

Лабораторная работа №6

Администрирование локальных сетей

Оразгелдиев Язгелди

Российский университет дружбы народов, Москва, Россия

Информация

- Оразгелдиев Язгелди
- студент
- Российский университет дружбы народов
- orazgeldiyev.yazgeldi@gmail.com
- <https://github.com/YazgeldiOrazgeldiyev>

Настроить статическую маршрутизацию VLAN в сети.

1. Добавить в локальную сеть маршрутизатор, провести его первоначальную настройку.
2. Настроить статическую маршрутизацию VLAN.
3. При выполнении работы необходимо учитывать соглашение об именовании

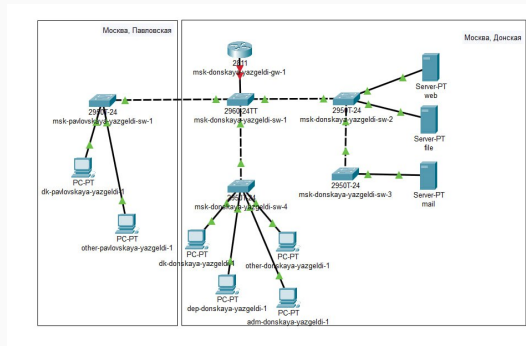


Рис. 1: Схема сети с маршрутизатором Cisco 2811

```
msk-donskaya-yazgeldi-gw-1(config)#line vty 0 4
msk-donskaya-yazgeldi-gw-1(config-line)#password cisco
msk-donskaya-yazgeldi-gw-1(config-line)#login
msk-donskaya-yazgeldi-gw-1(config-line)#exit
msk-donskaya-yazgeldi-gw-1(config)#line console 0
msk-donskaya-yazgeldi-gw-1(config-line)#password cisco
msk-donskaya-yazgeldi-gw-1(config-line)#login
msk-donskaya-yazgeldi-gw-1(config-line)#exit
^
% Invalid input detected at '^' marker.

msk-donskaya-yazgeldi-gw-1(config-line)#exit
msk-donskaya-yazgeldi-gw-1(config)#enable secret cisco
msk-donskaya-yazgeldi-gw-1(config)#service password-encryption
msk-donskaya-yazgeldi-gw-1(config)#username admin privilege 1 secret cisco
^
% Invalid input detected at '^' marker.

msk-donskaya-yazgeldi-gw-1(config)#username admin privilege 1 secret cisco
msk-donskaya-yazgeldi-gw-1(config)#ip domain-name dosnkaya.rudn.edu
^
% Invalid input detected at '^' marker.

msk-donskaya-yazgeldi-gw-1(config)#ip domain-name dosnkaya.rudn.edu
msk-donskaya-yazgeldi-gw-1(config)#crypto key generate rsa
The name for the keys will be: msk-donskaya-yazgeldi-gw-1.dosnkaya.rudn.edu
Choose the size of the key modulus in the range of 360 to 4096 for your
General Purpose Keys. Choosing a key modulus greater than 512 may take
a few minutes.

How many bits in the modulus [512]: 2048
% Generating 2048 bit RSA keys, keys will be non-exportable...[OK]

msk-donskaya-yazgeldi-gw-1(config)#line vty 0 4
*Mar 1 0:21:19.423: %SSH-5-ENABLED: SSH 1.99 has been enabled
msk-donskaya-yazgeldi-gw-1(config-line)#transport input ssh
msk-donskaya-yazgeldi-gw-1(config-line)#exit
msk-donskaya-yazgeldi-gw-1(config)#exit
msk-donskaya-yazgeldi-gw-1#
%SYS-5-CONFIG_I: Configured from console by console

msk-donskaya-yazgeldi-gw-1#wr mem
Building configuration...
[OK]
msk-donskaya-yazgeldi-gw-1#
```

Рис. 2: Начальная настройка маршрутизатора

```
msk-donskaya-yazgeldi-sw-1(config)#msk-donskaya-yazgeldi-sw-1(config)#  
msk-donskaya-yazgeldi-sw-1(config)#interface f0/24  
msk-donskaya-yazgeldi-sw-1(config-if)#switchport mode trunk  
msk-donskaya-yazgeldi-sw-1(config-if)#^Z  
msk-donskaya-yazgeldi-sw-1#  
%SYS-5-CONFIG_I: Configured from console by console  
  
msk-donskaya-yazgeldi-sw-1#wr mem  
Building configuration...  
[OK]  
msk-donskaya-yazgeldi-sw-1#
```

Рис. 3: Настройка порта на коммутаторе


```
mak-donskaya-yazgeldi-gw-1(config-if)#interface f0/0.2
mak-donskaya-yazgeldi-gw-1(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.2, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.2, changed state to up

mak-donskaya-yazgeldi-gw-1(config-subif)#encapsulation dot1Q 2
^
% Invalid input detected at '^' marker.

mak-donskaya-yazgeldi-gw-1(config-subif)#encapsulation dot1Q 2
mak-donskaya-yazgeldi-gw-1(config-subif)#ip address 10.128.1.1 255.255.255.0
mak-donskaya-yazgeldi-gw-1(config-subif)#description management
mak-donskaya-yazgeldi-gw-1(config-subif)#interface f0/0.3
mak-donskaya-yazgeldi-gw-1(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.3, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.3, changed state to up

mak-donskaya-yazgeldi-gw-1(config-subif)#interface f0/0.3
mak-donskaya-yazgeldi-gw-1(config-subif)#encapsulation dot1Q 3
mak-donskaya-yazgeldi-gw-1(config-subif)#ip address 10.128.0.1 255.255.255.0
mak-donskaya-yazgeldi-gw-1(config-subif)#description servers
^
% Invalid input detected at '^' marker.

mak-donskaya-yazgeldi-gw-1(config-subif)#description servers
mak-donskaya-yazgeldi-gw-1(config-subif)#interface f0/0.101
mak-donskaya-yazgeldi-gw-1(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.101, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.101, changed state to up

mak-donskaya-yazgeldi-gw-1(config-subif)#encapsulation dot1Q 101
mak-donskaya-yazgeldi-gw-1(config-subif)#ip address 10.128.3.1 255.255.255.0
mak-donskaya-yazgeldi-gw-1(config-subif)#description dk
mak-donskaya-yazgeldi-gw-1(config-subif)#interface f0/0.102
mak-donskaya-yazgeldi-gw-1(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.102, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.102, changed state to up

mak-donskaya-yazgeldi-gw-1(config-subif)#encapsulation dot1Q 102
mak-donskaya-yazgeldi-gw-1(config-subif)#ip address 10.128.4.1 255.255.255.0
mak-donskaya-yazgeldi-gw-1(config-subif)#description departments
```

Рис. 4: Настройка интерфейсов маршрутизатора

```
msk-donskaya-yazgeldi-gw-1(config-subif)#interface f0/0.103
msk-donskaya-yazgeldi-gw-1(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.103, changed state to up

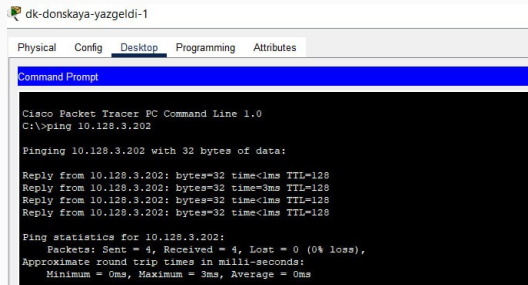
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.103, changed state to up

msk-donskaya-yazgeldi-gw-1(config-subif)#encapsulation dot1Q 103
msk-donskaya-yazgeldi-gw-1(config-subif)#ip address 10.128.5.1 255.255.255.0
msk-donskaya-yazgeldi-gw-1(config-subif)#description adm
msk-donskaya-yazgeldi-gw-1(config-subif)#
msk-donskaya-yazgeldi-gw-1(config-subif)#interface f0/0.104
msk-donskaya-yazgeldi-gw-1(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.104, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.104, changed state to up

msk-donskaya-yazgeldi-gw-1(config-subif)#encapsulation dot1Q 104
msk-donskaya-yazgeldi-gw-1(config-subif)#ip address 10.128.6.1 255.255.255.0
msk-donskaya-yazgeldi-gw-1(config-subif)#description other
msk-donskaya-yazgeldi-gw-1(config-subif)#
```

Рис. 5: Настройка интерфейсов маршрутизатора



dk-donskaya-yazgeldi-1

Physical Config **Desktop** Programming Attributes

Command Prompt

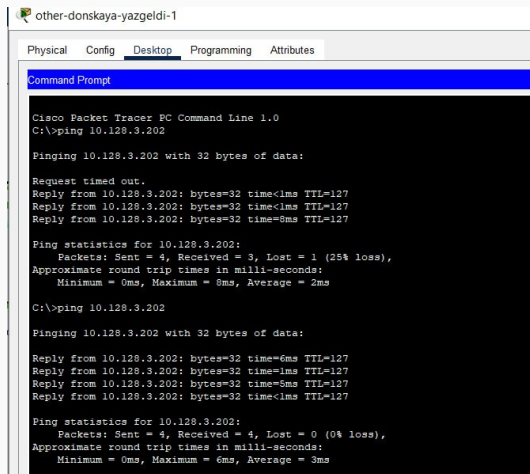
```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 10.128.3.202

Pinging 10.128.3.202 with 32 bytes of data:

Reply from 10.128.3.202: bytes=32 time<1ms TTL=128
Reply from 10.128.3.202: bytes=32 time=3ms TTL=128
Reply from 10.128.3.202: bytes=32 time<1ms TTL=128
Reply from 10.128.3.202: bytes=32 time<1ms TTL=128

Ping statistics for 10.128.3.202:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 3ms, Average = 0ms
```

Рис. 6: Команда пинг для одной VLAN



The screenshot shows a Cisco Packet Tracer PC Command Line window for a device named 'other-donskaya-yazgeldi-1'. The 'Desktop' tab is selected. The command prompt shows a series of ping attempts to the IP address 10.128.3.202. The first attempt shows a 'Request timed out' for the first packet, followed by three successful replies. The second attempt shows four successful replies. The statistics for the first attempt show a 25% loss, while the statistics for the second attempt show 0% loss.

```
other-donskaya-yazgeldi-1
Physical Config Desktop Programming Attributes
Command Prompt

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 10.128.3.202

Pinging 10.128.3.202 with 32 bytes of data:

Request timed out.
Reply from 10.128.3.202: bytes=32 time<1ms TTL=127
Reply from 10.128.3.202: bytes=32 time<1ms TTL=127
Reply from 10.128.3.202: bytes=32 time=8ms TTL=127

Ping statistics for 10.128.3.202:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 8ms, Average = 2ms

C:\>ping 10.128.3.202

Pinging 10.128.3.202 with 32 bytes of data:

Reply from 10.128.3.202: bytes=32 time=6ms TTL=127
Reply from 10.128.3.202: bytes=32 time=1ms TTL=127
Reply from 10.128.3.202: bytes=32 time=5ms TTL=127
Reply from 10.128.3.202: bytes=32 time<1ms TTL=127

Ping statistics for 10.128.3.202:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 6ms, Average = 3ms
```

Рис. 7: Команда пинг для разных VLAN

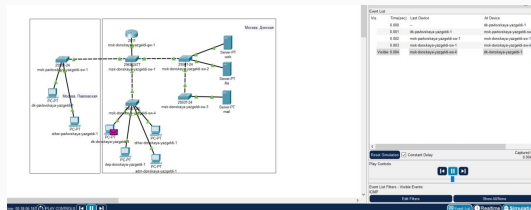


Рис. 8: Процесс передвижения пакета ICMP по сети

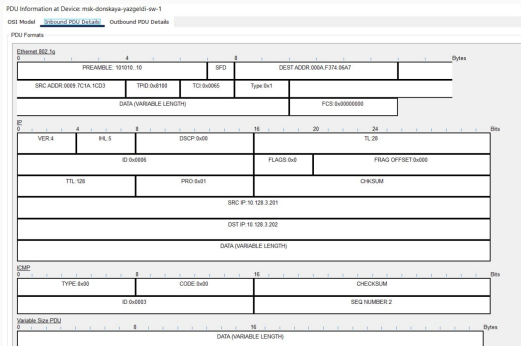


Рис. 9: Содержание передаваемого пакета

В ходе лабораторной работы я настроил статическую маршрутизацию VLAN в сети.