



Российский университет
дружбы народов

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Лабораторная работа №6

АДРЕСАЦИЯ IPV4 И IPV6. ДВОЙНОЙ СТЕК





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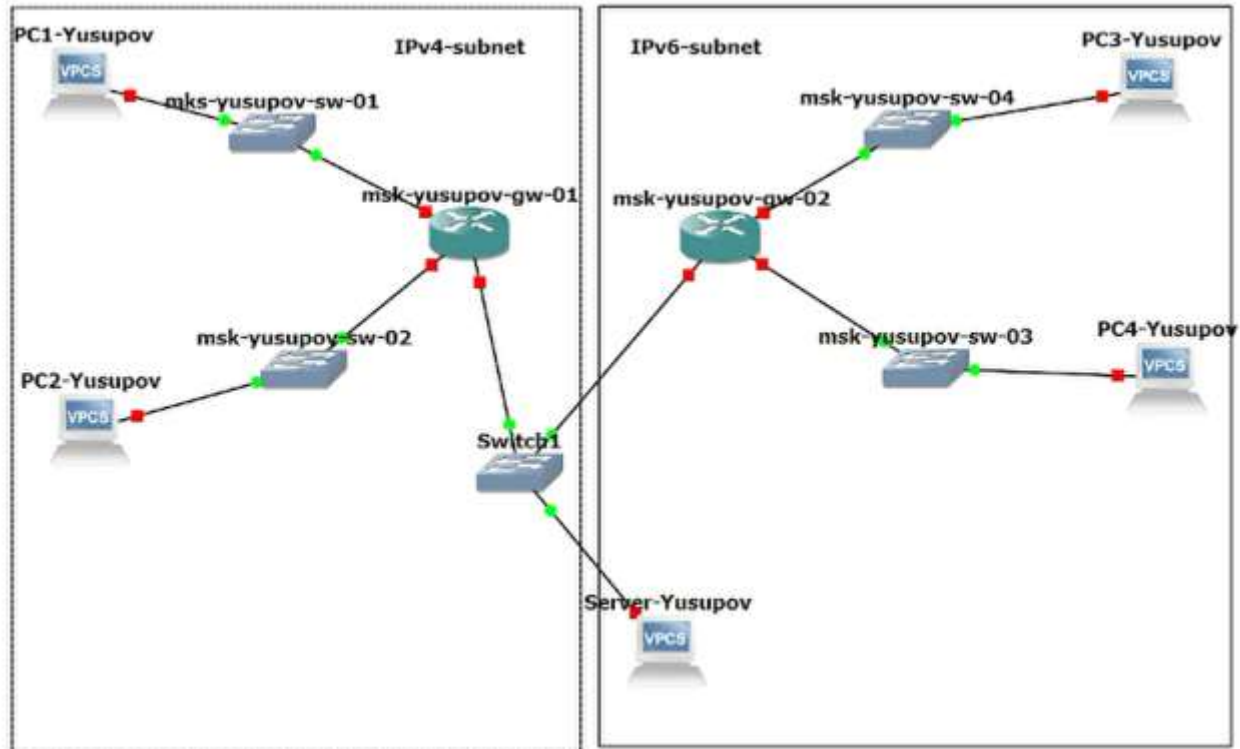




Цель:

Изучение принципов распределения и настройки адресного пространства на устройствах сети.





```
PC1-Yusupov> ip 172.16.20.10/25 172.16.20.1
Checking for duplicate address...
PC1-Yusupov : 172.16.20.10 255.255.255.128 gateway 172.16.20.1

PC1-Yusupov> save
Saving startup configuration to startup.vpc
. done

PC1-Yusupov>
```

```
PC2-Yusupov>
PC2-Yusupov>
PC2-Yusupov> ip 172.16.20.138/25 172.16.20.129
Checking for duplicate address...
PC2-Yusupov : 172.16.20.138 255.255.255.128 gateway 172.16.20.129

PC2-Yusupov> save
```

```
PC2-Yusupov>
PC2-Yusupov>
PC2-Yusupov> ip 172.16.20.138/25 172.16.20.129
Checking for duplicate address...
PC2-Yusupov : 172.16.20.138 255.255.255.128 gateway 172.16.20.129

PC2-Yusupov> save

VPCS> ip 64.100.1.10/24 64.100.1.1
Checking for duplicate address...
VPCS : 64.100.1.10 255.255.255.0 gateway 64.100.1.1

VPCS> save
Saving startup configuration to startup.vpc
. done

VPCS>
```

```
PC1-Yusupov> show ip
```

```
NAME       : PC1-Yusupov[1]  
IP/MASK    : 172.16.20.10/25  
GATEWAY    : 172.16.20.1  
DNS        :  
MAC        : 00:50:79:66:68:00  
LPORT     : 20032  
RHOST:PORT : 127.0.0.1:20033  
MTU        : 1500
```

```
PC1-Yusupov> show ipv6
```

```
PC2-Yusupov> show ip
```

```
NAME       : PC2-Yusupov[1]  
IP/MASK    : 172.16.20.138/25  
GATEWAY    : 172.16.20.129  
DNS        :  
MAC        : 00:50:79:66:68:01  
LPORT     : 20034  
RHOST:PORT : 127.0.0.1:20035  
MTU        : 1500
```

```
PC2-Yusupov> show ipv6
```

```
NAME           : PC2-Yusupov[1]  
LINK-LOCAL SCOPE : fe80::250:79ff:fe66:  
GLOBAL SCOPE    :  
DNS             :  
ROUTER LINK-LAYER :  
MAC            : 00:50:79:66:68:01  
LPORT          : 20034  
RHOST:PORT      : 127.0.0.1:20035  
MTU:           : 1500
```

```
PC2-Yusupov>
```



```
frr# configure terminal
frr(config)# hostname msk-yusupov-gw-01
msk-yusupov-gw-01(config)# exit
msk-yusupov-gw-01# write memory
Note: this version of vtysh never writes vtysh.conf
Building Configuration...
Integrated configuration saved to /etc/frr/frr.conf
[OK]
msk-yusupov-gw-01# configure terminal
msk-yusupov-gw-01(config)# interface eth0
msk-yusupov-gw-01(config-if)# ip address 172.16.20.1/25
msk-yusupov-gw-01(config-if)# no shutdown
msk-yusupov-gw-01(config-if)# exit
msk-yusupov-gw-01(config)# interface eth1
msk-yusupov-gw-01(config-if)# ip address 172.16.20.129/25
msk-yusupov-gw-01(config-if)# no shutdown
msk-yusupov-gw-01(config-if)# exit
msk-yusupov-gw-01(config)# interface eth2
msk-yusupov-gw-01(config-if)# ip address 64.100.1.1/24
msk-yusupov-gw-01(config-if)# no shutdown
msk-yusupov-gw-01(config-if)# exit
msk-yusupov-gw-01(config)# exit
msk-yusupov-gw-01# wri
```

```
msk-yusupov-gw-01# frr
Building configuration...

Current configuration:
!
frr version 8.1
frr defaults traditional
hostname frr
hostname msk-yusupov-gw-01
service integrated-vtysh-config
!
interface eth0
 ip address 172.16.20.1/25
exit
!
interface eth1
 ip address 172.16.20.129/25
exit
!
interface eth2
 ip address 64.100.1.1/24
exit
!
end
msk-yusupov-gw-01#
```

```

interface eth1
 ip address 172.16.20.129/25
exit
!
interface eth2
 ip address 64.100.1.1/24
exit
!
end
msk-yusupov-gw-01# show interface brief

```

Interface	Status	VRF	Addresses
eth0	up	default	172.16.20.1/25
eth1	up	default	172.16.20.129/25
eth2	up	default	64.100.1.1/24
eth3	down	default	
eth4	down	default	
eth5	down	default	
eth6	down	default	
eth7	down	default	
lo	up	default	
pimreg	up	default	

```

msk-yusupov-gw-01#

```

```

MTU:                : 1500

```

```

PC1-Yusupov> ping 172.16.20.129

```

```

84 bytes from 172.16.20.129 icmp_seq=1 ttl=64 time=0.452 ms
84 bytes from 172.16.20.129 icmp_seq=2 ttl=64 time=1.349 ms
84 bytes from 172.16.20.129 icmp_seq=3 ttl=64 time=0.672 ms
84 bytes from 172.16.20.129 icmp_seq=4 ttl=64 time=0.632 ms
84 bytes from 172.16.20.129 icmp_seq=5 ttl=64 time=1.289 ms

```

```

PC1-Yusupov> ping 64.100.1.1

```

```

84 bytes from 64.100.1.1 icmp_seq=1 ttl=64 time=1.161 ms
84 bytes from 64.100.1.1 icmp_seq=2 ttl=64 time=0.622 ms
84 bytes from 64.100.1.1 icmp_seq=3 ttl=64 time=0.634 ms
84 bytes from 64.100.1.1 icmp_seq=4 ttl=64 time=0.592 ms
84 bytes from 64.100.1.1 icmp_seq=5 ttl=64 time=0.615 ms

```

```

PC1-Yusupov> trace 172.16.20.129

```

```

trace to 172.16.20.129, 8 hops max, press Ctrl+C to stop

```

```

 1  *172.16.20.129  0.603 ms (ICMP type:3, code:3, Destination port unreachab
e)

```

```

PC1-Yusupov>

```



```
PC3-Yusupov> ip 2001:db8:c0de:12::a/64
PC1 : 2001:db8:c0de:12::a/64

PC3-Yusupov> save
Saving startup configuration to startup.vpc
. done

PC3-Yusupov> █
```

```
VPCS> save
Saving startup configuration to startup.vpc
. done

VPCS> ip 2001:db8:c0de:11::a/64
PC1 : 2001:db8:c0de:11::a/64

VPCS> save
Saving startup configuration to startup.vpc
. done

VPCS> █
```

```
PC4-Yusupov>
PC4-Yusupov>
PC4-Yusupov> ip 2001:db8:c0de:13::aa/64
PC1 : 2001:db8:c0de:13::aa/64

PC4-Yusupov> save
Saving startup configuration to startup.vpc
. done

PC4-Yusupov>
PC4-Yusupov> █
```

```
PC3-Yusupov> show ip  
NAME       : PC3-Yusupov[1]  
IP/MASK    : 0.0.0.0/0  
GATEWAY    : 0.0.0.0  
DNS        :  
MAC        : 00:50:79:66:68:02  
LPORT      : 20052  
RHOST:PORT : 127.0.0.1:20053  
MTU        : 1500
```

```
PC3-Yusupov> show ipv6  
NAME           : PC3-Yusupov[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          : 20052  
RHOST:PORT      : 127.0.0.1:20053  
MTU            : 1500  
PC3-Yusupov> █
```

```
PC4-Yusupov> show ip  
NAME       : PC4-Yusupov[1]  
IP/MASK    : 0.0.0.0/0  
GATEWAY    : 0.0.0.0  
DNS        :  
MAC        : 00:50:79:66:68:03  
LPORT      : 20060  
RHOST:PORT : 127.0.0.1:20061  
MTU        : 1500
```

```
PC4-Yusupov> show ipv6  
NAME           : PC4-Yusupov[1]  
LINK-LOCAL SCOPE : fe80::250:79ff:fe66:6803  
GLOBAL SCOPE    : 2001:db8:c0de:13::aa/64  
DNS             :  
ROUTER LINK-LAYER :  
MAC            : 00:50:79:66:68:03  
LPORT          : 20060  
RHOST:PORT      : 127.0.0.1:20061  
MTU            : 1500
```

```
PC4-Yusupov> █
```

```
/usr/share/vyos/BOLA  
vyos@vyos:~$ install image  
Welcome to the VyOS install program. This script  
will walk you through the process of installing the  
VyOS image to a local hard drive.  
Would you like to continue? (Yes/No) [Yes]: ye █
```

```
vyos@msk-yusupov-gw-02:~$ configure
[edit]
vyos@msk-yusupov-gw-02# set interfaces ethernet eth0 address 2001:db8:c0de:12::1/64
[edit]
vyos@msk-yusupov-gw-02# set service router-advert interface eth0 prefix 2001:db8:c0de:12::/64
[edit]
vyos@msk-yusupov-gw-02# set interfaces ethernet eth1 address 2001:db8:c0de:13::1/64
[edit]
vyos@msk-yusupov-gw-02# set service router-advert interface eth1 prefix 2001:db8:c0de:13::/64
[edit]
vyos@msk-yusupov-gw-02# set interfaces ethernet eth2 address 2001:db8:c0de:11::1/64
[edit]
vyos@msk-yusupov-gw-02# address 2001:db8:c0de:11::1/64 eth2 prefix 2001:db8:c0de:11::/64

Invalid command: [address]

[edit]
```

```
[edit]
vyos@msk-yusupov-gw-02# commit
[edit]
vyos@msk-yusupov-gw-02# save
Saving configuration to '/config/config.boot'...
Done
[edit]
vyos@msk-yusupov-gw-02# show interfaces
  ethernet eth0 {
    address 2001:db8:c0de:12::1/64
    hw-id 0c:43:9a:58:00:00
  }
  ethernet eth1 {
    address 2001:db8:c0de:13::1/64
    hw-id 0c:43:9a:58:00:01
  }
  ethernet eth2 {
    address 2001:db8:c0de:11::1/64
    hw-id 0c:43:9a:58:00:02
  }
  loopback lo {
  }
[edit]
vyos@msk-yusupov-gw-02#
```