

Отчёт по лабораторной работе №4

Администрирование локальных сетей

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1 Цель работы

Провести подготовительную работу по первоначальной настройке коммутаторов сети.

2 Выполнение лабораторной работы

Создадим новый проект с названием lab_PT-04.pkt (рис. fig. 2.1).

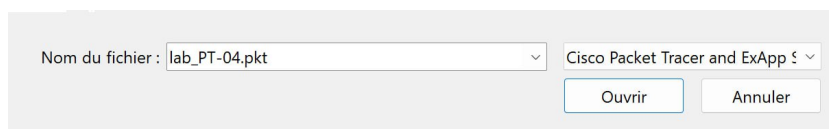


Рис. 2.1: новый проект

В логической рабочей области Packet Tracer разместим коммутаторы и оконечные устройства согласно схеме сети L1 (схема приведена в лабораторной работе) и соединим их через соответствующие интерфейсы (рис. fig. 2.2).

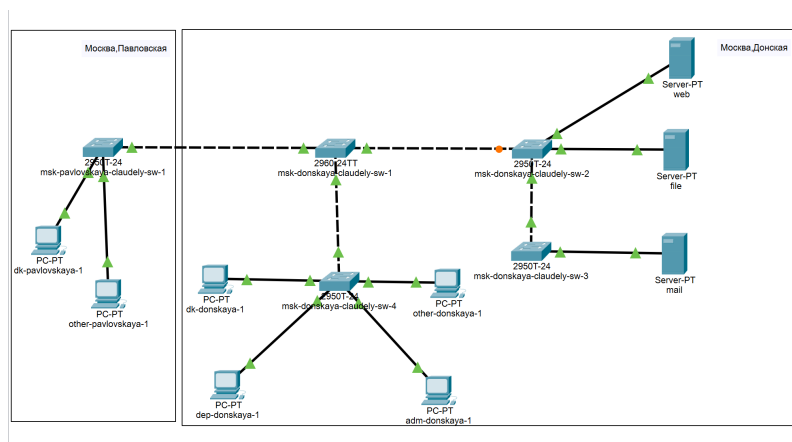


Рис. 2.2: Размещение коммутаторов и оконечных устройств согласно схеме сети L1.

устройств согласно схеме сети L1. Используя типовую конфигурацию коммутатора, настроим все коммутаторы, изменяя название устройства и его IP-адрес согласно плану IP (рис. fig. 2.3).

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

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

Switch>enable
Switch#configure terminal
Switch(config)#
% Invalid input detected at '^' marker.

Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname msk-donskaya-claudely-1
msk-donskaya-claudely-1(config)#interface vlan2
msk-donskaya-claudely-1(config-if)#no shutdown
msk-donskaya-claudely-1(config-if)#ip address 10.128.1.2 255.255.255.0
msk-donskaya-claudely-1(config-if)#exit
msk-donskaya-claudely-1(config)#
msk-donskaya-claudely-1(config)#ip default-gateway 10.128.1.1
msk-donskaya-claudely-1(config)#
msk-donskaya-claudely-1(config)#line vty 0 4
msk-donskaya-claudely-1(config-line)#password cisco
msk-donskaya-claudely-1(config-line)#login
msk-donskaya-claudely-1(config-line)#exit
msk-donskaya-claudely-1(config)#
msk-donskaya-claudely-1(config)#line console 0
msk-donskaya-claudely-1(config-line)#password cisco
msk-donskaya-claudely-1(config-line)#login
msk-donskaya-claudely-1(config-line)#exit
msk-donskaya-claudely-1(config)#
msk-donskaya-claudely-1(config)#enable secret cisco
msk-donskaya-claudely-1(config)#service password-encryption
msk-donskaya-claudely-1(config)#username admin privilege 1 secret cisco
msk-donskaya-claudely-1(config)#
msk-donskaya-claudely-1(config)#ip domain-name donskeya.rudn.edu
msk-donskaya-claudely-1(config)#crypto key generate rsa
The name for the keys will be: msk-donskaya-claudely-1.donskeya.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]:
% Generating 512 bit RSA keys, keys will be non-exportable...[OK]

msk-donskaya-claudely-1(config)#line vty 0 4
*Mar 1 0:35:56.255: RSA key size needs to be at least 768 bits for ssh version 2
*Mar 1 0:35:56.256: %SSH-5-ENABLED: SSH 1.5 has been enabled
msk-donskaya-claudely-1(config-line)#transport input ssh
msk-donskaya-claudely-1(config-line)#exit
msk-donskaya-claudely-1(config)#exit
msk-donskaya-claudely-1#
*SYS-5-CONFIG_I: Configured from console by console

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

Рис. 2.3: Настройка коммутатора msk-donskaya-claudely-sw-1, используя типовую конфигурацию.



```
msk-donskaya-claudely-sw-2
Physical Config CLI Attributes

Switch#
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname msk-donskaya-claudely-sw-2
msk-donskaya-claudely-sw-2(config)#interface vlan2
msk-donskaya-claudely-sw-2(config-if)#no shutdown
msk-donskaya-claudely-sw-2(config-if)#ip address 10.128.1.3 255.255.255.0
msk-donskaya-claudely-sw-2(config-if)#exit
msk-donskaya-claudely-sw-2(config)#ip default-gateway 10.128.1.1
msk-donskaya-claudely-sw-2(config)#
msk-donskaya-claudely-sw-2(config)#line vty 0 4
msk-donskaya-claudely-sw-2(config-line)#paasword cisco
^
% Invalid input detected at '^' marker.

msk-donskaya-claudely-sw-2(config-line)#password cisco
msk-donskaya-claudely-sw-2(config-line)#login
msk-donskaya-claudely-sw-2(config-line)#exit
msk-donskaya-claudely-sw-2(config)#
msk-donskaya-claudely-sw-2(config)#line console 0
msk-donskaya-claudely-sw-2(config-line)#password cisco
msk-donskaya-claudely-sw-2(config-line)#login
msk-donskaya-claudely-sw-2(config-line)#exit
msk-donskaya-claudely-sw-2(config)#
msk-donskaya-claudely-sw-2(config)#enable secret cisco
msk-donskaya-claudely-sw-2(config)#servuce password-encryption
^
% Invalid input detected at '^' marker.

msk-donskaya-claudely-sw-2(config)#service password-encryption
msk-donskaya-claudely-sw-2(config)#username admin privilege 1 secret cisco
msk-donskaya-claudely-sw-2(config)#ip domain-name donsokaya.rudn.edu
msk-donskaya-claudely-sw-2(config)#crypto key generate rsa
The name for the keys will be: msk-donskaya-claudely-sw-2.donsokaya.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]:
% Generating 512 bit RSA keys, keys will be non-exportable...[OK]

msk-donskaya-claudely-sw-2(config)#line vty 0 4
*Mar 1 0:45:24.178: RSA key size needs to be at least 768 bits for ssh version 2
*Mar 1 0:45:24.178: %SSH-5-ENABLED: SSH 1.5 has been enabled
msk-donskaya-claudely-sw-2(config-line)#transport input ssh
msk-donskaya-claudely-sw-2(config-line)#exit
msk-donskaya-claudely-sw-2(config)#exit
msk-donskaya-claudely-sw-2#
%SYS-5-CONFIG_I: Configured from console by console

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

Рис. 2.4: Настройка коммутатора msk-donskaya-claudely-sw-2, используя типовую конфигурацию.



The screenshot shows a network management interface with tabs for Physical, Config, CLI, and Attributes. The CLI tab is active, displaying a series of configuration commands for a switch named msk-donskaya-claudely-sw-3. The commands include enabling the switch, configuring the terminal, setting the hostname, configuring VLAN 2, setting the IP address to 10.128.1.4, and configuring the default gateway to 10.128.1.1. It also includes settings for VTY lines, passwords, and SSH. The configuration is saved to memory.

```
msk-donskaya-claudely-sw-3
Physical Config CLI Attributes

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

Switch>enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname msk-donskaya-claudely-sw-3
msk-donskaya-claudely-sw-3(config)#interface vlan2
msk-donskaya-claudely-sw-3(config-if)#no shutdown
msk-donskaya-claudely-sw-3(config-if)#ip address 10.128.1.4 255.255.255.0
msk-donskaya-claudely-sw-3(config-if)#exit
msk-donskaya-claudely-sw-3(config)# ip default-gateway 10.128.1.1
msk-donskaya-claudely-sw-3(config)#line vty 0 4
msk-donskaya-claudely-sw-3(config-line)#password cisco
msk-donskaya-claudely-sw-3(config-line)#login
msk-donskaya-claudely-sw-3(config-line)#exit
msk-donskaya-claudely-sw-3(config)#
msk-donskaya-claudely-sw-3(config)#line console 0
msk-donskaya-claudely-sw-3(config-line)#password cisco
msk-donskaya-claudely-sw-3(config-line)#login
msk-donskaya-claudely-sw-3(config-line)#exit
msk-donskaya-claudely-sw-3(config)#
msk-donskaya-claudely-sw-3(config)#enable secret cisco
msk-donskaya-claudely-sw-3(config)#service password-encryption
msk-donskaya-claudely-sw-3(config)#username admin privilege 1 secret cisco
msk-donskaya-claudely-sw-3(config)#
msk-donskaya-claudely-sw-3(config)#ip domain-name donsokaya.rudn.edu
msk-donskaya-claudely-sw-3(config)#crypto key generate rsa

% Invalid input detected at '^' marker.

msk-donskaya-claudely-sw-3(config)#
msk-donskaya-claudely-sw-3(config)#crypto key generate rsa
The name for the keys will be: msk-donskaya-claudely-sw-3.donsokaya.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]:
% Generating 512 bit RSA keys, keys will be non-exportable...[OK]

msk-donskaya-claudely-sw-3(config)#line vty 0 4
*Mar 1 0:52:2.76: RSA key size needs to be at least 768 bits for ssh version 2
*Mar 1 0:52:2.76: %SSH-5-ENABLED: SSH 1.5 has been enabled
msk-donskaya-claudely-sw-3(config-line)#transport input ssh
msk-donskaya-claudely-sw-3(config-line)#exit
msk-donskaya-claudely-sw-3(config)#exit
msk-donskaya-claudely-sw-3#
%SYS-5-CONFIG_I: Configured from console by console

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

Рис. 2.5: Настройка коммутатора msk-donskaya-claudely-sw-3, используя типовую конфигурацию.

```
msk-donskaya-claudely-sw-4
Physical Config CLI Attributes
IOS
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/11, 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

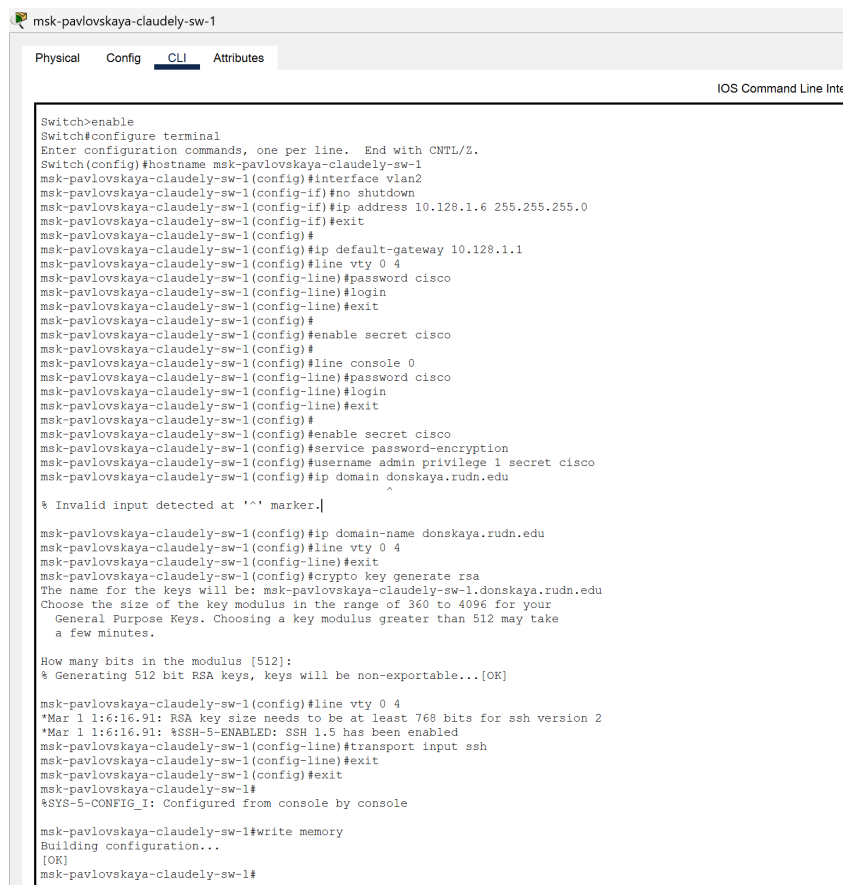
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname msk-donskaya-claudely-sw-4
msk-donskaya-claudely-sw-4(config)#interface vlan2
msk-donskaya-claudely-sw-4(config-if)#no shutdown
msk-donskaya-claudely-sw-4(config-if)#ip address 10.128.1.5 255.255.255.0
msk-donskaya-claudely-sw-4(config-if)#exit
msk-donskaya-claudely-sw-4(config)#
msk-donskaya-claudely-sw-4(config)#ip default-gateway 10.128.1.1
msk-donskaya-claudely-sw-4(config)#line vty 0 4
msk-donskaya-claudely-sw-4(config-line)#password cisco
msk-donskaya-claudely-sw-4(config-line)#login
msk-donskaya-claudely-sw-4(config-line)#exit
msk-donskaya-claudely-sw-4(config)#
msk-donskaya-claudely-sw-4(config)#line console 0
msk-donskaya-claudely-sw-4(config-line)#password cisco
msk-donskaya-claudely-sw-4(config-line)#login
msk-donskaya-claudely-sw-4(config-line)#exit
msk-donskaya-claudely-sw-4(config)#
msk-donskaya-claudely-sw-4(config)#enable secret cisco
msk-donskaya-claudely-sw-4(config)#service password-encryption
msk-donskaya-claudely-sw-4(config)#username admin privilege 1 secret cisco
msk-donskaya-claudely-sw-4(config)#ip domain-name donsokaya.rudn.edu
msk-donskaya-claudely-sw-4(config)#line vty 0 4
msk-donskaya-claudely-sw-4(config-line)#exit
msk-donskaya-claudely-sw-4(config)#crypto key generate rsa
The name for the keys will be: msk-donskaya-claudely-sw-4.donsokaya.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]:
% Generating 512 bit RSA keys, keys will be non-exportable...[OK]

msk-donskaya-claudely-sw-4(config)#line vty 0 4
*Mar 1 0:58:32.234: RSA key size needs to be at least 768 bits for ssh version 2
*Mar 1 0:58:32.234: %SSH-5-ENABLED: SSH 1.5 has been enabled
msk-donskaya-claudely-sw-4(config-line)#transport input ssh
msk-donskaya-claudely-sw-4(config-line)#exit
msk-donskaya-claudely-sw-4(config)#exit
msk-donskaya-claudely-sw-4#
%SYS-5-CONFIG_I: Configured from console by console

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

Рис. 2.6: Настройка коммутатора msk-donskaya-claudely-sw-4, используя типовую конфигурацию.



The screenshot shows a network configuration window for a switch named 'msk-pavlovskaya-claudely-sw-1'. The window has tabs for 'Physical', 'Config', 'CLI', and 'Attributes', with 'CLI' selected. The main area displays a series of CLI commands and their outputs. The commands configure the switch to enable terminal configuration, set the hostname, configure VLAN 2 with IP address 10.128.1.6, set the default gateway to 10.128.1.1, and configure VTY lines 0-4 with password 'cisco'. It also enables secret storage, configures console access with password 'cisco', and sets up SSH with RSA keys. The configuration is saved to memory.

```
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname msk-pavlovskaya-claudely-sw-1
msk-pavlovskaya-claudely-sw-1(config)#interface vlan2
msk-pavlovskaya-claudely-sw-1(config-if)#no shutdown
msk-pavlovskaya-claudely-sw-1(config-if)#ip address 10.128.1.6 255.255.255.0
msk-pavlovskaya-claudely-sw-1(config-if)#exit
msk-pavlovskaya-claudely-sw-1(config)#
msk-pavlovskaya-claudely-sw-1(config)#ip default-gateway 10.128.1.1
msk-pavlovskaya-claudely-sw-1(config)#line vty 0 4
msk-pavlovskaya-claudely-sw-1(config-line)#password cisco
msk-pavlovskaya-claudely-sw-1(config-line)#login
msk-pavlovskaya-claudely-sw-1(config-line)#exit
msk-pavlovskaya-claudely-sw-1(config)#
msk-pavlovskaya-claudely-sw-1(config)#enable secret cisco
msk-pavlovskaya-claudely-sw-1(config)#
msk-pavlovskaya-claudely-sw-1(config)#line console 0
msk-pavlovskaya-claudely-sw-1(config-line)#password cisco
msk-pavlovskaya-claudely-sw-1(config-line)#login
msk-pavlovskaya-claudely-sw-1(config-line)#exit
msk-pavlovskaya-claudely-sw-1(config)#
msk-pavlovskaya-claudely-sw-1(config)#enable secret cisco
msk-pavlovskaya-claudely-sw-1(config)#service password-encryption
msk-pavlovskaya-claudely-sw-1(config)#username admin privilege 1 secret cisco
msk-pavlovskaya-claudely-sw-1(config)#ip domain dontkey.rudn.edu
msk-pavlovskaya-claudely-sw-1(config)#ip domain dontkey.rudn.edu
% Invalid input detected at '^' marker.
msk-pavlovskaya-claudely-sw-1(config)#ip domain-name dontkey.rudn.edu
msk-pavlovskaya-claudely-sw-1(config)#line vty 0 4
msk-pavlovskaya-claudely-sw-1(config-line)#exit
msk-pavlovskaya-claudely-sw-1(config)#crypto key generate rsa
The name for the keys will be: msk-pavlovskaya-claudely-sw-1.dontkey.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]:
% Generating 512 bit RSA keys, keys will be non-exportable...[OK]
msk-pavlovskaya-claudely-sw-1(config)#line vty 0 4
*Mar 1 1:6:16.91: RSA key size needs to be at least 768 bits for ssh version 2
*Mar 1 1:6:16.91: %SSH-5-ENABLED: SSH 1.5 has been enabled
msk-pavlovskaya-claudely-sw-1(config-line)#transport input ssh
msk-pavlovskaya-claudely-sw-1(config-line)#exit
msk-pavlovskaya-claudely-sw-1(config)#exit
msk-pavlovskaya-claudely-sw-1#
%SYS-5-CONFIG_I: Configured from console by console

msk-pavlovskaya-claudely-sw-1#write memory
Building configuration...
[OK]
msk-pavlovskaya-claudely-sw-1#
```

Рис. 2.7: Настройка коммутатора msk-pavlovskaya-claudely-sw-1, используя типовую конфигурацию.

3 Выводы

В ходе выполнения лабораторной работы мы научились проводить подготовительную работу по первоначальной настройке коммутаторов сети.

4 Ответы на контрольные вопросы:

1. При помощи каких команд можно посмотреть конфигурацию сетевого оборудования? - `show running-config`
2. При помощи каких команд можно посмотреть стартовый конфигурационный файл оборудования? - `show startup-config`
3. При помощи каких команд можно экспортировать конфигурационный файл оборудования? - `copy running-config startup-config/copy running-config flash`
4. При помощи каких команд можно импортировать конфигурационный файл оборудования? - `copy startup-config running-config`

Список литературы