

Лабораторная работа №2

Предварительная настройка оборудования Cisco

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Цель работы

Основная цель

Получить основные навыки по начальному конфигурированию
сетевого оборудования Cisco и настройке удалённого доступа.

Сборка сети

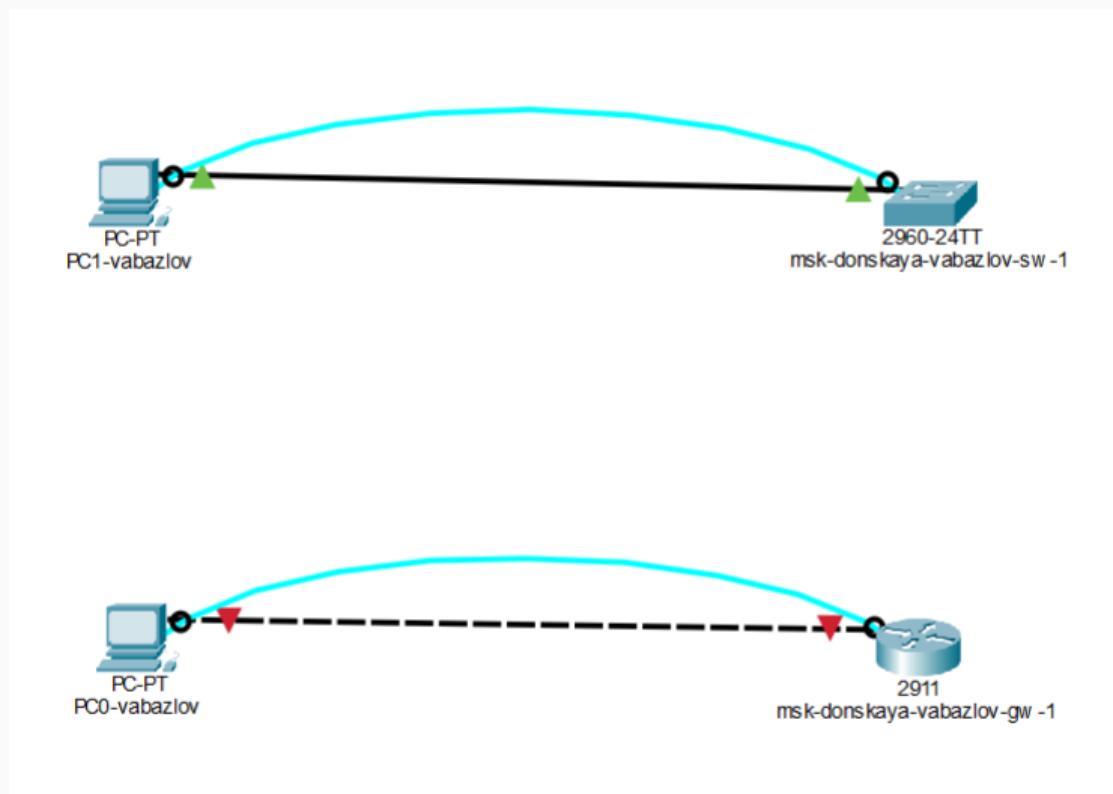


Рис. 1: Схема подключения ПК, коммутатора и маршрутизатора

Настройка IP-адресов

ПК, подключённый к коммутатору

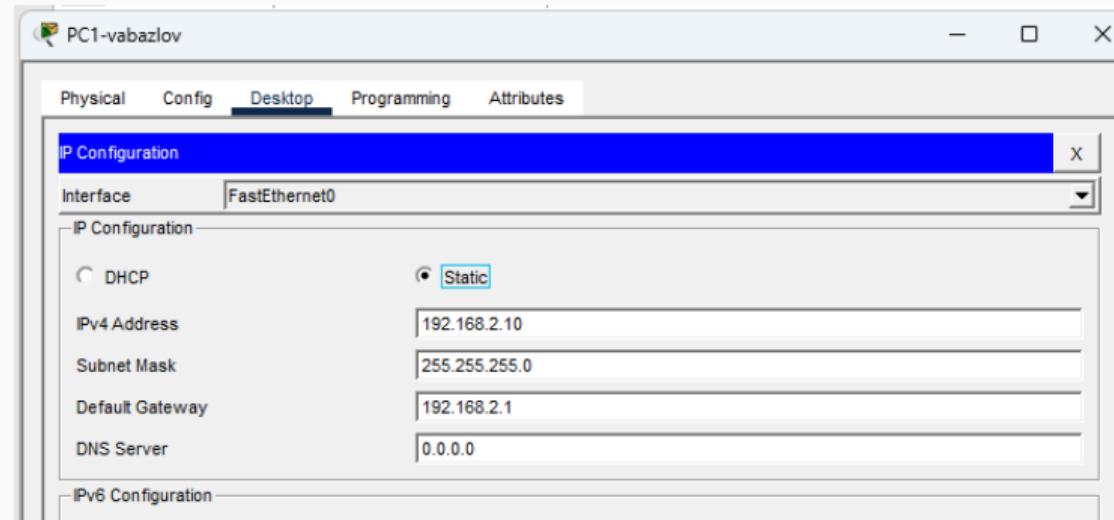


Рис. 2: Настройка IP PC1

ПК, подключённый к маршрутизатору

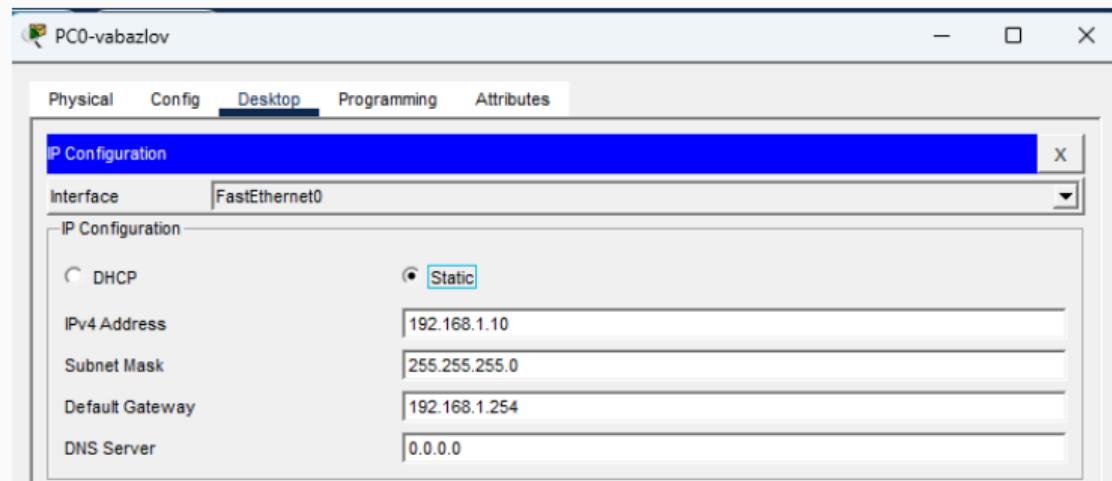
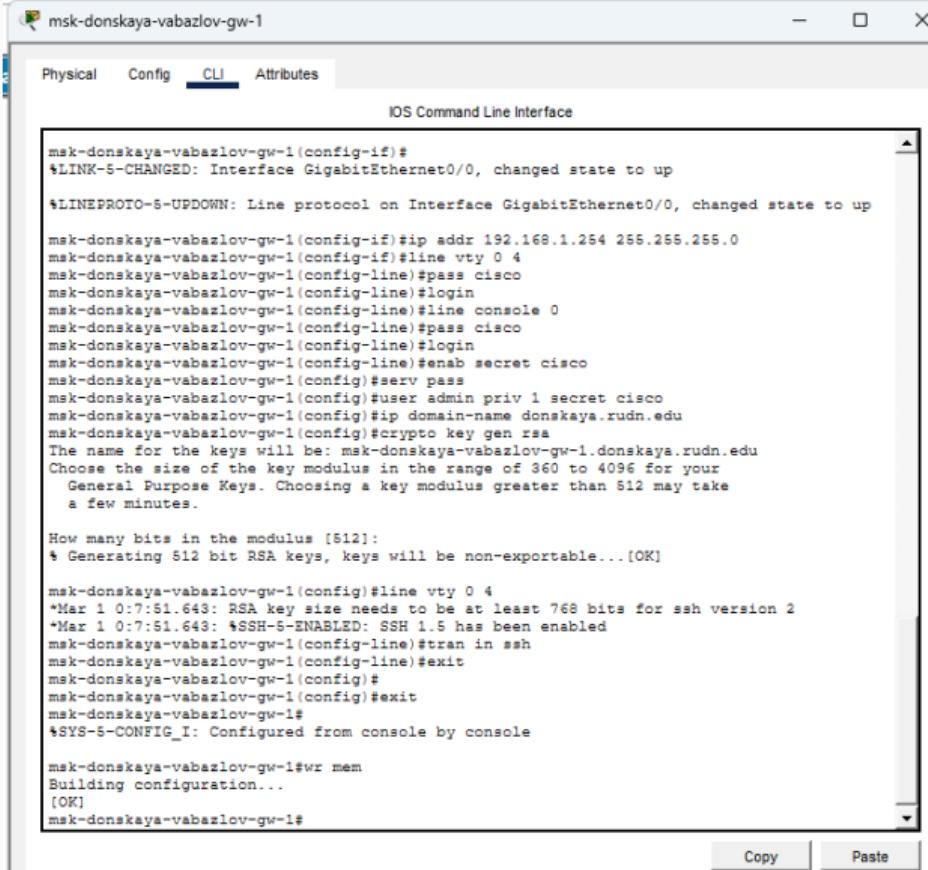


Рис. 3: Настройка IP PC0

Настройка маршрутизатора

Конфигурация CLI



msk-donskaya-vabazlov-gw-1(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

msk-donskaya-vabazlov-gw-1(config-if)#ip addr 192.168.1.254 255.255.255.0
msk-donskaya-vabazlov-gw-1(config-if)#line vty 0 4
msk-donskaya-vabazlov-gw-1(config-line)#pass cisco
msk-donskaya-vabazlov-gw-1(config-line)#login
msk-donskaya-vabazlov-gw-1(config-line)#line console 0
msk-donskaya-vabazlov-gw-1(config-line)#pass cisco
msk-donskaya-vabazlov-gw-1(config-line)#login
msk-donskaya-vabazlov-gw-1(config-line)#enab secret cisco
msk-donskaya-vabazlov-gw-1(config)#serv pass
msk-donskaya-vabazlov-gw-1(config)#user admin priv 1 secret cisco
msk-donskaya-vabazlov-gw-1(config)#ip domain-name donskaya.rudn.edu
msk-donskaya-vabazlov-gw-1(config)#crypto key gen rsa
The name for the keys will be: msk-donskaya-vabazlov-gw-1.donskaya.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]

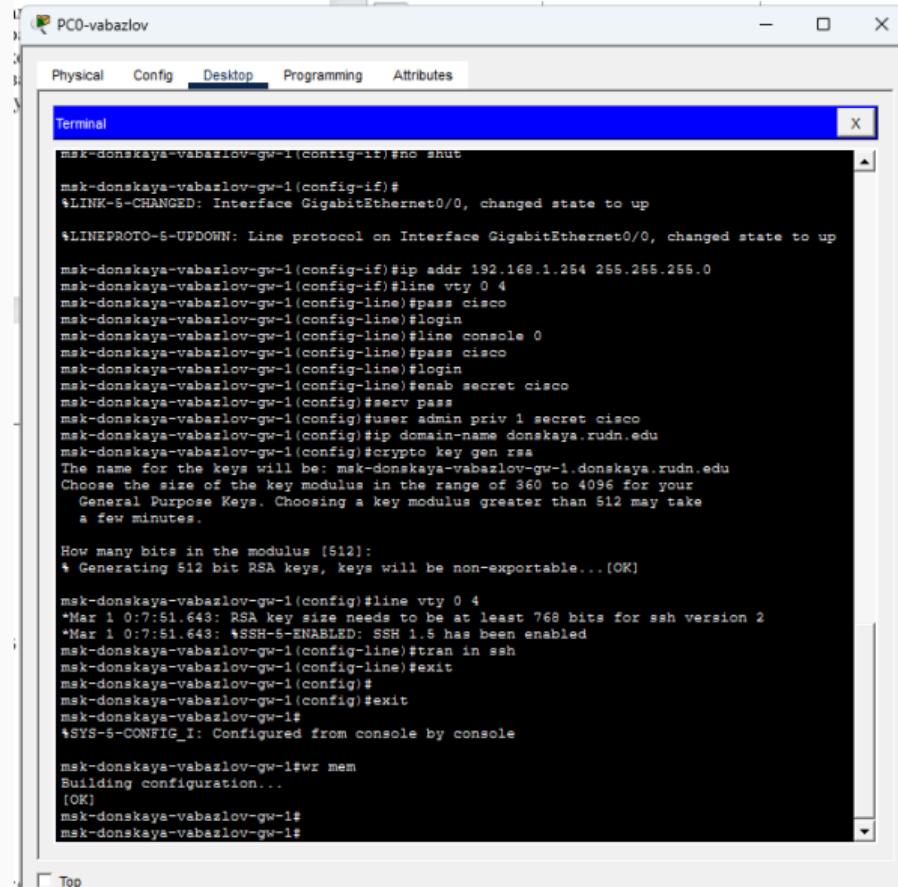
msk-donskaya-vabazlov-gw-1(config)#line vty 0 4
*Mar 1 0:7:51.643: RSA key size needs to be at least 768 bits for ssh version 2
*Mar 1 0:7:51.643: %SSH-5-ENABLED: SSH 1.5 has been enabled
msk-donskaya-vabazlov-gw-1(config-line)#tran in ssh
msk-donskaya-vabazlov-gw-1(config-line)#exit
msk-donskaya-vabazlov-gw-1(config)#
msk-donskaya-vabazlov-gw-1(config)#exit
msk-donskaya-vabazlov-gw-1#
%SYS-5-CONFIG_I: Configured from console by console

msk-donskaya-vabazlov-gw-1#wr mem
Building configuration...
[OK]
msk-donskaya-vabazlov-gw-1#

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Консольный доступ

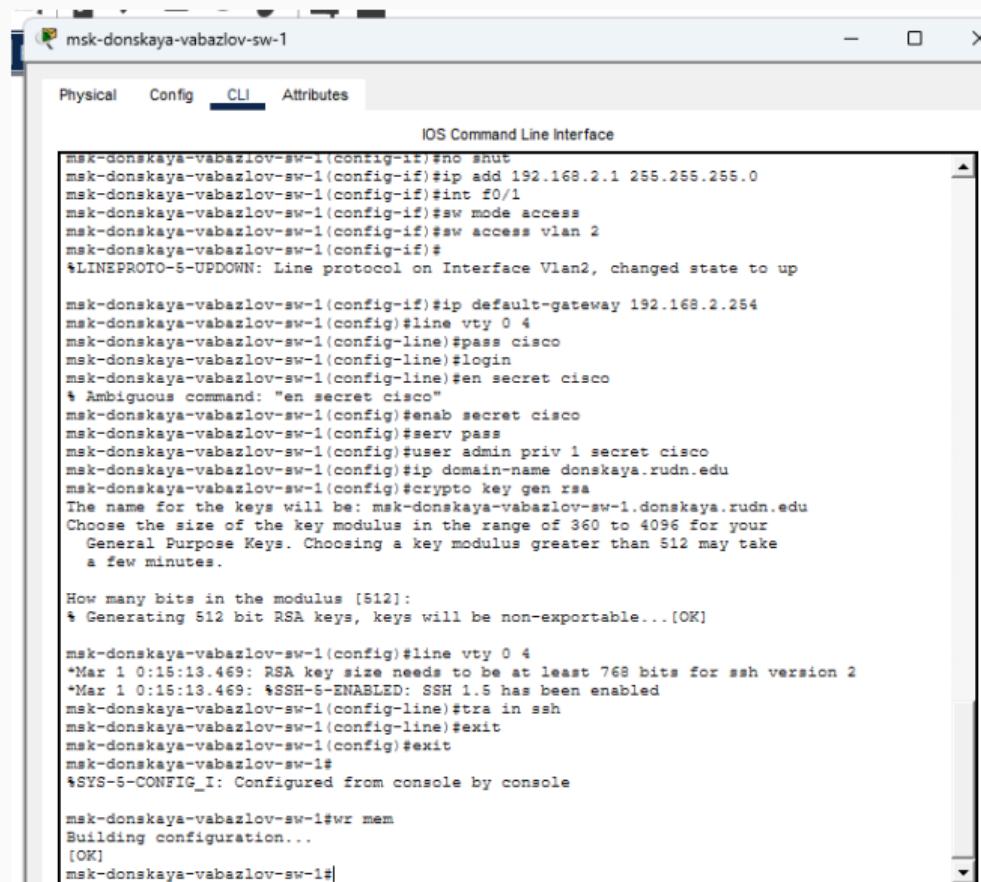


The screenshot shows a terminal window titled "PC0-vabazlov" with the "Desktop" tab selected. The window contains a command-line interface for a Cisco router. The user is performing several configuration tasks:

- Enabling a port: `no shutdown`
- Setting the port state to up: `LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up`
- Configuring the line protocol state: `%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up`
- Configuring IP address: `ip addr vty 0 4`
- Setting password: `pass cisco`
- Configuring the console line: `line console 0`
- Setting console password: `pass cisco`
- Enabling secret mode: `#enable secret cisco`
- Configuring a user: `#username admin privilege 1 secret cisco`
- Configuring RSA keys: `#crypto key gen rsa`
The user is prompted to choose a key modulus size between 360 and 4096 bits.
How many bits in the modulus [512]:
Generating 512 bit RSA keys, keys will be non-exportable...[OK]
- Enabling SSH: `*Mar 1 0:7:51.643: RSA key size needs to be at least 768 bits for ssh version 2`
`*Mar 1 0:7:51.643: %SSH-5-ENABLED: SSH 1.5 has been enabled`
- Configuring the transport layer: `#transport input ssh`
- Exiting configuration mode: `#exit`
- Final configuration summary: `%SYS-5-CONFIG_I: Configured from console by console`
- Writing memory: `wrmem`
Building configuration...
[OK]
- Final prompt: `msk-donskaya-vabazlov-gw-1#`

Настройка коммутатора

Конфигурация управления



The screenshot shows a terminal window titled "msk-donskaya-vabazlov-sw-1". The window has tabs for "Physical", "Config", "CLI", and "Attributes", with "CLI" being the active tab. The title bar also displays the text "IOS Command Line Interface". The terminal window contains the following command-line session:

```
msk-donskaya-vabazlov-sw-1(config-if)#no shut
msk-donskaya-vabazlov-sw-1(config-if)#ip add 192.168.2.1 255.255.255.0
msk-donskaya-vabazlov-sw-1(config-if)#int f0/1
msk-donskaya-vabazlov-sw-1(config-if)#sw mode access
msk-donskaya-vabazlov-sw-1(config-if)#sw access vlan 2
msk-donskaya-vabazlov-sw-1(config-if)#
*LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan2, changed state to up

msk-donskaya-vabazlov-sw-1(config-if)#ip default-gateway 192.168.2.254
msk-donskaya-vabazlov-sw-1(config)#line vty 0 4
msk-donskaya-vabazlov-sw-1(config-line)#pass cisco
msk-donskaya-vabazlov-sw-1(config-line)#login
msk-donskaya-vabazlov-sw-1(config-line)#en secret cisco
* Ambiguous command: "en secret cisco"
msk-donskaya-vabazlov-sw-1(config)#enab secret cisco
msk-donskaya-vabazlov-sw-1(config)#serv pass
msk-donskaya-vabazlov-sw-1(config)#user admin priv 1 secret cisco
msk-donskaya-vabazlov-sw-1(config)#ip domain-name donskaya.rudn.edu
msk-donskaya-vabazlov-sw-1(config)#crypto key gen rsa
The name for the keys will be: msk-donskaya-vabazlov-sw-1.donskaya.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.

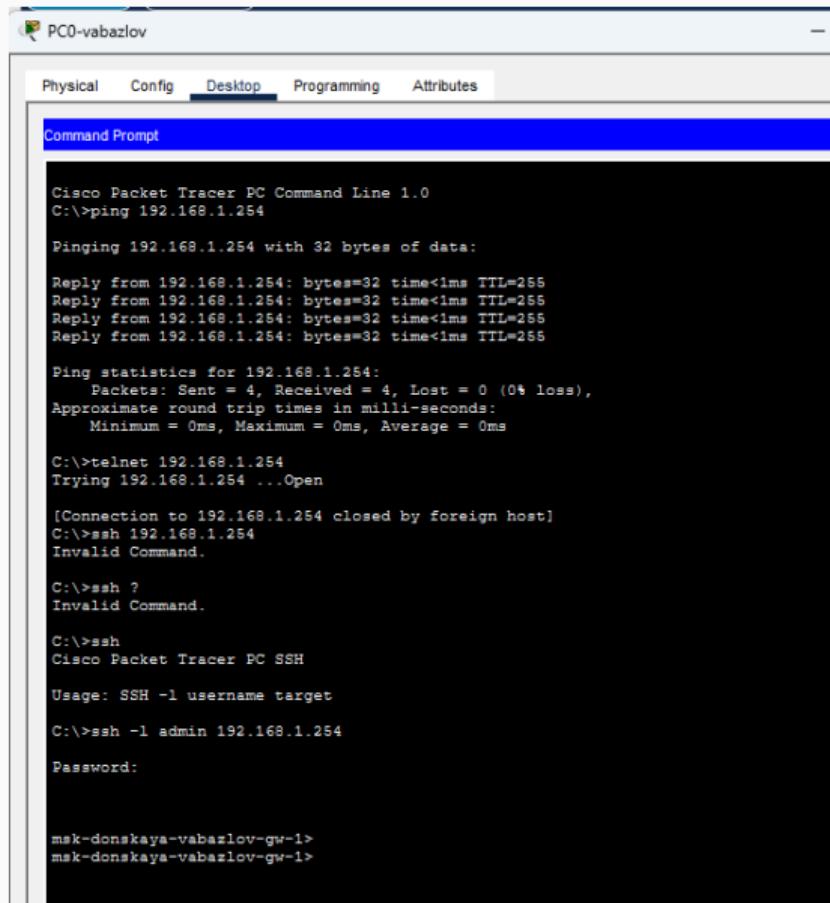
How many bits in the modulus [512]:
* Generating 512 bit RSA keys, keys will be non-exportable...[OK]

msk-donskaya-vabazlov-sw-1(config)#line vty 0 4
*Mar 1 0:15:13.469: RSA key size needs to be at least 768 bits for ssh version 2
*Mar 1 0:15:13.469: %SSH-5-ENABLED: SSH 1.5 has been enabled
msk-donskaya-vabazlov-sw-1(config-line)#tra in ssh
msk-donskaya-vabazlov-sw-1(config-line)#exit
msk-donskaya-vabazlov-sw-1(config)#exit
msk-donskaya-vabazlov-sw-1#
*SYS-5-CONFIG_I: Configured from console by console

msk-donskaya-vabazlov-sw-1#wr mem
Building configuration...
[OK]
msk-donskaya-vabazlov-sw-1#
```

Проверка соединения

Доступ к маршрутизатору



The screenshot shows a window titled "PC0-vabazlov" with a tab bar containing "Physical", "Config", "Desktop", "Programming", and "Attributes". The "Desktop" tab is selected. Below the tabs is a blue header bar labeled "Command Prompt". The main area displays the Cisco Packet Tracer PC Command Line 1.0 interface. The user has entered several commands:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.254

Pinging 192.168.1.254 with 32 bytes of data:

Reply from 192.168.1.254: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.1.254:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>telnet 192.168.1.254
Trying 192.168.1.254 ...Open

[Connection to 192.168.1.254 closed by foreign host]
C:\>ssh 192.168.1.254
Invalid Command.

C:\>ssh ?
Invalid Command.

C:\>ssh
Cisco Packet Tracer PC SSH

Usage: SSH -l username target

C:\>ssh -l admin 192.168.1.254

Password:

msk-donskaya-vabazlov-gw-1>
msk-donskaya-vabazlov-gw-1>
```

Доступ к коммутатору

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.2.1

Pinging 192.168.2.1 with 32 bytes of data:

Request timed out.
Reply from 192.168.2.1: bytes=32 time<1ms TTL=255
Reply from 192.168.2.1: bytes=32 time<1ms TTL=255
Reply from 192.168.2.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.2.1:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>telnet 192.168.2.1
Trying 192.168.2.1 ...Open

[Connection to 192.168.2.1 closed by foreign host]
C:\>ssh -l admin 192.168.2.1

Password:

msk-donskaya-vabazlov-sw-1>exit

[Connection to 192.168.2.1 closed by foreign host]
C:\>
```

Итоги работы

Вывод

В ходе лабораторной работы:

- собрана сеть с маршрутизатором и коммутатором;
- настроены IP-адреса на ПК;
- выполнена базовая настройка Router и Switch;
- настроены пароли и пользователь admin;
- включён защищённый доступ по SSH;
- проверена связность с помощью ping;
- выполнено подключение к оборудованию разными способами.

Получены практические навыки начальной настройки сетевого оборудования и организации безопасного удалённого администрирования.