

Конфигурирование VLAN

Лабораторная работа № 5

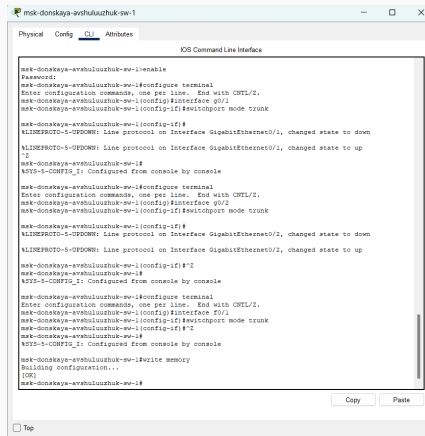
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12 февраль 2025

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Получить основные навыки по настройке VLAN на коммутаторах сети.

Выполнение лабораторной работы



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

msk-donskaya-avshuluuzhuk-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
^Z
msk-donskaya-avshuluuzhuk-sw-1#
%SYS-5-CONFIG_I: Configured from console by console

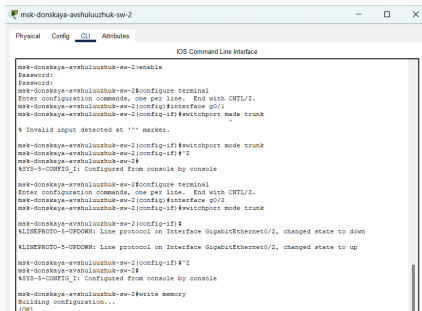
msk-donskaya-avshuluuzhuk-sw-1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
msk-donskaya-avshuluuzhuk-sw-1(config)#interface g0/2
msk-donskaya-avshuluuzhuk-sw-1(config-if)#switchport mode trunk

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

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

msk-donskaya-avshuluuzhuk-sw-1#write memory
Building configuration...
[OK]
msk-donskaya-avshuluuzhuk-sw-1#
```

Рис. 1: конфигурация Trunk-порта коммутатора msk-donskaya-sw-1



```
msk-donskaya-avshuluzhuk-sw-2
Physical Config CLI Attributes
IOS Command Line Interface

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

% Invalid input detected at '' marker.

msk-donskaya-avshuluzhuk-sw-2(config-if)#switchport mode trunk
msk-donskaya-avshuluzhuk-sw-2(config-if)#"2
msk-donskaya-avshuluzhuk-sw-2#
%SYS-5-CONFIG_I: Configured from console by console

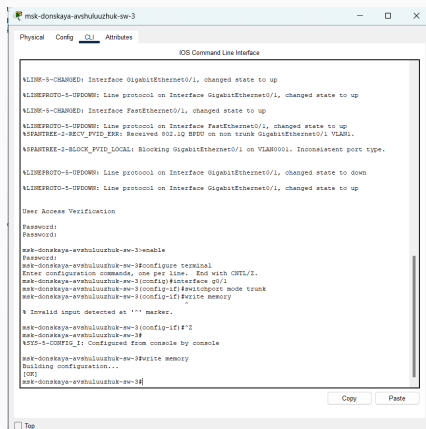
msk-donskaya-avshuluzhuk-sw-2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
msk-donskaya-avshuluzhuk-sw-2(config)#interface g0/2
msk-donskaya-avshuluzhuk-sw-2(config-if)#switchport mode trunk

msk-donskaya-avshuluzhuk-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-avshuluzhuk-sw-2(config-if)#"2
msk-donskaya-avshuluzhuk-sw-2#
%SYS-5-CONFIG_I: Configured from console by console

msk-donskaya-avshuluzhuk-sw-2#write memory
Building configuration...
[OK]
```

Рис. 2: конфигурация Trunk-порта коммутатора msk-donskaya-sw-2



```
msk-donskaya-avshukuzhuk-sw-3
Physical Config CLI Attributes
IOS Command Line Interface

%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
%SPANTREE-3-RECV_PVID_ERR: Received 802.1Q BPDU on non trunk GigabitEthernet0/1 VLAN1.
%SPANTREE-3-BLOCK_PVID_LOCAL: Blocking GigabitEthernet0/1 on VLAN0001. Inconsistent port type.

%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

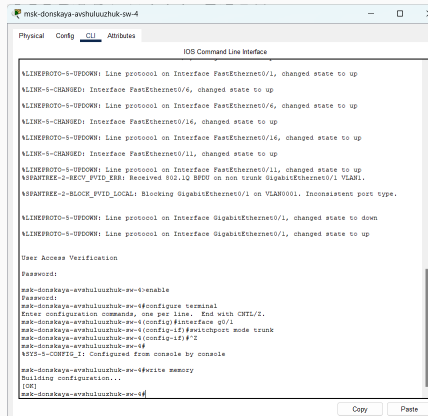
User Access Verification
Password:
Password:
msk-donskaya-avshukuzhuk-sw-3#enable
Password:
msk-donskaya-avshukuzhuk-sw-3(config)#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
msk-donskaya-avshukuzhuk-sw-3(config)#interface g0/1
msk-donskaya-avshukuzhuk-sw-3(config-if)#switchport mode trunk
msk-donskaya-avshukuzhuk-sw-3(config-if)#write memory
^
% Invalid input detected at '^' marker.

msk-donskaya-avshukuzhuk-sw-3(config-if)#^Z
msk-donskaya-avshukuzhuk-sw-3#
%SYS-5-CONFIG_I: Configured from console by console

msk-donskaya-avshukuzhuk-sw-3#write memory
Building configuration...
[OK]
msk-donskaya-avshukuzhuk-sw-3#
```

Рис. 3: конфигурация Trunk-порта коммутатора msk-donskaya-sw-3

Выполнение лабораторной работы



```
msk-donskaya-avshuluuzhuk-sw-4
Physical Config CLI Attributes
IOS Command Line Interface

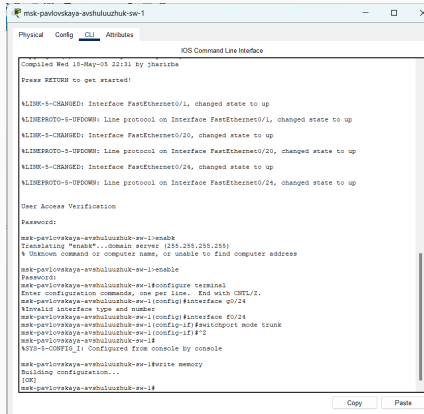
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/6, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/16, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/16, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/11, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/11, changed state to up
%SPANTREE-2-RECV_FVID_FHR: Received 802.1Q BPDU on non trunk GigabitEthernet0/1 VLAN1.
%SPANTREE-2-BLOCK_FVID_LOCAL: Blocking GigabitEthernet0/1 on VLAN0001. Inconsistent port type.

%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

User Access Verification
Password:
msk-donskaya-avshuluuzhuk-sw-4#enable
Password:
msk-donskaya-avshuluuzhuk-sw-4#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
msk-donskaya-avshuluuzhuk-sw-4(config)#interface g0/1
msk-donskaya-avshuluuzhuk-sw-4(config-if)#switchport mode trunk
msk-donskaya-avshuluuzhuk-sw-4(config-if)#*2
msk-donskaya-avshuluuzhuk-sw-4#
%SYS-3-CONFIG_I: Configured from console by console

msk-donskaya-avshuluuzhuk-sw-4#write memory
Building configuration...
[OK]
msk-donskaya-avshuluuzhuk-sw-4#
```

Рис. 4: конфигурация Trunk-порта коммутатора msk-donskaya-sw-4



```
msk-pavlovskaya-sw1
Physical Config CLI Attributes
IOS Command Line Interface
Compiled Wed 18-May-05 22:13:1 by jharirba
Press RETURN to get started!

%LINK-3-CHANGED: Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
%LINK-3-CHANGED: Interface FastEthernet0/20, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/20, changed state to up
%LINK-3-CHANGED: Interface FastEthernet0/24, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/24, changed state to up

User Access Verification

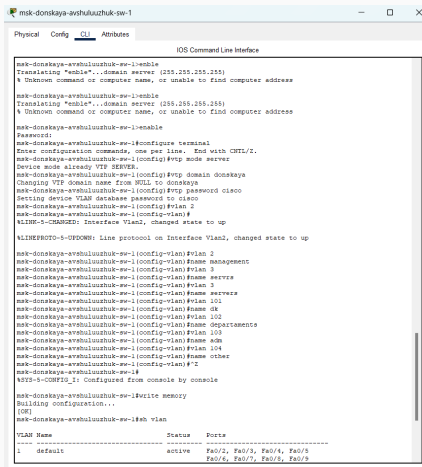
Password:
msk-pavlovskaya-sw1#enable
Translating "enable"...domain server (255.255.255.255)
% Unknown command or computer name, or unable to find computer address

msk-pavlovskaya-sw1#enable
Password:
msk-pavlovskaya-sw1(config)#configure terminal
Enter configuration commands, one per line. End with CTRL/Z.
msk-pavlovskaya-sw1(config)#interface f0/24
%Invalid interface type and number
msk-pavlovskaya-sw1(config)#interface f0/24
msk-pavlovskaya-sw1(config-if)#switchport mode trunk
msk-pavlovskaya-sw1(config-if)#^Z
msk-pavlovskaya-sw1#
%SYS-5-CONFIG_I: Configured from console by console

msk-pavlovskaya-sw1#wr
Building configuration...
[OK]
msk-pavlovskaya-sw1#
```

Рис. 5: конфигурация Trunk-порта коммутатора msk-pavlovskaya-sw-1

Выполнение лабораторной работы



```
msk-donskaya-avshuluzhuk-sw-1
Physical Config CLI Attributes
IOS Command Line Interface

msk-donskaya-avshuluzhuk-sw-1#enable
Translating "enable"...domain server (255.255.255.255)
% Unknown command or computer name, or unable to find computer address

msk-donskaya-avshuluzhuk-sw-1#enable
Translating "enable"...domain server (255.255.255.255)
% Unknown command or computer name, or unable to find computer address

msk-donskaya-avshuluzhuk-sw-1#enable
Password:
msk-donskaya-avshuluzhuk-sw-1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
msk-donskaya-avshuluzhuk-sw-1(config)#vtp mode server
Device mode already VTP SERVER.
msk-donskaya-avshuluzhuk-sw-1(config)#vtp domain donskeya
Changing VTP domain name from NULL to donskeya
msk-donskaya-avshuluzhuk-sw-1(config)#vtp password cisco
Setting device VLAN database password to cisco
msk-donskaya-avshuluzhuk-sw-1(config)#vlan 2
msk-donskaya-avshuluzhuk-sw-1(config-vlan)#
VLAN2-5-CHANGED: Interface Vlan2, changed state to up

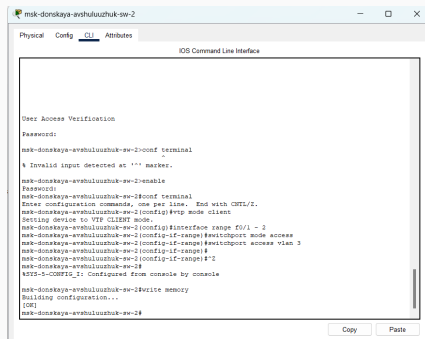
VLANPROTO-5-UPDOWN: Line protocol on Interface Vlan2, changed state to up

msk-donskaya-avshuluzhuk-sw-1(config-vlan)#vlan 2
msk-donskaya-avshuluzhuk-sw-1(config-vlan)#name management
msk-donskaya-avshuluzhuk-sw-1(config-vlan)#vlan 3
msk-donskaya-avshuluzhuk-sw-1(config-vlan)#name servers
msk-donskaya-avshuluzhuk-sw-1(config-vlan)#vlan 3
msk-donskaya-avshuluzhuk-sw-1(config-vlan)#name servers
msk-donskaya-avshuluzhuk-sw-1(config-vlan)#vlan 101
msk-donskaya-avshuluzhuk-sw-1(config-vlan)#name dk
msk-donskaya-avshuluzhuk-sw-1(config-vlan)#vlan 102
msk-donskaya-avshuluzhuk-sw-1(config-vlan)#name departments
msk-donskaya-avshuluzhuk-sw-1(config-vlan)#vlan 103
msk-donskaya-avshuluzhuk-sw-1(config-vlan)#name adm
msk-donskaya-avshuluzhuk-sw-1(config-vlan)#vlan 104
msk-donskaya-avshuluzhuk-sw-1(config-vlan)#name other
msk-donskaya-avshuluzhuk-sw-1(config-vlan)#?
msk-donskaya-avshuluzhuk-sw-1#
SYS-5-CONFIG_I: Configured from console by console

msk-donskaya-avshuluzhuk-sw-1#write memory
Building configuration...
[OK]
msk-donskaya-avshuluzhuk-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
```

Рис. 6: настройка коммутатора msk-donskaya-sw-1 как VTP-сервер



The screenshot shows a web-based configuration interface for a network switch. The title bar indicates the device is 'msk-donskaya-avbuluuzhuk-sw-2'. The 'CLI' tab is selected, showing the 'IOS Command Line Interface'. The interface displays a series of commands and their outputs for configuring port ranges. The commands include enabling the terminal, setting the device to VTP CLIENT mode, and configuring interface ranges f0/1 - 2 with specific access and VLAN settings. The output shows the configuration being applied successfully.

```
User Access Verification
Password:
msk-donskaya-avbuluuzhuk-sw-2>conf terminal
^
% Invalid input detected at '^' marker.

msk-donskaya-avbuluuzhuk-sw-2#enable
Password:
msk-donskaya-avbuluuzhuk-sw-2#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
msk-donskaya-avbuluuzhuk-sw-2(config)#vtp mode client
Setting device to VTP CLIENT mode.
msk-donskaya-avbuluuzhuk-sw-2(config)#interface range f0/1 - 2
msk-donskaya-avbuluuzhuk-sw-2(config-if-range)#switchport mode access
msk-donskaya-avbuluuzhuk-sw-2(config-if-range)#switchport access vlan 3
msk-donskaya-avbuluuzhuk-sw-2(config-if-range)#
msk-donskaya-avbuluuzhuk-sw-2(config-if-range)#^Z
msk-donskaya-avbuluuzhuk-sw-2#
%SYS-5-CONFIG_1: Configured from console by console

msk-donskaya-avbuluuzhuk-sw-2#write memory
Building configuration...
[OK]
msk-donskaya-avbuluuzhuk-sw-2#
```

Рис. 7: конфигурация диапазонов портов коммутатора msk-donskaya-sw-2

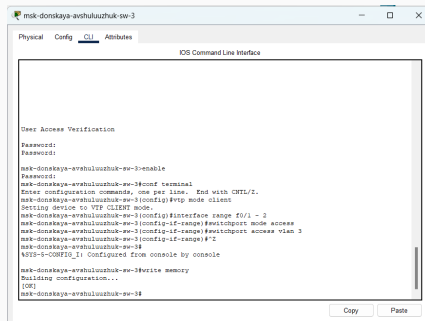
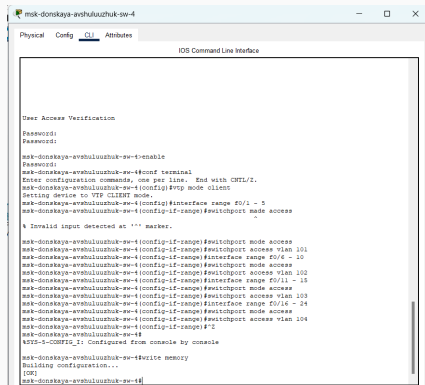


Рис. 8: конфигурация диапазонов портов коммутатора msk-donskaya-sw-3



```
msk-donskaya-avshuluzhuk-sw-4
Physical Config CLI Attributes
IOS Command Line Interface

User Access Verification
Password:
Password:

msk-donskaya-avshuluzhuk-sw-4#enable
Password:
msk-donskaya-avshuluzhuk-sw-4#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
msk-donskaya-avshuluzhuk-sw-4(config)#vtp mode client
Setting device to VTP CLIENT mode.
msk-donskaya-avshuluzhuk-sw-4(config)#interface range f0/1 - 5
msk-donskaya-avshuluzhuk-sw-4(config-if-range)#switchport mode access
^
% Invalid input detected at '^' marker.

msk-donskaya-avshuluzhuk-sw-4(config-if-range)#switchport mode access
msk-donskaya-avshuluzhuk-sw-4(config-if-range)#switchport access vlan 101
msk-donskaya-avshuluzhuk-sw-4(config-if-range)#interface range f0/6 - 10
msk-donskaya-avshuluzhuk-sw-4(config-if-range)#switchport mode access
msk-donskaya-avshuluzhuk-sw-4(config-if-range)#switchport access vlan 102
msk-donskaya-avshuluzhuk-sw-4(config-if-range)#interface range f0/11 - 15
msk-donskaya-avshuluzhuk-sw-4(config-if-range)#switchport mode access
msk-donskaya-avshuluzhuk-sw-4(config-if-range)#switchport access vlan 103
msk-donskaya-avshuluzhuk-sw-4(config-if-range)#interface range f0/16 - 24
msk-donskaya-avshuluzhuk-sw-4(config-if-range)#switchport mode access
msk-donskaya-avshuluzhuk-sw-4(config-if-range)#switchport access vlan 104
msk-donskaya-avshuluzhuk-sw-4(config-if-range)#2
msk-donskaya-avshuluzhuk-sw-4#
%SYS-5-CONFIG_I: Configured from console by console

msk-donskaya-avshuluzhuk-sw-4#write memory
Building configuration...
[OK]
msk-donskaya-avshuluzhuk-sw-4#
```

Рис. 9: конфигурация диапазонов портов коммутатора msk-donskaya-sw-4

Выполнение лабораторной работы



```
msk-pavlovskaya-avshuluuzhuk-sw-1
IOS Command Line Interface

User Access Verification
Password:

msk-pavlovskaya-avshuluuzhuk-sw-1>enable
Password:
msk-pavlovskaya-avshuluuzhuk-sw-1#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
msk-pavlovskaya-avshuluuzhuk-sw-1(config)#vtp mode client
Setting device to VTP CLIENT mode.
msk-pavlovskaya-avshuluuzhuk-sw-1(config)#interface range f0/1 - 15
msk-pavlovskaya-avshuluuzhuk-s(config-if-range)#switchport mode access
msk-pavlovskaya-avshuluuzhuk-s(config-if-range)#switchport access vlan 101
msk-pavlovskaya-avshuluuzhuk-s(config-if-range)#interface range f0/20
msk-pavlovskaya-avshuluuzhuk-s(config-if-range)#switchport mode access
msk-pavlovskaya-avshuluuzhuk-s(config-if-range)#switchport access vlan 104
msk-pavlovskaya-avshuluuzhuk-s(config-if-range)#
```

Рис. 10: конфигурация диапазонов портов коммутатора msk-pavlovskaya-sw-1

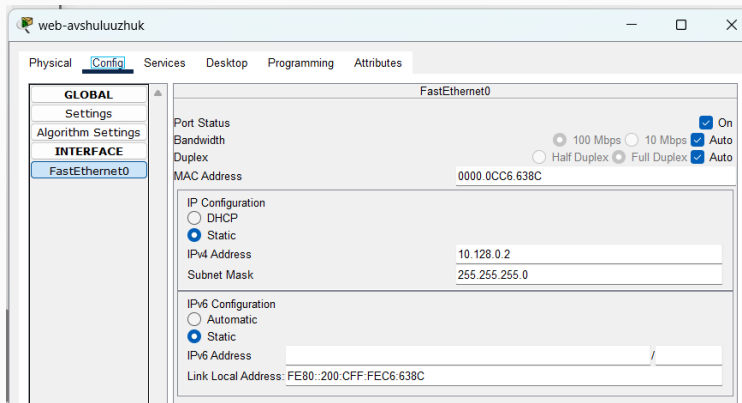


Рис. 11: настройка IP-адресации на серверах

Выполнение лабораторной работы

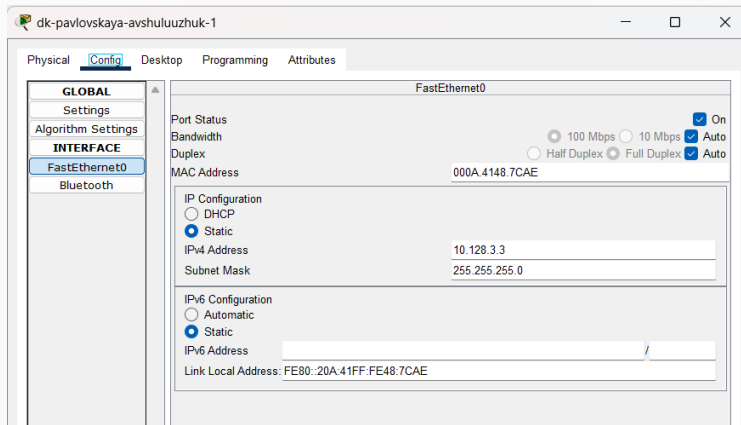


Рис. 12: настройка шлюза и IP-адресации на оконечных устройствах

Выполнение лабораторной работы

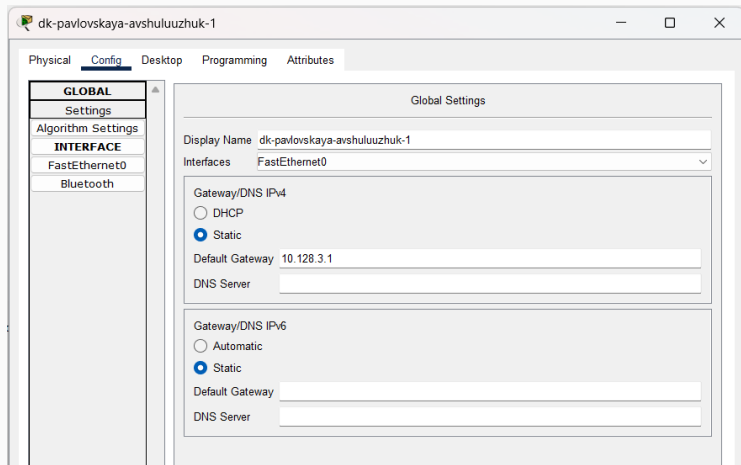
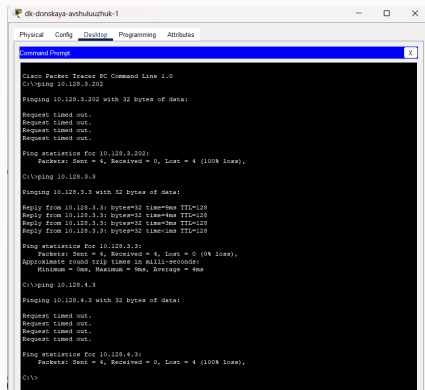


Рис. 13: настройка шлюза и IP-адресации на оконечных устройствах



```
di-donskaya-avshuluzhuk-1
Physical  Config  Desktop  Programming  Attributes

Command Prompt

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 10.128.3.202

Pinging 10.128.3.202 with 32 bytes of data:

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

Ping statistics for 10.128.3.202:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

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=5ms TTL=128
Reply from 10.128.3.3: bytes=32 time=4ms TTL=128
Reply from 10.128.3.3: bytes=32 time=3ms TTL=128
Reply from 10.128.3.3: bytes=32 time=4ms 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 = 3ms, Maximum = 5ms, Average = 4ms

C:\>ping 10.128.4.3

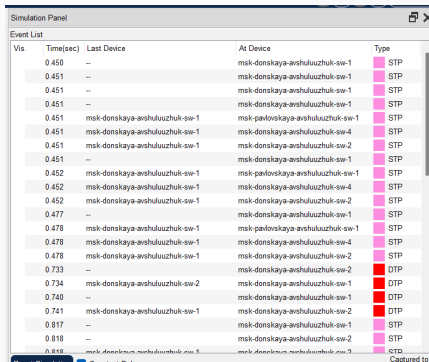
Pinging 10.128.4.3 with 32 bytes of data:

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

Ping statistics for 10.128.4.3:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

Рис. 14: проверка доступности устройств



Vis.	Time(sec)	Last Device	At Device	Type
	0.450	--	msk-donskaya-avshuluuzhuk-sw-1	STP
	0.451	--	msk-donskaya-avshuluuzhuk-sw-1	STP
	0.451	--	msk-donskaya-avshuluuzhuk-sw-1	STP
	0.451	--	msk-donskaya-avshuluuzhuk-sw-1	STP
	0.451	msk-donskaya-avshuluuzhuk-sw-1	msk-pavlovskaya-avshuluuzhuk-sw-1	STP
	0.451	msk-donskaya-avshuluuzhuk-sw-1	msk-donskaya-avshuluuzhuk-sw-4	STP
	0.451	msk-donskaya-avshuluuzhuk-sw-1	msk-donskaya-avshuluuzhuk-sw-2	STP
	0.451	--	msk-donskaya-avshuluuzhuk-sw-1	STP
	0.452	msk-donskaya-avshuluuzhuk-sw-1	msk-pavlovskaya-avshuluuzhuk-sw-1	STP
	0.452	msk-donskaya-avshuluuzhuk-sw-1	msk-donskaya-avshuluuzhuk-sw-4	STP
	0.452	msk-donskaya-avshuluuzhuk-sw-1	msk-donskaya-avshuluuzhuk-sw-2	STP
	0.477	--	msk-donskaya-avshuluuzhuk-sw-1	STP
	0.478	msk-donskaya-avshuluuzhuk-sw-1	msk-pavlovskaya-avshuluuzhuk-sw-1	STP
	0.478	msk-donskaya-avshuluuzhuk-sw-1	msk-donskaya-avshuluuzhuk-sw-4	STP
	0.478	msk-donskaya-avshuluuzhuk-sw-1	msk-donskaya-avshuluuzhuk-sw-2	STP
	0.733	--	msk-donskaya-avshuluuzhuk-sw-2	DTP
	0.734	msk-donskaya-avshuluuzhuk-sw-2	msk-donskaya-avshuluuzhuk-sw-1	DTP
	0.740	--	msk-donskaya-avshuluuzhuk-sw-1	DTP
	0.741	msk-donskaya-avshuluuzhuk-sw-1	msk-donskaya-avshuluuzhuk-sw-2	DTP
	0.817	--	msk-donskaya-avshuluuzhuk-sw-1	STP
	0.818	--	msk-donskaya-avshuluuzhuk-sw-2	STP
	0.818	msk-donskaya-avshuluuzhuk-sw-1	msk-donskaya-avshuluuzhuk-sw-2	STP

Рис. 15: процесс передвижения пакетов по сети

Выводы

В результате выполнения лабораторной работы были получены основные навыки по настройке VLAN на коммутаторах сети