Лабораторная работа №6

Статическая маршрутизация VLAN

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Информация

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Вводная часть

Цель работы

Настроить статическую маршрутизацию VLAN в сети.

Задание

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

Выполнение лабораторной работы

Выполнение лабораторной работы

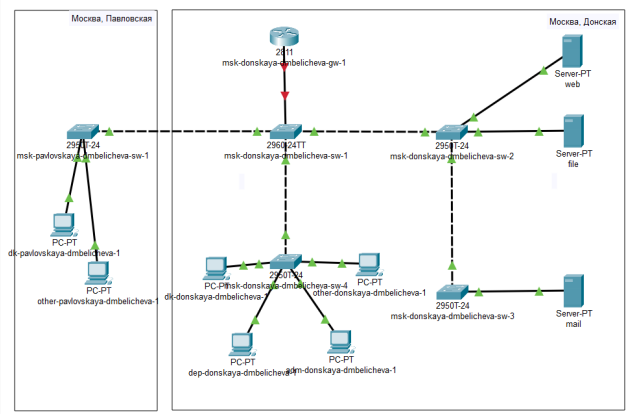

Рис. 1: Логическая область проекта с добавленным маршрутизатором

Выполнение лабораторной работы

```
Router(config)#hostname msk-donskaya-dmbelicheva-gw-1
msk-donskaya-dmbelicheva-gw-1(config)#^Z
msk-donskaya-dmbelicheva-gw-1#
%SYS-5-CONFIG_I: Configured from console by console

msk-donskaya-dmbelicheva-gw-1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
msk-donskaya-dmbelicheva-gw-1(config)#interface f0/0
msk-donskaya-dmbelicheva-gw-1(config-if)#no shutdown

msk-donskaya-dmbelicheva-gw-1(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

msk-donskaya-dmbelicheva-gw-1(config-if)#^Z
msk-donskaya-dmbelicheva-gw-1#
%SYS-5-CONFIG_I: Configured from console by console

msk-donskaya-dmbelicheva-gw-1#wr m
Building configuration...
[OK]
msk-donskaya-dmbelicheva-gw-1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
msk-donskaya-dmbelicheva-gw-1(config)#line vty 0 4
msk-donskaya-dmbelicheva-gw-1(config-line)#password cisco
msk-donskaya-dmbelicheva-gw-1(config-line)#login
msk-donskaya-dmbelicheva-gw-1(config-line)#exit
msk-donskaya-dmbelicheva-gw-1(config)#line console 0
msk-donskaya-dmbelicheva-gw-1(config-line)#password cisco
msk-donskaya-dmbelicheva-gw-1(config-line)#login
msk-donskaya-dmbelicheva-gw-1(config-line)#exit
msk-donskaya-dmbelicheva-gw-1(config)#enable secret cisco
msk-donskaya-dmbelicheva-gw-1(config)#service password-encryption
msk-donskaya-dmbelicheva-gw-1(config)#username admin privilege 1 secret cisco
msk-donskaya-dmbelicheva-gw-1(config)#ip domain-name donskaya.rudn.edu
msk-donskaya-dmbelicheva-gw-1(config)#crypto key generate rsa
The name for the keys will be: msk-donskaya-dmbelicheva-gw-1.donskaya.rudn.edu
Choose the size of the key modulus in the range of 360 to 2048 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-dmbelicheva-gw-1(config)#line vty 0 4
*Mar 1 0:13:43.159: %SSH-5-ENABLED: SSH 1.99 has been enabled
msk-donskaya-dmbelicheva-gw-1(config-line)#transport input ssh
```

Рис. 2: Конфигурация маршрутизатора

```
Password:

msk-donskaya-dmbelicheva-sw-1>en
Password:
msk-donskaya-dmbelicheva-sw-1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
msk-donskaya-dmbelicheva-sw-1(config)#interface f0/24
msk-donskaya-dmbelicheva-sw-1(config-if)#switchport mode trunk
msk-donskaya-dmbelicheva-sw-1(config-if)#^Z
msk-donskaya-dmbelicheva-sw-1#
%SYS-5-CONFIG_I: Configured from console by console

msk-donskaya-dmbelicheva-sw-1#wr m
Building configuration...
```

Рис. 3: Настройка порта 24 как trunk-порта

Выполнение лабораторной работы

```
msk-donskaya-dmbelicheva-gw-1(config)#interface f0/0
msk-donskaya-dmbelicheva-gw-1(config-if)#no shutdown
msk-donskaya-dmbelicheva-gw-1(config-if)#interface f0/0.2
msk-donskaya-dmbelicheva-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

msk-donskaya-dmbelicheva-gw-1(config-subif)#encapsulation dot1Q 2
msk-donskaya-dmbelicheva-gw-1(config-subif)#ip address 10.128.1.1 255.255.255.0
msk-donskaya-dmbelicheva-gw-1(config-subif)#description management
msk-donskaya-dmbelicheva-gw-1(config-subif)#exit
msk-donskaya-dmbelicheva-gw-1(config)#interface f0/0.3
msk-donskaya-dmbelicheva-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

msk-donskaya-dmbelicheva-gw-1(config-subif)#encapsulation dot1Q 3
msk-donskaya-dmbelicheva-gw-1(config-subif)#ip address 10.128.0.1 255.255.255.0
msk-donskaya-dmbelicheva-gw-1(config-subif)#description servers
msk-donskaya-dmbelicheva-gw-1(config-subif)#exit
msk-donskaya-dmbelicheva-gw-1(config)#interface f0/0.101
msk-donskaya-dmbelicheva-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

msk-donskaya-dmbelicheva-gw-1(config-subif)#encapsulation dot1Q 101
msk-donskaya-dmbelicheva-gw-1(config-subif)#ip address 10.128.3.1 255.255.255.0
msk-donskaya-dmbelicheva-gw-1(config-subif)#description dk
msk-donskaya-dmbelicheva-gw-1(config-subif)#exit
```

Рис. 4: Конфигурация VLAN-интерфейсов маршрутизатора

Выполнение лабораторной работы

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

FastEthernet0 Connection:(default port)

   Connection-specific DNS Suffix..:
   Link-local IPv6 Address.....: FE80::20D:BDFF:FEBD:9D3
   IPv6 Address.....: ::
   IPv4 Address.....: 10.128.3.201
   Subnet Mask.....: 255.255.255.0
   Default Gateway.....: ::
                                 10.128.3.1

Bluetooth Connection:

   Connection-specific DNS Suffix..:
   Link-local IPv6 Address.....: ::
   IPv6 Address.....: ::
   IPv4 Address.....: 0.0.0.0
   Subnet Mask.....: 0.0.0.0
   Default Gateway.....: ::
                                 0.0.0.0

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=17ms 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
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 = 17ms, Average = 4ms
```

Рис. 5: Проверка доступности оконечных устройств

Выполнение лабораторной работы

```
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=17ms 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
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 = 17ms, Average = 4ms

C:\>ping 10.128.4.201

Pinging 10.128.4.201 with 32 bytes of data:

Request timed out.
Reply from 10.128.4.201: bytes=32 time<1ms TTL=127
Reply from 10.128.4.201: bytes=32 time<1ms TTL=127
Reply from 10.128.4.201: bytes=32 time=1ms TTL=127

Ping statistics for 10.128.4.201:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>ping 10.128.4.201

Pinging 10.128.4.201 with 32 bytes of data:

Reply from 10.128.4.201: bytes=32 time<1ms TTL=127
Reply from 10.128.4.201: bytes=32 time<1ms TTL=127
Reply from 10.128.4.201: bytes=32 time<1ms TTL=127
Reply from 10.128.4.201: bytes=32 time<1ms TTL=127

Ping statistics for 10.128.4.201:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

Рис. 6: Проверка доступности оконечных устройств

Выполнение лабораторной работы

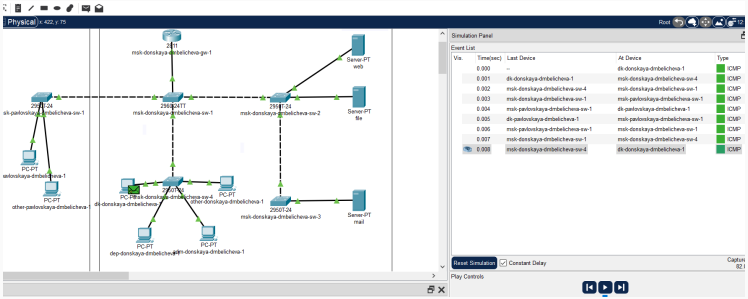

Рис. 7: Передвижения пакета ICMP по сети

Выполнение лабораторной работы

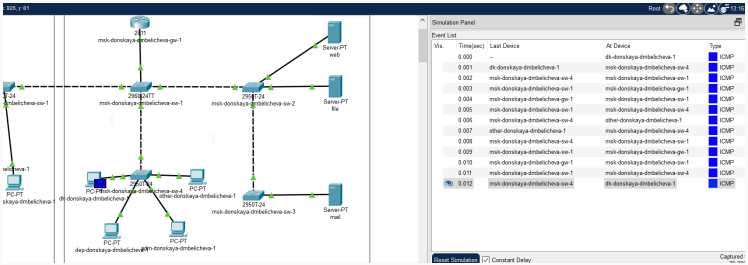

Рис. 8: Передвижения пакета ICMP по сети

Выполнение лабораторной работы

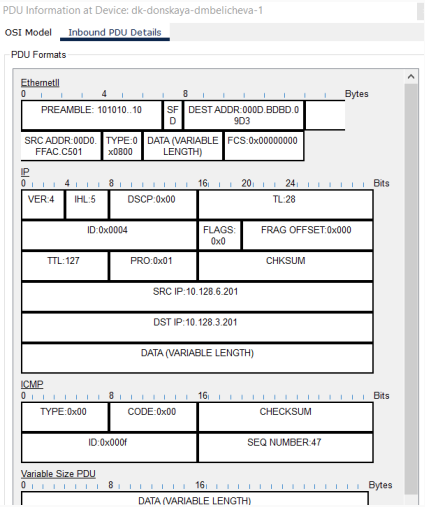

Рис. 9: Информация о PDU

Выводы

Выводы

В результате выполнения лабораторной работы я настроила статическую маршрутизацию VLAN в сети.