

Лабораторная работа №5

Администрирование локальных сетей

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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.

Выполнение лабораторной работы

Настройка Trunk-портов

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

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

msk-donskaya-aamishina-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

msk-donskaya-aamishina-sw-1(config-if)#^Z
msk-donskaya-aamishina-sw-1#
%SYS-5-CONFIG_I: Configured from console by console
|
```

Рис. 1: Настройка Trunk-портов на msk-donskaya-aamishina-sw-1

Настройка Trunk-портов

```
Password:

msk-donskaya-aamishina-sw-2>enable
Password:
msk-donskaya-aamishina-sw-2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
msk-donskaya-aamishina-sw-2(config)#interface g0/1
msk-donskaya-aamishina-sw-2(config-if)#switchport mode trunk
msk-donskaya-aamishina-sw-2(config-if)#interface g0/2
msk-donskaya-aamishina-sw-2(config-if)#switchport mode trunk

msk-donskaya-aamishina-sw-2(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

msk-donskaya-aamishina-sw-2(config-if)#
```

Рис. 2: Настройка Trunk-портов на msk-donskaya-aamishina-sw-2

```
User Access Verification

Password:

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

msk-donskaya-aamishina-sw-3#
```

Рис. 3: Настройка Trunk-портов на msk-donskaya-aamishina-sw-3

User Access Verification

Password:

msk-donskaya-aamishina-sw-4>enable

Password:

msk-donskaya-aamishina-sw-4#conf t

Enter configuration commands, one per line. End with CNTL/Z.

msk-donskaya-aamishina-sw-4(config)#interface g0/1

msk-donskaya-aamishina-sw-4(config-if)#switchport mode trunk

msk-donskaya-aamishina-sw-4(config-if)#exit

msk-donskaya-aamishina-sw-4(config)#exit

msk-donskaya-aamishina-sw-4#

%SYS-5-CONFIG_I: Configured from console by console

msk-donskaya-aamishina-sw-4#

Рис. 4: Настройка Trunk-портов на msk-donskaya-aamishina-sw-4

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

msk-donskaya-aamishina-sw-1#
```

Рис. 5: Настройка Trunk-портов на msk-donskaya-aamishina-sw-1

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

Рис. 6: Настройка Trunk-портов на msk-pavlovskaya-aamishina-sw-1

```
msk-donskaya-aamishina-sw-1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
msk-donskaya-aamishina-sw-1(config)#vlan 2
msk-donskaya-aamishina-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-aamishina-sw-1(config-vlan)#name management
msk-donskaya-aamishina-sw-1(config-vlan)#vlan 3
msk-donskaya-aamishina-sw-1(config-vlan)#name servers
msk-donskaya-aamishina-sw-1(config-vlan)#vlan 101
msk-donskaya-aamishina-sw-1(config-vlan)#name dk
msk-donskaya-aamishina-sw-1(config-vlan)#vlan 102
msk-donskaya-aamishina-sw-1(config-vlan)#name departaments
msk-donskaya-aamishina-sw-1(config-vlan)#vlan 103
msk-donskaya-aamishina-sw-1(config-vlan)#name adm
msk-donskaya-aamishina-sw-1(config-vlan)#vlan 104
msk-donskaya-aamishina-sw-1(config-vlan)#name other
```

Рис. 7: Задание VLAN

Коммутатор msk-donskaya-aamishina-sw-1

```
msk-donskaya-aamishina-sw-1#show 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	departaments	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
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

```
msk-donskaya-aamishina-sw-1#
```

Рис. 8: Проверка VLAN

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

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

```
password:

msk-donskaya-aamishina-sw-2>enable
Password:
msk-donskaya-aamishina-sw-2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
msk-donskaya-aamishina-sw-2(config)#vtp mode client
Setting device to VTP CLIENT mode.
msk-donskaya-aamishina-sw-2(config)#vtp password cisco
Setting device VLAN database password to cisco
```

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

```
msk-donskaya-aamishina-sw-3>enable
Password:
Password:
msk-donskaya-aamishina-sw-3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
msk-donskaya-aamishina-sw-3(config)#vtp mode client
Setting device to VTP CLIENT mode.
msk-donskaya-aamishina-sw-3(config)#vtp password cisco
Setting device VLAN database password to cisco
```

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


```
msk-donskaya-aamishina-sw-4#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
msk-donskaya-aamishina-sw-4(config)#vtp mode client
Setting device to VTP CLIENT mode.
msk-donskaya-aamishina-sw-4(config)#vtp password cisco
                                     ^
% Invalid input detected at '^' marker.

msk-donskaya-aamishina-sw-4(config)#vtp password cisco
Setting device VLAN database password to cisco
msk-donskaya-aamishina-sw-4(config)#
```

Рис. 12: Конфигурация VTP msk-donskaya-aamishina-sw-4

```
msk-donskaya-aamishina-sw-4#  
msk-donskaya-aamishina-sw-4#show vtp status  
VTP Version : 1  
Configuration Revision : 0  
Maximum VLANs supported locally : 255  
Number of existing VLANs : 11  
VTP Operating Mode : Client  
VTP Domain Name : donskaya  
VTP Pruning Mode : Disabled  
VTP V2 Mode : Disabled  
VTP Traps Generation : Disabled  
MD5 digest : 0xEB 0x25 0xCC 0x23 0x03 0x2E 0x7C 0x95  
Configuration last modified by 10.128.1.2 at 3-1-93 00:14:03  
msk-donskaya-aamishina-sw-4#
```

Рис. 13: Проверка VTP статуса

```
msk-donskaya-aamishina-sw-4#show 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 departaments	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

```
msk-donskaya-aamishina-sw-4#
```

Рис. 14: Проверка отображения VLAN

```
msk-pavlovskaya-aamishina-sw-1>enable
Password:
msk-pavlovskaya-aamishina-sw-1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
msk-pavlovskaya-aamishina-sw-1(config)#vtp mode client
Setting device to VTP CLIENT mode.
msk-pavlovskaya-aamishina-sw-1(config)#vtp password cisco
Setting device VLAN database password to cisco
msk-pavlovskaya-aamishina-sw-1(config)#
%LINK-5-CHANGED: Interface Vlan2, changed state to up

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

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

```
msk-donskaya-aamishina-sw-4#  
msk-donskaya-aamishina-sw-4#conf t  
Enter configuration commands, one per line. End with CNTL/Z.  
msk-donskaya-aamishina-sw-4 (config)#interface range f0/1-5  
msk-donskaya-aamishina-sw-4 (config-if-range)#switchport mode access  
msk-donskaya-aamishina-sw-4 (config-if-range)#switchport access vlan 101  
msk-donskaya-aamishina-sw-4 (config-if-range)#interface range f0/6-10  
msk-donskaya-aamishina-sw-4 (config-if-range)#switchport mode access  
msk-donskaya-aamishina-sw-4 (config-if-range)#switchport access vlan 102  
msk-donskaya-aamishina-sw-4 (config-if-range)#interface range f0/11-15  
msk-donskaya-aamishina-sw-4 (config-if-range)#switchport mode access  
msk-donskaya-aamishina-sw-4 (config-if-range)#switchport access vlan 103  
msk-donskaya-aamishina-sw-4 (config-if-range)#interface range f0/16-24  
msk-donskaya-aamishina-sw-4 (config-if-range)#switchport mode access  
msk-donskaya-aamishina-sw-4 (config-if-range)#switchport access vlan 104  
msk-donskaya-aamishina-sw-4 (config-if-range)#exit
```

Рис. 16: Конфигурация VTP msk-donskaya-aamishina-sw-4

```
msk-pavlovskaya-aamishina-sw-1#  
msk-pavlovskaya-aamishina-sw-1#conf t  
Enter configuration commands, one per line. End with CNTL/Z.  
msk-pavlovskaya-aamishina-sw-1(config)#interface range f0/1-15  
msk-pavlovskaya-aamishina-sw-1(config-if-range)#switchport mode access  
msk-pavlovskaya-aamishina-sw-1(config-if-range)#switchport access vlan 101  
msk-pavlovskaya-aamishina-sw-1(config-if-range)#interface range f0/20  
msk-pavlovskaya-aamishina-sw-1(config-if-range)#switchport mode access  
msk-pavlovskaya-aamishina-sw-1(config-if-range)#switchport access vlan 104
```

Рис. 17: Конфигурация VTP msk-pavlovskaya-aamishina-sw-1

```
msk-donskaya-aamishina-sw-2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
msk-donskaya-aamishina-sw-2(config)#interface range f0/1-2
msk-donskaya-aamishina-sw-2(config-if-range)#switchport mode access
msk-donskaya-aamishina-sw-2(config-if-range)#switchport access vlan 3
```

Рис. 18: Конфигурация VTP msk-donskaya-aamishina-sw-2

```
msk-donskaya-aamishina-sw-3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
msk-donskaya-aamishina-sw-3(config)#interface f0/1
msk-donskaya-aamishina-sw-3(config-if)#switchport mode access
msk-donskaya-aamishina-sw-3(config-if)#switchport access vlan 3
```

Рис. 19: Конфигурация VTP msk-donskaya-aamishina-sw-3

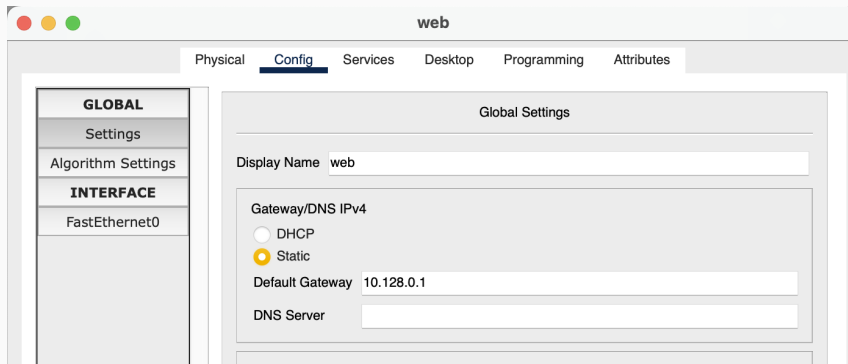


Рис. 20: Задание IP-адреса шлюзу

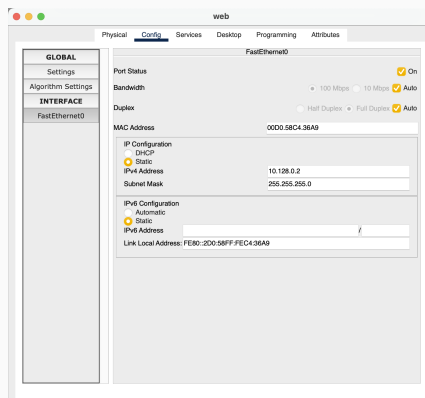


Рис. 21: Задание IP-адреса

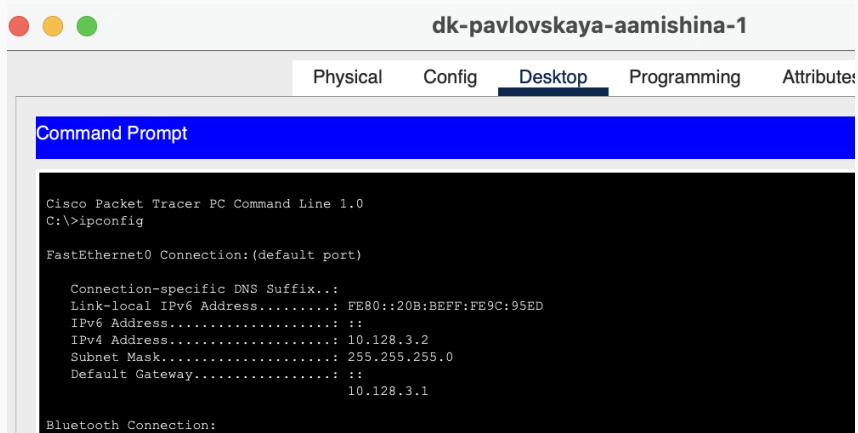


Рис. 22: ifconfig

```
C:\>ping 10.128.3.3

Pinging 10.128.3.3 with 32 bytes of data:

Reply from 10.128.3.3: bytes=32 time<1ms TTL=128
Reply from 10.128.3.3: bytes=32 time<1ms TTL=128
Reply from 10.128.3.3: bytes=32 time<1ms TTL=128
Reply from 10.128.3.3: bytes=32 time<1ms TTL=128

Ping statistics for 10.128.3.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 10.128.4.2

Pinging 10.128.4.2 with 32 bytes of data:

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

Ping statistics for 10.128.4.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>|
```

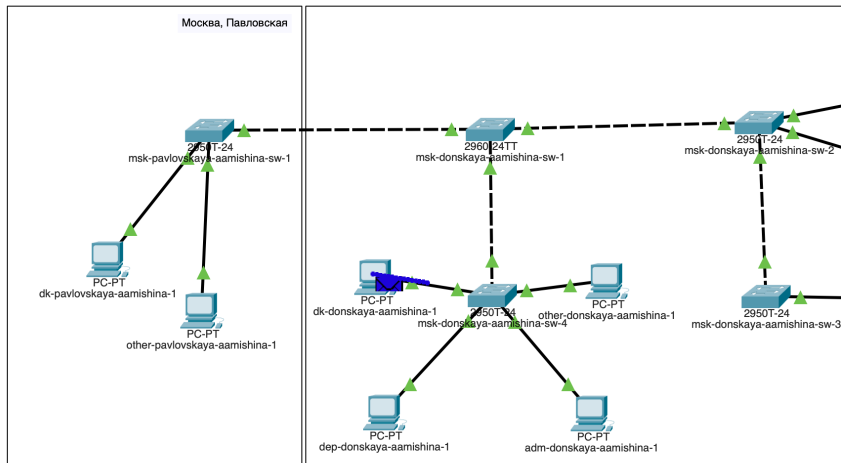


Рис. 24: Режим симуляции

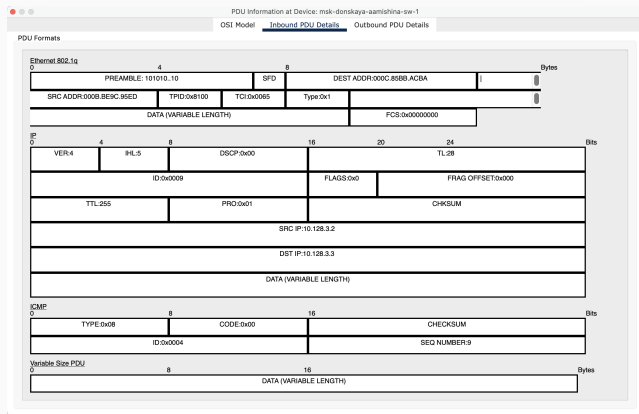


Рис. 25: Информация о PDU

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