

Лабораторная работа №14

Администрирование локальных сетей

Бансимба К. Д.

11/04/2025

Российский университет дружбы народов, Москва, Россия

Информация

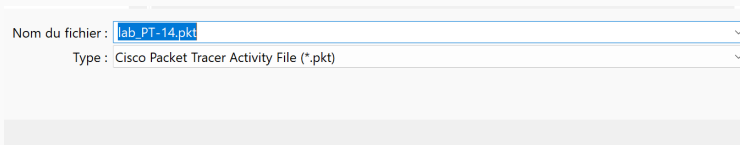
- Бансимба Клодели Дьегра
- студент
- Российский университет дружбы народов
- 1032215651@pfur.ru



Настроить взаимодействие через сеть провайдера посредством статической маршрутизации локальной сети организации с сетью основного здания, расположенного в 42-м квартале в Москве, и сетью филиала, расположенного в г. Сочи. .

Выполнение лабораторной работы

Теперь откроем проект с названием lab_PT-13.pkt и сохраним под названием lab_PT-14.pkt. После чего откроем его для дальнейшего редактирования.



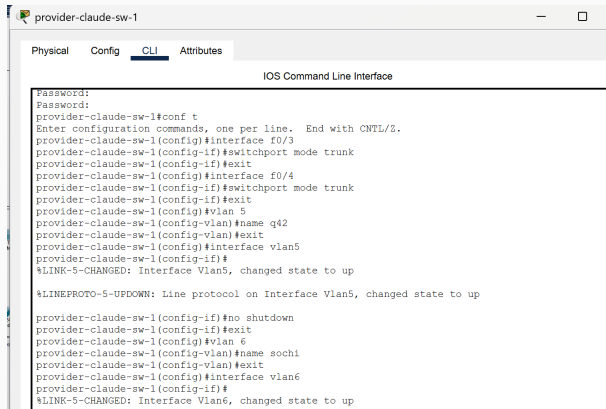
The image shows a file dialog box with two input fields. The first field, labeled 'Nom du fichier :', contains the text 'lab_PT-14.pkt'. The second field, labeled 'Type :', contains the text 'Cisco Packet Tracer Activity File (*.pkt)'. Both fields have a small downward arrow icon on the right side, indicating they are dropdown menus. The dialog box is set against a light gray background.

Рис. 1: нОткрытие проекта lab_PT-14.pkt.

Выполнение лабораторной работы

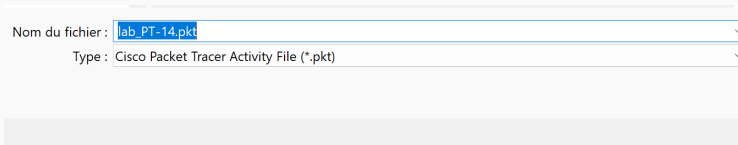
Выполнение лабораторной работы

Первым делом нам нужно настроить линку между площадками. Для этого настроим интерфейсы у коммутатора provider-claudely-sw-1, маршрутизатора msk-donskaya-claudely-gw-1, маршрутизатора msk-q42-claudely-gw-1, коммутатора sch-sochi-claudely-sw-1 и маршрутизатора sch-sochi-claudely-gw-1



```
provider-claudely-sw-1
Physical Config CLI Attributes
IOS Command Line Interface
Password:
Password:
provider-claudely-sw-1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
provider-claudely-sw-1(config)#interface f0/3
provider-claudely-sw-1(config-if)#switchport mode trunk
provider-claudely-sw-1(config-if)#exit
provider-claudely-sw-1(config)#interface f0/4
provider-claudely-sw-1(config-if)#switchport mode trunk
provider-claudely-sw-1(config-if)#exit
provider-claudely-sw-1(config)#vlan 5
provider-claudely-sw-1(config-vlan)#name q42
provider-claudely-sw-1(config-vlan)#exit
provider-claudely-sw-1(config)#interface vlan5
provider-claudely-sw-1(config-if)#
%LINK-5-CHANGED: Interface Vlan5, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan5, changed state to up
provider-claudely-sw-1(config-if)#no shutdown
provider-claudely-sw-1(config-if)#exit
provider-claudely-sw-1(config)#vlan 6
provider-claudely-sw-1(config-vlan)#name sochi
provider-claudely-sw-1(config-vlan)#exit
provider-claudely-sw-1(config)#interface vlan6
provider-claudely-sw-1(config-if)#
%LINK-5-CHANGED: Interface Vlan6, changed state to up
```


Выполнение лабораторной работы



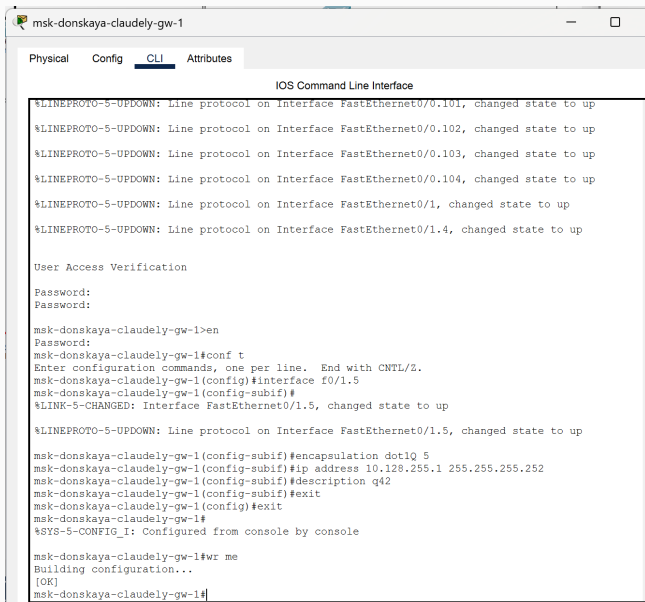
Nom du fichier : lab_PT-14.pkt

Type : Cisco Packet Tracer Activity File (*.pkt)

Рис. 3: Настройка интерфейсов маршрутизатора msk-donskaya-claudely-gw-1.

Выполнение лабораторной работы

Выполнение лабораторной работы



```
msk-donskaya-claudely-gw-1
Physical Config CLI Attributes
IOS Command Line Interface
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.101, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.102, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.103, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.104, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1.4, changed state to up

User Access Verification

Password:
Password:

msk-donskaya-claudely-gw-1>en
Password:
msk-donskaya-claudely-gw-1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
msk-donskaya-claudely-gw-1(config)#interface f0/1.5
msk-donskaya-claudely-gw-1(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/1.5, changed state to up

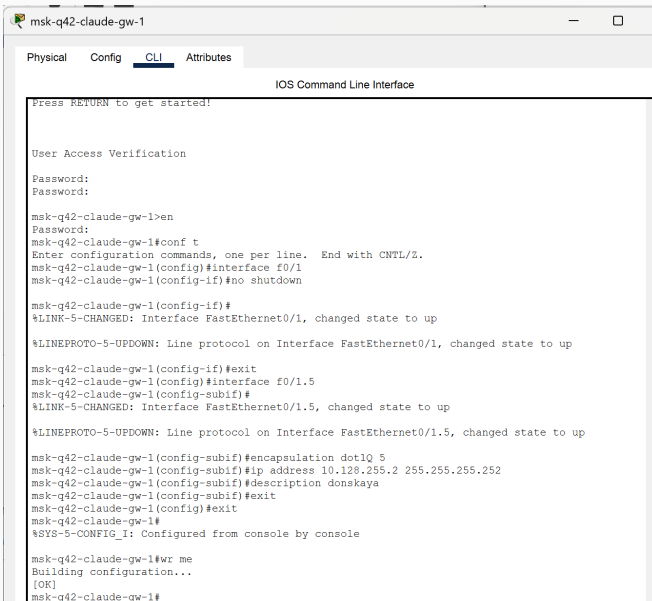
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1.5, changed state to up

msk-donskaya-claudely-gw-1(config-subif)#encapsulation dot1Q 5
msk-donskaya-claudely-gw-1(config-subif)#ip address 10.128.255.1 255.255.255.252
msk-donskaya-claudely-gw-1(config-subif)#description q42
msk-donskaya-claudely-gw-1(config-subif)#exit
msk-donskaya-claudely-gw-1(config)#exit
msk-donskaya-claudely-gw-1#
%SYS-5-CONFIG_I: Configured from console by console

msk-donskaya-claudely-gw-1#wr me
Building configuration...
[OK]
msk-donskaya-claudely-gw-1#
```

Выполнение лабораторной работы

Выполнение лабораторной работы



The screenshot shows a web browser window with the address bar displaying 'msk-q42-claude-gw-1'. The browser has three tabs: 'Physical', 'Config', and 'CLI', with 'CLI' being the active tab. Below the tabs is a header 'IOS Command Line Interface'. The main content area displays the CLI session. The session starts with a prompt 'Press RETURN to get started!'. The user enters 'en' to enter enable mode, followed by 'conf t' to enter configuration mode. The user then configures interface 'f0/1' with 'no shutdown'. The system responds with '%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up' and '%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up'. Next, the user configures subinterface 'f0/1.5'. The system responds with '%LINK-5-CHANGED: Interface FastEthernet0/1.5, changed state to up' and '%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1.5, changed state to up'. The user then sets encapsulation to 'dot1Q 5' and IP address '10.128.255.2 255.255.255.252' on the subinterface, and adds a description 'donskaya'. Finally, the user exits configuration mode and returns to enable mode. The system displays '%SYS-5-CONFIG_I: Configured from console by console' and 'Building configuration... [OK]'. The session ends with the prompt 'msk-q42-claude-gw-1#'.

```
msk-q42-claude-gw-1#
msk-q42-claude-gw-1>en
msk-q42-claude-gw-1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
msk-q42-claude-gw-1(config)#interface f0/1
msk-q42-claude-gw-1(config-if)#no shutdown

msk-q42-claude-gw-1(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

msk-q42-claude-gw-1(config-if)#exit
msk-q42-claude-gw-1(config)#interface f0/1.5
msk-q42-claude-gw-1(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/1.5, changed state to up

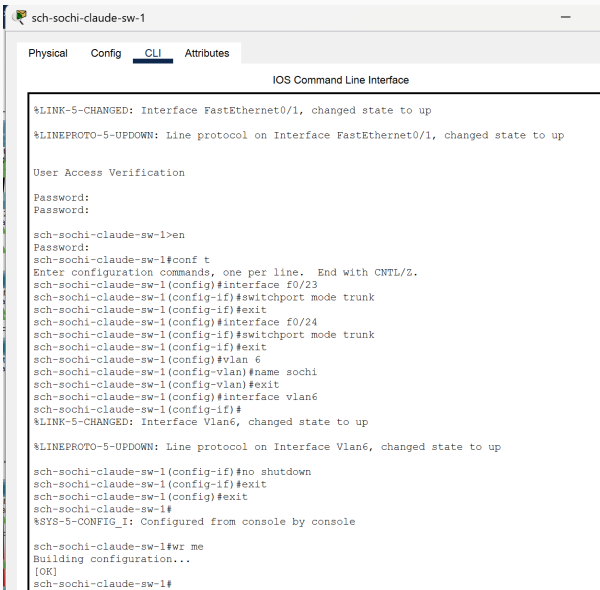
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1.5, changed state to up

msk-q42-claude-gw-1(config-subif)#encapsulation dot1Q 5
msk-q42-claude-gw-1(config-subif)#ip address 10.128.255.2 255.255.255.252
msk-q42-claude-gw-1(config-subif)#description donskeya
msk-q42-claude-gw-1(config-subif)#exit
msk-q42-claude-gw-1(config)#exit
msk-q42-claude-gw-1#
%SYS-5-CONFIG_I: Configured from console by console

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

Выполнение лабораторной работы

Выполнение лабораторной работы



```
sch-sochi-claude-sw-1
Physical  Config  CLI  Attributes
IOS Command Line Interface

%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

User Access Verification

Password:
Password:

sch-sochi-claude-sw-1>en
Password:
sch-sochi-claude-sw-1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
sch-sochi-claude-sw-1(config)#interface f0/23
sch-sochi-claude-sw-1(config-if)#switchport mode trunk
sch-sochi-claude-sw-1(config-if)#exit
sch-sochi-claude-sw-1(config)#interface f0/24
sch-sochi-claude-sw-1(config-if)#switchport mode trunk
sch-sochi-claude-sw-1(config-if)#exit
sch-sochi-claude-sw-1(config)#vlan 6
sch-sochi-claude-sw-1(config-vlan)#name sochi
sch-sochi-claude-sw-1(config-vlan)#exit
sch-sochi-claude-sw-1(config)#interface vlan6
sch-sochi-claude-sw-1(config-if)#
%LINK-5-CHANGED: Interface Vlan6, changed state to up

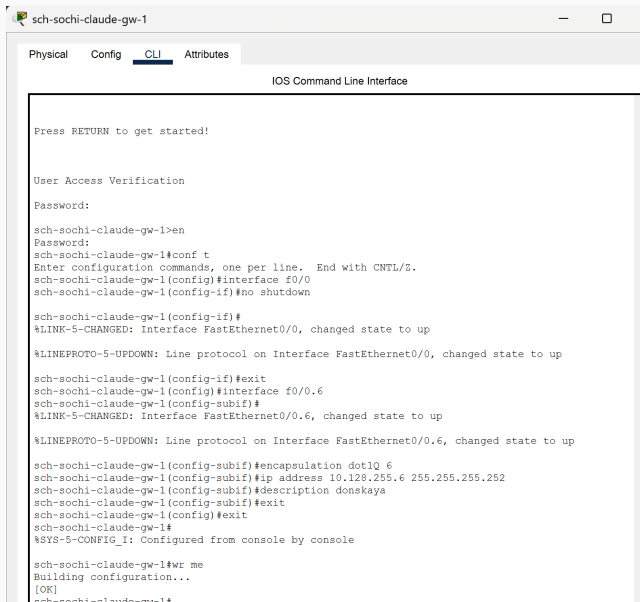
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan6, changed state to up

sch-sochi-claude-sw-1(config-if)#no shutdown
sch-sochi-claude-sw-1(config-if)#exit
sch-sochi-claude-sw-1(config)#exit
sch-sochi-claude-sw-1#
%SYS-5-CONFIG_I: Configured from console by console

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


Выполнение лабораторной работы

Выполнение лабораторной работы



```
sch-sochi-claude-gw-1
Physical  Config  CLI  Attributes
IOS Command Line Interface

Press RETURN to get started!

User Access Verification
Password:

sch-sochi-claude-gw-1>en
Password:
sch-sochi-claude-gw-1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
sch-sochi-claude-gw-1(config)#interface f0/0
sch-sochi-claude-gw-1(config-if)#no shutdown

sch-sochi-claude-gw-1(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

sch-sochi-claude-gw-1(config-if)#exit
sch-sochi-claude-gw-1(config)#interface f0/0.6
sch-sochi-claude-gw-1(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.6, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.6, changed state to up

sch-sochi-claude-gw-1(config-subif)#encapsulation dot1Q 6
sch-sochi-claude-gw-1(config-subif)#ip address 10.128.255.6 255.255.255.252
sch-sochi-claude-gw-1(config-subif)#description donskaya
sch-sochi-claude-gw-1(config-subif)#exit
sch-sochi-claude-gw-1(config)#exit
sch-sochi-claude-gw-1#
%SYS-5-CONFIG_I: Configured from console by console

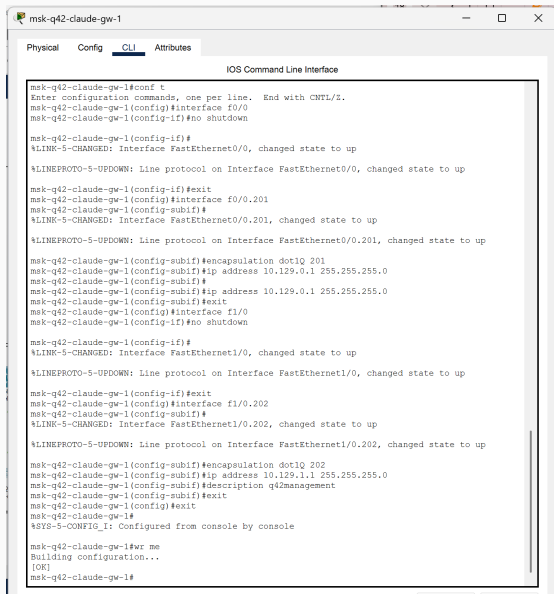
sch-sochi-claude-gw-1#wr me
Building configuration...
[OK]
sch-sochi-claude-gw-1#
```

Выполнение лабораторной работы

Следующим шагом настроим площадку 42-го квартала. Для этого настроим интерфейсы у маршрутизатора `msk-q42-claude-gw-1`, коммутатора `msk-q42-claude-sw-1`, маршрутизирующего коммутатора `msk-hostel-claude-gw-1` и коммутатора `msk-hostel-sw-1`

Выполнение лабораторной работы

Выполнение лабораторной работы



```
mks-q42-claude-gw-1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
mks-q42-claude-gw-1(config)#interface f0/0
mks-q42-claude-gw-1(config-if)#no shutdown

mks-q42-claude-gw-1(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

mks-q42-claude-gw-1(config-if)#exit
mks-q42-claude-gw-1(config)#interface f0/0.201
mks-q42-claude-gw-1(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.201, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.201, changed state to up

mks-q42-claude-gw-1(config-subif)#encapsulation dot1Q 201
mks-q42-claude-gw-1(config-subif)#ip address 10.129.0.1 255.255.255.0
mks-q42-claude-gw-1(config-subif)#
mks-q42-claude-gw-1(config-subif)#ip address 10.129.0.1 255.255.255.0
mks-q42-claude-gw-1(config-subif)#exit
mks-q42-claude-gw-1(config)#interface f1/0
mks-q42-claude-gw-1(config-if)#no shutdown

mks-q42-claude-gw-1(config-if)#
%LINK-5-CHANGED: Interface FastEthernet1/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up

mks-q42-claude-gw-1(config-if)#exit
mks-q42-claude-gw-1(config)#interface f1/0.202
mks-q42-claude-gw-1(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet1/0.202, changed state to up

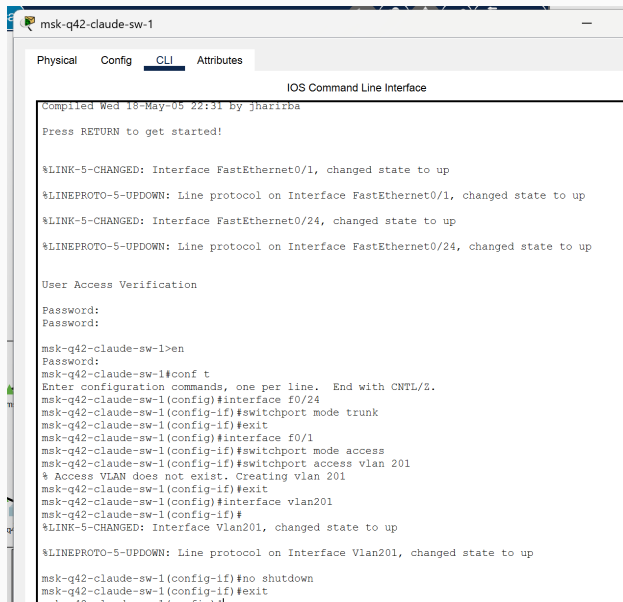
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0.202, changed state to up

mks-q42-claude-gw-1(config-subif)#encapsulation dot1Q 202
mks-q42-claude-gw-1(config-subif)#ip address 10.129.1.1 255.255.255.0
mks-q42-claude-gw-1(config-subif)#description q42management
mks-q42-claude-gw-1(config-subif)#exit
mks-q42-claude-gw-1(config)#exit
mks-q42-claude-gw-1#
%SYS-5-CONFIG_I: Configured from console by console

mks-q42-claude-gw-1#wr me
Building configuration...
[OK]
mks-q42-claude-gw-1#
```

Выполнение лабораторной работы

Выполнение лабораторной работы



```
msk-q42-claude-sw-1
Physical Config CLI Attributes
IOS Command Line Interface
Compiled Wed 18-May-05 22:31 by jharirba
Press RETURN to get started!

%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/24, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/24, changed state to up

User Access Verification

Password:
Password:

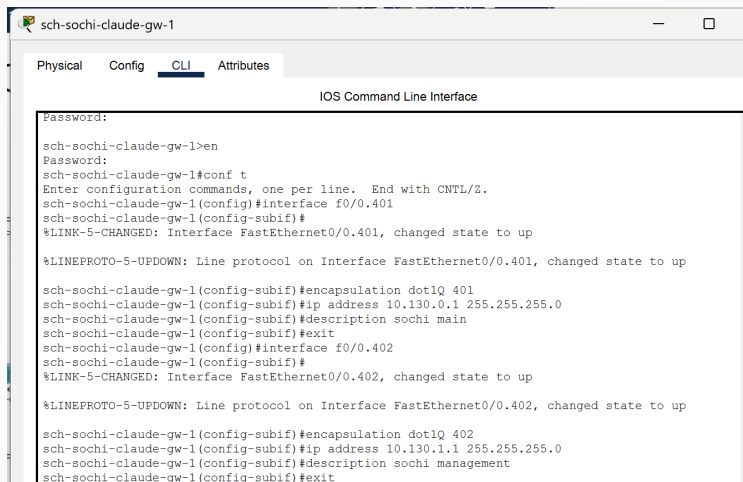
msk-q42-claude-sw-1>en
Password:
msk-q42-claude-sw-1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
msk-q42-claude-sw-1(config)#interface f0/24
msk-q42-claude-sw-1(config-if)#switchport mode trunk
msk-q42-claude-sw-1(config-if)#exit
msk-q42-claude-sw-1(config)#interface f0/1
msk-q42-claude-sw-1(config-if)#switchport mode access
msk-q42-claude-sw-1(config-if)#switchport access vlan 201
% Access VLAN does not exist. Creating vlan 201
msk-q42-claude-sw-1(config-if)#exit
msk-q42-claude-sw-1(config)#interface vlan201
msk-q42-claude-sw-1(config-if)#
%LINK-5-CHANGED: Interface Vlan201, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan201, changed state to up

msk-q42-claude-sw-1(config-if)#no shutdown
msk-q42-claude-sw-1(config-if)#exit
```


Выполнение лабораторной работы

Далее настроим площадку в Сочи. Настроим интерфейсы у маршрутизатора sch-sochi-clause-gw-1 и у коммутатора sch-sochi-clause-sw-1



```
sch-sochi-clause-gw-1
Physical Config CLI Attributes
IOS Command Line Interface
Password:
sch-sochi-clause-gw-1>en
Password:
sch-sochi-clause-gw-1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
sch-sochi-clause-gw-1(config)#interface f0/0.401
sch-sochi-clause-gw-1(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.401, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.401, changed state to up

sch-sochi-clause-gw-1(config-subif)#encapsulation dot1Q 401
sch-sochi-clause-gw-1(config-subif)#ip address 10.130.0.1 255.255.255.0
sch-sochi-clause-gw-1(config-subif)#description sochi main
sch-sochi-clause-gw-1(config-subif)#exit
sch-sochi-clause-gw-1(config)#interface f0/0.402
sch-sochi-clause-gw-1(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.402, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.402, changed state to up

sch-sochi-clause-gw-1(config-subif)#encapsulation dot1Q 402
sch-sochi-clause-gw-1(config-subif)#ip address 10.130.1.1 255.255.255.0
sch-sochi-clause-gw-1(config-subif)#description sochi management
sch-sochi-clause-gw-1(config-subif)#exit
```

Выполнение лабораторной работы

атем настроим маршрутизацию между площадками. Настроим маршрутизатор msk-donskaya-claudely-gw-1, маршрутизатор msk-q42-claude-gw-1 и маршрутизатор sch-sochi-claude-gw-1

```
User Access Verification

Password:

msk-donskaya-claudely-gw-1>en
Password:
Password:
msk-donskaya-claudely-gw-1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
msk-donskaya-claudely-gw-1(config)#ip route 10.129.0.0 255.255.0.0 10.128.255.2
msk-donskaya-claudely-gw-1(config)#ip route 10.130.0.0 255.255.0.0 10.128.255.6
msk-donskaya-claudely-gw-1(config)#
```

Copy Paste

Рис. 11: Настройка маршрутизатора msk-donskaya-claudely-gw-1.

Выполнение лабораторной работы

```
Password:
msk-q42-claude-gw-1>en
Password:
msk-q42-claude-gw-1#ip route 0.0.0.0 0.0.0.0 10.128.255.1
                        ^
% Invalid input detected at '^' marker.

msk-q42-claude-gw-1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
msk-q42-claude-gw-1(config)#ip route 0.0.0.0 0.0.0.0 10.128.255.1
msk-q42-claude-gw-1(config)#
```

Рис. 12: Настройка маршрутизатора msk-q42-claude-gw-1.

Выполнение лабораторной работы

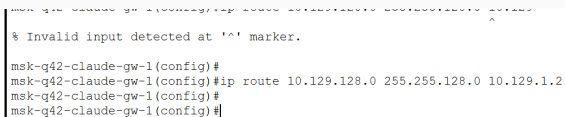
```
sch-sochi-claude-gw-1(config)#  
sch-sochi-claude-gw-1(config)#  
sch-sochi-claude-gw-1(config)#ip route 0.0.0.0 0.0.0.0 10.128.255.5  
sch-sochi-claude-gw-1(config)#
```

Рис. 13: Настройка маршрутизатора sch-sochi-claude-gw-1.

Выполнение лабораторной работы

Предпоследним шагом настроим маршрутизацию на 42 квартале. Для этого настроим маршрутизатор `msk-q42-claude-gw-1` (Рис. 1.26) и маршрутизирующий коммутатор `msk-hostel-claude-gw-1`

Выполнение лабораторной работы



```
msk-q42-claude-gw-1(config)#ip route 10.129.128.0 255.255.128.0 10.129.1.2 ^
% Invalid input detected at '^' marker.

msk-q42-claude-gw-1(config)#
msk-q42-claude-gw-1(config)#ip route 10.129.128.0 255.255.128.0 10.129.1.2
msk-q42-claude-gw-1(config)#
msk-q42-claude-gw-1(config)#
```

Рис. 14: Настройка маршрутизатора msk-q42-claude-gw-1.

Выполнение лабораторной работы

```
msk-hostel-claude-gw-1(config)#  
msk-hostel-claude-gw-1(config)#  
msk-hostel-claude-gw-1(config)#  
msk-hostel-claude-gw-1(config)#ip routing  
msk-hostel-claude-gw-1(config)#ip route 0.0.0.0 0.0.0.0 10.129.1.1  
msk-hostel-claude-gw-1(config)#
```

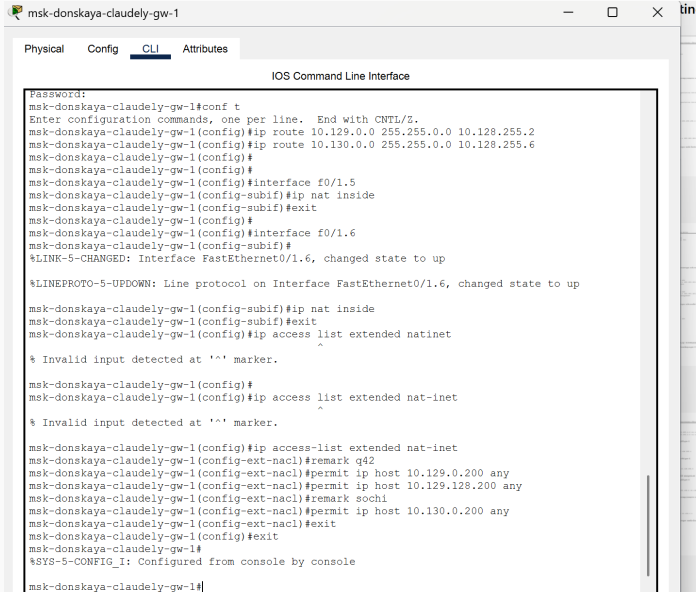
Рис. 15: Настройка интерфейсов маршрутизирующего коммутатора msk-hostel-claude-gw-1.

Выполнение лабораторной работы

И наконец последним шагом настроим NAT на маршрутизаторе `msk-donskaya-claudely-gw-1` (Рис. 1.28) и выполним контрольную проверку

Выполнение лабораторной работы

Выполнение лабораторной работы



```
msk-donskaya-claudely-gw-1
Physical Config CLI Attributes
IOS Command Line Interface
Password:
msk-donskaya-claudely-gw-1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
msk-donskaya-claudely-gw-1(config)#ip route 10.129.0.0 255.255.0.0 10.128.255.2
msk-donskaya-claudely-gw-1(config)#ip route 10.130.0.0 255.255.0.0 10.128.255.6
msk-donskaya-claudely-gw-1(config)#
msk-donskaya-claudely-gw-1(config)#
msk-donskaya-claudely-gw-1(config)#interface f0/1.5
msk-donskaya-claudely-gw-1(config-subif)#ip nat inside
msk-donskaya-claudely-gw-1(config-subif)#exit
msk-donskaya-claudely-gw-1(config)#
msk-donskaya-claudely-gw-1(config)#interface f0/1.6
msk-donskaya-claudely-gw-1(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/1.6, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1.6, changed state to up

msk-donskaya-claudely-gw-1(config-subif)#ip nat inside
msk-donskaya-claudely-gw-1(config-subif)#exit
msk-donskaya-claudely-gw-1(config)#ip access list extended natinet
^
% Invalid input detected at '^' marker.

msk-donskaya-claudely-gw-1(config)#
msk-donskaya-claudely-gw-1(config)#ip access list extended nat-inet
^
% Invalid input detected at '^' marker.

msk-donskaya-claudely-gw-1(config)#ip access-list extended nat-inet
msk-donskaya-claudely-gw-1(config-ext-nacl)#remark q42
msk-donskaya-claudely-gw-1(config-ext-nacl)#permit ip host 10.129.0.200 any
msk-donskaya-claudely-gw-1(config-ext-nacl)#permit ip host 10.129.128.200 any
msk-donskaya-claudely-gw-1(config-ext-nacl)#remark sochi
msk-donskaya-claudely-gw-1(config-ext-nacl)#permit ip host 10.130.0.200 any
msk-donskaya-claudely-gw-1(config-ext-nacl)#exit
msk-donskaya-claudely-gw-1(config)#exit
msk-donskaya-claudely-gw-1#
%SYS-5-CONFIG_I: Configured from console by console

msk-donskaya-claudely-gw-1#
```

Выводы

В ходе выполнения лабораторной работы мы настроили взаимодействие через сеть провайдера посредством статической маршрутизации локальной сети организации с сетью основного здания, расположенного в 42-м квартале в Москве, и сетью филиала, расположенного в г. Сочи.