

# Предварительная настройка оборудования Cisco

Лабораторная работа №2

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15 февраля 2026

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## Цель работы

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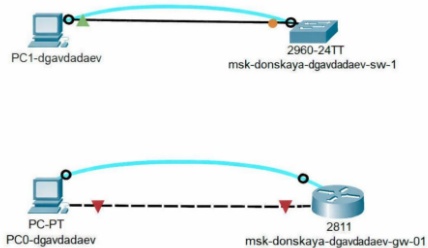
Получить основные навыки по начальному конфигурированию сетевого оборудования Cisco в Packet Tracer.

## Ход выполнения

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## Создание топологии

- Размещены:
  - маршрутизатор 2811
  - коммутатор 2960-24TT
  - два ПК
- Один ПК подключён к маршрутизатору
- Второй ПК подключён к коммутатору
- Использован прямой медный кабель



## Настройка PC1 (через коммутатор)

- IP-адрес: 192.168.2.10
- Маска: 255.255.255.0
- Шлюз: 192.168.2.1

The screenshot shows a network configuration window titled "IP Configuration" with a close button (X). The "Interface" dropdown menu is set to "FastEthernet0". The "IP Configuration" section has two radio buttons: "DHCP" (unselected) and "Static" (selected). Below these are four text input fields: "IPv4 Address" with the value "192.168.2.10", "Subnet Mask" with "255.255.255.0", "Default Gateway" with "192.168.2.1", and "DNS Server" with "0.0.0.0". The "IPv6 Configuration" section also has two radio buttons: "Automatic" (unselected) and "Static" (selected). Below these are four text input fields: "IPv6 Address" (empty), "Link Local Address" with the value "FE80::206:2AFF:FE08:4AD6", "Default Gateway" (empty), and "DNS Server" (empty). At the bottom left, there is a small label "Rn7 1X".

## Настройка PC0 (через маршрутизатор)

- IP-адрес: 192.168.1.1
- Маска: 255.255.255.0
- Шлюз: 192.168.1.254

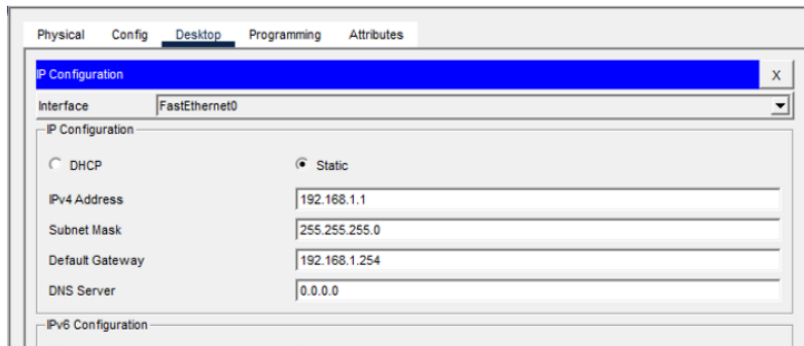


Рис. 3: Настройка IP PC0

# Настройка коммутатора

- Задано имя устройства
- Создан VLAN 2
- Назначен IP: 192.168.2.1
- Настроен порт access VLAN 2
- Указан шлюз: 192.168.2.254

```
IOS Command Line Interface

Enter configuration commands, one per line. End with CNTL/Z.
router(config)#hostname mk-donskaya-gv-dgavdadaev-01
mk-donskaya-gv-dgavdadaev-01(config)#int f0/0
mk-donskaya-gv-dgavdadaev-01(config-if)#no shut

mk-donskaya-gv-dgavdadaev-01(config-if)#
ENK-5-CHANGED: Interface FastEthernet0/0, changed state to up

MNIPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

mk-donskaya-gv-dgavdadaev-01(config-if)#ip address 192.168.1.254 255.255.255.0
mk-donskaya-gv-dgavdadaev-01(config)#line vty 0 4
mk-donskaya-gv-dgavdadaev-01(config)#password cisco
mk-donskaya-gv-dgavdadaev-01(config)#login
mk-donskaya-gv-dgavdadaev-01(config)#line console 0
mk-donskaya-gv-dgavdadaev-01(config)#password cisco
mk-donskaya-gv-dgavdadaev-01(config)#transport
mk-donskaya-gv-dgavdadaev-01(config)#service secret cisco
mk-donskaya-gv-dgavdadaev-01(config)#encrypt passw
mk-donskaya-gv-dgavdadaev-01(config)#service password-encryption
mk-donskaya-gv-dgavdadaev-01(config)#ip domain-name donskeya.ru.edu
mk-donskaya-gv-dgavdadaev-01(config)#ip ssh version 2
mk-donskaya-gv-dgavdadaev-01(config)#encrypt key gen rsa
mk-donskaya-gv-dgavdadaev-01(config)#domain donskeya.songde.gem.aedu
mk-donskaya-gv-dgavdadaev-01(config)#!Unauthorized access is prohibited
r name for the keys will be at least 768 bits for ssh version 2. If= Team
Note the Security Service may wage of 360 to 400$ for your act.*C Service

Generated RSA keys [1024 b]: [OK]
Generate a 512 bit RSA key, keys will be non-exportable...[OK]

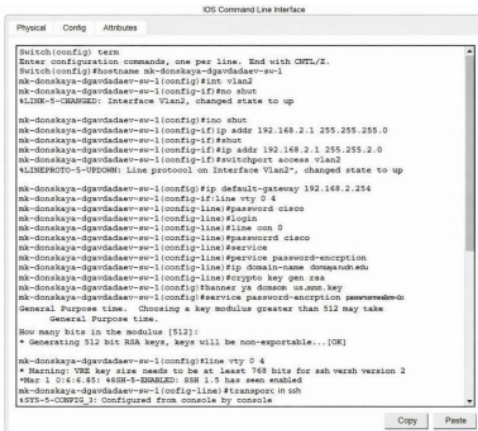
How many bits in the modulus [512]:
Generating 512 bit RSA keys, keys will be vty 0 4
mk-donskaya-gv-dgavdadaev-01(config)#line vty 0 least 768 bits for sh version 2
ar 1 0:12:593: *SSH-5-ENABLED: SSH 1.5 has been enabled to
ar 1 0:12:31.599: *SSH-5-ENABLED: SSH 1.5 has been enabled
mk-donskaya-gv-dgavdadaev-01(config-line)#transport in ssh
EE-5-CONFIG_1: Configured from console by console
```





# Настройка маршрутизатора

- Интерфейс Fa0/0:
  - 192.168.1.254 /24
- Интерфейс активирован (no shutdown)



```
IOS Command Line Interface
Physical Config Attributes

Switch(config) term
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname nk-donskaya-dgavdadaev-sw-1
nk-donskaya-dgavdadaev-sw-1(config)#int vlan2
nk-donskaya-dgavdadaev-sw-1(config-if)#no shut
%LINK-5-CHANGED: Interface Vlan2, changed state to up

nk-donskaya-dgavdadaev-sw-1(config)#no shut
nk-donskaya-dgavdadaev-sw-1(config-if)#ip addr 192.168.2.1 255.255.255.0
nk-donskaya-dgavdadaev-sw-1(config-if)#shut
nk-donskaya-dgavdadaev-sw-1(config-if)#ip addr 192.168.2.1 255.255.2.0
nk-donskaya-dgavdadaev-sw-1(config-if)#switchport access vlan2
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan2, changed state to up

nk-donskaya-dgavdadaev-sw-1(config)#ip default-gateway 192.168.2.254
nk-donskaya-dgavdadaev-sw-1(config-if:line vty 0 4)
nk-donskaya-dgavdadaev-sw-1(config-line)#password cisco
nk-donskaya-dgavdadaev-sw-1(config-line)#login
nk-donskaya-dgavdadaev-sw-1(config-line)#line con 0
nk-donskaya-dgavdadaev-sw-1(config-line)#password cisco
nk-donskaya-dgavdadaev-sw-1(config-line)#service
nk-donskaya-dgavdadaev-sw-1(config-line)#service password-encryption
nk-donskaya-dgavdadaev-sw-1(config-line)#ip domain-name dongskaedu
nk-donskaya-dgavdadaev-sw-1(config-line)#crypto key gen rsa
nk-donskaya-dgavdadaev-sw-1(config)#banner ya dongska.us.mn.key
nk-donskaya-dgavdadaev-sw-1(config)#service password-encryption passwordenon
General Purpose time. Choosing a key modulus greater than 512 may take
General Purpose time.
How many bits in the modulus [512]:
* Generating 512 bit RSA keys, keys will be non-exportable...[OK]

nk-donskaya-dgavdadaev-sw-1(config)#line vty 0 4
* Warning: VTY key size needs to be at least 768 bits for ssh version 2
*Mar 1 0:46:55: 46SN-5-ENABLED: SSH 1.5 has been enabled
nk-donskaya-dgavdadaev-sw-1(config-line)#transport in ssh
%SYS-5-CONFIG: 1: Configured from console by console
```

# Настройка удалённого доступа (Router)

- Пароли console и VTY
- enable secret
- user admin
- domain-name
- RSA-ключи
- Разрешён SSH

```
Physical Config Desktop Programming Attributes
-----
Router>enable
Router#conf term
Enter configuration commands, one per line. End with CNTL/Z.
ak-donakaya-dv-dgavdadaev-01(config)#hostname ru-f0/0
ak-donakaya-dv-dgavdadaev-01(config-if)#no shut

ak-donakaya-dv-dgavdadaev-01(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

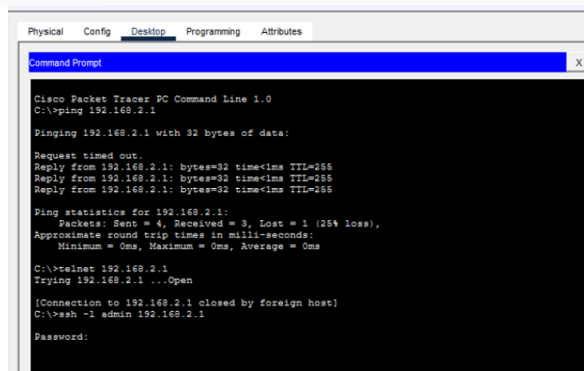
ak-donakaya-dv-dgavdadaev-01(config)#ip address 192.168.1.254 255.255.255.0
ak-donakaya-dv-dgavdadaev-01(config)#line vty 0 4
ak-donakaya-dv-dgavdadaev-01(config)#password cisco
ak-donakaya-dv-dgavdadaev-01(config)#login
ak-donakaya-dv-dgavdadaev-01(config)#line console 0
ak-donakaya-dv-dgavdadaev-01(config)#password ciscoes
ak-donakaya-dv-dgavdadaev-01(config)#root 0
ak-donakaya-dv-dgavdadaev-01(config)#enable secret cisco
ak-donakaya-dv-dgavdadaev-01(config)#service password-encryption
ak-donakaya-dv-dgavdadaev-01(config)#ip domain-name
ak-donakaya-dv-dgavdadaev-01(config)#ip ehkaya.ru.dn.edu
ak-donakaya-dv-dgavdadaev-01(config)#ip ssh version 2
ak-donakaya-dv-dgavdadaev-01(config)#banner login "!--
  Welcome to the router.
  What you see is not what you get.
  Generated RSA keys/1024 b. [OK]

Now generate a 1024 bit RSA key, keys will be non-exportable...[OK]
% ak-donakaya-dv-dgavdadaev-01(config)#line vty 0 4
% Warning: VTY key bits needn't be at least 768 bits for ssh version 2
% SSH-2-ENABLED: SSH 1.9 has been enabled
ak-donakaya-dv-dgavdadaev-01(config)#ssh transport ssh
ak-donakaya-dv-dgavdadaev-01(config)#banner login con, wsa, sm
ak-donakaya-dv-dgavdadaev-01(config)#ssh transport ssh

%V99-S-CONFIG-1: Configured from console by console
ak-donakaya-dv-dgavdadaev-01(config)#line vty 0 4
```

## Проверка соединения (Switch)

- Выполнен ping 192.168.2.1
- Успешные ответы
- Подключение:
  - telnet
  - ssh



```
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

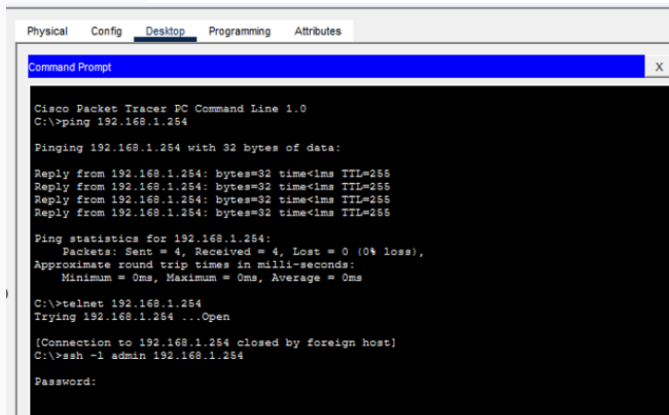
C:\>telnet 192.168.2.1
Trying 192.168.2.1 ...Open

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

Password:
```

## Проверка соединения (Router)

- Выполнен ping 192.168.1.254
- Ответ без потерь
- Успешное подключение по SSH



The screenshot shows a Cisco Packet Tracer PC Command Line window with the following text:

```
Physical  Config  Desktop  Programming  Attributes
Command Prompt X
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 -l admin 192.168.1.254

Password:
```

ИТОГ



В ходе работы:

- Создана сеть с маршрутизатором и коммутатором
- Назначены IP-адреса устройствам
- Настроены интерфейсы
- Выполнена базовая защита паролями
- Настроен удалённый доступ по SSH
- Проверена доступность устройств с помощью ping
- Выполнено подключение к оборудованию по сети