

Предварительная настройка оборудования Cisco

Лабораторная работа №2

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Цель работы

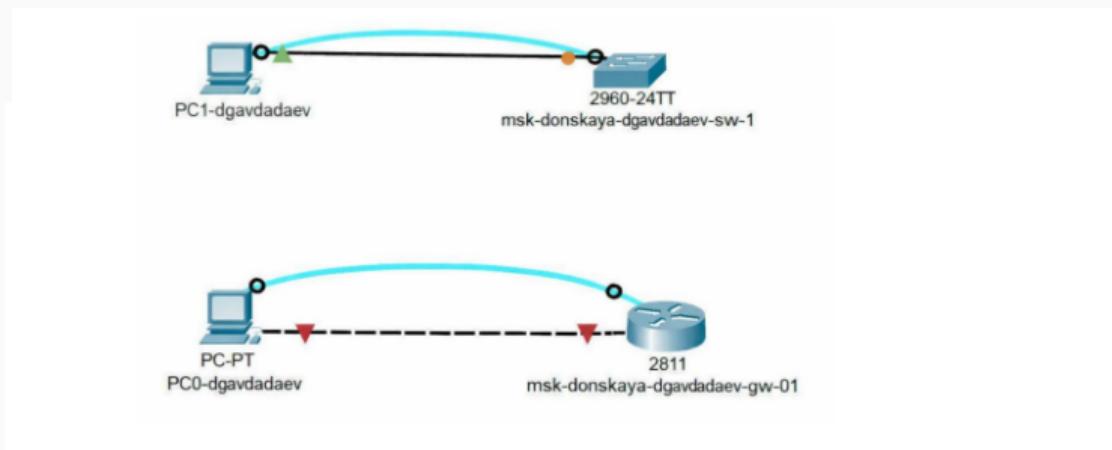
Цель

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

Ход выполнения

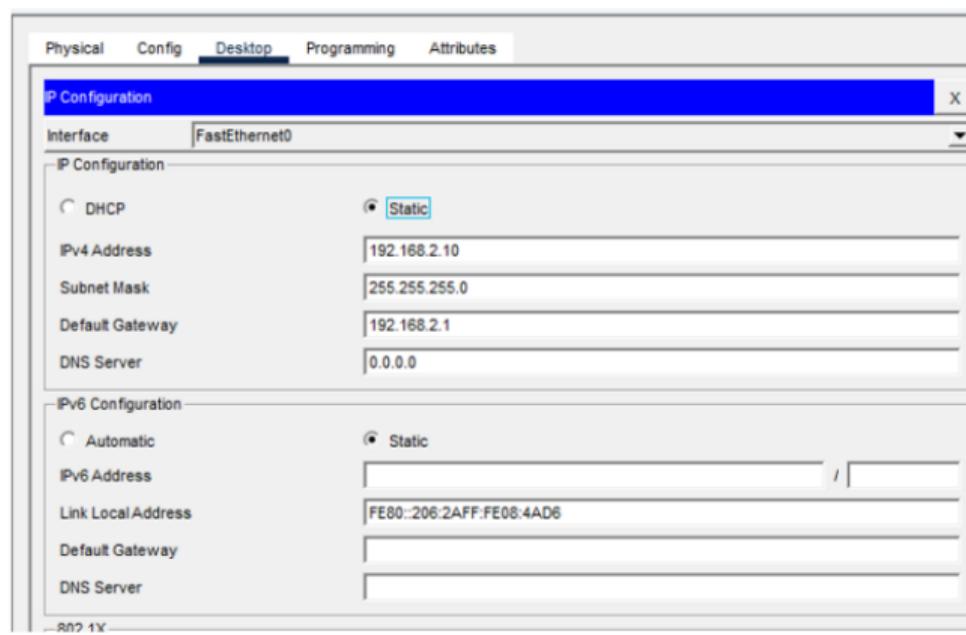
Создание топологии

- 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



Настройка PC0 (через маршрутизатор)

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

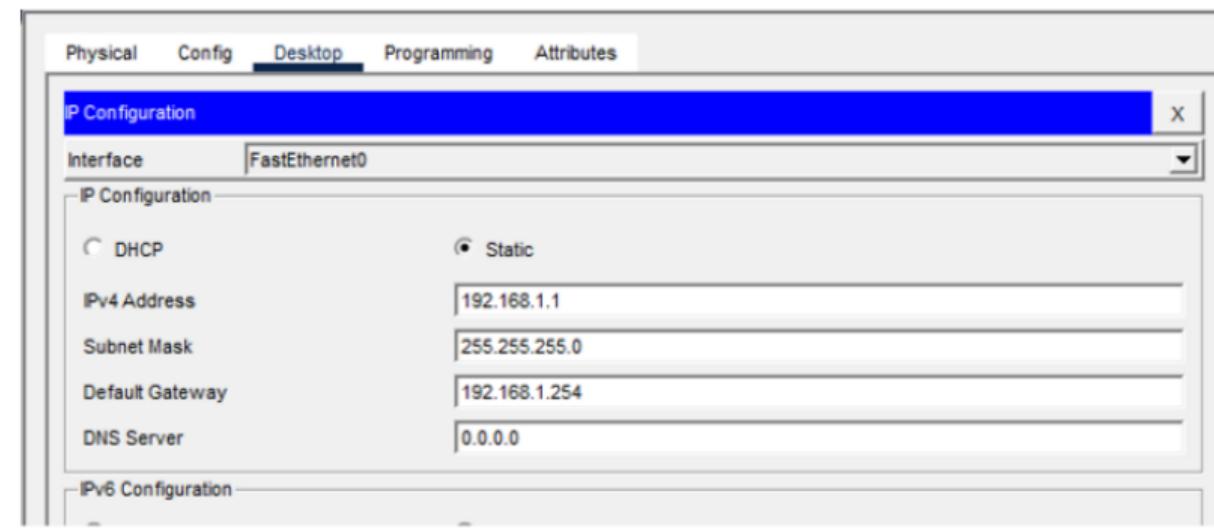


Рис. 3: Настройка IP PC0

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

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

mk-donskaya-gv-dgavdadadev-01(config-if)#
LINK-B-CHANGED: Interface FastEthernet0/0, changed state to up

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

mk-donskaya-gv-dgavdadadev-01(config-if)ip address 192.168.1.254 255.255.255.0
mk-donskaya-gv-dgavdadadev-01(config)#line vty 0 4
mk-donskaya-gv-dgavdadadev-01(config)#password cisco
mk-donskaya-gv-dgavdadadev-01(config)#login
mk-donskaya-gv-dgavdadadev-01(config)#line console 0
mk-donskaya-gv-dgavdadadev-01(config)#password cisco
mk-donskaya-gv-dgavdadadev-01(config)#tftp
mk-donskaya-gv-dgavdadadev-01(config)#service secret cisco
mk-donskaya-gv-dgavdadadev-01(config)#encrypto passw
mk-donskaya-gv-dgavdadadev-01(config)#service password-encryption
mk-donskaya-gv-dgavdadadev-01(config)#ip domain-name donskaya.rudedu
mk-donskaya-gv-dgavdadadev-01(config)#ip ssh version 2
mk-donskaya-gv-dgavdadadev-01(config)#encrypt key gen rsa
mk-donskaya-gv-dgavdadadev-01(config)#domain donskaya.sngde.gem.aedu
mk-donskaya-gv-dgavdadadev-01(config)*!Unauthorized access is prohibited!
* name for the keys will be at least 768 bits for ssh version 2 [yes/no] *no*
* use the Security Service may wage of 360 to 400$ for your act.*C      Service

Generated RSA keys [1024 b: [OK]
* no generates 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 stay 0 4
mk-donskaya-gv-dgavdadadev-01(config)#line vty 0 least 768 bits for ssh version 2
mk-donskaya-gv-dgavdadadev-01(config)#line vty 0 4
mk-donskaya-gv-dgavdadadev-01(config)*SSH-5-ENABLED: SSH 1.5 has been enabled to
mk-donskaya-gv-dgavdadadev-01(config)*SSH-5-ENABLED: SSH 1.5 has been enabled
mk-donskaya-gv-dgavdadadev-01(config-line)transport in ssh
SSH-5-Config-1: Configured from console by console
```

Настройка удалённого доступа (Switch)

- Пароли на console и VTY
 - enable secret
 - user admin
 - Генерация RSA-ключей
 - Включён SSH

```
Physical Config Desktop Programming Attributes

Terminal >

Router>enable
Router#conf term
Enter configuration commands, one per line. End with CNTL/Z.
mak-donskaya-dv-dgavdadasv=01(config)#hostname mak-f0/0
mak-donskaya-dv-dgavdadasv=01(config-if)#no shut
mak-donskaya-dv-dgavdadasv=01(config-if)#!
*LINE-5-CHANGED: Interface FastEthernet0/0, changed state to up

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

mak-donskaya-dv-dgavdadasv=01(config)#ip address 192.168.1.254 255.255.255.0
mak-donskaya-dv-dgavdadasv=01(config)#line vty 0 4
mak-donskaya-dv-dgavdadasv=01(config)#line vty 0 4 password cisco
mak-donskaya-dv-dgavdadasv=01(config)#login
mak-donskaya-dv-dgavdadasv=01(config)#line console 0
mak-donskaya-dv-dgavdadasv=01(config)#password ciscoset
mak-donskaya-dv-dgavdadasv=01(config)#secret cisco
mak-donskaya-dv-dgavdadasv=01(config)#enable secret cisco
mak-donskaya-dv-dgavdadasv=01(config)#service password-encryption
mak-donskaya-dv-dgavdadasv=01(config)#ip domain-name
mak-donskaya-dv-dgavdadasv=01(config)#ip domain-name enchuya.rudn.edu
mak-donskaya-dv-dgavdadasv=01(config)#ip domain-list 2
mak-donskaya-dv-dgavdadasv=01(config)#banner login "logon <**>
Whatousite morder in protadated, some of this system it based, traced,
Exstaneect SWMEDIALCY or You Will be Logged.Computer Security Service may !"
* Generete RSA keys/1024 b: [OK]

Now generate a $12 bit RSA key, keys will be non-exportable...[OK]
* mak-donskaya-dv-dgavdadasv=01(config)#line vty 0 4
* No authentication key still needs to be set, at least 768 bits for ssh verast version 2
* SSH-5-ENABLED: SSH 1.5 has been enabled
mak-donskaya-dv-dgavdadasv=01(config)#line transport ssh
mak-donskaya-dv-dgavdadasv=01(config)#Banner logon con.nosmcm
mak-donskaya-dv-dgavdadasv=01(config)#line transport ssh

*975-5-CONFIG_1: Configured from console by console

mak-donskaya-dv-dgavdadasv=01(config-line)#!
```

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 mk-donskaya-dgavdadaev-sw-1
mk-donskaya-dgavdadaev-sw-1(config)#int vlan2
mk-donskaya-dgavdadaev-sw-1(config)#no shut
%LINK-5-CHANGED: Interface Vlan2, changed state to up

mk-donskaya-dgavdadaev-sw-1(config)#ino shut
mk-donskaya-dgavdadaev-sw-1(config-if)ip addr 192.168.2.1 255.255.255.0
mk-donskaya-dgavdadaev-sw-1(config-if)#shut
mk-donskaya-dgavdadaev-sw-1(config-if)ip addr 192.168.2.1 255.255.2.0
mk-donskaya-dgavdadaev-sw-1(config-if)#switchport access vlan2
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan2", changed state to up

mk-donskaya-dgavdadaev-sw-1(config)#ip default-gateway 192.168.2.254
mk-donskaya-dgavdadaev-sw-1(config-if)line vty 0 4
mk-donskaya-dgavdadaev-sw-1(config-line)#password cisco
mk-donskaya-dgavdadaev-sw-1(config-line)#login
mk-donskaya-dgavdadaev-sw-1(config-line)#line con 0
mk-donskaya-dgavdadaev-sw-1(config-line)#password cisco
mk-donskaya-dgavdadaev-sw-1(config-line)#service
mk-donskaya-dgavdadaev-sw-1(config-line)#service password-encryption
mk-donskaya-dgavdadaev-sw-1(config-line)#ip domain-name domashnaya
mk-donskaya-dgavdadaev-sw-1(config-line)#crypto key gen rsa
mk-donskaya-dgavdadaev-sw-1(config)#banner ya domash us.vnn.key
mk-donskaya-dgavdadaev-sw-1(config)#service password-encryption password=0
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]

mk-donskaya-dgavdadaev-sw-1(config)#line vty 0 4
* Warning: VME key size needs to be at least 768 bits for ssh version 2
* Mar 1 0:6:6.85: 48SH-5-ENABLED: SSH 1.5 has been enabled
mk-donskaya-dgavdadaev-sw-1(config-line)#transport ssh
SYS-5-CONFIG_3: Configured from console by console
```

Copy Paste

Настройка удалённого доступа (Router)

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

```
Physical Config Desktop Programming Attributes



```
Routerenable
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
nas-donskaya>dv-dgvdaddev-01(config)#hostname ra 0/0
nas-donskaya>dv-dgvdaddev-01(config)#no shutdown
nas-donskaya>dv-dgvdaddev-01(config)#line 0
nas-donskaya>dv-dgvdaddev-01(config)#line 0
WLINE-5-CHANGED: Interface FastEthernet0/0, changed state to up
WLINERPHOTO-3-UPDOWN: line protocol on Interface FastEthernet0/0, changed state to up
nas-donskaya>dv-dgvdaddev-01(config)#line vty 0 4
nas-donskaya>dv-dgvdaddev-01(config)#password cisco
nas-donskaya>dv-dgvdaddev-01(config)#service password-encryption
nas-donskaya>dv-dgvdaddev-01(config)#line console 0
nas-donskaya>dv-dgvdaddev-01(config)#password cisco
nas-donskaya>dv-dgvdaddev-01(config)#secret cisco
nas-donskaya>dv-dgvdaddev-01(config)#service password-encryption
nas-donskaya>dv-dgvdaddev-01(config)#ip domain-name
nas-donskaya>dv-dgvdaddev-01(config)#ip domain-name ruden.edu
nas-donskaya>dv-dgvdaddev-01(config)#service ssh version
nas-donskaya>dv-dgvdaddev-01(config)#
** Warning: RSA key size must be at least 768 bits for ssh verstat version 2
** Whatouisever harder in prosodized, some of this system it based, traced.
** Entersect %WHDIDATC or you Will be Logged.Computer Security Service may !
Generated RSA keys/1024 b: [OK]

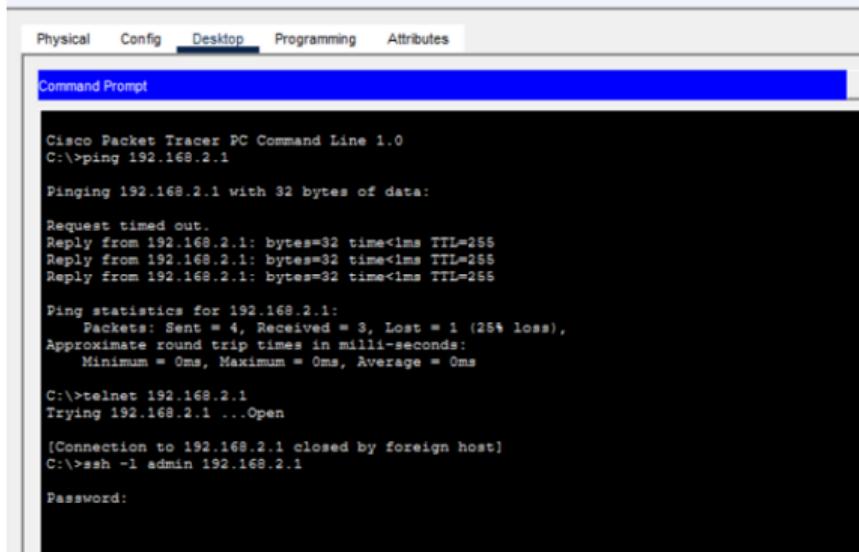
Now generate a 512 bit RSA key, keys will be non-exportable..(OK)
% mk-donskaya>dv-dgvdaddev-01(config)#line vty 0 4
Warning: Your key bits need to be at least 768 bits for ssh verstat version 2
** Whatouisever harder in prosodized, some of this system it based, traced.
nas-donskaya>dv-dgvdaddev-01(config)#line1transport in ssh
nas-donskaya>dv-dgvdaddev-01(config)#Banner Logan con...+em
nas-donskaya>dv-dgvdaddev-01(config)#line1transport in ssh

#79-5-CONFIG_1: Configured from console by console
nas-donskaya>dv-dgvdaddev-01(config-line) #
```


```

Проверка соединения (Switch)

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



The screenshot shows a Cisco Packet Tracer Command Line interface. The tabs at the top are Physical, Config, Desktop, Programming, and Attributes. The Desktop tab is selected. The command prompt window displays the following output:

```
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

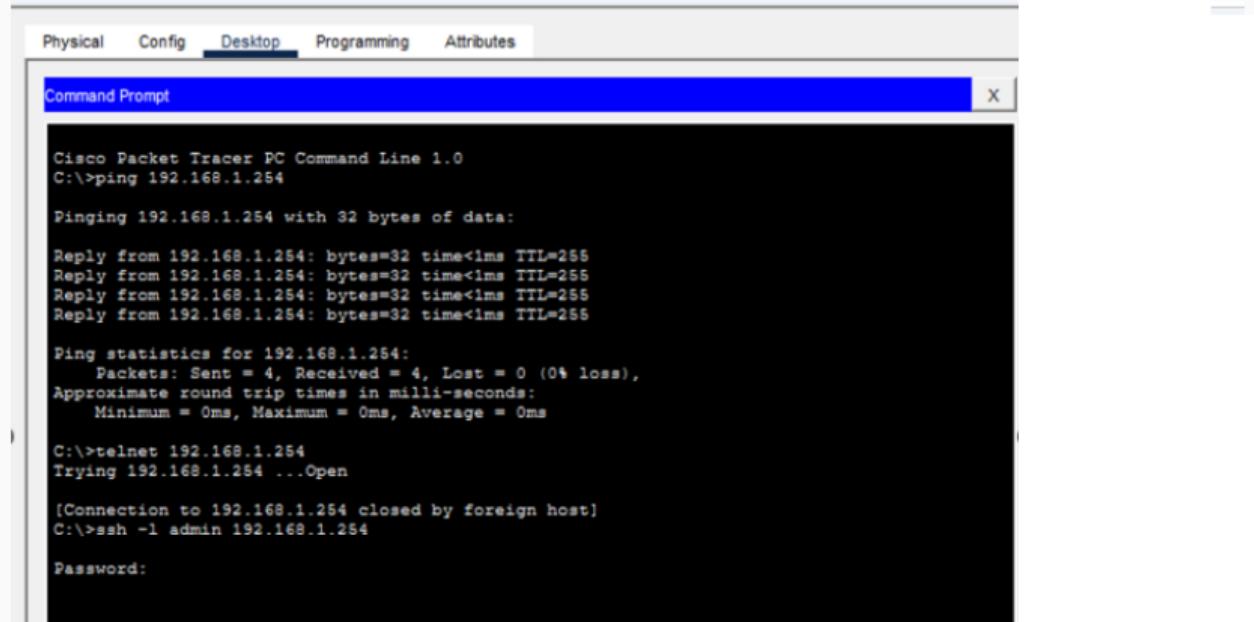
C:>telnet 192.168.2.1
Trying 192.168.2.1 ...Open

[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 Command Prompt window with the following 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

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