

Лабораторная работа 6

Статическая маршрутизация VLAN

Ланцова Я. И.

Российский университет дружбы народов, Москва, Россия

Информация

- Ланцова Яна Игоревна
- студентка
- Российский университет дружбы народов

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

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

msk-donskaya-yalantsova-sw-1#^Z
msk-donskaya-yalantsova-sw-1#
msk-donskaya-yalantsova-sw-1#wr mem
Building configuration...
[OK]
```

Рис. 1: Настройка Trunk-порта коммутатора msk-donskaya-yalantsova-sw-1

Выполнение лабораторной работы

```
msk-donskaya-yalantsova-gw-1(config-if)#  
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up  
  
%LINKPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up  
  
msk-donskaya-yalantsova-gw-1(config-if)#line vty 0 4  
msk-donskaya-yalantsova-gw-1(config-line)#password cisco  
msk-donskaya-yalantsova-gw-1(config-line)#login  
msk-donskaya-yalantsova-gw-1(config-line)#exit  
msk-donskaya-yalantsova-gw-1(config)#line console 0  
msk-donskaya-yalantsova-gw-1(config-line)#password cisco  
msk-donskaya-yalantsova-gw-1(config-line)#login  
msk-donskaya-yalantsova-gw-1(config-line)#exit  
msk-donskaya-yalantsova-gw-1(config)#enable secret cisco  
msk-donskaya-yalantsova-gw-1(config)#service password encryption  
^  
% Invalid input detected at '^' marker.  
  
msk-donskaya-yalantsova-gw-1(config)#service password-encryption  
msk-donskaya-yalantsova-gw-1(config)#username admin privilege 1 secret cisco  
msk-donskaya-yalantsova-gw-1(config)#ip domain name donskaya.rudn.edu  
msk-donskaya-yalantsova-gw-1(config)#crypto key generate rsa  
The name for the keys will be msk-donskaya-yalantsova-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]: 2048  
% Generating 2048 bit RSA keys, keys will be non-exportable...[OK]  
  
msk-donskaya-yalantsova-gw-1(config)#line vty 0  
*Mar 1 01:23:948: %SSH-5-ENABLED: SSH 1.99 has been enabled  
msk-donskaya-yalantsova-gw-1(config-line)#transport input ssh  
msk-donskaya-yalantsova-gw-1(config-line)#+  
msk-donskaya-yalantsova-gw-1#  
%SYS-5-CONFIG_I: Configured from console by console  
  
msk-donskaya-yalantsova-gw-1#wr mem  
Building configuration...  
[OK]  
msk-donskaya-yalantsova-gw-1#
```

Рис. 2: Настройка маршрутизатора msk-donskaya-yalantsova-gw-1

Выполнение лабораторной работы

```
msk-donskaya-yalantssova-gw-1#sh vtp status
VTP Version : 1
Configuration Revision : 0
Maximum VLANs supported locally : 36
Number of existing VLANs : 5
VTP Operating Mode : Server
VTP Domain Name :
VTP Pruning Mode : Disabled
VTP V2 Mode : Disabled
VTP Traps Generation : Disabled
MD5 digest : 0x7D 0xA6 0x0E 0x9A 0x72 0xA0 0x3A
Configuration last modified by 0.0.0.0 at 0-0-00 00:00:00
Local updatier ID is 0.0.0.0 (no valid interface found)
msk-donskaya-yalantssova-gw-1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
msk-donskaya-yalantssova-gw-1(config)#interface f0/0.2
msk-donskaya-yalantssova-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-yalantssova-gw-1(config-subif)#encapsulation dot1Q 2
msk-donskaya-yalantssova-gw-1(config-subif)#description management
msk-donskaya-yalantssova-gw-1(config-subif)#ip address 10.128.1.1 255.255.255.0
msk-donskaya-yalantssova-gw-1(config-subif)^Z
msk-donskaya-yalantssova-gw-1#
%SYS-5-CONFIG_I: Configured from console by console

msk-donskaya-yalantssova-gw-1#wr mem
```

Рис. 3: Настройка виртуальных интерфейсов на маршрутизаторе

Выполнение лабораторной работы

```
IUS Command Line Interface
mask-donskaya-yalantssova-gw-1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
mask-donskaya-yalantssova-gw-1(config)#interface fa0/0.3
mask-donskaya-yalantssova-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

mask-donskaya-yalantssova-gw-1(config-subif)#encapsulation dot1Q 3
mask-donskaya-yalantssova-gw-1(config-subif)#
mask-donskaya-yalantssova-gw-1(config-subif)#ip address 10.128.0.1 255.255.255.0
mask-donskaya-yalantssova-gw-1(config-subif)#
mask-donskaya-yalantssova-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

mask-donskaya-yalantssova-gw-1(config-subif)#encapsulation dot1Q 101
mask-donskaya-yalantssova-gw-1(config-subif)#
mask-donskaya-yalantssova-gw-1(config-subif)#
mask-donskaya-yalantssova-gw-1(config-subif)#
mask-donskaya-yalantssova-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

mask-donskaya-yalantssova-gw-1(config-subif)#encapsulation dot1Q 102
mask-donskaya-yalantssova-gw-1(config-subif)#
mask-donskaya-yalantssova-gw-1(config-subif)#
mask-donskaya-yalantssova-gw-1(config-subif)#
mask-donskaya-yalantssova-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

mask-donskaya-yalantssova-gw-1(config-subif)#encapsulation dot1Q 103
mask-donskaya-yalantssova-gw-1(config-subif)#
mask-donskaya-yalantssova-gw-1(config-subif)#
mask-donskaya-yalantssova-gw-1(config-subif)#
mask-donskaya-yalantssova-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

mask-donskaya-yalantssova-gw-1(config-subif)#encapsulation dot1Q 104
mask-donskaya-yalantssova-gw-1(config-subif)#
mask-donskaya-yalantssova-gw-1(config-subif)#
mask-donskaya-yalantssova-gw-1(config-subif)#
mask-donskaya-yalantssova-gw-1(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.105, changed state to up
```

Рис. 4: Настройка виртуальных интерфейсов на маршрутизаторе

Выполнение лабораторной работы

```
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

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 = 0ms, Average = 0ms

C:\>ping 10.128.4.202

Pinging 10.128.4.202 with 32 bytes of data:
Request timed out.
Request timed out.

Ping statistics for 10.128.4.202:
    Packets: Sent = 3, Received = 0, Lost = 3 (100% loss),

Control-C
^C
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:\>
```

Рис. 5: Проверка доступности устройств с помощью команды ping

Выполнение лабораторной работы

Vis.	Time(sec)	Last Device	At Device	Type
	0.000	--	dk.donskaya.yalantsova-1	ICMP
	0.001	dk.donskaya.yalantsova-1	msk.donskaya.yalantsova-sw-4	ICMP
	0.002	msk.donskaya.yalantsova-sw-4	msk.donskaya.yalantsova-sw-1	ICMP
	0.003	msk.donskaya.yalantsova-sw-1	msk.donskaya.yalantsova-gw-1	ICMP
	0.004	msk.donskaya.yalantsova-gw-1	msk.donskaya.yalantsova-sw-1	ICMP
	0.005	msk.donskaya.yalantsova-sw-1	msk.donskaya.yalantsova-sw-4	ICMP
	0.006	msk.donskaya.yalantsova-sw-4	other.donskaya.yalantsova-1	ICMP
	0.007	other.donskaya.yalantsova-1	msk.donskaya.yalantsova-sw-4	ICMP
	0.008	msk.donskaya.yalantsova-sw-4	msk.donskaya.yalantsova-sw-1	ICMP
	0.009	msk.donskaya.yalantsova-sw-1	msk.donskaya.yalantsova-gw-1	ICMP
	0.010	msk.donskaya.yalantsova-gw-1	msk.donskaya.yalantsova-sw-1	ICMP
	0.011	msk.donskaya.yalantsova-sw-1	msk.donskaya.yalantsova-sw-4	ICMP
	0.012	msk.donskaya.yalantsova-sw-4	dk.donskaya.yalantsova-1	ICMP

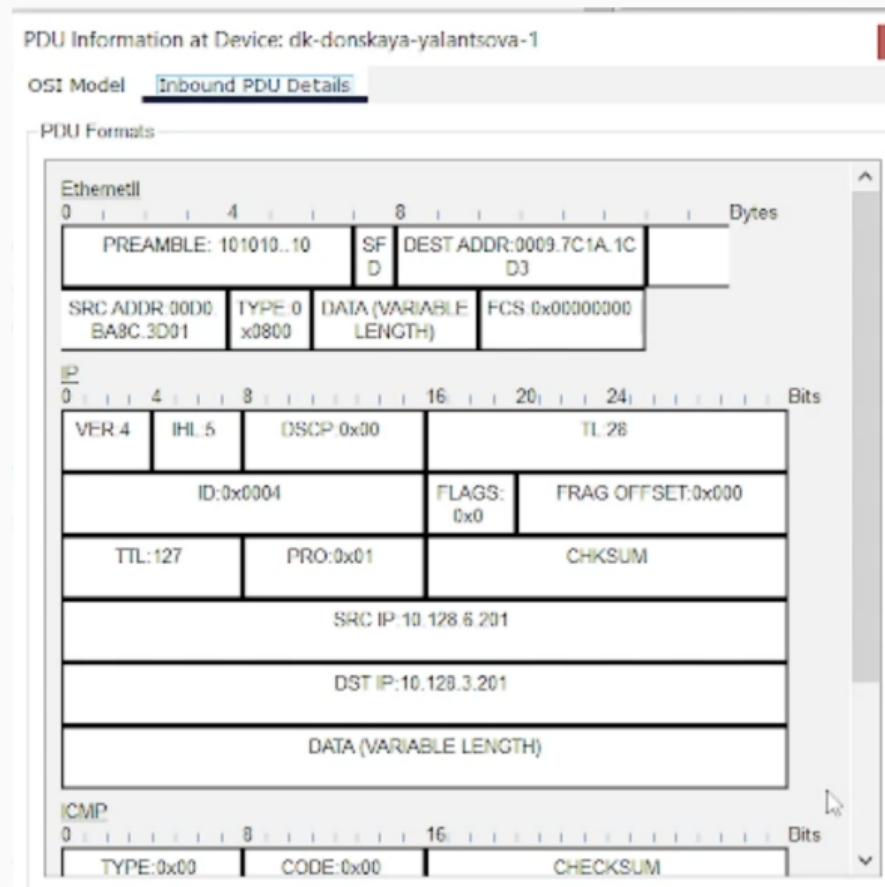
Рис. 6: Проверка доступности устройств в режиме симуляции в разных VLAN

Выполнение лабораторной работы

Vis.	Time(sec)	Last Device	At Device	Type
	0.000	-	dk-donskaya-yalantsova-1	ICMP
	0.001	dk-donskaya-yalantsova-1	msk-donskaya-yalantsova-sw-4	ICMP
	0.002	msk-donskaya-yalantsova-sw-4	msk-donskaya-yalantsova-sw-1	ICMP
	0.003	msk-donskaya-yalantsova-sw-1	msk-pavlovskaya-yalantsova-sw-1	ICMP
	0.004	msk-pavlovskaya-yalantsova-sw-1	dk-pavlovskaya-yalantsova-1	ICMP
	0.005	dk-pavlovskaya-yalantsova-1	msk-pavlovskaya-yalantsova-sw-1	ICMP
	0.006	msk-pavlovskaya-yalantsova-sw-1	msk-donskaya-yalantsova-sw-1	ICMP
	0.007	msk-donskaya-yalantsova-sw-1	msk-donskaya-yalantsova-sw-4	ICMP
	0.008	msk-donskaya-yalantsova-sw-4	dk-donskaya-yalantsova-1	ICMP

Рис. 7: Проверка доступности устройств в режиме симулции в одном VLAN

Выполнение лабораторной работы



Выводы

В результате выполнения лабораторной работы получили основные навыки по настройке статической маршрутизации VLAN в сети.