

# Лабораторная работа № 6

## Статическая маршрутизация VLAN

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## Вводная часть

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### Цели

Настроить статическую маршрутизацию VLAN в сети.

### Задачи

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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# Настройка маршрутизатора

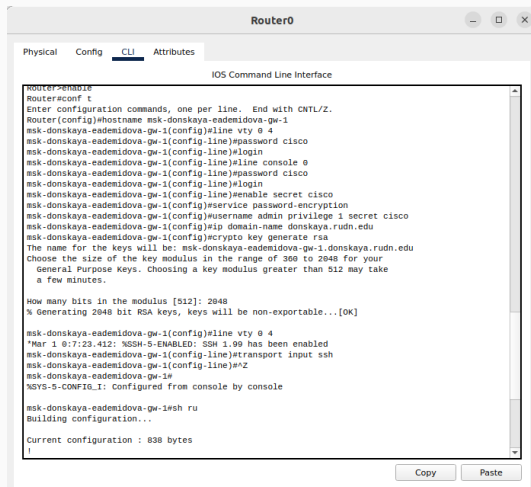


Рис. 1: Настройка маршрутизатора msk-donskaya-eademidova-pw-1

# Настройка Trunk-порта коммутатора

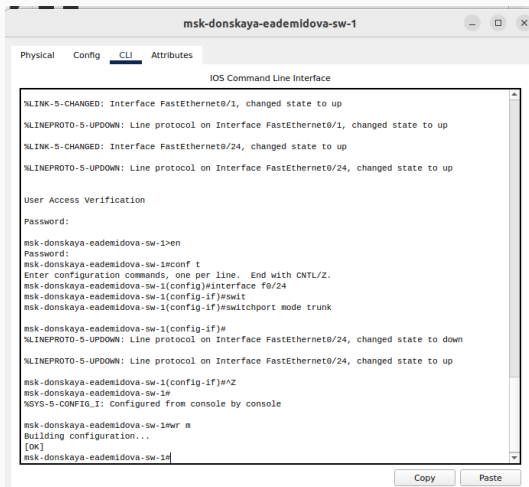


Рис. 2: Настройка Trunk-порта коммутатора msk-donskaya-eademidova-sw-1

# Настройка виртуальных интерфейсов



```
msk-donskaya-eademidova-gw-1
Physical  Config  CLI  Attributes
IOS Command Line Interface

msk-donskaya-eademidova-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-eademidova-gw-1(config-if)#interface fa0/0.2
msk-donskaya-eademidova-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-eademidova-gw-1(config-subif)#encapsulation dot1q 2
msk-donskaya-eademidova-gw-1(config-subif)#ip address 10.128.3.1 255.255.255.0
msk-donskaya-eademidova-gw-1(config-subif)#description management
msk-donskaya-eademidova-gw-1(config-subif)#interface fa0/0.3
msk-donskaya-eademidova-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-eademidova-gw-1(config-subif)#encapsulation dot1q 3
msk-donskaya-eademidova-gw-1(config-subif)#ip address 10.128.0.1 255.255.255.0
msk-donskaya-eademidova-gw-1(config-subif)#description servers
msk-donskaya-eademidova-gw-1(config-subif)#interface fa0/0.101
msk-donskaya-eademidova-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-eademidova-gw-1(config-subif)#encapsulation dot1q 101
msk-donskaya-eademidova-gw-1(config-subif)#ip address 10.128.3.1 255.255.255.0
msk-donskaya-eademidova-gw-1(config-subif)#description dk
msk-donskaya-eademidova-gw-1(config-subif)#interface fa0/0.102
msk-donskaya-eademidova-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

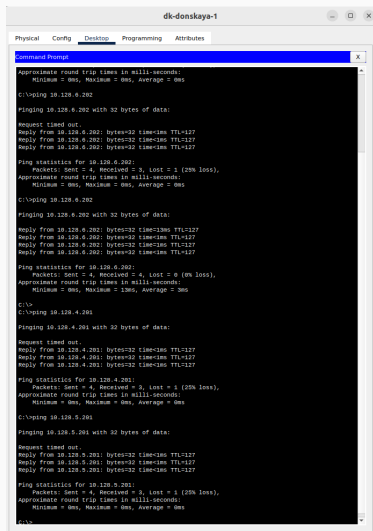
msk-donskaya-eademidova-gw-1(config-subif)#encapsulation dot1q 102
msk-donskaya-eademidova-gw-1(config-subif)#ip address 10.128.3.1 255.255.255.0
msk-donskaya-eademidova-gw-1(config-subif)#description departments
msk-donskaya-eademidova-gw-1(config-subif)#interface fa0/0.103
msk-donskaya-eademidova-gw-1(config-subif)#
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-eademidova-gw-1(config-subif)#encapsulation dot1q 103
msk-donskaya-eademidova-gw-1(config-subif)#ip address 10.128.5.1 255.255.255.0
msk-donskaya-eademidova-gw-1(config-subif)#description adm
msk-donskaya-eademidova-gw-1(config-subif)#interface fa0/0.104
msk-donskaya-eademidova-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-eademidova-gw-1(config-subif)#encapsulation dot1q 104
msk-donskaya-eademidova-gw-1(config-subif)#ip address 10.128.0.1 255.255.255.0
msk-donskaya-eademidova-gw-1(config-subif)#description other
msk-donskaya-eademidova-gw-1(config-subif)#
```

Рис. 3: Настройка виртуальных интерфейсов на маршрутизаторе

# Проверка доступности устройств



```
dk-donskaya-1
Physical Config Desktop Programming Attributes
Command Prompt
Approximate round trip times in milliseconds:
  Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>ping 10.128.6.202
Pinging 10.128.6.202 with 32 bytes of data:
Request timed out.
Reply from 10.128.6.202: bytes=32 time=1ms TTL=127
Reply from 10.128.6.202: bytes=32 time=1ms TTL=127
Reply from 10.128.6.202: bytes=32 time=1ms TTL=127
Ping statistics for 10.128.6.202:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milliseconds:
      Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>ping 10.128.6.202
Pinging 10.128.6.202 with 32 bytes of data:
Reply from 10.128.6.202: bytes=32 time=1ms TTL=127
Reply from 10.128.6.202: bytes=32 time=1ms TTL=127
Reply from 10.128.6.202: bytes=32 time=1ms TTL=127
Reply from 10.128.6.202: bytes=32 time=1ms TTL=127
Ping statistics for 10.128.6.202:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milliseconds:
      Minimum = 0ms, Maximum = 1ms, Average = 3ms
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 milliseconds:
      Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>ping 10.128.5.201
Pinging 10.128.5.201 with 32 bytes of data:
Request timed out.
Reply from 10.128.5.201: bytes=32 time=1ms TTL=127
Reply from 10.128.5.201: bytes=32 time=1ms TTL=127
Reply from 10.128.5.201: bytes=32 time=1ms TTL=127
Ping statistics for 10.128.5.201:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milliseconds:
      Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>
```

Рис. 4: Проверка доступности устройств с помощью команды ping



# Проверка доступности устройств

Simulation Panel

Event List


Vis.	Time(sec)	Last Device	At Device	Type
	0.000	--	dep-donskaya-1	ICMP
	0.001	dep-donskaya-1	msk-donskaya-eademidova-sw-4	ICMP
	0.002	msk-donskaya-eademidova-sw-4	msk-donskaya-eademidova-sw-1	ICMP
	0.002	--	msk-pavlovskaya-eademidova-sw-1	STP
	0.003	msk-pavlovskaya-eademidova-sw-1	msk-donskaya-eademidova-sw-1	STP
	0.003	msk-donskaya-eademidova-sw-1	msk-donskaya-eademidova-gw-1	ICMP
	0.004	msk-donskaya-eademidova-sw-1	msk-donskaya-eademidova-gw-1	STP
	0.004	msk-donskaya-eademidova-sw-1	msk-donskaya-eademidova-sw-2	STP
	0.004	msk-donskaya-eademidova-sw-1	msk-donskaya-eademidova-sw-4	STP
	0.004	msk-donskaya-eademidova-gw-1	msk-donskaya-eademidova-sw-1	ICMP
	0.005	msk-donskaya-eademidova-sw-2	msk-donskaya-eademidova-sw-3	STP
	0.005	msk-donskaya-eademidova-sw-4	adm-donskaya-1	STP
	0.005	msk-donskaya-eademidova-sw-1	msk-pavlovskaya-eademidova-sw-1	ICMP
	0.006	msk-pavlovskaya-eademidova-sw-1	other-pavlovskaya-1	ICMP
	0.007	other-pavlovskaya-1	msk-pavlovskaya-eademidova-sw-1	ICMP
	0.008	msk-pavlovskaya-eademidova-sw-1	msk-donskaya-eademidova-sw-1	ICMP
	0.009	msk-donskaya-eademidova-sw-1	msk-donskaya-eademidova-gw-1	ICMP
	0.010	msk-donskaya-eademidova-gw-1	msk-donskaya-eademidova-sw-1	ICMP
	0.011	msk-donskaya-eademidova-sw-1	msk-donskaya-eademidova-sw-4	ICMP
	0.012	msk-donskaya-eademidova-sw-4	dep-donskaya-1	ICMP

Рис. 5: Проверка доступности устройств в режиме симуляции в разных VLAN

## Проверка доступности устройств

Simulation Panel

Event List


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

Рис. 6: Проверка доступности устройств в режиме симуции в одном VLAN

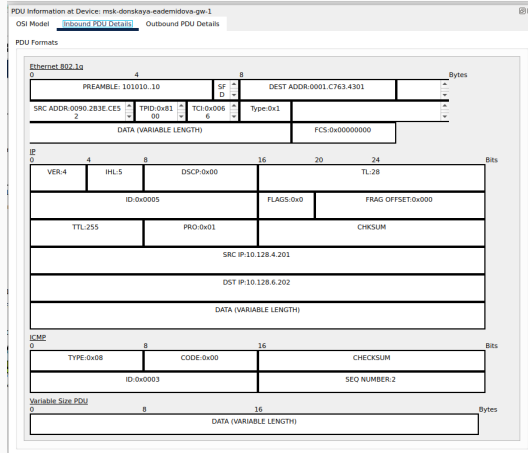


Рис. 7: Содержимое ICMP-пакета

## Выводы

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