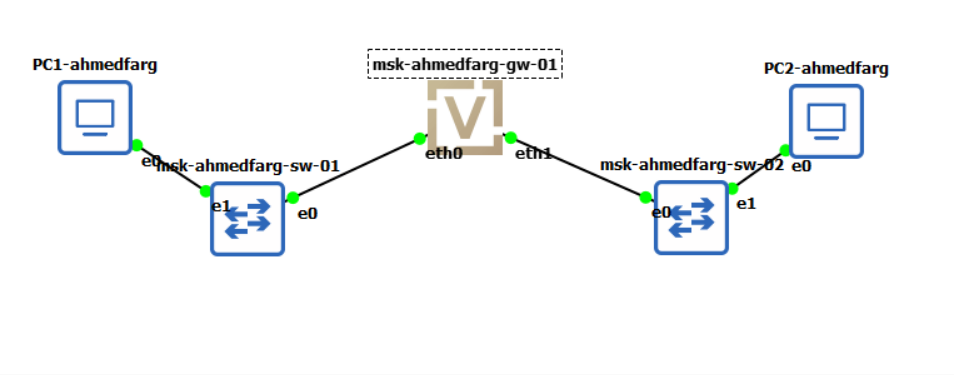


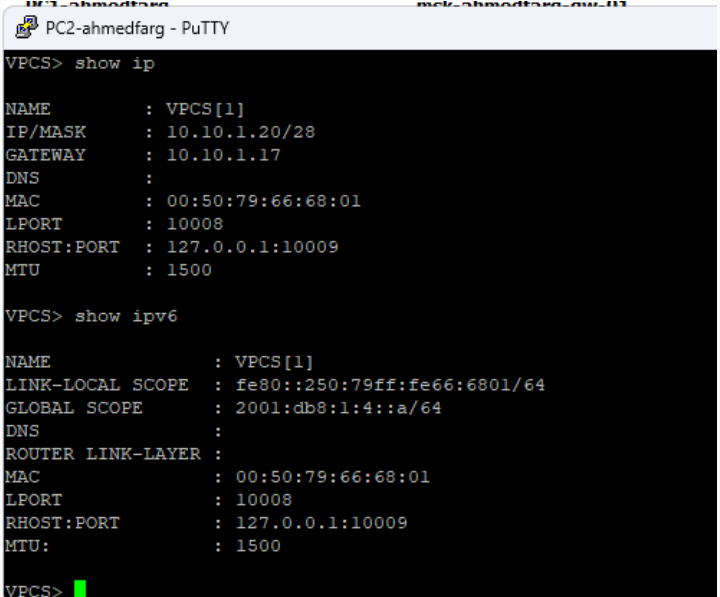

Рис. 18: New topology

# IPv4 и IPv6 PC1 в задании

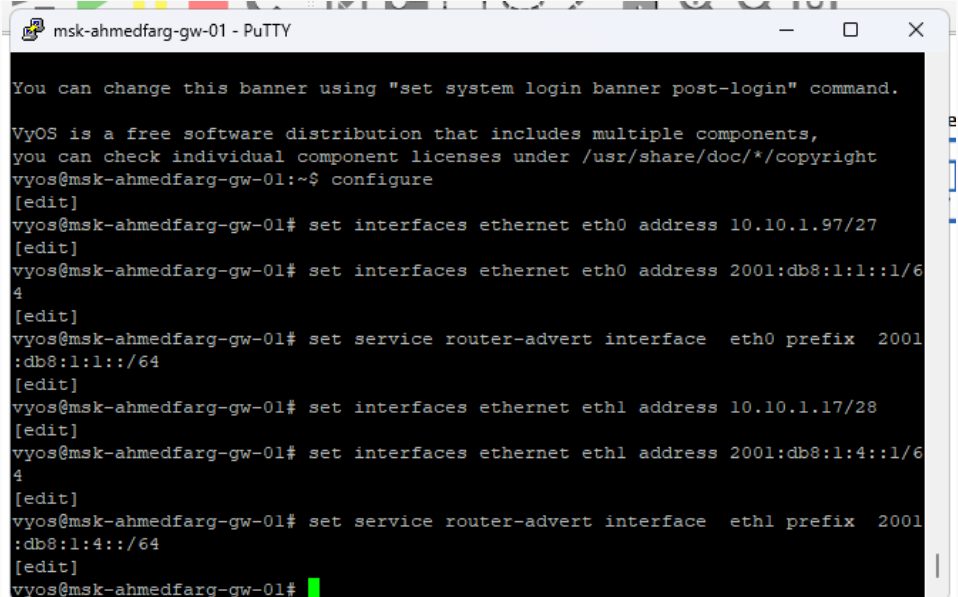
PC1-ahmedfarg - PuTTY

```
VPCS> show ip

NAME         : VPCS[1]
IP/MASK      : 10.10.1.100/27
GATEWAY      : 10.10.1.97
DNS          :
MAC          : 00:50:79:66:68:00
LPORT        : 10010
RHOST:PORT   : 127.0.0.1:10011
MTU          : 1500

VPCS> show ipv6

NAME               : VPCS[1]
LINK-LOCAL SCOPE   : fe80::250:79ff:fe66:6800/64
GLOBAL SCOPE       : 2001:db8:1:1::a/64
DNS                :
ROUTER LINK-LAYER  :
MAC                : 00:50:79:66:68:00
LPORT              : 10010
RHOST:PORT         : 127.0.0.1:10011
MTU:               : 1500

VPCS>
```

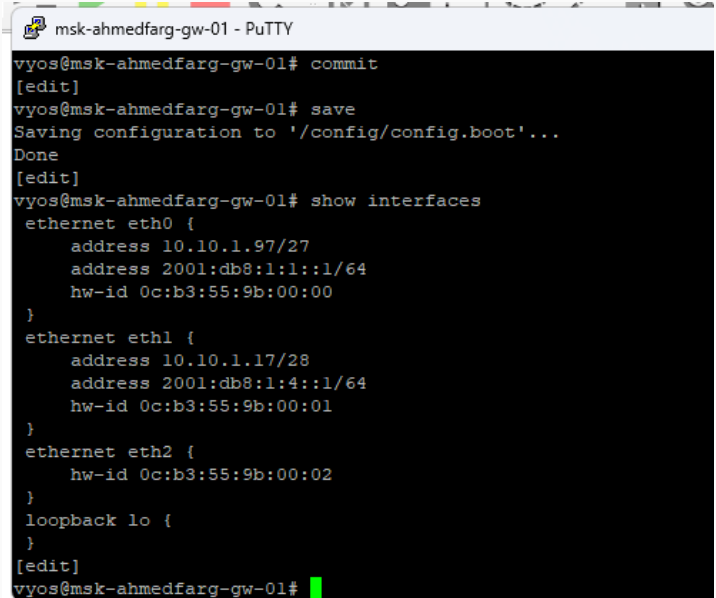
# IPv4 и IPv6 PC2 в задании



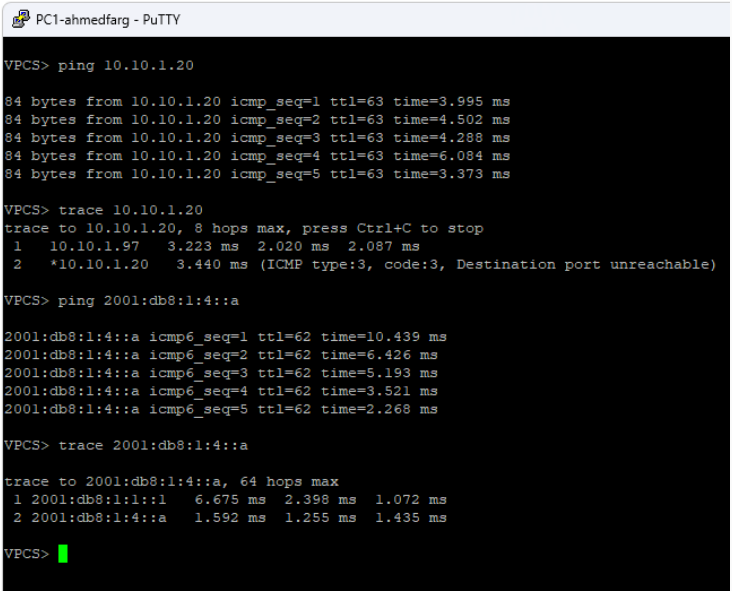
# Конфигурация маршрутизатора VyOS



# Интерфейсы VyOS



# Проверка ping/trace



# Итоги

# Вывод

- Выполнена настройка IPv4, IPv6 и Dual Stack
- Устройства связаны в обеих подсетях
- Сервер Dual Stack доступен по обоим протоколам
- Wireshark подтвердил работу ARP, ICMP, ICMPv6