

Лабораторная работа №2

Предварительная настройка оборудования Cisco

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Цель работы

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

Сборка сети

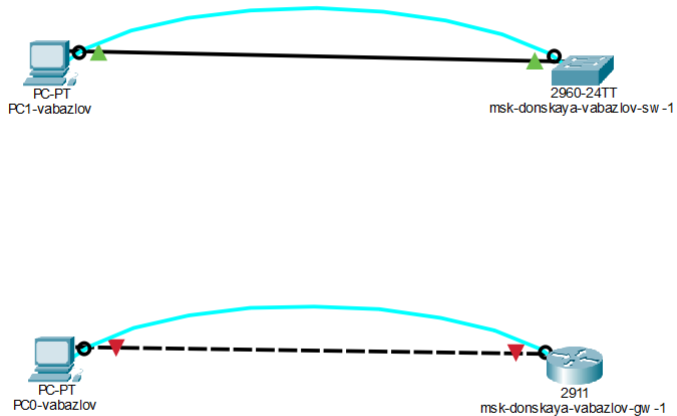


Рис. 1: Схема подключения ПК, коммутатора и маршрутизатора

Настройка IP-адресов

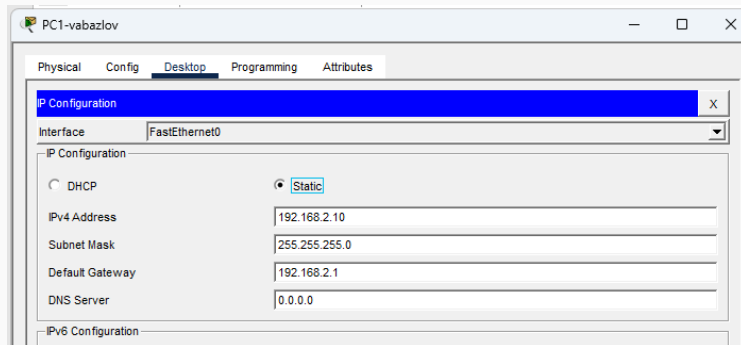


Рис. 2: Настройка IP PC1

ПК, подключённый к маршрутизатору

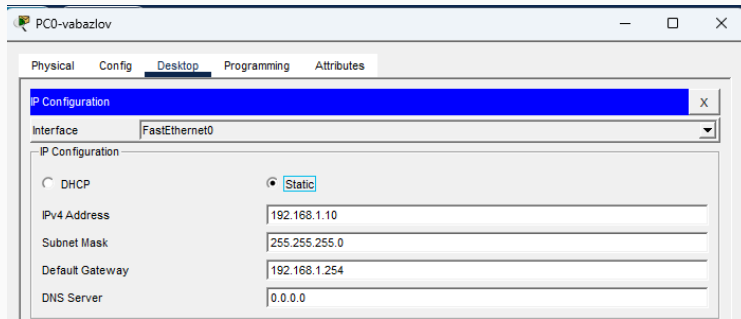
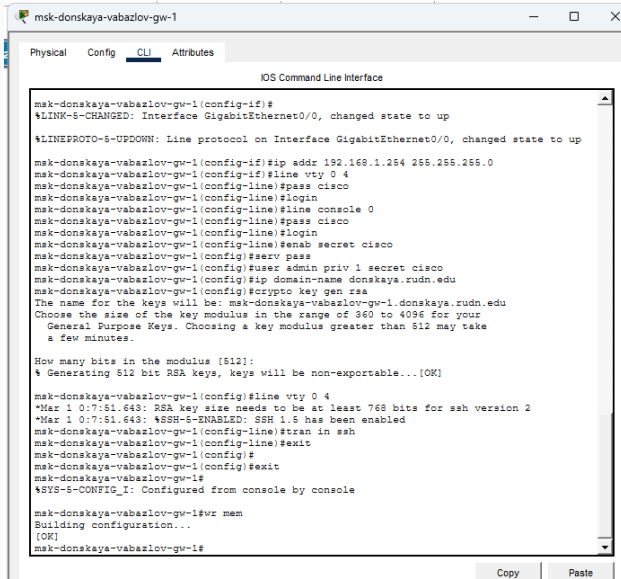


Рис. 3: Настройка IP PC0

Настройка маршрутизатора



```
msk-donskaya-vabazlov-gw-1
Physical Config CLI Attributes

IOS Command Line Interface

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

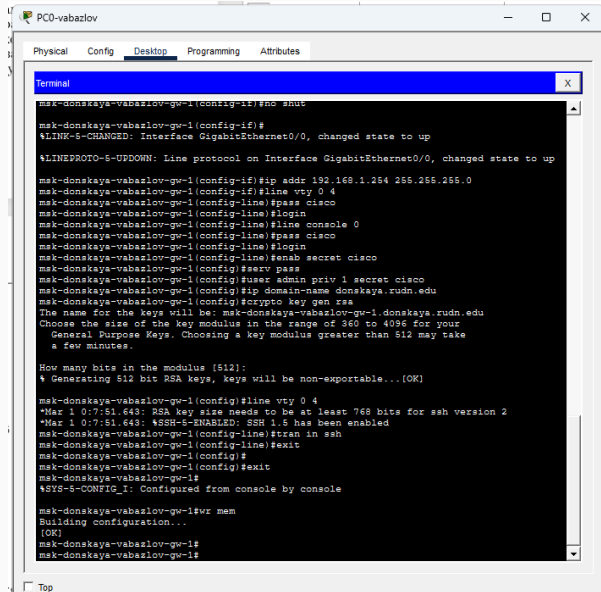
msk-donskaya-vabazlov-gw-1(config-if)#ip addr 192.168.1.254 255.255.255.0
msk-donskaya-vabazlov-gw-1(config-if)#line vty 0 4
msk-donskaya-vabazlov-gw-1(config-line)#pass cisco
msk-donskaya-vabazlov-gw-1(config-line)#login
msk-donskaya-vabazlov-gw-1(config-line)#line console 0
msk-donskaya-vabazlov-gw-1(config-line)#pass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

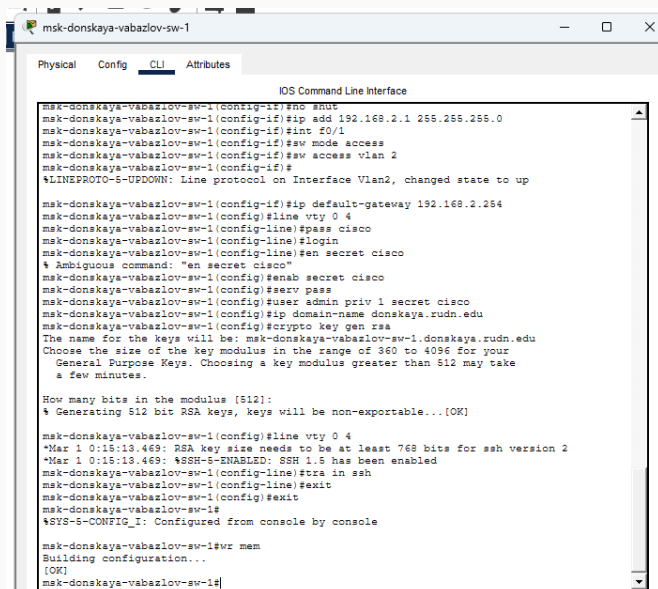
msk-donskaya-vabazlov-gw-1#wr mem
Building configuration...
[OK]
msk-donskaya-vabazlov-gw-1#
```

Copy Paste



```
PC0-vabazlov
Physical Config Desktop Programming Attributes
Terminal
msk-donskaya-vabazlov-gw-1(config-if)#no shut
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 donskeya.rudn.edu
msk-donskaya-vabazlov-gw-1(config)#crypto key gen rsa
The name for the keys will be: msk-donskaya-vabazlov-gw-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-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#
msk-donskaya-vabazlov-gw-1#
```

Настройка коммутатора



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

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 donsokaya.rudn.edu
msk-donskaya-vabazlov-sw-1(config)#crypto key gen rsa
The name for the keys will be: msk-donskaya-vabazlov-sw-1.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.

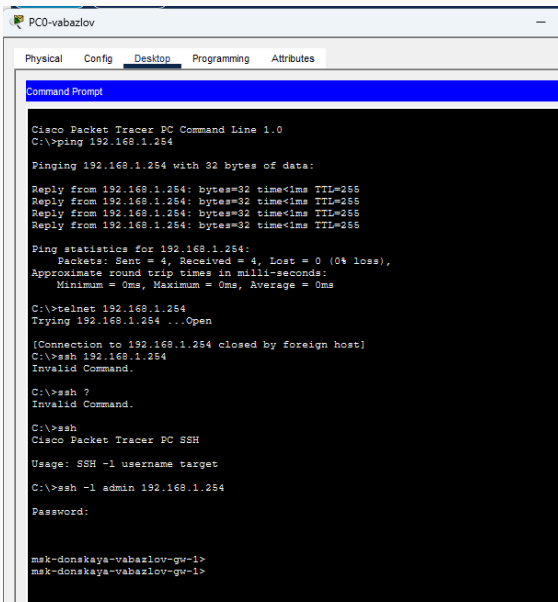
How many bits in the modulus [512]:
% Generating 512 bit RSA keys, keys will be non-exportable...[OK]

msk-donskaya-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 Cisco Packet Tracer PC Command Line window for PC0-vabazlov. The window has tabs for Physical, Config, Desktop, Programming, and Attributes, with Desktop selected. The Command Prompt shows the following commands and output:

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

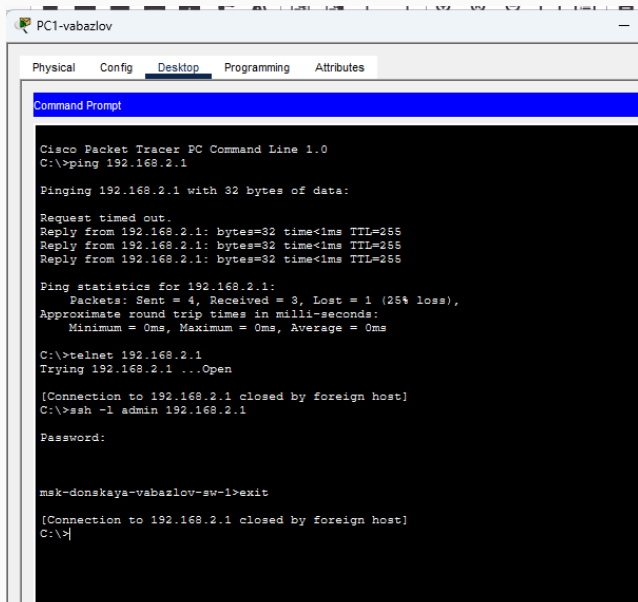
Usage: SSH -l username target

C:\>ssh -l admin 192.168.1.254

Password:

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

Доступ к коммутатору



```
PC1-vabazlov
Physical Config Desktop Programming Attributes
Command Prompt

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

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.