

# Лабораторная работа №5

## Конфигурирование VLAN

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## Информация

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Получить основные навыки по настройке VLAN на коммутаторах сети.

1. На коммутаторах сети настроить Trunk-порты на соответствующих интерфейсах, связывающих коммутаторы между собой.
2. Коммутатор `msk-donskaya-sw-1` настроить как VTP-сервер и прописать на нём номера и названия VLAN.
3. Коммутаторы `msk-donskaya-sw-2` — `msk-donskaya-sw-4`, `mskpavlovskaya-sw-1` настроить как VTP-клиенты, на интерфейсах указать принадлежность к соответствующему VLAN.
4. На серверах прописать IP-адреса.

5. На оконечных устройствах указать соответствующий адрес шлюза и прописать статические IP-адреса из диапазона соответствующей сети, следуя регламенту выделения ip-адресов.
6. Проверить доступность устройств, принадлежащих одному VLAN, и недоступность устройств, принадлежащих разным VLAN.
7. При выполнении работы необходимо учитывать соглашение об именовании.

```
msk-donskaya-dvzambalova-sw-1>en
Password:
msk-donskaya-dvzambalova-sw-1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
msk-donskaya-dvzambalova-sw-1(config)#interface g0/1
msk-donskaya-dvzambalova-sw-1(config-if)#switchport mode trunk

msk-donskaya-dvzambalova-sw-1(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up

msk-donskaya-dvzambalova-sw-1(config-if)#ex
msk-donskaya-dvzambalova-sw-1(config)#interface g0/2
msk-donskaya-dvzambalova-sw-1(config-if)#switchport mode trunk

msk-donskaya-dvzambalova-sw-1(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/2, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/2, changed state to up
```

Рис. 1: Настройка Trunk-порта на msk-donskaya-dvzambalova-sw-1

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

msk-donskaya-dvzambalova-sw-1#wr m
```

Рис. 2: Настройка Trunk-порта на msk-donskaya-dvzambalova-sw-2



```
msk-donskaya-dvzambalova-sw-2>en
Password:
msk-donskaya-dvzambalova-sw-2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
msk-donskaya-dvzambalova-sw-2(config)#interface g0/1
msk-donskaya-dvzambalova-sw-2(config-if)#
msk-donskaya-dvzambalova-sw-2#
%SYS-5-CONFIG_I: Configured from console by console

msk-donskaya-dvzambalova-sw-2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
msk-donskaya-dvzambalova-sw-2(config)#interface g0/1
msk-donskaya-dvzambalova-sw-2(config-if)#switchport mode trunk
msk-donskaya-dvzambalova-sw-2(config-if)#ex
msk-donskaya-dvzambalova-sw-2(config)#interface g0/2
msk-donskaya-dvzambalova-sw-2(config-if)#switchport mode trunk
```

Рис. 3: Настройка Trunk-порта на msk-donskaya-dvzambalova-sw-3

```
msk-donskaya-dvzambalova-sw-3>en
Password:
msk-donskaya-dvzambalova-sw-3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
msk-donskaya-dvzambalova-sw-3(config)#interface g0/1
msk-donskaya-dvzambalova-sw-3(config-if)#switchport mode trunk
msk-donskaya-dvzambalova-sw-3(config-if)#ex
msk-donskaya-dvzambalova-sw-3(config)#ex
msk-donskaya-dvzambalova-sw-3#
%SYS-5-CONFIG_I: Configured from console by console
msk-donskaya-dvzambalova-sw-3#wr m
```

Рис. 4: Настройка Trunk-порта на msk-donskaya-dvzambalova-sw-4

```
msk-donskaya-dvzambalova-sw-4>en
Password:
msk-donskaya-dvzambalova-sw-4#conf t
Enter configuration commands, one per line. End with CNTL/Z.
msk-donskaya-dvzambalova-sw-4(config)#interface g0/1
msk-donskaya-dvzambalova-sw-4(config-if)#switchport mode trunk
```

Рис. 5: Настройка Trunk-порта на msk-donskaya-dvzambalova-sw-1

```
msk-pavlovskaya-dvzambalova-sw-1>en
Password:
msk-pavlovskaya-dvzambalova-sw-1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
msk-pavlovskaya-dvzambalova-sw-1(config)#interface f0/24
                                     ^
% Invalid input detected at '^' marker.

msk-pavlovskaya-dvzambalova-sw-1(config)#interface f0/24
msk-pavlovskaya-dvzambalova-sw-1(config-if)#switchport mode trunk
msk-pavlovskaya-dvzambalova-sw-1(config-if)#ex
msk-pavlovskaya-dvzambalova-sw-1(config)#wr m
```

Рис. 6: Настройка Trunk-порта на msk-pavlovskaya-dvzambalova-sw-1

```
msk-donskaya-dvzambalova-sw-1(config)#vlan 2
msk-donskaya-dvzambalova-sw-1(config-vlan)#
%LINK-5-CHANGED: Interface Vlan2, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan2, changed state to up

msk-donskaya-dvzambalova-sw-1(config-vlan)#name management
msk-donskaya-dvzambalova-sw-1(config-vlan)#vlan 3
msk-donskaya-dvzambalova-sw-1(config-vlan)#name servers
msk-donskaya-dvzambalova-sw-1(config-vlan)#vlan 101
msk-donskaya-dvzambalova-sw-1(config-vlan)#name dk
msk-donskaya-dvzambalova-sw-1(config-vlan)#vlan 102
msk-donskaya-dvzambalova-sw-1(config-vlan)#name departments
msk-donskaya-dvzambalova-sw-1(config-vlan)#vlan 103
msk-donskaya-dvzambalova-sw-1(config-vlan)#name adm
msk-donskaya-dvzambalova-sw-1(config-vlan)#vlan 104
msk-donskaya-dvzambalova-sw-1(config-vlan)#name other
msk-donskaya-dvzambalova-sw-1(config-vlan)#ex
msk-donskaya-dvzambalova-sw-1(config)#wr m
```

Рис. 7: Задания VLAN

```
msk-donskaya-dvzambalova-sw-1#sh vlan
```

VLAN	Name	Status	Ports
1	default	active	Fa0/2, Fa0/3, Fa0/4, Fa0/5 Fa0/6, Fa0/7, Fa0/8, Fa0/9 Fa0/10, Fa0/11, Fa0/12, Fa0/13 Fa0/14, Fa0/15, Fa0/16, Fa0/17 Fa0/18, Fa0/19, Fa0/20, Fa0/21 Fa0/22, Fa0/23, Fa0/24
2	management	active	
3	servers	active	
101	dk	active	
102	departments	active	
103	adm	active	
104	other	active	
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2
------	------	------	-----	--------	--------	----------	-----	----------	--------	--------

Рис. 8: Команда show vlan

```
msk-donskaya-dvzambalova-sw-1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
msk-donskaya-dvzambalova-sw-1(config)#vtp mode server
Device mode already VTP SERVER.
msk-donskaya-dvzambalova-sw-1(config)#vtp domain donskaya
Changing VTP domain name from NULL to donskaya
msk-donskaya-dvzambalova-sw-1(config)#vtp password cisco
Setting device VLAN database password to cisco
```

Рис. 9: Конфигурация VTP msk-donskaya-dvzambalova-sw-1

```
msk-donskaya-dvzambalova-sw-2>en
Password:
msk-donskaya-dvzambalova-sw-2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
msk-donskaya-dvzambalova-sw-2(config)#vtp mode client
Setting device to VTP CLIENT mode.
msk-donskaya-dvzambalova-sw-2(config)#ex
msk-donskaya-dvzambalova-sw-2#
%SYS-5-CONFIG_I: Configured from console by console

msk-donskaya-dvzambalova-sw-2#wr m
Building configuration...
```

Рис. 10: Конфигурация VTP msk-donskaya-dvzambalova-sw-2



```
msk-donskaya-dvzambalova-sw-3>en
Password:
msk-donskaya-dvzambalova-sw-3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
msk-donskaya-dvzambalova-sw-3(config)#vtp mode client
Setting device to VTP CLIENT mode.
msk-donskaya-dvzambalova-sw-3(config)#vtp domain dontskaya
Domain name already set to dontskaya.
msk-donskaya-dvzambalova-sw-3(config)#vtp password cisco
Setting device VLAN database password to cisco
msk-donskaya-dvzambalova-sw-3(config)#
%LINK-5-CHANGED: Interface Vlan2, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan2, changed state to up
msk-donskaya-dvzambalova-sw-3(config)#wr m
```

Рис. 11: Конфигурация VTP msk-donskaya-dvzambalova-sw-3

## Выполнение лабораторной работы

```
msk-donskaya-dvzambalova-sw-4>en
Password:
msk-donskaya-dvzambalova-sw-4#conf t
Enter configuration commands, one per line. End with CNTL/Z.
msk-donskaya-dvzambalova-sw-4(config)#vtp mode client
Setting device to VTP CLIENT mode.
msk-donskaya-dvzambalova-sw-4(config)#vtp domain dontskaya
Domain name already set to dontskaya.
msk-donskaya-dvzambalova-sw-4(config)#vtp password cisco
Setting device VLAN database password to cisco
msk-donskaya-dvzambalova-sw-4(config)#
%LINK-5-CHANGED: Interface Vlan2, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan2, changed state to up

msk-donskaya-dvzambalova-sw-4(config)#ex
msk-donskaya-dvzambalova-sw-4#
%SYS-5-CONFIG_I: Configured from console by console

msk-donskaya-dvzambalova-sw-4#wr m
Building configuration...
[OK]
msk-donskaya-dvzambalova-sw-4#sh vlan
```

VLAN	Name	Status	Ports
1	default	active	Fa0/2, Fa0/3, Fa0/4, Fa0/5 Fa0/7, Fa0/8, Fa0/9, Fa0/10 Fa0/12, Fa0/13, Fa0/14, Fa0/15 Fa0/17, Fa0/18, Fa0/19, Fa0/20 Fa0/21, Fa0/22, Fa0/23, Fa0/24 Gig0/2
2	management	active	
3	servers	active	
101	dk	active	
102	departments	active	
103	adm	active	
104	other	active	
1002	fdi-default	active	
1003	token-ring-default	active	
1004	fdinet-default	active	
1005	trnet-default	active	

VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2
------	------	------	-----	--------	--------	----------	-----	----------	--------	--------

Рис. 12: Конфигурация VTP msk-donskaya-dvzambalova-sw-4. Проверка отображения VLAN

```
msk-pavlovskaya-dvzambalova-sw-1>en
Password:
msk-pavlovskaya-dvzambalova-sw-1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
msk-pavlovskaya-dvzambalova-sw-1(config)#vtp mode server
Device mode already VTP SERVER.
msk-pavlovskaya-dvzambalova-sw-1(config)#vtp mode client
Setting device to VTP CLIENT mode.
msk-pavlovskaya-dvzambalova-sw-1(config)#vtp domain pavlovskaya
Changing VTP domain name from donskaya to pavlovskaya
msk-pavlovskaya-dvzambalova-sw-1(config)#00:42:01 %DTP-5-DOMAINMISMATCH: Unable to perform trunk
negotiation on port Fa0/24 because of VTP domain mismatch.

msk-pavlovskaya-dvzambalova-sw-1(config)#vtp password cisco
Setting device VLAN database password to cisco
msk-pavlovskaya-dvzambalova-sw-1(config)#00:42:31 %DTP-5-DOMAINMISMATCH: Unable to perform trunk
negotiation on port Fa0/24 because of VTP domain mismatch.

msk-pavlovskaya-dvzambalova-sw-1(config)#ex
msk-pavlovskaya-dvzambalova-sw-1#
%SYS-5-CONFIG_I: Configured from console by console

msk-pavlovskaya-dvzambalova-sw-1#wr m
Building configuration...
```

Рис. 15: Конфигурация VTP msk-pavlovskaya-dvzambalova-sw-1

```
msk-donskaya-dvzambalova-sw-4#conf t
Enter configuration commands, one per line. End with CNTL/Z.
msk-donskaya-dvzambalova-sw-4(config)#vtp mode client
Device mode already VTP CLIENT.
msk-donskaya-dvzambalova-sw-4(config)#interface range f0/1 5
                                     ^
% Invalid input detected at '^' marker.

msk-donskaya-dvzambalova-sw-4(config)#interface range f0/1 - 5
msk-donskaya-dvzambalova-sw-4(config-if-range)#switchport mode access
msk-donskaya-dvzambalova-sw-4(config-if-range)#switchport access vlan 101
msk-donskaya-dvzambalova-sw-4(config-if-range)#interface range f0/6 - 10
msk-donskaya-dvzambalova-sw-4(config-if-range)#switchport mode access
msk-donskaya-dvzambalova-sw-4(config-if-range)#switchport access vlan 102
msk-donskaya-dvzambalova-sw-4(config-if-range)#interface range f0/11 - 15
msk-donskaya-dvzambalova-sw-4(config-if-range)#switchport access vlan 103
msk-donskaya-dvzambalova-sw-4(config-if-range)#interface range f0/16 - 24
msk-donskaya-dvzambalova-sw-4(config-if-range)#switchport access vlan 104
msk-donskaya-dvzambalova-sw-4(config-if-range)#ex
msk-donskaya-dvzambalova-sw-4(config)#wr m
                                     ^
```

Рис. 16: Конфигурация диапазона портов и указание принадлежности к VLAN для msk-donskaya-dvzambalova-sw-4

```
msk-pavlovskaya-dvzambalova-sw-1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
msk-pavlovskaya-dvzambalova-sw-1(config)#vtp mode client
Device mode already VTP CLIENT.
msk-pavlovskaya-dvzambalova-sw-1(config)#interface range f0/1 5
                                     ^
% Invalid input detected at '^' marker.

msk-pavlovskaya-dvzambalova-sw-1(config)#interface range f0/1 - 15
msk-pavlovskaya-dvzambalova-sw-1(config-if-range)#switchport mode access
msk-pavlovskaya-dvzambalova-sw-1(config-if-range)#switchport access vlan 101
msk-pavlovskaya-dvzambalova-sw-1(config-if-range)#interface f0/20
msk-pavlovskaya-dvzambalova-sw-1(config-if)#switchport mode access
msk-pavlovskaya-dvzambalova-sw-1(config-if)#switchport access vlan 104
msk-pavlovskaya-dvzambalova-sw-1(config-if)#ex
msk-pavlovskaya-dvzambalova-sw-1(config)#ex
msk-pavlovskaya-dvzambalova-sw-1#
%SYS-5-CONFIG_I: Configured from console by console

msk-pavlovskaya-dvzambalova-sw-1#wr m
```

Рис. 17: Конфигурация диапазона портов и указание принадлежности к VLAN для msk-pavlovskaya-dvzambalova-sw-1

```
msk-donskaya-dvzambalova-sw-2>en
Password:
msk-donskaya-dvzambalova-sw-2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
msk-donskaya-dvzambalova-sw-2(config)#interface range f0/1 2
^
% Invalid input detected at '^' marker.

msk-donskaya-dvzambalova-sw-2(config)#interface range f0/1 - 2
msk-donskaya-dvzambalova-sw-2(config-if-range)#switchport mode access
msk-donskaya-dvzambalova-sw-2(config-if-range)#switchport access vlan 3
msk-donskaya-dvzambalova-sw-2(config-if-range)#ex
msk-donskaya-dvzambalova-sw-2(config)#ex
msk-donskaya-dvzambalova-sw-2#
%SYS-5-CONFIG_I: Configured from console by console

msk-donskaya-dvzambalova-sw-2#wr m
Building configuration...
```

Рис. 18: Конфигурация диапазона портов и указание принадлежности к VLAN для msk-donskaya-dvzambalova-sw-2

```
msk-donskaya-dvzambalova-sw-3>en
Password:
msk-donskaya-dvzambalova-sw-3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
msk-donskaya-dvzambalova-sw-3(config)#interface range f0/1 - 2
msk-donskaya-dvzambalova-sw-3(config-if-range)#switchport mode access
msk-donskaya-dvzambalova-sw-3(config-if-range)#switchport access vlan 3
msk-donskaya-dvzambalova-sw-3(config-if-range)#ex
msk-donskaya-dvzambalova-sw-3(config)#ex
msk-donskaya-dvzambalova-sw-3#
%SYS-5-CONFIG_I: Configured from console by console
msk-donskaya-dvzambalova-sw-3#wr m
```

Рис. 19: Конфигурация диапазона портов и указание принадлежности к VLAN для msk-donskaya-dvzambalova-sw-3

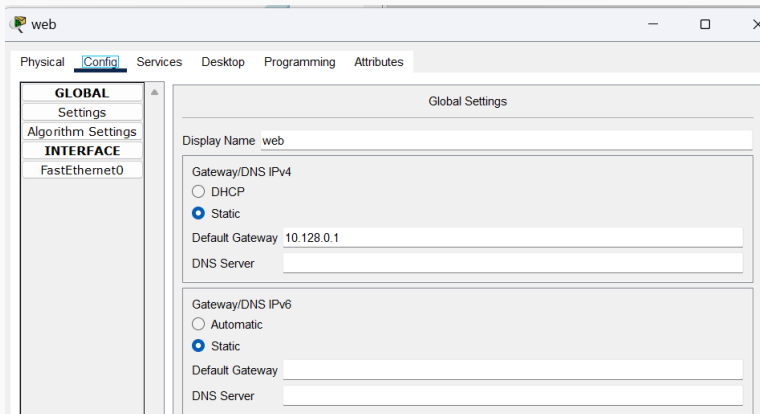


Рис. 20: Задание IP-адреса шлюзу



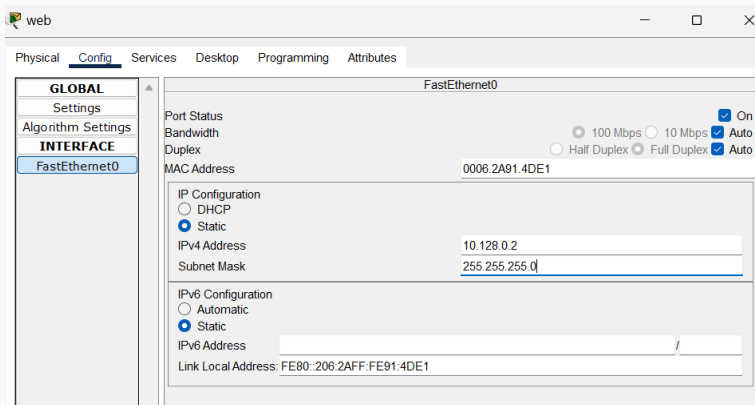
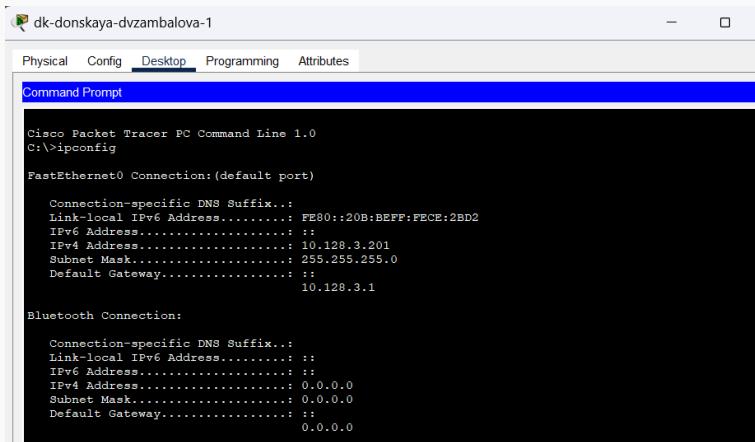


Рис. 21: Задание IP-адреса



The screenshot shows a Cisco Packet Tracer PC Command Line window for a device named 'dk-donskaya-dvzambalova-1'. The 'Desktop' tab is selected. The command prompt shows the command 'ipconfig' has been entered, resulting in the following output:

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

FastEthernet0 Connection:(default port)

    Connection-specific DNS Suffix...:
    Link-local IPv6 Address.....: FE80::20B:BEFF:FECE:2BD2
    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
```

Рис. 22: ipconfig

```
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<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 = 0ms, Average = 0ms

C:\>ping 10.128.4.201

Pinging 10.128.4.201 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 10.128.4.201:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
    Approximate round trip times in milli-seconds:
```

Рис. 23: Пингование

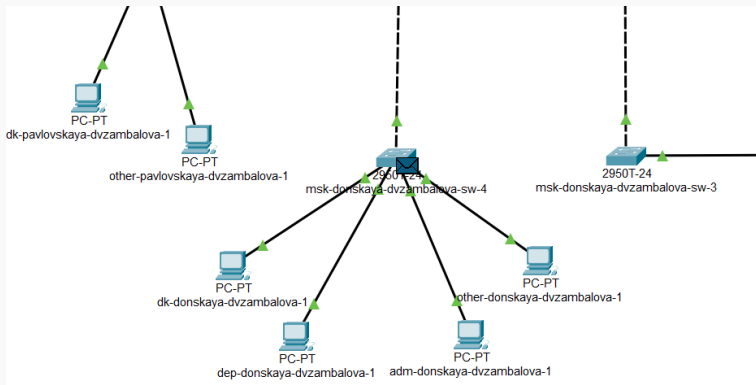


Рис. 24: Режим симуляции

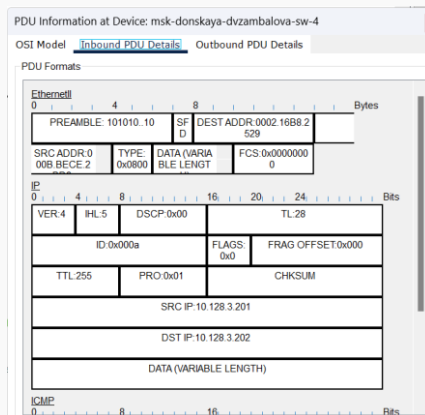


Рис. 25: Информация о PDU

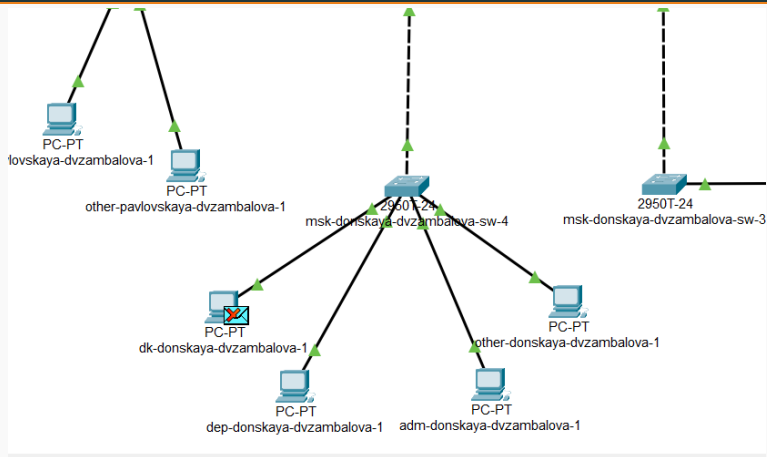


Рис. 26: Режим симуляции

В процессе выполнения данной лабораторной работы я получила основные навыки по настройке VLAN на коммутаторах сети.