Лабораторная работа №13

Статическая маршрутизация в Интернете. Планирование

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10 мая 2025

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Информация

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Ход работы

Рис. 1: Создание нового проекта
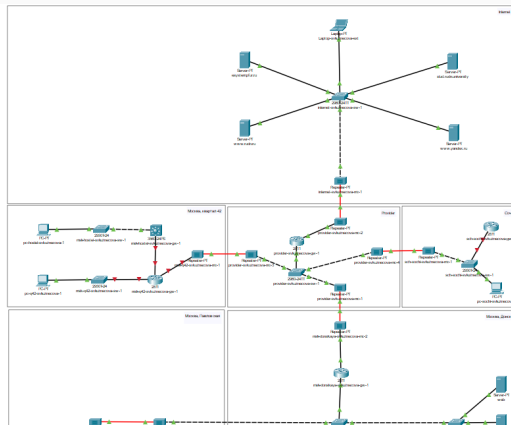
Рис. 2: Размещение необходимого оборудования
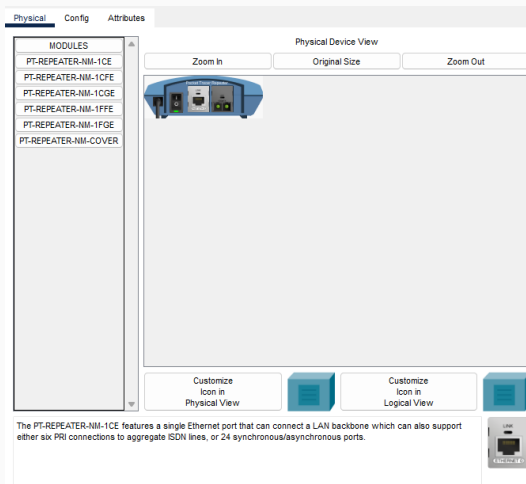
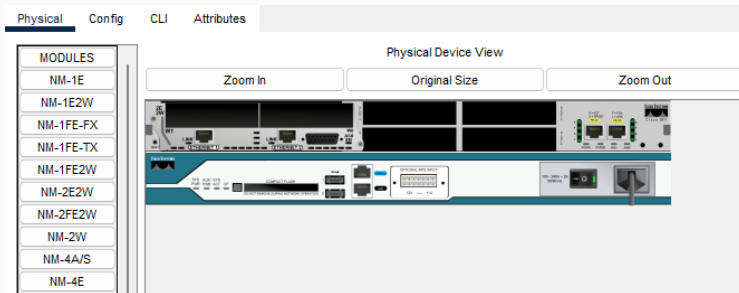Рис. 3: Замена модулей

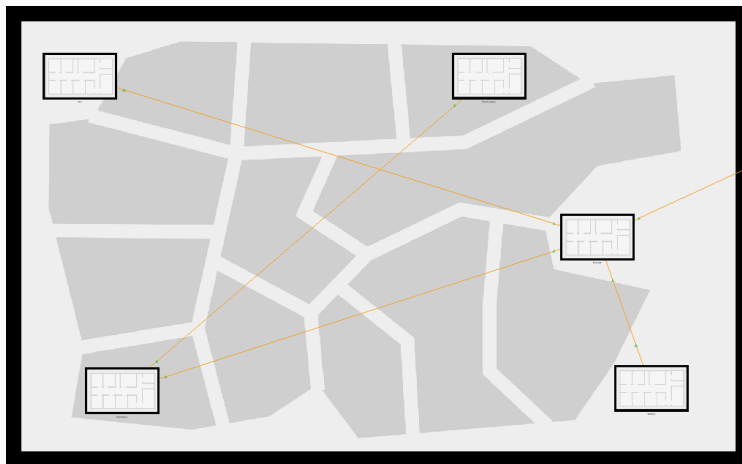Рис. 4: Дополнительный интерфейс
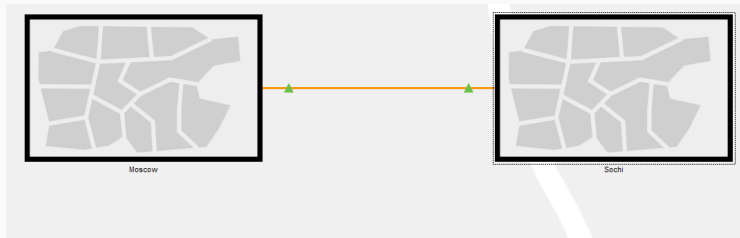
Рис. 5: Здание 42-го квартала

Рис. 6: Город Сочи и Здание Сочи
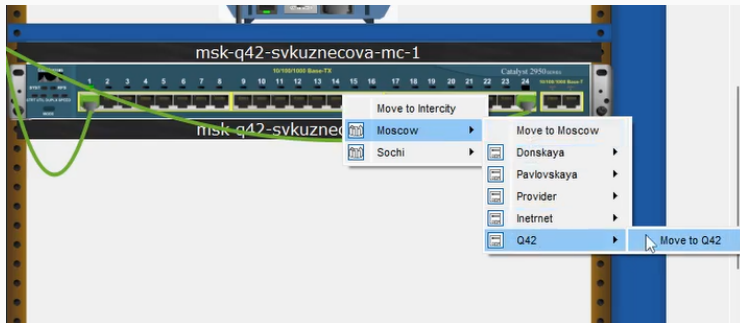
Рис. 7: Перенос оборудования
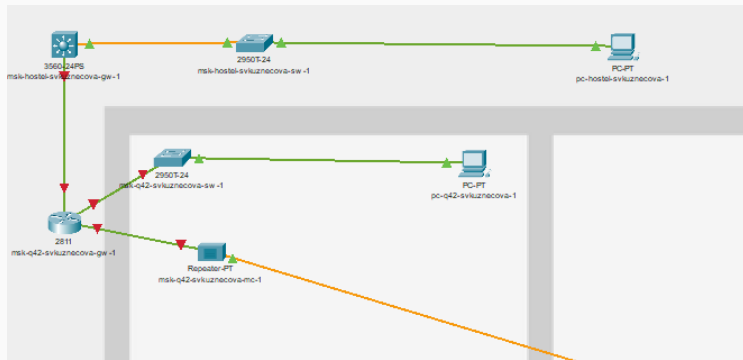
Рис. 8: Оборудование сети 42-го квартала
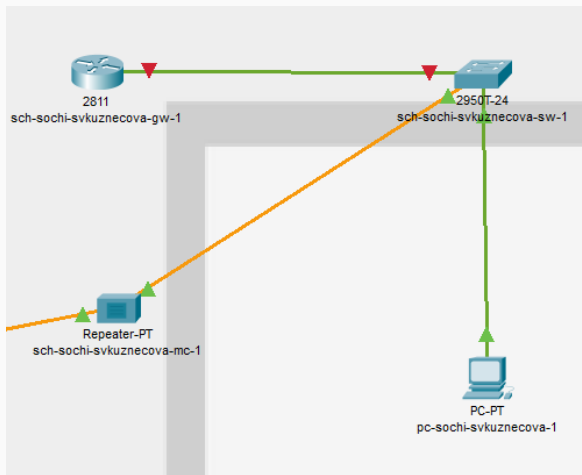
Рис. 9: Оборудование сети Сочи

```
Router>en
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname msk-q42-svkuznecova-gw-1
msk-q42-svkuznecova-gw-1(config)#line vty 0 4
msk-q42-svkuznecova-gw-1(config-line)#password cisco
msk-q42-svkuznecova-gw-1(config-line)#login
msk-q42-svkuznecova-gw-1(config-line)#exit
msk-q42-svkuznecova-gw-1(config)#line console 0
msk-q42-svkuznecova-gw-1(config-line)#password cisco
msk-q42-svkuznecova-gw-1(config-line)#login
msk-q42-svkuznecova-gw-1(config-line)#exit
msk-q42-svkuznecova-gw-1(config)#enable secret cisco
msk-q42-svkuznecova-gw-1(config)#service password-encryption
msk-q42-svkuznecova-gw-1(config)#username admin privilege 1 secret cisco
msk-q42-svkuznecova-gw-1(config)#ip domain-name q42.rudn.edu
msk-q42-svkuznecova-gw-1(config)#crypto key generate rsa
The name for the keys will be: msk-q42-svkuznecova-gw-1.q42.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-q42-svkuznecova-gw-1(config)#line vty 0 4
*Mar 1 0:43:11.321: RSA key size needs to be at least 768 bits for ssh version 2
*Mar 1 0:43:11.498: %SSH-5-ENABLED: SSH 1.5 has been enabled
msk-q42-svkuznecova-gw-1(config-line)#transport input ssh
msk-q42-svkuznecova-gw-1(config-line)#exit
msk-q42-svkuznecova-gw-1(config)#exit
msk-q42-svkuznecova-gw-1#
%SYS-5-CONFIG_I: Configured from console by console

msk-q42-svkuznecova-gw-1#wr me
Building configuration...
[OK]
msk-q42-svkuznecova-gw-1#
```

Рис. 10: Первоначальная настройка маршрутизатора msk-q42-svkuznecova-gw-1

```
Switch>en
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#hostname msk-q42-svkuznecova-sw-1
msk-q42-svkuznecova-sw-1(config)#line vty 0 4
msk-q42-svkuznecova-sw-1(config-line)#password cisco
msk-q42-svkuznecova-sw-1(config-line)#login
msk-q42-svkuznecova-sw-1(config-line)#exit
msk-q42-svkuznecova-sw-1(config)#line console 0
msk-q42-svkuznecova-sw-1(config-line)#password cisco
msk-q42-svkuznecova-sw-1(config-line)#login
msk-q42-svkuznecova-sw-1(config-line)#exit
msk-q42-svkuznecova-sw-1(config)#enable secret cisco
msk-q42-svkuznecova-sw-1(config)#service password-encryption
msk-q42-svkuznecova-sw-1(config)#username admin privilege 1 secret cisco
msk-q42-svkuznecova-sw-1(config)#ip domain name q42.rudn.edu
msk-q42-svkuznecova-sw-1(config)#ip domain-name q42.rudn.edu
msk-q42-svkuznecova-sw-1(config)#crypto key generate rsa
The name for the keys will be: msk-q42-svkuznecova-sw-1.q42.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-q42-svkuznecova-sw-1(config)#line vty 0 4
*Mar 1 0:59:9.162: RSA key size needs to be at least 768 bits for ssh version 2
*Mar 1 0:59:9.162: %SSH-5-ENABLED: SSH 1.5 has been enabled
msk-q42-svkuznecova-sw-1(config-line)#transport input ssh
msk-q42-svkuznecova-sw-1(config-line)#exit
msk-q42-svkuznecova-sw-1(config)#exit
msk-q42-svkuznecova-sw-1#
%SYS-5-CONFIG_I: Configured from console by console

msk-q42-svkuznecova-sw-1#wr me
Building configuration...
[OK]
msk-q42-svkuznecova-sw-1#
```

Рис. 11: Первоначальная настройка коммутатора msk-q42-svkuznecova-sw-1

```
Switch>en
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#hostname msk-hostel-svkuznecova-gw-1
msk-hostel-svkuznecova-gw-1(config)#line vty 0 4
msk-hostel-svkuznecova-gw-1(config-line)#password cisco
msk-hostel-svkuznecova-gw-1(config-line)#login
msk-hostel-svkuznecova-gw-1(config-line)#exit
msk-hostel-svkuznecova-gw-1(config)#line console 0
msk-hostel-svkuznecova-gw-1(config-line)#password cisco
msk-hostel-svkuznecova-gw-1(config-line)#login
msk-hostel-svkuznecova-gw-1(config-line)#exit
msk-hostel-svkuznecova-gw-1(config)#enable secret cisco
msk-hostel-svkuznecova-gw-1(config)#service password-encryption
msk-hostel-svkuznecova-gw-1(config)#username admin privilege 1 secret cisco
msk-hostel-svkuznecova-gw-1(config)#ip ssh version 2
Please create RSA keys (of at least 768 bits size) to enable SSH v2.
msk-hostel-svkuznecova-gw-1(config)#ip domain name hostel.rudn.edu
msk-hostel-svkuznecova-gw-1(config)#ip domain-name hostel.rudn.edu
msk-hostel-svkuznecova-gw-1(config)#crypto key generate rsa
The name for the keys will be: msk-hostel-svkuznecova-gw-1.hostel.rudn.edu
Choose the size of the key modulus in the range of 360 to 2048 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-hostel-svkuznecova-gw-1(config)#line vty 0 4
*Mar 1 1:3:24.745: RSA key size needs to be at least 768 bits for ssh version 2
*Mar 1 1:3:24.745: %SSH-5-ENABLED: SSH 1.5 has been enabled
msk-hostel-svkuznecova-gw-1(config-line)#transport input ssh
msk-hostel-svkuznecova-gw-1(config-line)#exit
msk-hostel-svkuznecova-gw-1(config)#exit
msk-hostel-svkuznecova-gw-1#
%SYS-5-CONFIG_I: Configured from console by console

msk-hostel-svkuznecova-gw-1#wr me
Building configuration...
[OK]
msk-hostel-svkuznecova-gw-1#
```

Рис. 12: Первоначальная настройка маршрутизирующего коммутатора msk-hostel-svkuznecova-gw-1

```
Switch>en
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#hostname msk-hostel-svkznecova-sw-1
msk-hostel-svkznecova-sw-1(config)#line vty 0 4
msk-hostel-svkznecova-sw-1(config-line)#password cisco
msk-hostel-svkznecova-sw-1(config-line)#login
msk-hostel-svkznecova-sw-1(config-line)#exit
msk-hostel-svkznecova-sw-1(config)#line console 0
msk-hostel-svkznecova-sw-1(config-line)#password cisco
msk-hostel-svkznecova-sw-1(config-line)#login
msk-hostel-svkznecova-sw-1(config-line)#exit
msk-hostel-svkznecova-sw-1(config)#enable secret cisco
msk-hostel-svkznecova-sw-1(config)#service password-encryption
msk-hostel-svkznecova-sw-1(config)#username admin privilege 1 secret cisco
msk-hostel-svkznecova-sw-1(config)#ip domain-name hostel.rudn.edu
msk-hostel-svkznecova-sw-1(config)#crypto key generate rsa
The name for the keys will be: msk-hostel-svkznecova-sw-1.hostel.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-hostel-svkznecova-sw-1(config)#line vty 0 4
*Mar 1 1:6:51.864: RSA key size needs to be at least 768 bits for ssh version 2
*Mar 1 1:6:51.864: %SSH-5-ENABLED: SSH 1.5 has been enabled
msk-hostel-svkznecova-sw-1(config-line)#transport input ssh
msk-hostel-svkznecova-sw-1(config-line)#exit
msk-hostel-svkznecova-sw-1(config)#exit
msk-hostel-svkznecova-sw-1#
%SYS-5-CONFIG_I: Configured from console by console

msk-hostel-svkznecova-sw-1#wr me
Building configuration...
[OK]
msk-hostel-svkznecova-sw-1#
```

Рис. 13: Первоначальная настройка коммутатора msk-hostel-svkuznecova-sw-1

```
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#sch-sochi-svkuznecova-sw-1
                ^
% Invalid input detected at '^' marker.

Switch(config)#hostname sch-sochi-svkuznecova-sw-1
sch-sochi-svkuznecova-sw-1(config)#line vty 0 4
sch-sochi-svkuznecova-sw-1(config-line)#password cisco
sch-sochi-svkuznecova-sw-1(config-line)#login
sch-sochi-svkuznecova-sw-1(config-line)#exit
sch-sochi-svkuznecova-sw-1(config)#line console 0
sch-sochi-svkuznecova-sw-1(config-line)#password cisco
sch-sochi-svkuznecova-sw-1(config-line)#login
sch-sochi-svkuznecova-sw-1(config-line)#exit
sch-sochi-svkuznecova-sw-1(config)#enable secret cisco
sch-sochi-svkuznecova-sw-1(config)#service password-encryption
sch-sochi-svkuznecova-sw-1(config)#username admin privilege 1 secret cisco
sch-sochi-svkuznecova-sw-1(config)#ip domain-name sochi.rudn.edu
sch-sochi-svkuznecova-sw-1(config)#crypto key generate rsa
The name for the keys will be: sch-sochi-svkuznecova-sw-1.sochi.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]

sch-sochi-svkuznecova-sw-1(config)#line vty 0 4
*Mar 1 0:4:58.846: RSA key size needs to be at least 768 bits for ssh version 2
*Mar 1 0:4:58.846: %SSH-5-ENABLED: SSH 1.5 has been enabled
sch-sochi-svkuznecova-sw-1(config-line)#transport input ssh
sch-sochi-svkuznecova-sw-1(config-line)#exit
sch-sochi-svkuznecova-sw-1(config)#exit
sch-sochi-svkuznecova-sw-1#
%SYS-5-CONFIG_I: Configured from console by console

sch-sochi-svkuznecova-sw-1#wr me
Building configuration...
[OK]
sch-sochi-svkuznecova-sw-1#
```

Рис. 14: Первоначальная настройка коммутатора sch-sochi-svkuznecova-sw-1

```
Router>en
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname sch-sochi-svkuznecova-gw-1
sch-sochi-svkuznecova-gw-1(config)#line vty 0 4
sch-sochi-svkuznecova-gw-1(config-line)#password cisco
sch-sochi-svkuznecova-gw-1(config-line)#login
sch-sochi-svkuznecova-gw-1(config-line)#exit
sch-sochi-svkuznecova-gw-1(config)#line console 0
sch-sochi-svkuznecova-gw-1(config-line)#password cisco
sch-sochi-svkuznecova-gw-1(config-line)#login
sch-sochi-svkuznecova-gw-1(config-line)#exit
sch-sochi-svkuznecova-gw-1(config)#enable secret cisco
sch-sochi-svkuznecova-gw-1(config)#service password encryption
                                                   ^
% Invalid input detected at '^' marker.

sch-sochi-svkuznecova-gw-1(config)#service password-encryption
sch-sochi-svkuznecova-gw-1(config)#username admin privilege 1 secret cisco
sch-sochi-svkuznecova-gw-1(config)#ip domain name sochi.rudn.edu
sch-sochi-svkuznecova-gw-1(config)#ip domain-name sochi.rudn.edu
sch-sochi-svkuznecova-gw-1(config)#crypto key generate rsa
The name for the keys will be: sch-sochi-svkuznecova-gw-1.sochi.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]

sch-sochi-svkuznecova-gw-1(config)#line vty 0 4
*Mar 1 1:8:0.797: RSA key size needs to be at least 768 bits for ssh version 2
*Mar 1 1:8:0.797: %SSH-5-ENABLED: SSH 1.5 has been enabled
sch-sochi-svkuznecova-gw-1(config-line)#transport input ssh
sch-sochi-svkuznecova-gw-1(config-line)#exit
sch-sochi-svkuznecova-gw-1(config)#exit
sch-sochi-svkuznecova-gw-1#
%SYS-5-CONFIG_I: Configured from console by console

sch-sochi-svkuznecova-gw-1#wr me
Building configuration...
[OK]
sch-sochi-svkuznecova-gw-1#
```

Рис. 15: Первоначальная настройка маршрутизатора sch-sochi-svkuznecova-gw-1

Выводы

В ходе выполнения лабораторной работы мы провели подготовительные мероприятия по организации взаимодействия через сеть посредством статической маршрутизации локальной сети с сетью основного здания, расположенного в 42-м квартале в Москве, и сетью филиала, расположенного в г. Сочи.

Спасибо за внимание!