Лабораторная работа №6

Статическая маршрутизация VLAN

Шуваев С. А.

Российский университет дружбы народов, Москва, Россия

Информация

Докладчик

- Шуваев Сергей Александрович
- студент
- Российский университет дружбы народов
- 1032224269@pfur.ru
- https://Grinders060050.github.io/ru/

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

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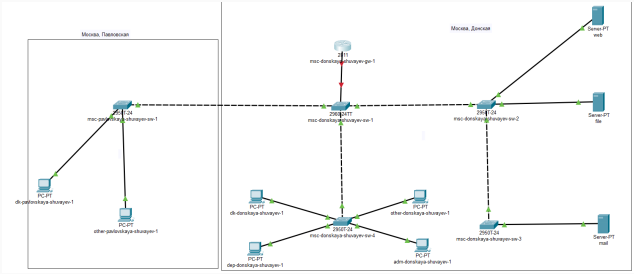


Figure 1: Логическая область проекта с добавленным маршрутизатором

Выполнение лабораторной работы

```
Router(config)#hostname msc-donskaya-shuvayev-gw-1
msc-donskaya-shuvayev-gw-1(config)#line vty 0 4
                                  ^
% Invalid input detected at '^' marker.

msc-donskaya-shuvayev-gw-1(config)#line vty 0 4
msc-donskaya-shuvayev-gw-1(config-line)#password cisco
msc-donskaya-shuvayev-gw-1(config-line)#login
msc-donskaya-shuvayev-gw-1(config-line)#line console 0
msc-donskaya-shuvayev-gw-1(config-line)#password cisco
msc-donskaya-shuvayev-gw-1(config-line)#login
msc-donskaya-shuvayev-gw-1(config-line)#enable secret cisco
msc-donskaya-shuvayev-gw-1(config)#service password-encryption
msc-donskaya-shuvayev-gw-1(config)#username admin privilege 1 secret cisco
msc-donskaya-shuvayev-gw-1(config)#ip domain-name donskaya.rudn.edu
msc-donskaya-shuvayev-gw-1(config)#crypto key generate rsa
The name for the keys will be: msc-donskaya-shuvayev-gw-1.donskaya.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]:
% Generating 512 bit RSA keys, keys will be non-exportable...[OK]

msc-donskaya-shuvayev-gw-1(config)#line vty 0 4
*Mar 1 0:11:41.450: RSA key size needs to be at least 768 bits for ssh version 2
*Mar 1 0:11:41.450: %SSH-5-ENABLED: SSH 1.5 has been enabled
msc-donskaya-shuvayev-gw-1(config-line)#transport input ssh
msc-donskaya-shuvayev-gw-1(config-line)#wr m
                                       ^
% Invalid input detected at '^' marker.

msc-donskaya-shuvayev-gw-1(config-line)#exit
msc-donskaya-shuvayev-gw-1(config)#exit
msc-donskaya-shuvayev-gw-1#
%SYS-5-CONFIG_I: Configured from console by console
wr m
Building configuration...
[OK]
msc-donskaya-shuvayev-gw-1#
```

Figure 2: Конфигурация маршрутизатора

Выполнение лабораторной работы

```
User Access Verification

Password:

msc-donskaya-shuvayev-sw-1>en
Password:
msc-donskaya-shuvayev-sw-1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
msc-donskaya-shuvayev-sw-1(config)#interface f0/24
msc-donskaya-shuvayev-sw-1(config-if)#switchport mode trunk
msc-donskaya-shuvayev-sw-1(config-if)#exit
msc-donskaya-shuvayev-sw-1(config)#exit
msc-donskaya-shuvayev-sw-1#
%SYS-5-CONFIG_I: Configured from console by console
wr m
Building configuration...
[OK]
msc-donskaya-shuvayev-sw-1#
```

Figure 3: Настройка порта 24 как trunk-порта

Выполнение лабораторной работы

```
msc-donskaya-shuvayev-gw-1(config-subif)#ip address 10.128.1.1 255.255.255.0
msc-donskaya-shuvayev-gw-1(config-subif)#description management
msc-donskaya-shuvayev-gw-1(config-subif)#interface f0/0.3
msc-donskaya-shuvayev-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

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

msc-donskaya-shuvayev-gw-1(config-subif)#encapsulation dot1Q 101
msc-donskaya-shuvayev-gw-1(config-subif)#ip address 10.128.3.1 255.255.255.0
msc-donskaya-shuvayev-gw-1(config-subif)#description dk
msc-donskaya-shuvayev-gw-1(config-subif)#interface f0/0.102
msc-donskaya-shuvayev-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

msc-donskaya-shuvayev-gw-1(config-subif)#encapsulation dot1Q 102
msc-donskaya-shuvayev-gw-1(config-subif)#ip address 10.128.4.1 255.255.255.0
msc-donskaya-shuvayev-gw-1(config-subif)#description departments
msc-donskaya-shuvayev-gw-1(config-subif)#interface f0/0.103
msc-donskaya-shuvayev-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

msc-donskaya-shuvayev-gw-1(config-subif)#encapsulation dot1Q 103
msc-donskaya-shuvayev-gw-1(config-subif)#ip address 10.128.5.1 255.255.255.0
msc-donskaya-shuvayev-gw-1(config-subif)#description adm
msc-donskaya-shuvayev-gw-1(config-subif)#interface f0/0.104
msc-donskaya-shuvayev-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

msc-donskaya-shuvayev-gw-1(config-subif)#encapsulation dot1Q 104
msc-donskaya-shuvayev-gw-1(config-subif)#ip address 10.128.6.1 255.255.255.0
msc-donskaya-shuvayev-gw-1(config-subif)#description other
msc-donskaya-shuvayev-gw-1(config-subif)#exit
msc-donskaya-shuvayev-gw-1(config)#exit
msc-donskaya-shuvayev-gw-1#
%SYS-5-CONFIG_I: Configured from console by console
```

Выполнение лабораторной работы

```
C:\>ipconfig

FastEthernet0 Connection:(default port)

   Connection-specific DNS Suffix..:
   Link-local IPv6 Address.....: FE80::20A:41FF:FE28:EE8D
   IPv6 Address.....: ::
   IPv4 Address.....: 10.128.3.202
   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 10.128.3.201

Pinging 10.128.3.201 with 32 bytes of data:

Reply from 10.128.3.201: bytes=32 time<1ms TTL=128
Reply from 10.128.3.201: bytes=32 time<1ms TTL=128
Reply from 10.128.3.201: bytes=32 time<1ms TTL=128
Reply from 10.128.3.201: bytes=32 time<1ms TTL=128

Ping statistics for 10.128.3.201:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

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=128
Reply from 10.128.3.202: bytes=32 time<1ms TTL=128
Reply from 10.128.3.202: bytes=32 time=6ms TTL=128
```

Выполнение лабораторной работы

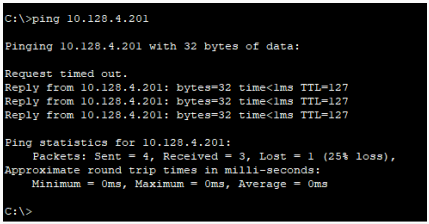


Figure 6: Проверка доступности оконечных устройств

Выполнение лабораторной работы

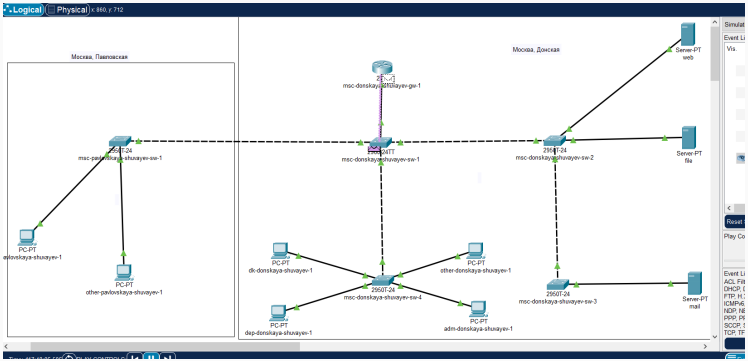


Figure 7: Передвижения пакета ICMP по сети

Выполнение лабораторной работы

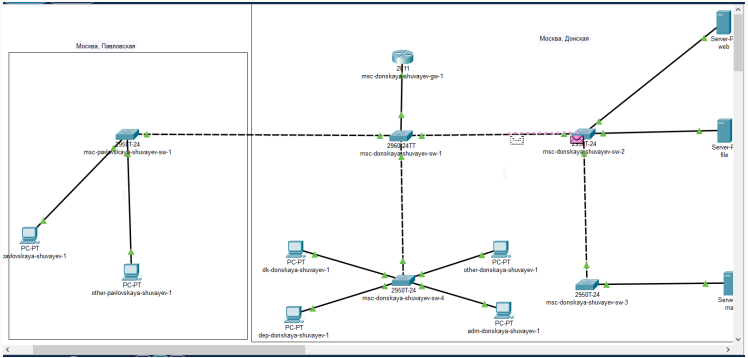
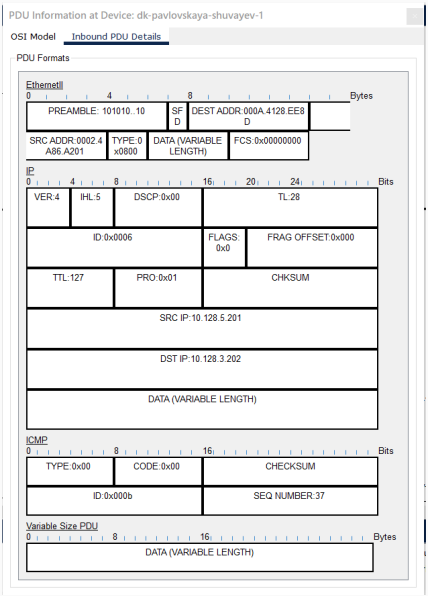


Figure 8: Передвижения пакета ICMP по сети

Выполнение лабораторной работы



Выводы

Выводы

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