

Лабораторная работа №14

Статическая маршрутизация в Интернете. Настройка.

Махорин Иван Сергеевич

1032211221

НПИБД-02-21

Открытие проекта

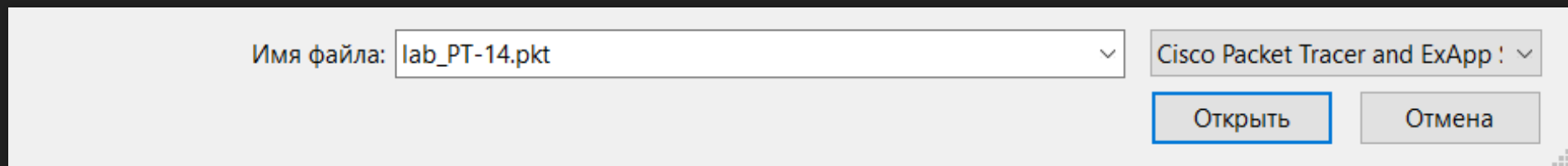
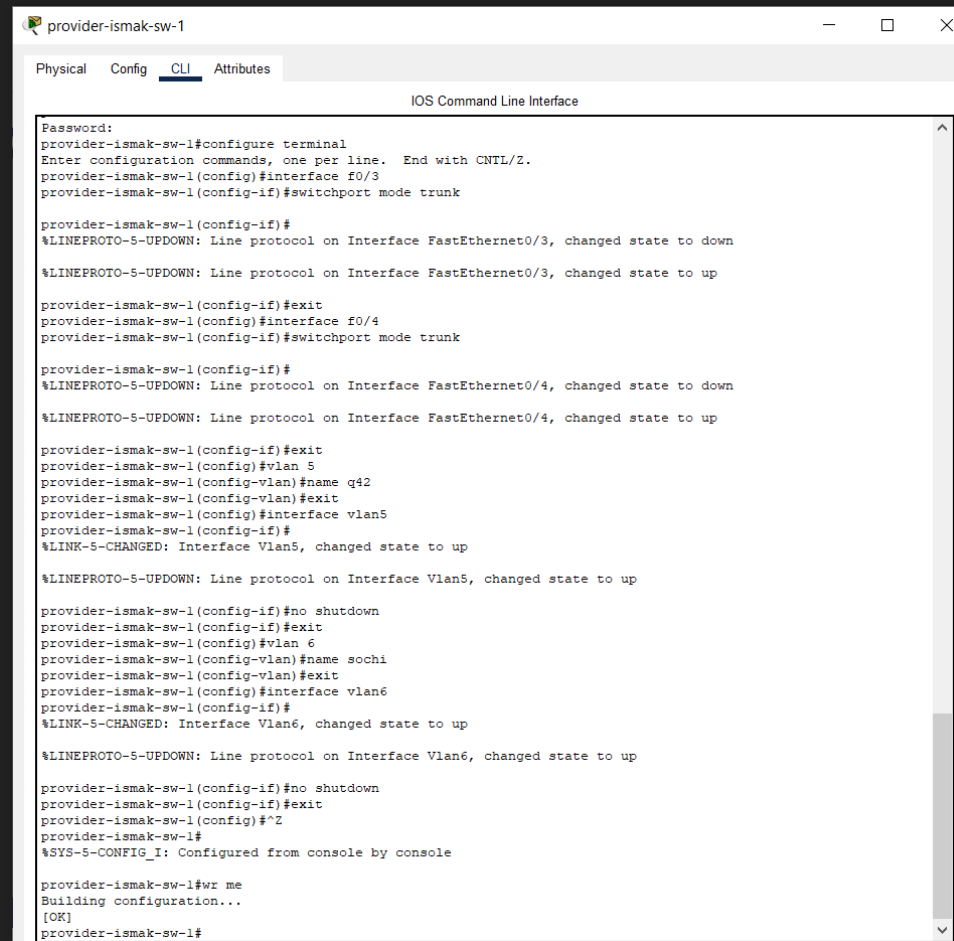


Рис. 1.1. Открытие проекта lab_PT-14.pkt.

Настройка линка между площадками



```
provider-ismak-sw-1
Physical Config CLI Attributes
IOS Command Line Interface

Password:
provider-ismak-sw-1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
provider-ismak-sw-1(config)#interface f0/3
provider-ismak-sw-1(config-if)#switchport mode trunk

provider-ismak-sw-1(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to up

provider-ismak-sw-1(config-if)#exit
provider-ismak-sw-1(config)#interface f0/4
provider-ismak-sw-1(config-if)#switchport mode trunk

provider-ismak-sw-1(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed state to up

provider-ismak-sw-1(config-if)#exit
provider-ismak-sw-1(config)#vlan 5
provider-ismak-sw-1(config-vlan)#name q42
provider-ismak-sw-1(config-vlan)#exit
provider-ismak-sw-1(config)#interface vlan5
provider-ismak-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-ismak-sw-1(config-if)#no shutdown
provider-ismak-sw-1(config-if)#exit
provider-ismak-sw-1(config)#vlan 6
provider-ismak-sw-1(config-vlan)#name sochi
provider-ismak-sw-1(config-vlan)#exit
provider-ismak-sw-1(config)#interface vlan6
provider-ismak-sw-1(config-if)#
%LINK-5-CHANGED: Interface Vlan6, changed state to up

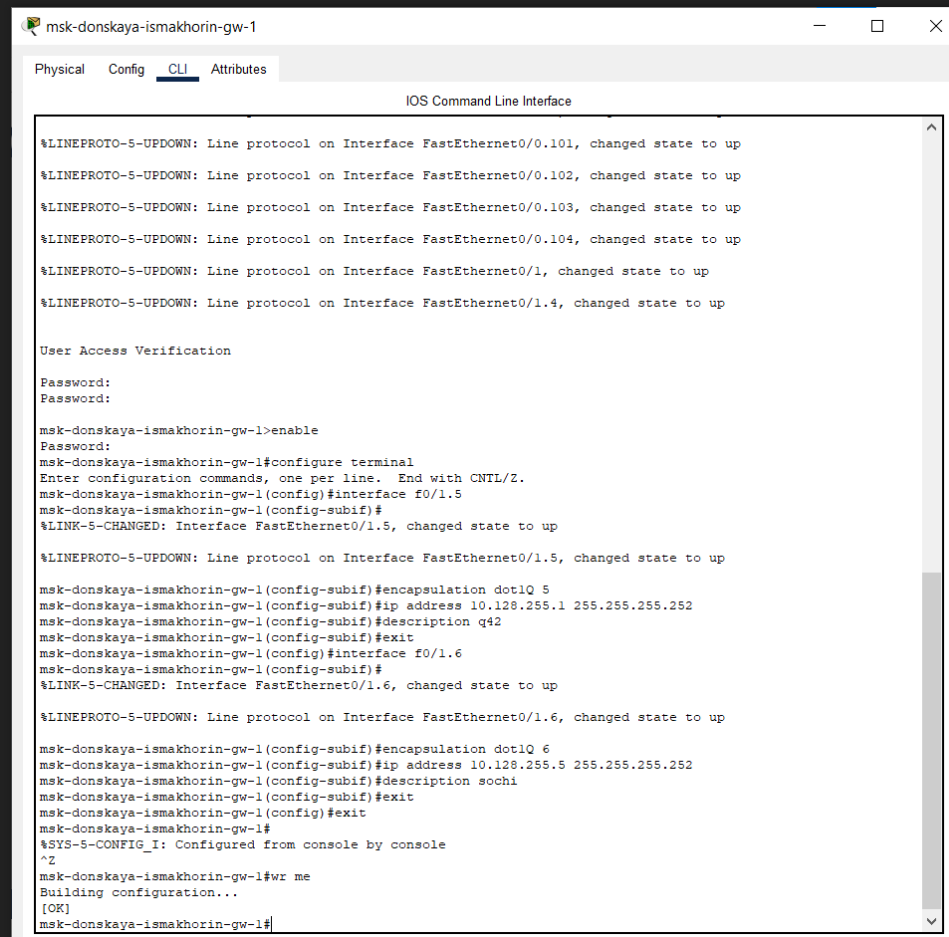
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan6, changed state to up

provider-ismak-sw-1(config-if)#no shutdown
provider-ismak-sw-1(config-if)#exit
provider-ismak-sw-1(config)#^Z
provider-ismak-sw-1#
%SYS-5-CONFIG_I: Configured from console by console

provider-ismak-sw-1#wr me
Building configuration...
[OK]
provider-ismak-sw-1#
```

Рис. 1.2. Настройка интерфейсов коммутатора provider-ismakhorin-sw-1.

Настройка линка между площадками



```
msk-donskaya-ismakhorin-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-ismakhorin-gw-1>enable
Password:
msk-donskaya-ismakhorin-gw-1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
msk-donskaya-ismakhorin-gw-1(config)#interface f0/1.5
msk-donskaya-ismakhorin-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

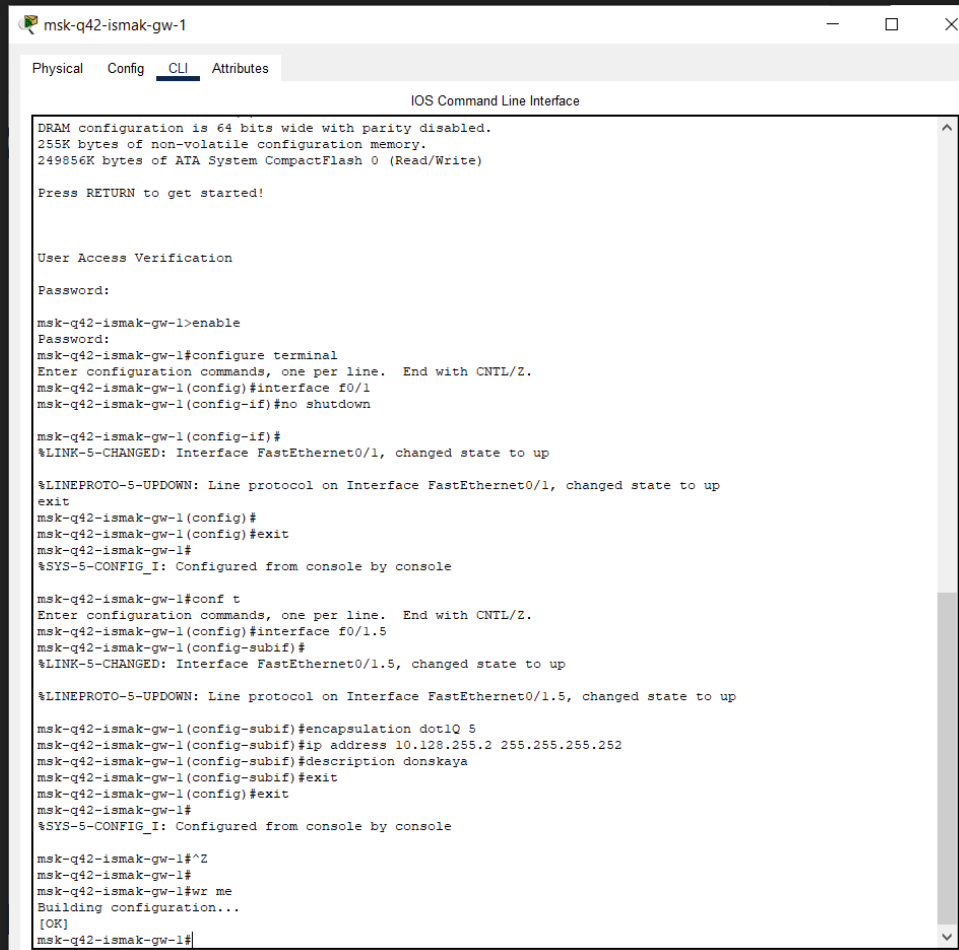
msk-donskaya-ismakhorin-gw-1(config-subif)#encapsulation dot1q 5
msk-donskaya-ismakhorin-gw-1(config-subif)#ip address 10.128.255.1 255.255.255.252
msk-donskaya-ismakhorin-gw-1(config-subif)#description q42
msk-donskaya-ismakhorin-gw-1(config-subif)#exit
msk-donskaya-ismakhorin-gw-1(config)#interface f0/1.6
msk-donskaya-ismakhorin-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-ismakhorin-gw-1(config-subif)#encapsulation dot1q 6
msk-donskaya-ismakhorin-gw-1(config-subif)#ip address 10.128.255.5 255.255.255.252
msk-donskaya-ismakhorin-gw-1(config-subif)#description sochi
msk-donskaya-ismakhorin-gw-1(config-subif)#exit
msk-donskaya-ismakhorin-gw-1(config)#exit
msk-donskaya-ismakhorin-gw-1#
%SYS-5-CONFIG_I: Configured from console by console
^Z
msk-donskaya-ismakhorin-gw-1#wr me
Building configuration...
[OK]
msk-donskaya-ismakhorin-gw-1#
```

Рис. 1.3. Настройка интерфейсов маршрутизатора msk-donskaya-ismakhorin-gw-1.

Настройка линка между площадками



```
msk-q42-ismak-gw-1
Physical Config CLI Attributes
IOS Command Line Interface

DRAM configuration is 64 bits wide with parity disabled.
255K bytes of non-volatile configuration memory.
249856K bytes of ATA System CompactFlash 0 (Read/Write)

Press RETURN to get started!

User Access Verification

Password:

msk-q42-ismak-gw-1>enable
Password:
msk-q42-ismak-gw-1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
msk-q42-ismak-gw-1(config)#interface f0/1
msk-q42-ismak-gw-1(config-if)#no shutdown

msk-q42-ismak-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
exit
msk-q42-ismak-gw-1(config)#
msk-q42-ismak-gw-1(config)#exit
msk-q42-ismak-gw-1#
%SYS-5-CONFIG_I: Configured from console by console

msk-q42-ismak-gw-1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
msk-q42-ismak-gw-1(config)#interface f0/1.5
msk-q42-ismak-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-ismak-gw-1(config-subif)#encapsulation dot1Q 5
msk-q42-ismak-gw-1(config-subif)#ip address 10.128.255.2 255.255.255.252
msk-q42-ismak-gw-1(config-subif)#description donsкаya
msk-q42-ismak-gw-1(config-subif)#exit
msk-q42-ismak-gw-1(config)#exit
msk-q42-ismak-gw-1#
%SYS-5-CONFIG_I: Configured from console by console

msk-q42-ismak-gw-1#^Z
msk-q42-ismak-gw-1#
msk-q42-ismak-gw-1#wr me
Building configuration...
[OK]
msk-q42-ismak-gw-1#
```

Рис. 1.4. Настройка интерфейсов маршрутизатора msk-q42-ismak-gw-1.

Настройка линка между площадками

```
msk-q42-ismak-gw-1#ping 10.128.255.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.128.255.1, timeout is 2 seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 0/0/0 ms

msk-q42-ismak-gw-1#ping 10.128.255.1

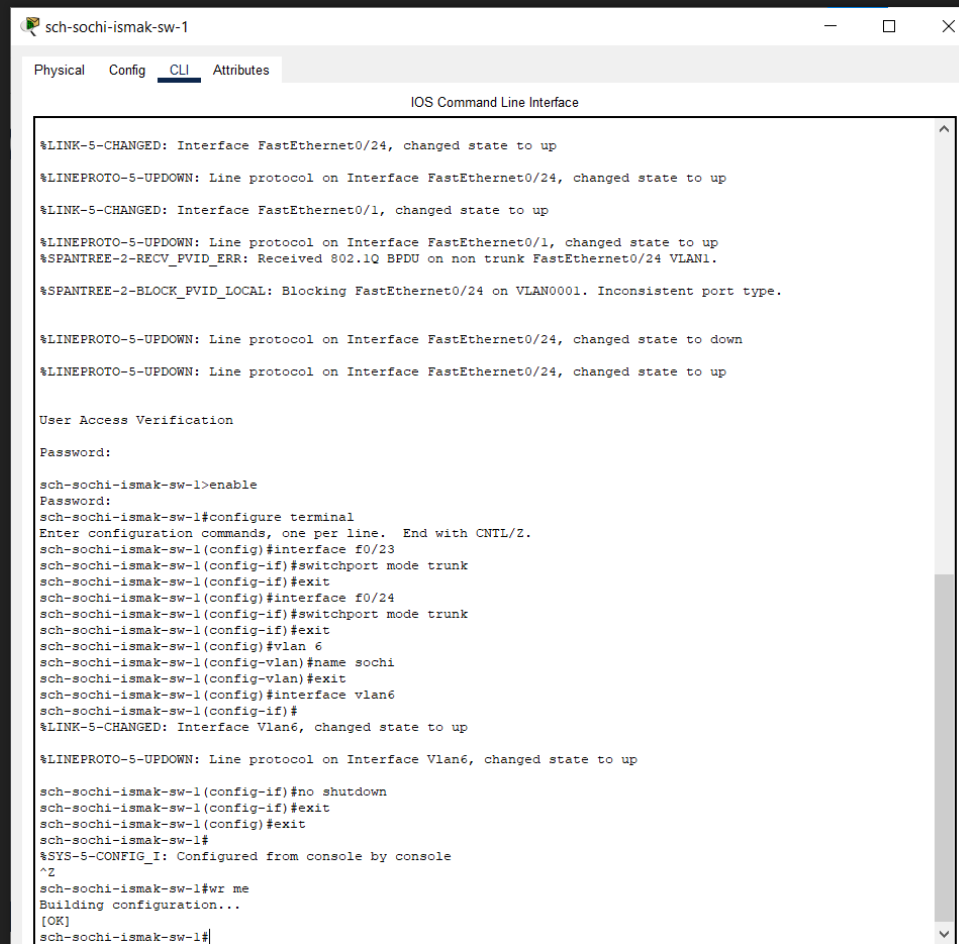
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.128.255.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/1 ms

msk-q42-ismak-gw-1#
```

Copy Paste

Рис. 1.5. Выполнение проверки.

Настройка линка между площадками



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

%LINK-5-CHANGED: Interface FastEthernet0/24, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/24, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
%SPANTREE-2-RECV_FVID_ERR: Received 802.1Q BPDU on non trunk FastEthernet0/24 VLAN1.
%SPANTREE-2-BLOCK_FVID_LOCAL: Blocking FastEthernet0/24 on VLAN0001. Inconsistent port type.

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

User Access Verification
Password:

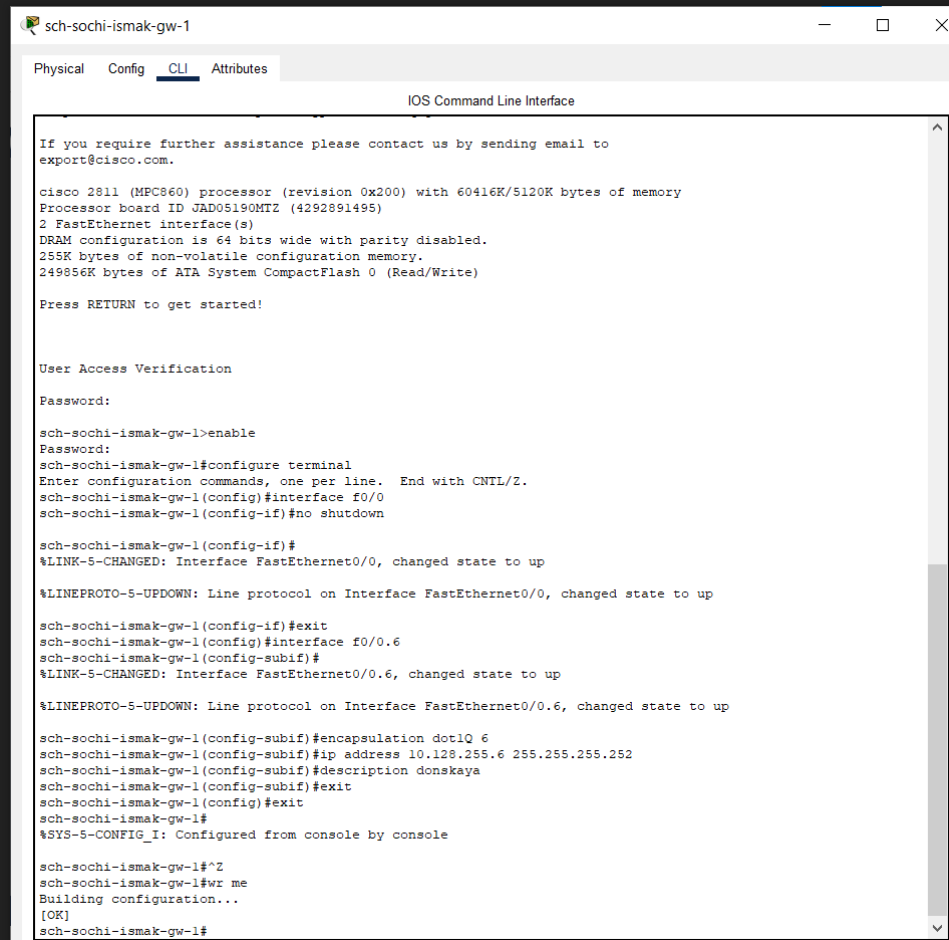
sch-sochi-ismak-sw-1>enable
Password:
sch-sochi-ismak-sw-1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
sch-sochi-ismak-sw-1(config)#interface f0/23
sch-sochi-ismak-sw-1(config-if)#switchport mode trunk
sch-sochi-ismak-sw-1(config-if)#exit
sch-sochi-ismak-sw-1(config)#interface f0/24
sch-sochi-ismak-sw-1(config-if)#switchport mode trunk
sch-sochi-ismak-sw-1(config-if)#exit
sch-sochi-ismak-sw-1(config)#vlan 6
sch-sochi-ismak-sw-1(config-vlan)#name sochi
sch-sochi-ismak-sw-1(config-vlan)#exit
sch-sochi-ismak-sw-1(config)#interface vlan6
sch-sochi-ismak-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-ismak-sw-1(config-if)#no shutdown
sch-sochi-ismak-sw-1(config-if)#exit
sch-sochi-ismak-sw-1(config)#exit
sch-sochi-ismak-sw-1#
%SYS-5-CONFIG_I: Configured from console by console
^Z
sch-sochi-ismak-sw-1#wr me
Building configuration...
[OK]
sch-sochi-ismak-sw-1#
```

Рис. 1.6. Настройка интерфейсов коммутатора sch-sochi-ismak-sw-1.

Настройка линка между площадками



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

If you require further assistance please contact us by sending email to
export@cisco.com.

cisco 2811 (MPC860) processor (revision 0x200) with 60416K/5120K bytes of memory
Processor board ID JAD05190MTZ (4292891495)
2 FastEthernet interface(s)
DRAM configuration is 64 bits wide with parity disabled.
255K bytes of non-volatile configuration memory.
249856K bytes of ATA System CompactFlash 0 (Read/Write)

Press RETURN to get started!

User Access Verification

Password:

sch-sochi-ismak-gw-1>enable
Password:
sch-sochi-ismak-gw-1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
sch-sochi-ismak-gw-1(config)#interface f0/0
sch-sochi-ismak-gw-1(config-if)#no shutdown

sch-sochi-ismak-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-ismak-gw-1(config-if)#exit
sch-sochi-ismak-gw-1(config)#interface f0/0.6
sch-sochi-ismak-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-ismak-gw-1(config-subif)#encapsulation dot1Q 6
sch-sochi-ismak-gw-1(config-subif)#ip address 10.128.255.6 255.255.255.252
sch-sochi-ismak-gw-1(config-subif)#description donskaya
sch-sochi-ismak-gw-1(config-subif)#exit
sch-sochi-ismak-gw-1(config)#exit
sch-sochi-ismak-gw-1#
%SYS-5-CONFIG_I: Configured from console by console

sch-sochi-ismak-gw-1#^Z
sch-sochi-ismak-gw-1#wr me
Building configuration...
[OK]
sch-sochi-ismak-gw-1#
```

Рис. 1.7. Настройка интерфейсов маршрутизатора sch-sochi-ismak-gw-1.

Настройка линка между площадками

```
sch-sochi-ismak-gw-l#ping 10.128.255.5

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.128.255.5, timeout is 2 seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 0/0/2 ms

sch-sochi-ismak-gw-l#ping 10.128.255.5

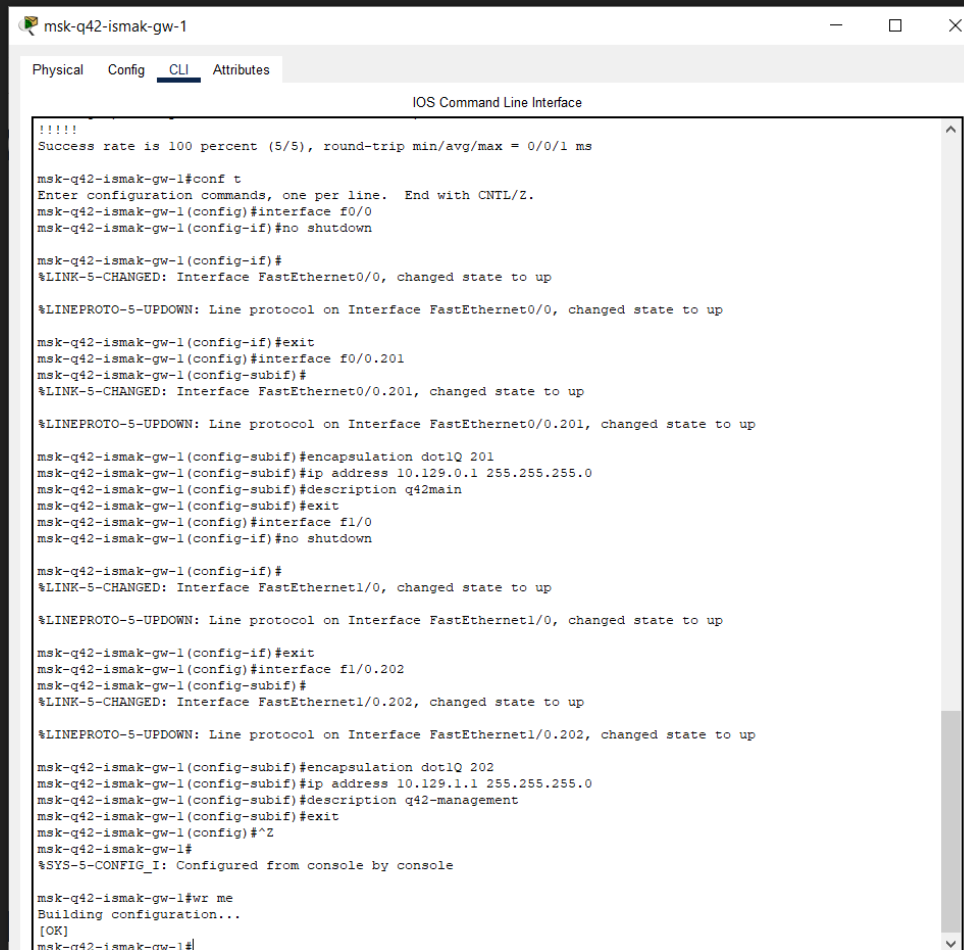
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.128.255.5, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/0 ms

sch-sochi-ismak-gw-l#
```

Copy Paste

Рис. 1.8. Выполнение проверки.

Настройка площадки 42-го квартала



```
msk-q42-ismak-gw-1
Physical Config CLI Attributes
IOS Command Line Interface
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/1 ms
msk-q42-ismak-gw-1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
msk-q42-ismak-gw-1(config)#interface f0/0
msk-q42-ismak-gw-1(config-if)#no shutdown

msk-q42-ismak-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

msk-q42-ismak-gw-1(config-if)#exit
msk-q42-ismak-gw-1(config)#interface f0/0.201
msk-q42-ismak-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

msk-q42-ismak-gw-1(config-subif)#encapsulation dot1Q 201
msk-q42-ismak-gw-1(config-subif)#ip address 10.129.0.1 255.255.255.0
msk-q42-ismak-gw-1(config-subif)#description q42main
msk-q42-ismak-gw-1(config-subif)#exit
msk-q42-ismak-gw-1(config)#interface f1/0
msk-q42-ismak-gw-1(config-if)#no shutdown

msk-q42-ismak-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

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

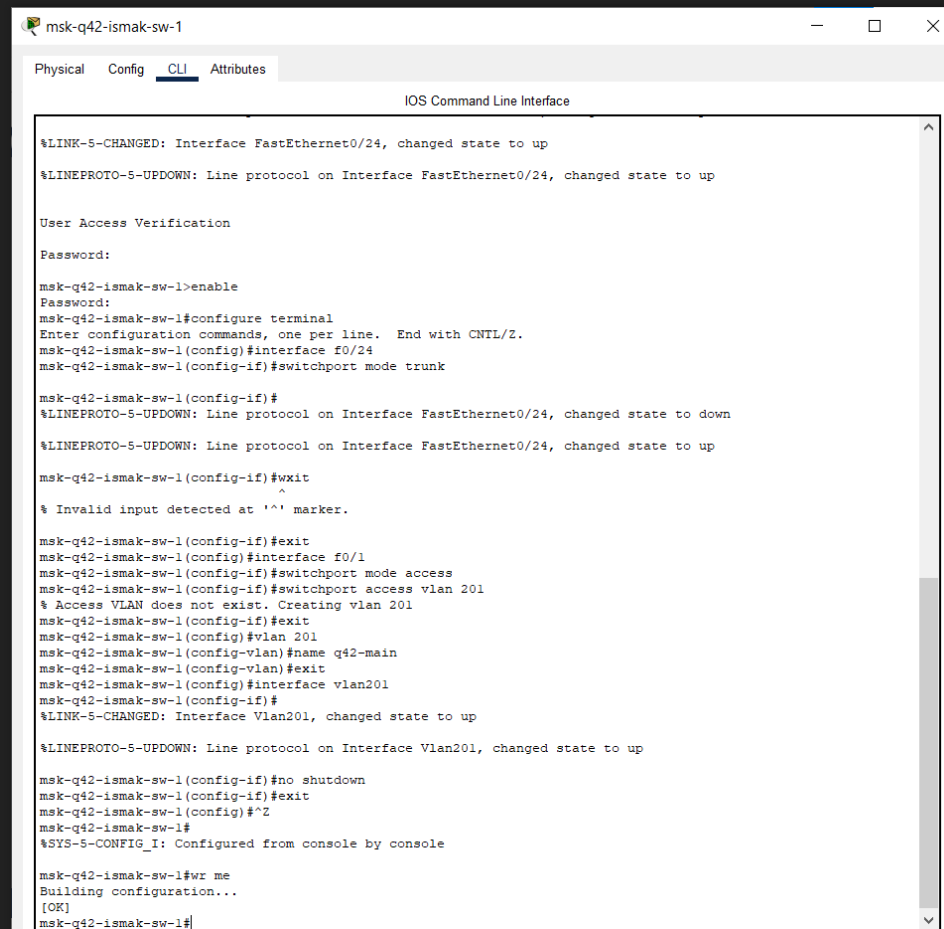
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0.202, changed state to up

msk-q42-ismak-gw-1(config-subif)#encapsulation dot1Q 202
msk-q42-ismak-gw-1(config-subif)#ip address 10.129.1.1 255.255.255.0
msk-q42-ismak-gw-1(config-subif)#description q42-management
msk-q42-ismak-gw-1(config-subif)#exit
msk-q42-ismak-gw-1(config)#^Z
%SYS-5-CONFIG_I: Configured from console by console

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

Рис. 1.9. Настройка интерфейсов маршрутизатора msk-q42-ismak-gw-1.

Настройка площадки 42-го квартала



```
msk-q42-ismak-sw-1
Physical Config CLI Attributes
IOS Command Line Interface

%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:

msk-q42-ismak-sw-1>enable
Password:
msk-q42-ismak-sw-1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
msk-q42-ismak-sw-1(config)#interface f0/24
msk-q42-ismak-sw-1(config-if)#switchport mode trunk

msk-q42-ismak-sw-1(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/24, changed state to down

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

msk-q42-ismak-sw-1(config-if)#^
% Invalid input detected at '^' marker.

msk-q42-ismak-sw-1(config-if)#exit
msk-q42-ismak-sw-1(config)#interface f0/1
msk-q42-ismak-sw-1(config-if)#switchport mode access
msk-q42-ismak-sw-1(config-if)#switchport access vlan 201
% Access VLAN does not exist. Creating vlan 201
msk-q42-ismak-sw-1(config-if)#exit
msk-q42-ismak-sw-1(config)#vlan 201
msk-q42-ismak-sw-1(config-vlan)#name q42-main
msk-q42-ismak-sw-1(config-vlan)#exit
msk-q42-ismak-sw-1(config)#interface vlan201
msk-q42-ismak-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-ismak-sw-1(config-if)#no shutdown
msk-q42-ismak-sw-1(config-if)#exit
msk-q42-ismak-sw-1(config)#^Z
msk-q42-ismak-sw-1#
%SYS-5-CONFIG_I: Configured from console by console

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

Рис. 1. 10. Настройка интерфейсов коммутатора msk-q42-ismak-sw-1.

Настройка площадки 42-го квартала

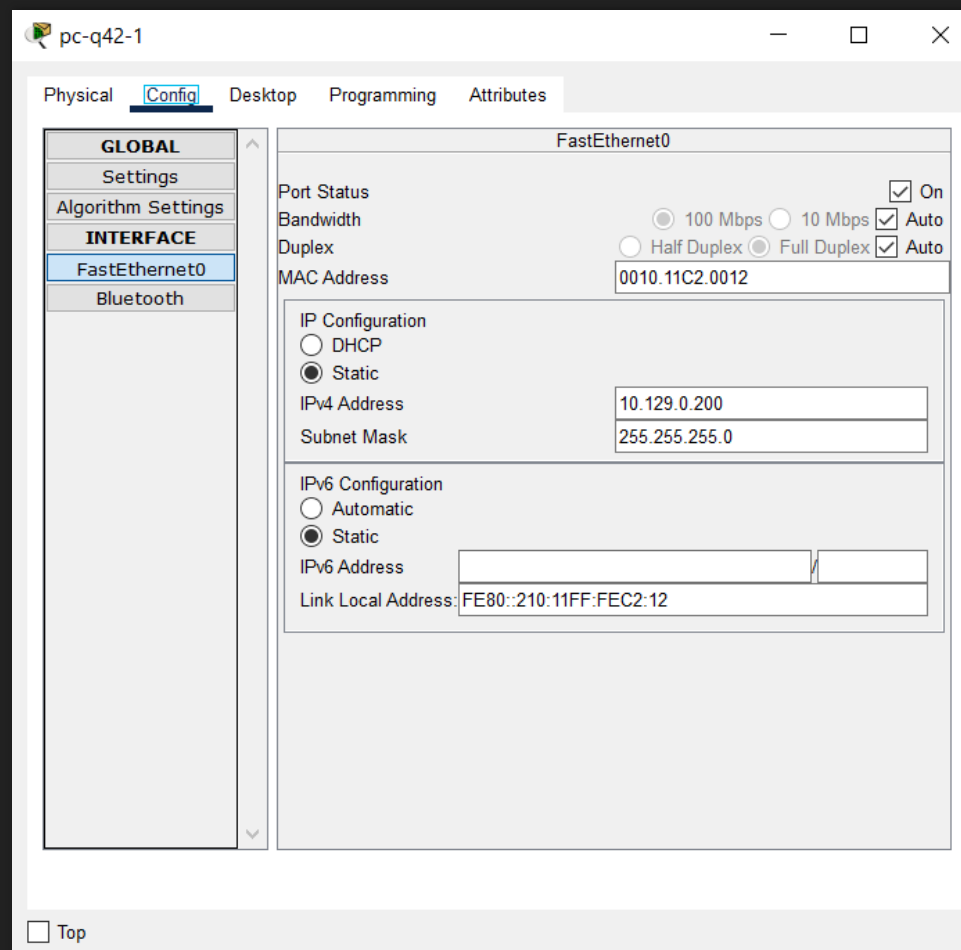
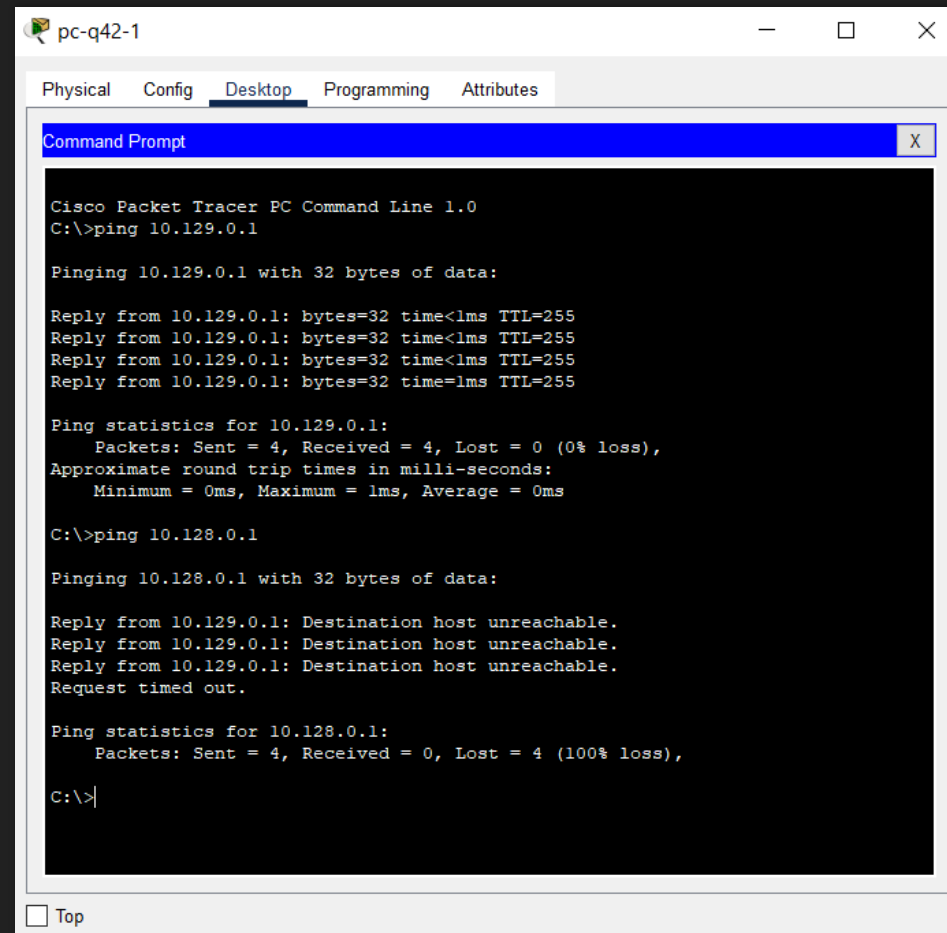


Рис. 1.11. Присвоение адресов оконечному устройству pc-q42-1.

Настройка площадки 42-го квартала



```
pc-q42-1
Physical Config Desktop Programming Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 10.129.0.1

Pinging 10.129.0.1 with 32 bytes of data:

Reply from 10.129.0.1: bytes=32 time<1ms TTL=255
Reply from 10.129.0.1: bytes=32 time<1ms TTL=255
Reply from 10.129.0.1: bytes=32 time<1ms TTL=255
Reply from 10.129.0.1: bytes=32 time<1ms TTL=255

Ping statistics for 10.129.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>ping 10.128.0.1

Pinging 10.128.0.1 with 32 bytes of data:

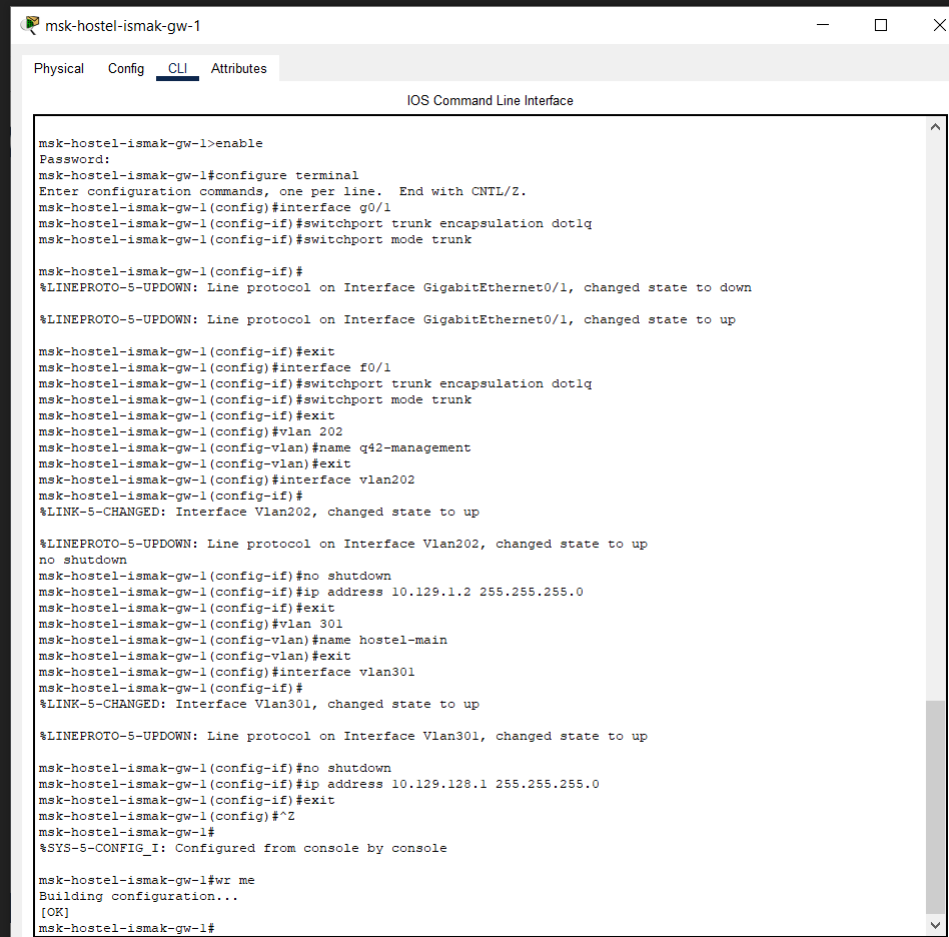
Reply from 10.129.0.1: Destination host unreachable.
Reply from 10.129.0.1: Destination host unreachable.
Reply from 10.129.0.1: Destination host unreachable.
Request timed out.

Ping statistics for 10.128.0.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

Рис. 1.12. Выполнение проверки.

Настройка площадки 42-го квартала



```
msk-hostel-ismak-gw-1>enable
Password:
msk-hostel-ismak-gw-1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
msk-hostel-ismak-gw-1(config)#interface g0/1
msk-hostel-ismak-gw-1(config-if)#switchport trunk encapsulation dot1q
msk-hostel-ismak-gw-1(config-if)#switchport mode trunk

msk-hostel-ismak-gw-1(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up

msk-hostel-ismak-gw-1(config-if)#exit
msk-hostel-ismak-gw-1(config)#interface f0/1
msk-hostel-ismak-gw-1(config-if)#switchport trunk encapsulation dot1q
msk-hostel-ismak-gw-1(config-if)#switchport mode trunk
msk-hostel-ismak-gw-1(config-if)#exit
msk-hostel-ismak-gw-1(config)#vlan 202
msk-hostel-ismak-gw-1(config-vlan)#name q42-management
msk-hostel-ismak-gw-1(config-vlan)#exit
msk-hostel-ismak-gw-1(config)#interface vlan202
msk-hostel-ismak-gw-1(config-if)#
%LINK-5-CHANGED: Interface Vlan202, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan202, changed state to up
no shutdown
msk-hostel-ismak-gw-1(config-if)#no shutdown
msk-hostel-ismak-gw-1(config-if)#ip address 10.129.1.2 255.255.255.0
msk-hostel-ismak-gw-1(config-if)#exit
msk-hostel-ismak-gw-1(config)#vlan 301
msk-hostel-ismak-gw-1(config-vlan)#name hostel-main
msk-hostel-ismak-gw-1(config-vlan)#exit
msk-hostel-ismak-gw-1(config)#interface vlan301
msk-hostel-ismak-gw-1(config-if)#
%LINK-5-CHANGED: Interface Vlan301, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan301, changed state to up

msk-hostel-ismak-gw-1(config-if)#no shutdown
msk-hostel-ismak-gw-1(config-if)#ip address 10.129.128.1 255.255.255.0
msk-hostel-ismak-gw-1(config-if)#exit
msk-hostel-ismak-gw-1(config)#^Z
msk-hostel-ismak-gw-1#
%SYS-5-CONFIG_I: Configured from console by console

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

Рис. 1.13. Настройка интерфейсов маршрутизирующего коммутатора msk-hostel-ismak-gw-1.

Настройка площадки 42-го квартала

```
msk-hostel-ismak-gw-1#ping 10.129.1.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.129.1.2, timeout is 2 seconds:
!!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/13/27 ms

msk-hostel-ismak-gw-1#ping 10.129.1.2

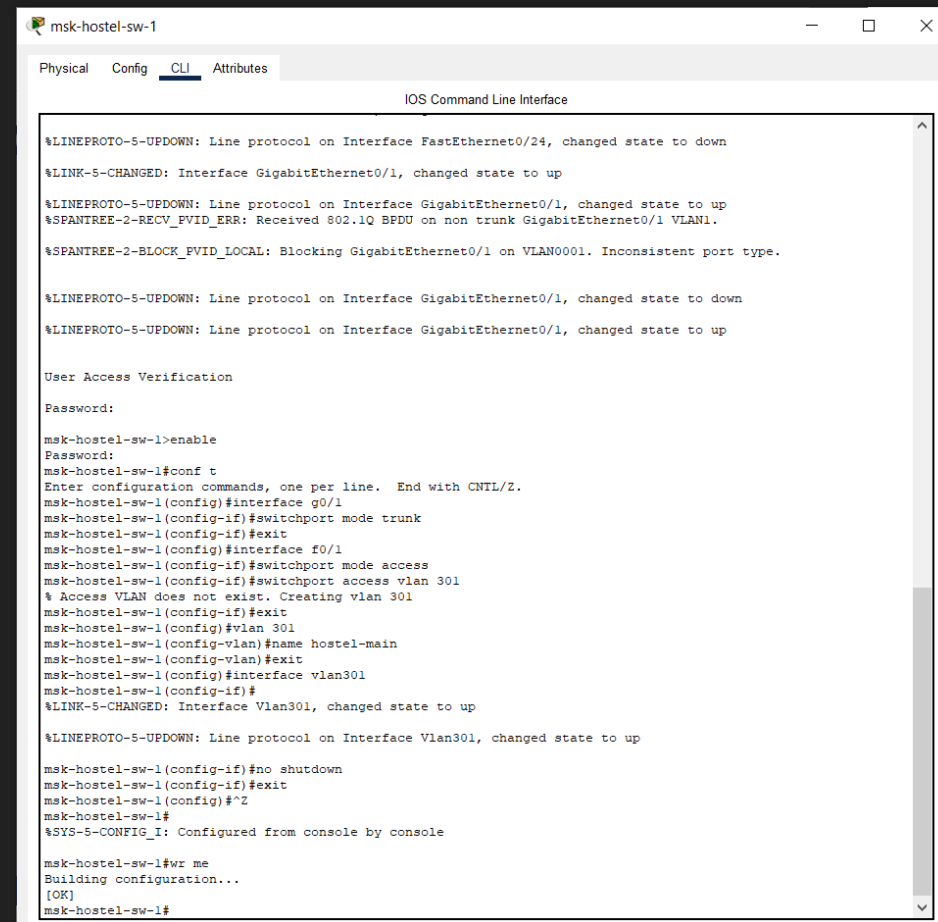
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.129.1.2, timeout is 2 seconds:
!!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 6/8/10 ms

msk-hostel-ismak-gw-1#
```

Copy Paste

Рис. 1.14. Выполнение проверки.

Настройка площадки 42-го квартала



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

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/24, changed state to down
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up
%SPANTREE-2-RECV_FVID_ERR: Received 802.1Q BPDU on non trunk GigabitEthernet0/1 VLAN1.
%SPANTREE-2-BLOCK_FVID_LOCAL: Blocking GigabitEthernet0/1 on VLAN0001. Inconsistent port type.

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up

User Access Verification
Password:
msk-hostel-sw-1>enable
Password:
msk-hostel-sw-1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
msk-hostel-sw-1(config)#interface g0/1
msk-hostel-sw-1(config-if)#switchport mode trunk
msk-hostel-sw-1(config-if)#exit
msk-hostel-sw-1(config)#interface f0/1
msk-hostel-sw-1(config-if)#switchport mode access
msk-hostel-sw-1(config-if)#switchport access vlan 301
% Access VLAN does not exist. Creating vlan 301
msk-hostel-sw-1(config-if)#exit
msk-hostel-sw-1(config)#vlan 301
msk-hostel-sw-1(config-vlan)#name hostel-main
msk-hostel-sw-1(config-vlan)#exit
msk-hostel-sw-1(config)#interface vlan301
msk-hostel-sw-1(config-if)#
%LINK-5-CHANGED: Interface Vlan301, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan301, changed state to up

msk-hostel-sw-1(config-if)#no shutdown
msk-hostel-sw-1(config-if)#exit
msk-hostel-sw-1(config)#^Z
msk-hostel-sw-1#
%SYS-5-CONFIG_I: Configured from console by console

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

Рис. 1.15. Настройка интерфейсов коммутатора msk-hostel-sw-1.

Настройка площадки 42-го квартала

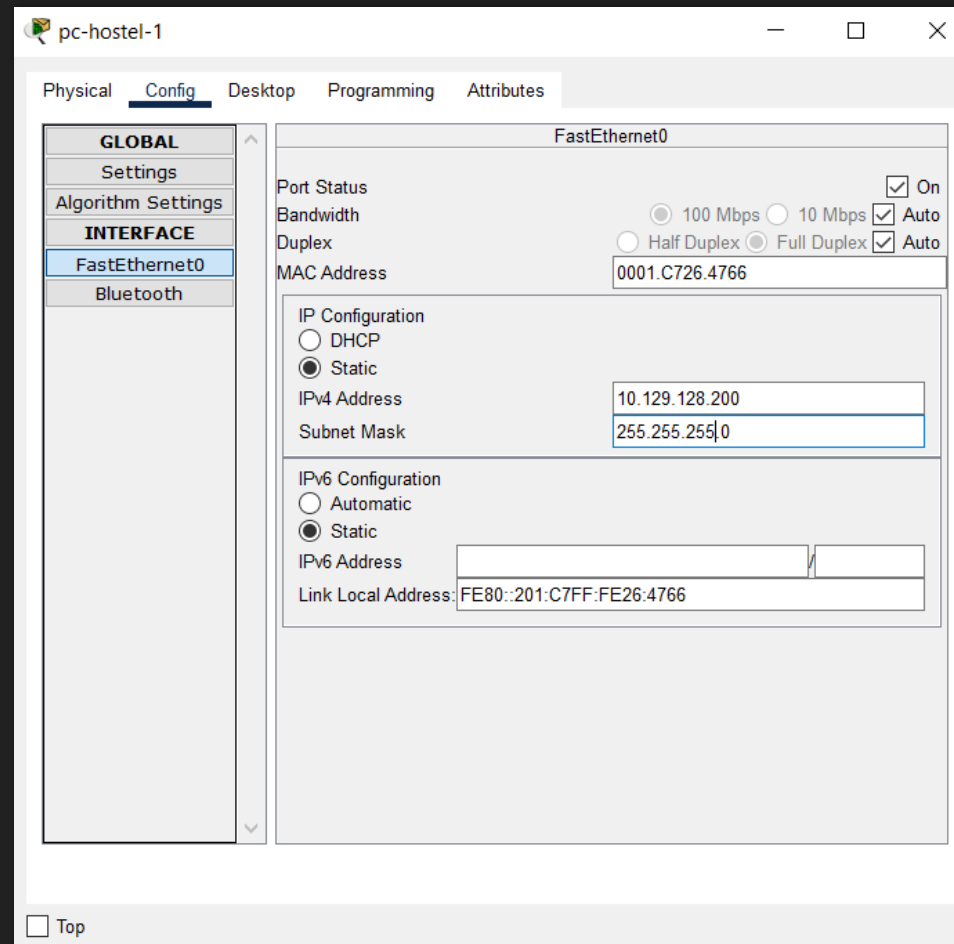
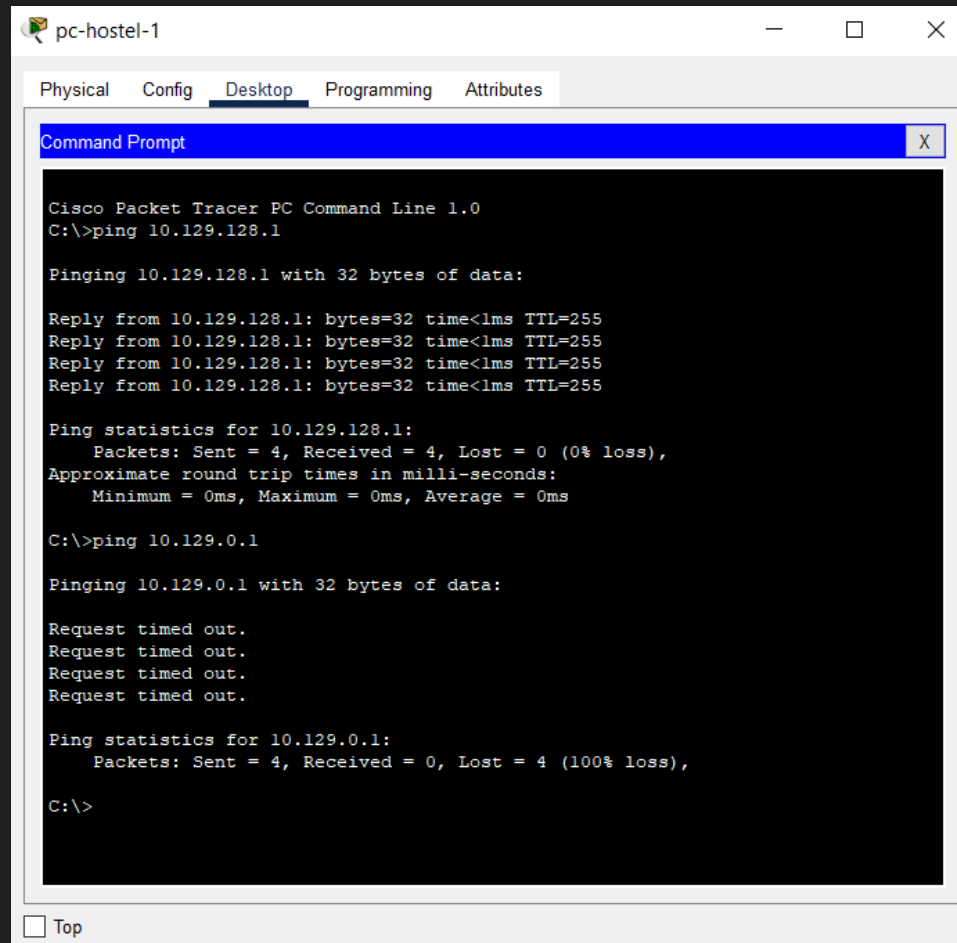


Рис. 1.16. Присвоение адресов оконечному устройству pc-hostel-1.

Настройка площадки 42-го квартала



```
pc-hostel-1
Physical Config Desktop Programming Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 10.129.128.1

Pinging 10.129.128.1 with 32 bytes of data:

Reply from 10.129.128.1: bytes=32 time<1ms TTL=255
Reply from 10.129.128.1: bytes=32 time<1ms TTL=255
Reply from 10.129.128.1: bytes=32 time<1ms TTL=255
Reply from 10.129.128.1: bytes=32 time<1ms TTL=255

Ping statistics for 10.129.128.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 10.129.0.1

Pinging 10.129.0.1 with 32 bytes of data:

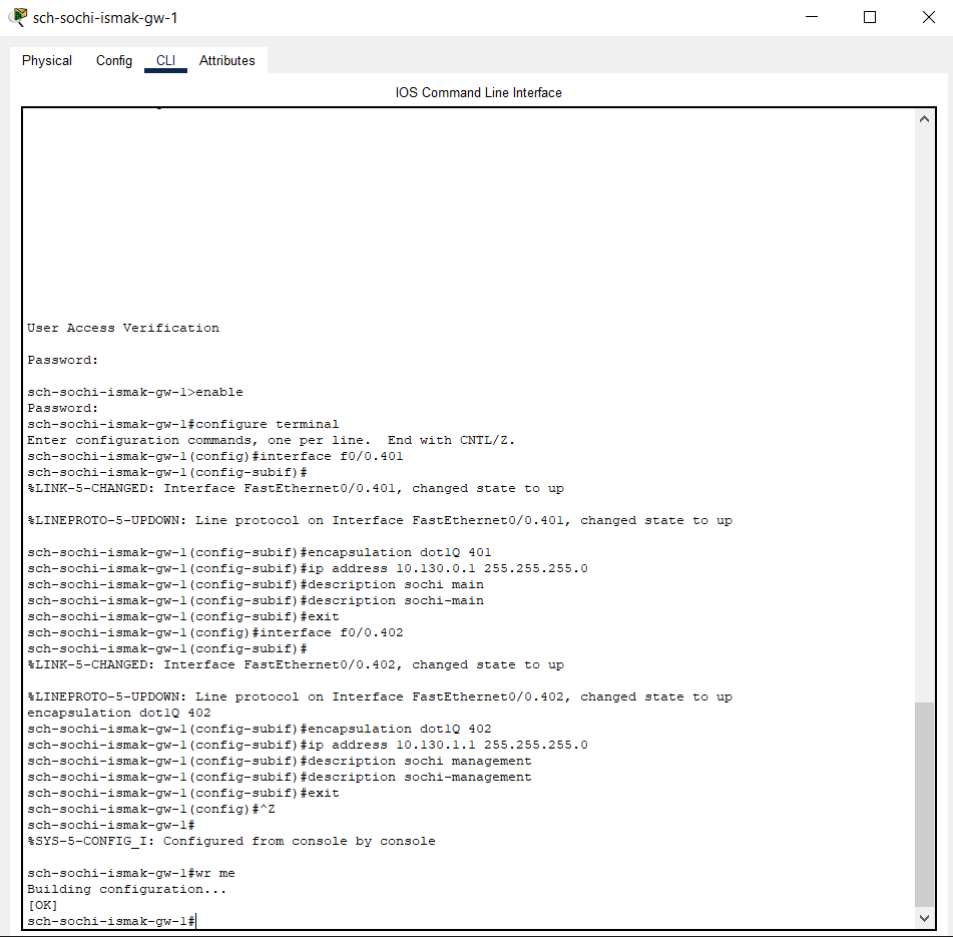
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 10.129.0.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

Рис. 1.17. Выполнение проверки.

Настройка площадки в Сочи



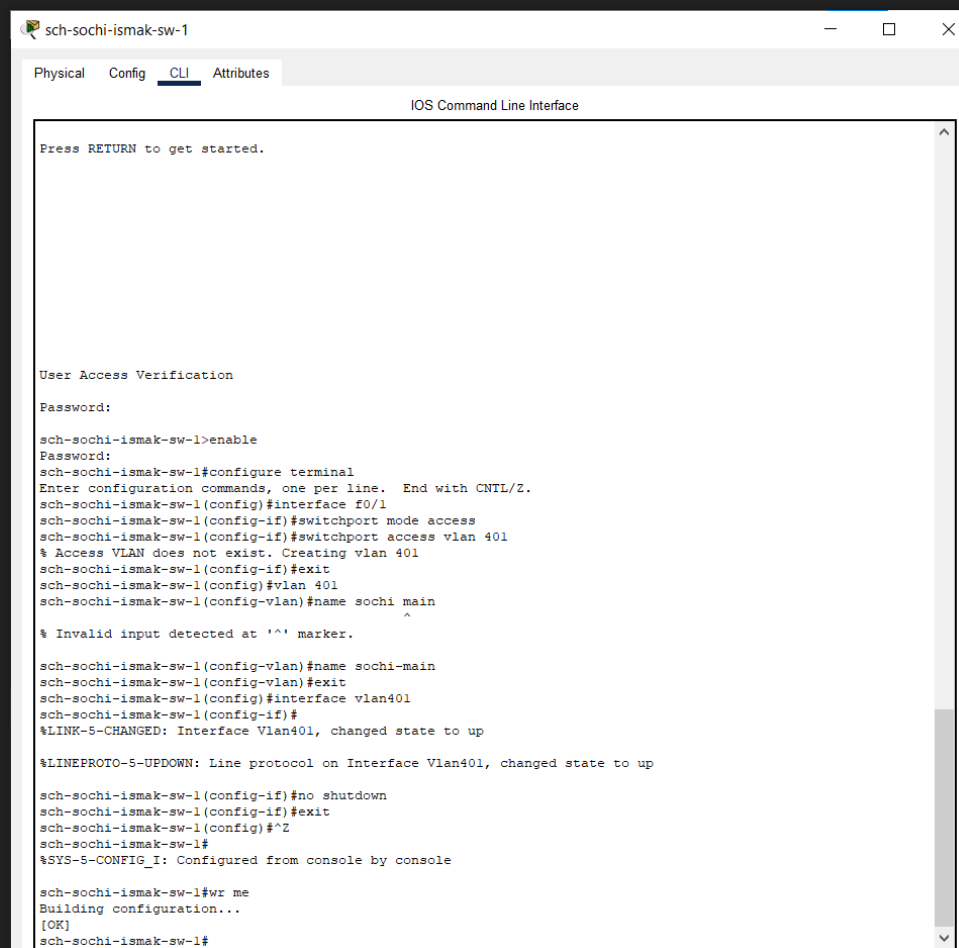
```
sch-sochi-ismak-gw-1
Physical Config CLI Attributes
IOS Command Line Interface

User Access Verification
Password:
sch-sochi-ismak-gw-1>enable
Password:
sch-sochi-ismak-gw-1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
sch-sochi-ismak-gw-1(config)#interface f0/0.401
sch-sochi-ismak-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-ismak-gw-1(config-subif)#encapsulation dot1Q 401
sch-sochi-ismak-gw-1(config-subif)#ip address 10.130.0.1 255.255.255.0
sch-sochi-ismak-gw-1(config-subif)#description sochi main
sch-sochi-ismak-gw-1(config-subif)#description sochi-main
sch-sochi-ismak-gw-1(config-subif)#exit
sch-sochi-ismak-gw-1(config)#interface f0/0.402
sch-sochi-ismak-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
encapsulation dot1Q 402
sch-sochi-ismak-gw-1(config-subif)#encapsulation dot1Q 402
sch-sochi-ismak-gw-1(config-subif)#ip address 10.130.1.1 255.255.255.0
sch-sochi-ismak-gw-1(config-subif)#description sochi management
sch-sochi-ismak-gw-1(config-subif)#description sochi-management
sch-sochi-ismak-gw-1(config-subif)#exit
sch-sochi-ismak-gw-1(config)#^Z
sch-sochi-ismak-gw-1#
%SYS-5-CONFIG_I: Configured from console by console

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

Рис. 1.18. Первоначальная настройка маршрутизатора sch-sochi-ismak-gw-1.

Настройка площадки в Сочи



The screenshot shows a network management interface for a switch named 'sch-sochi-ismak-sw-1'. The 'CLI' tab is selected, displaying the 'IOS Command Line Interface'. The interface shows a series of configuration commands and their outputs. The commands include enabling the switch, configuring the terminal, setting interface f0/1 to switchport mode access, creating VLAN 401, naming the VLAN 'sochi main', and enabling the interface. The output shows the VLAN being created and the interface being brought up. The window has a title bar with standard OS controls and tabs for Physical, Config, CLI, and Attributes.

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

Press RETURN to get started.

User Access Verification
Password:

sch-sochi-ismak-sw-1>enable
Password:
sch-sochi-ismak-sw-1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
sch-sochi-ismak-sw-1(config)#interface f0/1
sch-sochi-ismak-sw-1(config-if)#switchport mode access
sch-sochi-ismak-sw-1(config-if)#switchport access vlan 401
% Access VLAN does not exist. Creating vlan 401
sch-sochi-ismak-sw-1(config-if)#exit
sch-sochi-ismak-sw-1(config)#vlan 401
sch-sochi-ismak-sw-1(config-vlan)#name sochi main
^
% Invalid input detected at '^' marker.

sch-sochi-ismak-sw-1(config-vlan)#name sochi-main
sch-sochi-ismak-sw-1(config-vlan)#exit
sch-sochi-ismak-sw-1(config)#interface vlan401
sch-sochi-ismak-sw-1(config-if)#
%LINK-5-CHANGED: Interface Vlan401, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan401, changed state to up

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

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

Рис. 1.19. Первоначальная настройка коммутатора sch-sochi-ismak-sw-1.

Настройка площадки в Сочи

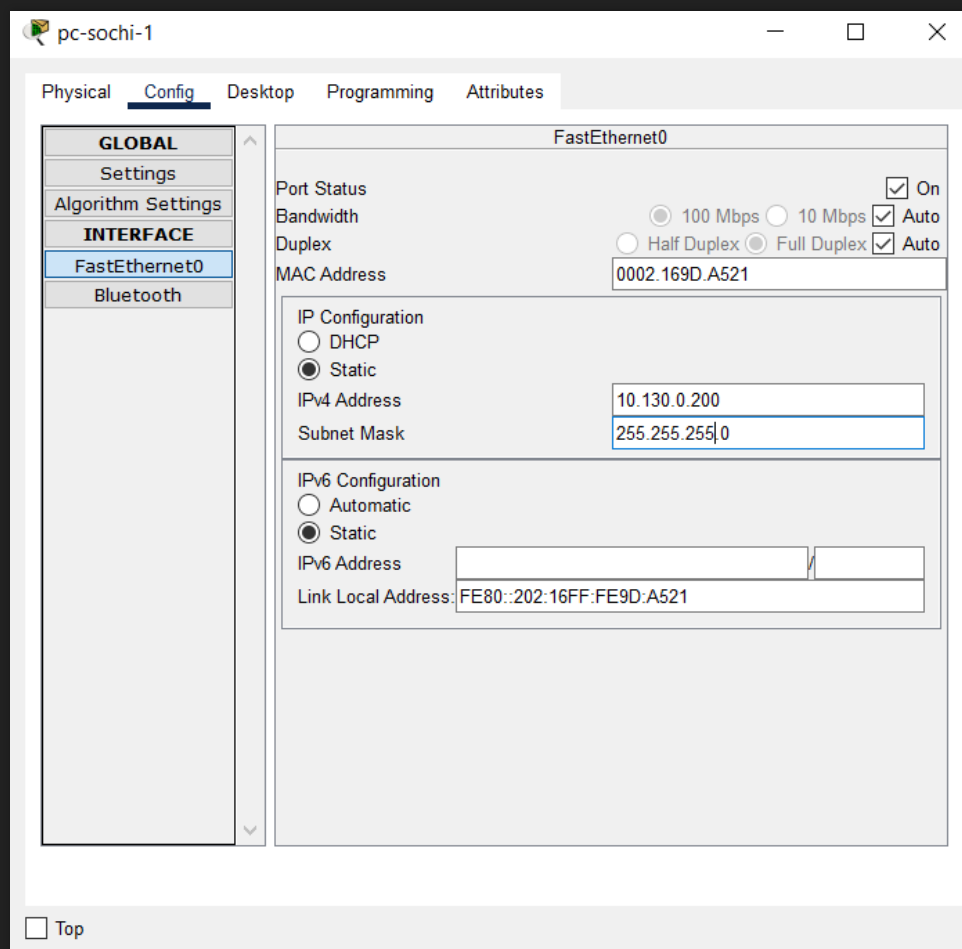
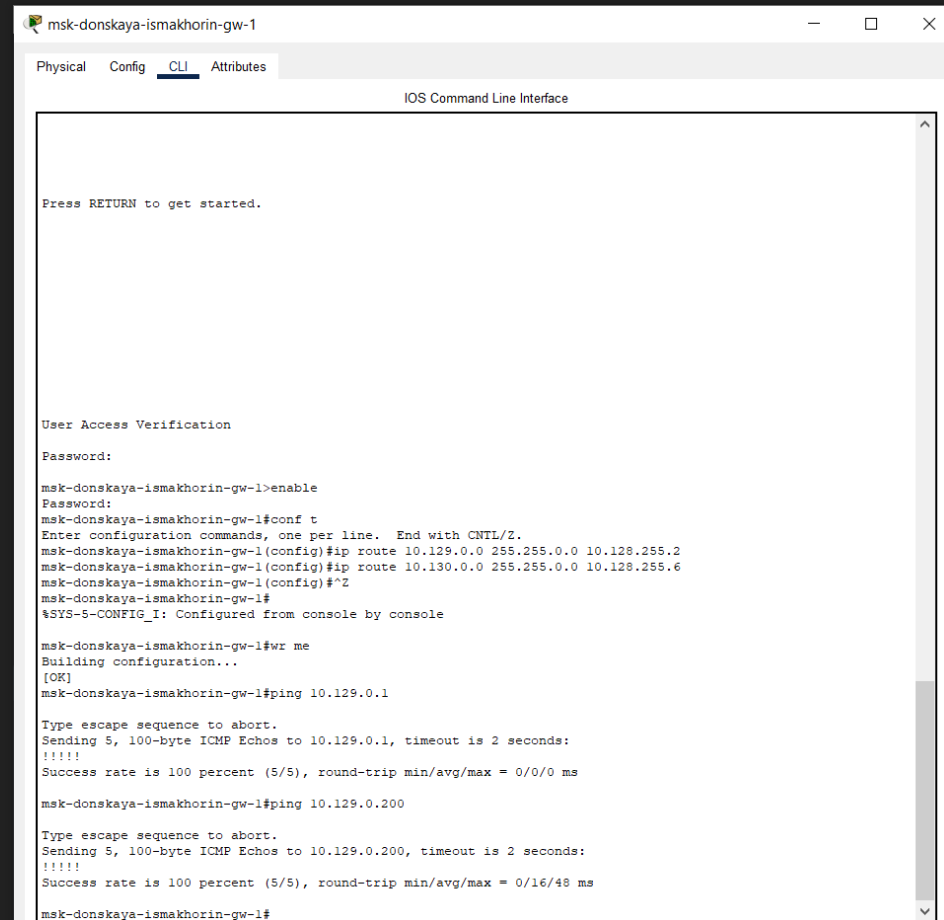


Рис. 1.20. Присвоение адресов оконечному устройству pc-sochi-1.

Настройка маршрутизации между площадками



```
msk-donskaya-ismakhorin-gw-1
Physical Config CLI Attributes
IOS Command Line Interface

Press RETURN to get started.

User Access Verification
Password:
msk-donskaya-ismakhorin-gw-1>enable
Password:
msk-donskaya-ismakhorin-gw-1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
msk-donskaya-ismakhorin-gw-1(config)#ip route 10.129.0.0 255.255.0.0 10.128.255.2
msk-donskaya-ismakhorin-gw-1(config)#ip route 10.130.0.0 255.255.0.0 10.128.255.6
msk-donskaya-ismakhorin-gw-1(config)#*Z
msk-donskaya-ismakhorin-gw-1#
%SYS-5-CONFIG_I: Configured from console by console

msk-donskaya-ismakhorin-gw-1#wr me
Building configuration...
[OK]
msk-donskaya-ismakhorin-gw-1#ping 10.129.0.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.129.0.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/0 ms

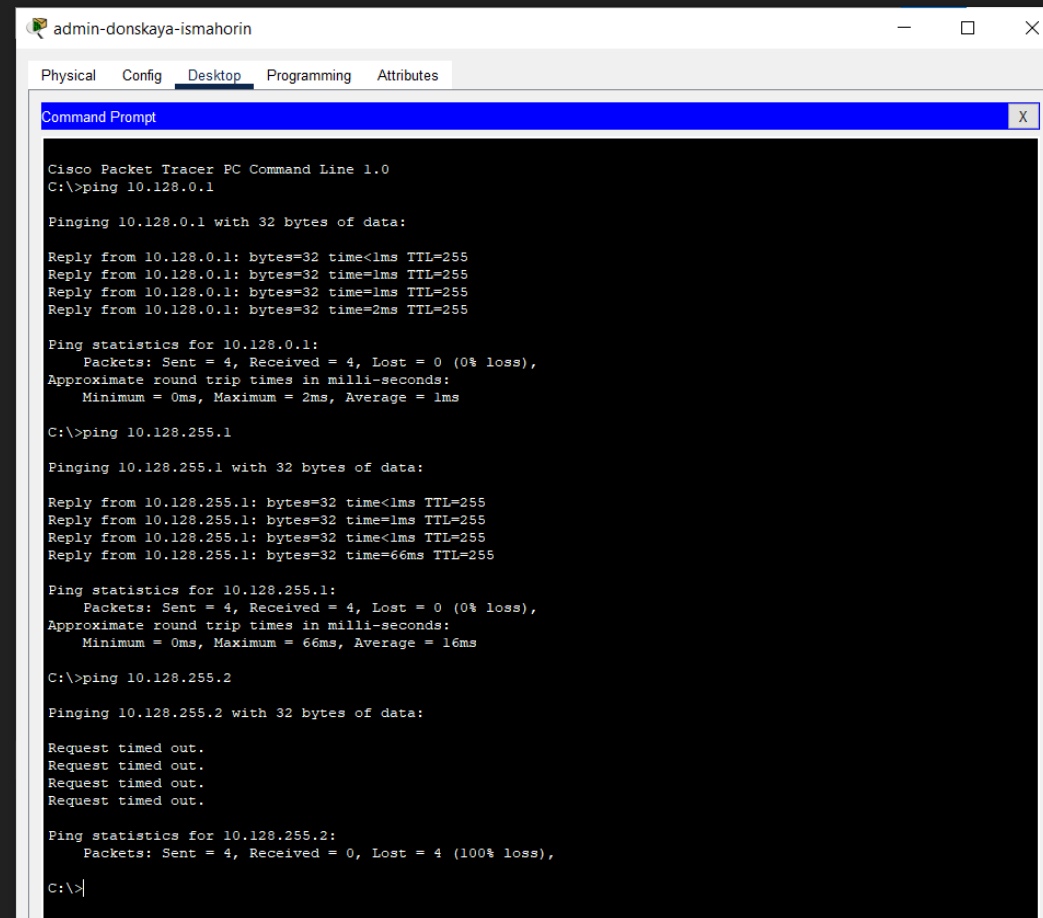
msk-donskaya-ismakhorin-gw-1#ping 10.129.0.200

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.129.0.200, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/16/48 ms

msk-donskaya-ismakhorin-gw-1#
```

Рис. 1.21. Настройка маршрутизатора msk-donskaya-ismakhorin-gw-1.

Настройка маршрутизации между площадками



The screenshot shows a Cisco Packet Tracer PC Command Line window for a device named 'admin-donskaya-ismahorin'. The window has tabs for Physical, Config, Desktop, Programming, and Attributes, with 'Desktop' selected. The Command Prompt shows the following output:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 10.128.0.1

Pinging 10.128.0.1 with 32 bytes of data:

Reply from 10.128.0.1: bytes=32 time<1ms TTL=255
Reply from 10.128.0.1: bytes=32 time=1ms TTL=255
Reply from 10.128.0.1: bytes=32 time=1ms TTL=255
Reply from 10.128.0.1: bytes=32 time=2ms TTL=255

Ping statistics for 10.128.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 2ms, Average = 1ms

C:\>ping 10.128.255.1

Pinging 10.128.255.1 with 32 bytes of data:

Reply from 10.128.255.1: bytes=32 time<1ms TTL=255
Reply from 10.128.255.1: bytes=32 time=1ms TTL=255
Reply from 10.128.255.1: bytes=32 time<1ms TTL=255
Reply from 10.128.255.1: bytes=32 time=66ms TTL=255

Ping statistics for 10.128.255.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 66ms, Average = 16ms

C:\>ping 10.128.255.2

Pinging 10.128.255.2 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 10.128.255.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

Рис. 1.22. Выполнение проверки.

Настройка маршрутизации между площадками

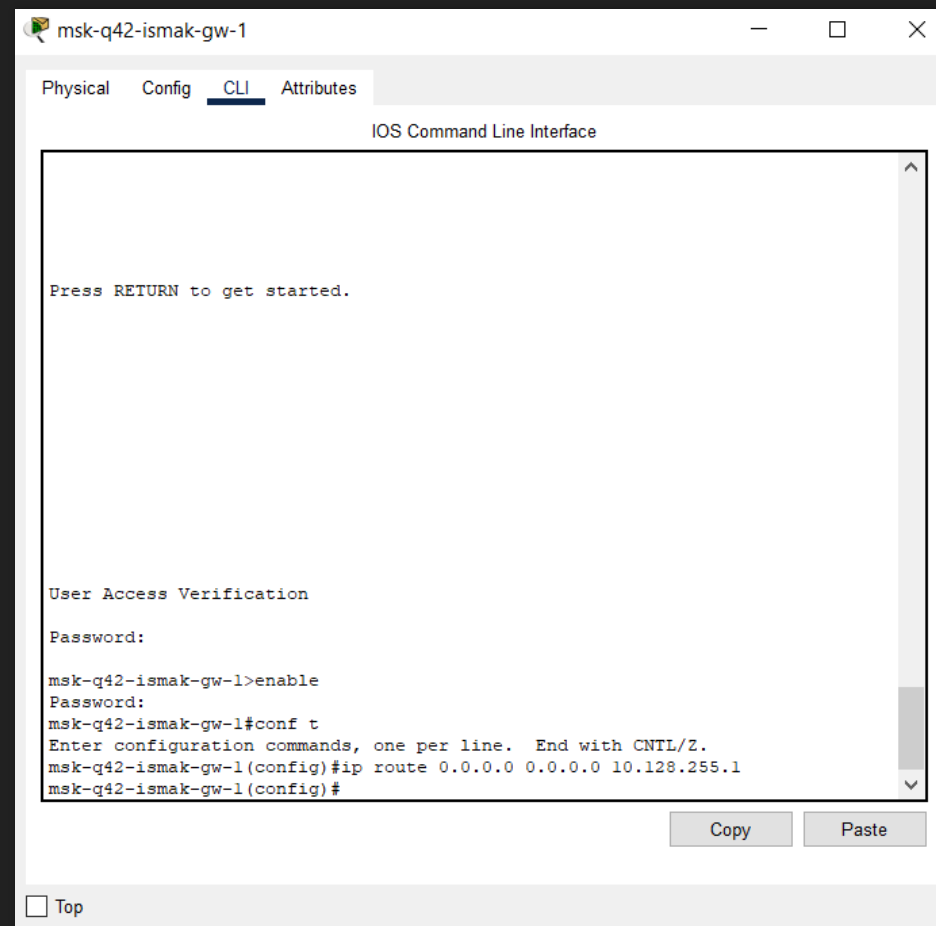
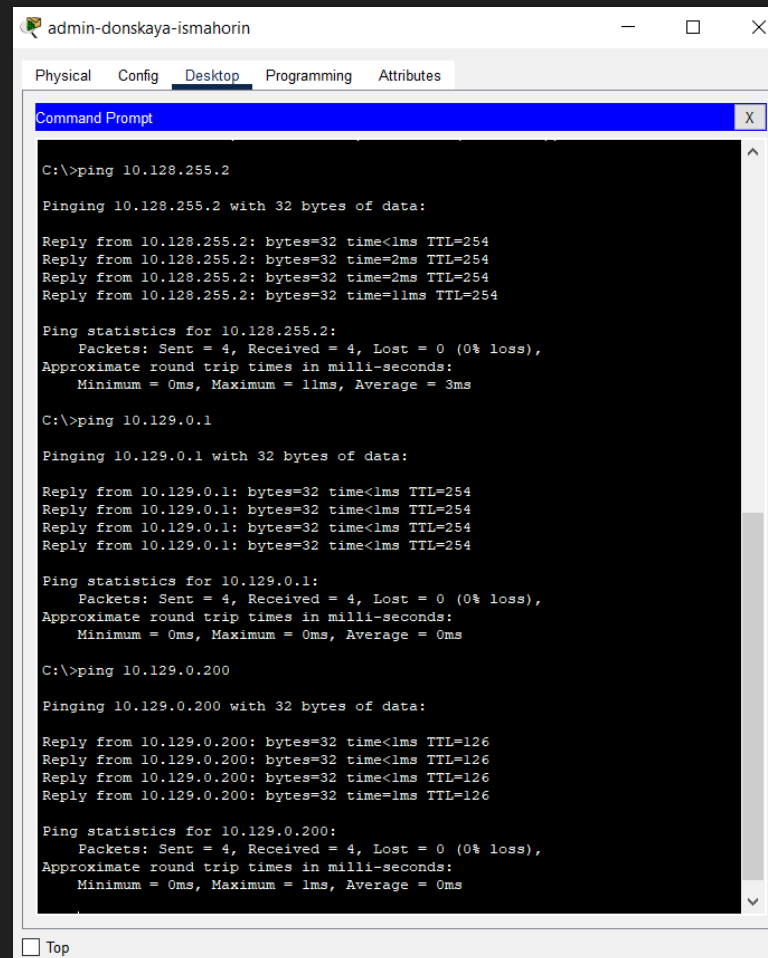


Рис. 1.23. Настройка маршрутизатора msk-q42-ismak-gw-1.

Настройка маршрутизации между площадками



```
admin-donskaya-ismahorin
Physical Config Desktop Programming Attributes
Command Prompt
C:\>ping 10.128.255.2

Pinging 10.128.255.2 with 32 bytes of data:

Reply from 10.128.255.2: bytes=32 time<1ms TTL=254
Reply from 10.128.255.2: bytes=32 time=2ms TTL=254
Reply from 10.128.255.2: bytes=32 time=2ms TTL=254
Reply from 10.128.255.2: bytes=32 time=11ms TTL=254

Ping statistics for 10.128.255.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 11ms, Average = 3ms

C:\>ping 10.129.0.1

Pinging 10.129.0.1 with 32 bytes of data:

Reply from 10.129.0.1: bytes=32 time<1ms TTL=254
Reply from 10.129.0.1: bytes=32 time<1ms TTL=254
Reply from 10.129.0.1: bytes=32 time<1ms TTL=254
Reply from 10.129.0.1: bytes=32 time<1ms TTL=254

Ping statistics for 10.129.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 10.129.0.200

Pinging 10.129.0.200 with 32 bytes of data:

Reply from 10.129.0.200: bytes=32 time<1ms TTL=126
Reply from 10.129.0.200: bytes=32 time<1ms TTL=126
Reply from 10.129.0.200: bytes=32 time<1ms TTL=126
Reply from 10.129.0.200: bytes=32 time=1ms TTL=126

Ping statistics for 10.129.0.200:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

Рис. 1.24. Выполнение проверки.

Настройка маршрутизации между площадками

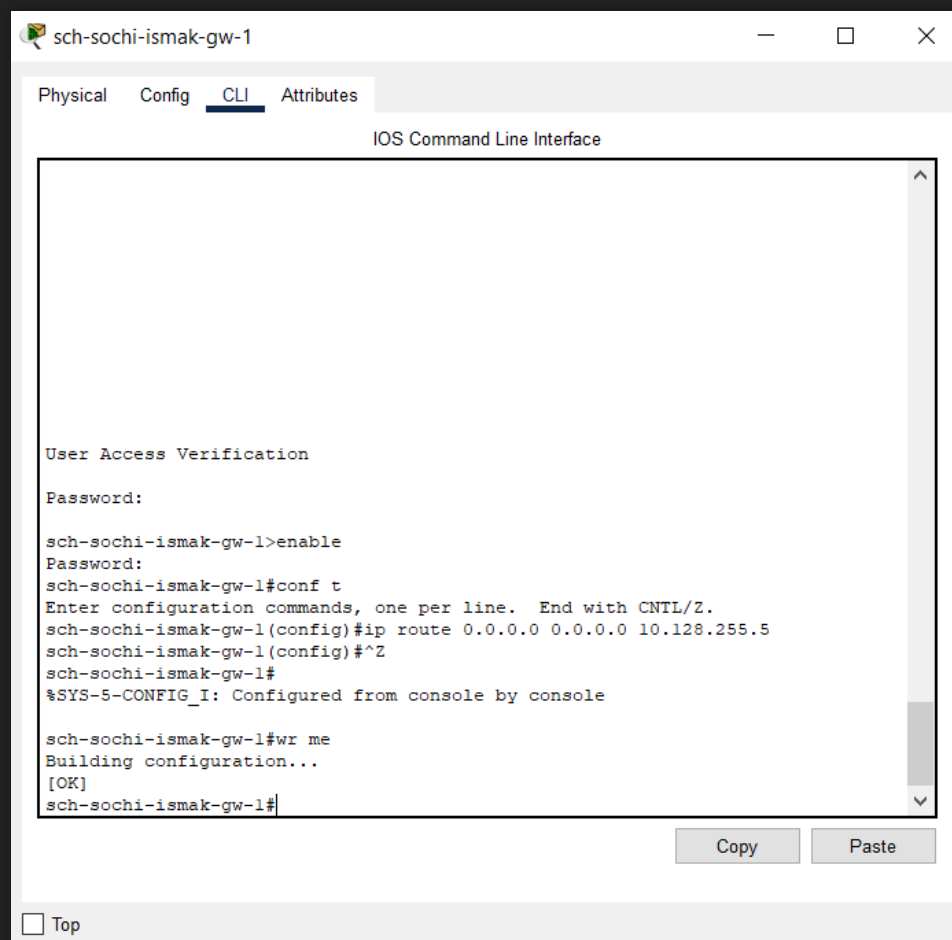
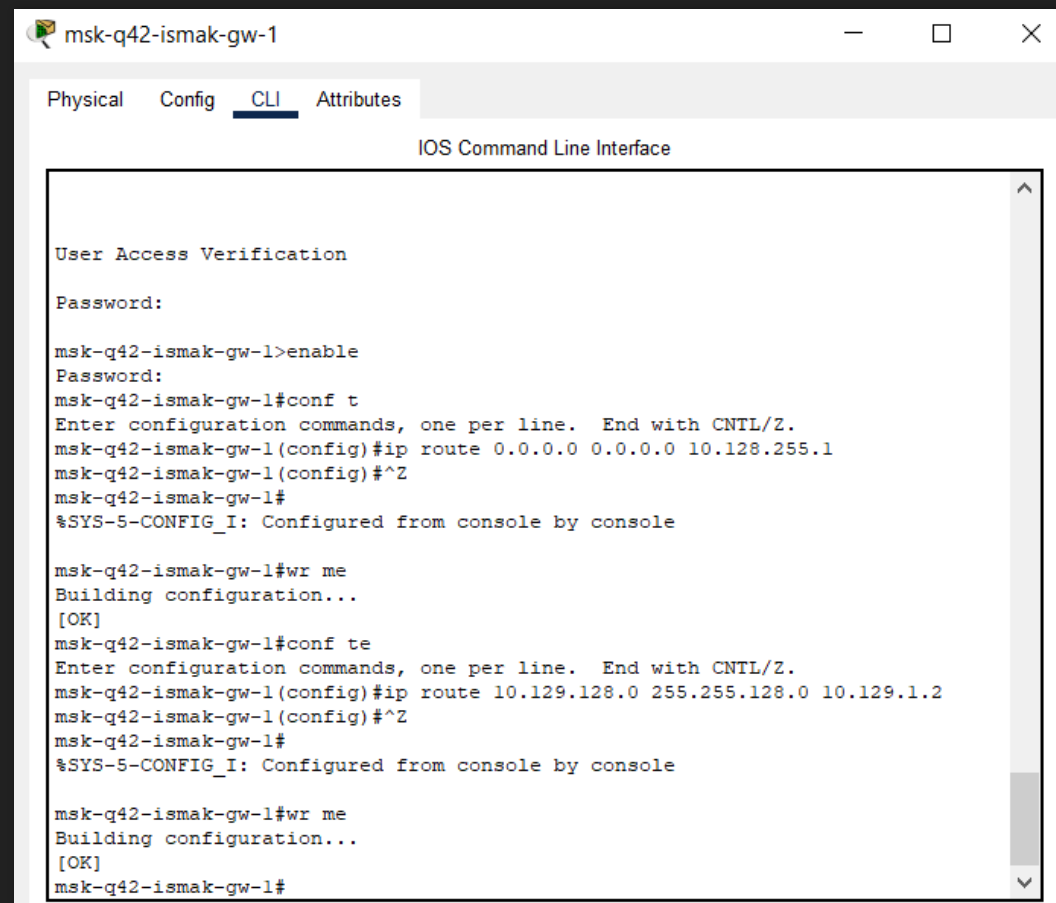


Рис. 1.25. Настройка маршрутизатора sch-sochi-ismak-gw-1.

Настройка маршрутизации на 42 квартале



```
msk-q42-ismak-gw-1
Physical Config CLI Attributes
IOS Command Line Interface

User Access Verification
Password:

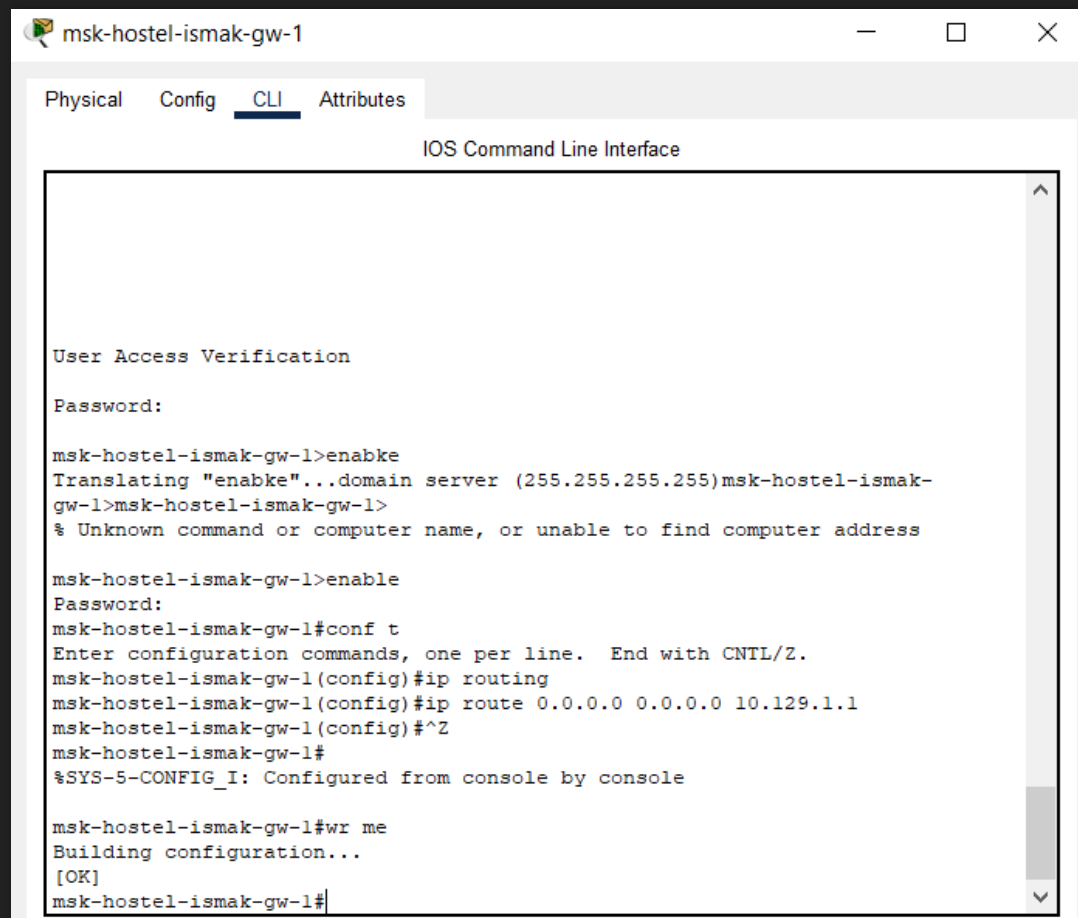
msk-q42-ismak-gw-1>enable
Password:
msk-q42-ismak-gw-1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
msk-q42-ismak-gw-1(config)#ip route 0.0.0.0 0.0.0.0 10.128.255.1
msk-q42-ismak-gw-1(config)#^Z
msk-q42-ismak-gw-1#
%SYS-5-CONFIG_I: Configured from console by console

msk-q42-ismak-gw-1#wr me
Building configuration...
[OK]
msk-q42-ismak-gw-1#conf te
Enter configuration commands, one per line. End with CNTL/Z.
msk-q42-ismak-gw-1(config)#ip route 10.129.128.0 255.255.128.0 10.129.1.2
msk-q42-ismak-gw-1(config)#^Z
msk-q42-ismak-gw-1#
%SYS-5-CONFIG_I: Configured from console by console

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

Рис. 1.26. Настройка маршрутизатора msk-q42-ismak-gw-1.

Настройка маршрутизации на 42 квартале



The screenshot shows a terminal window titled "msk-hostel-ismak-gw-1" with tabs for "Physical", "Config", "CLI", and "Attributes". The "CLI" tab is active, displaying the "IOS Command Line Interface". The terminal output shows the following sequence of commands and responses:

```
User Access Verification
Password:

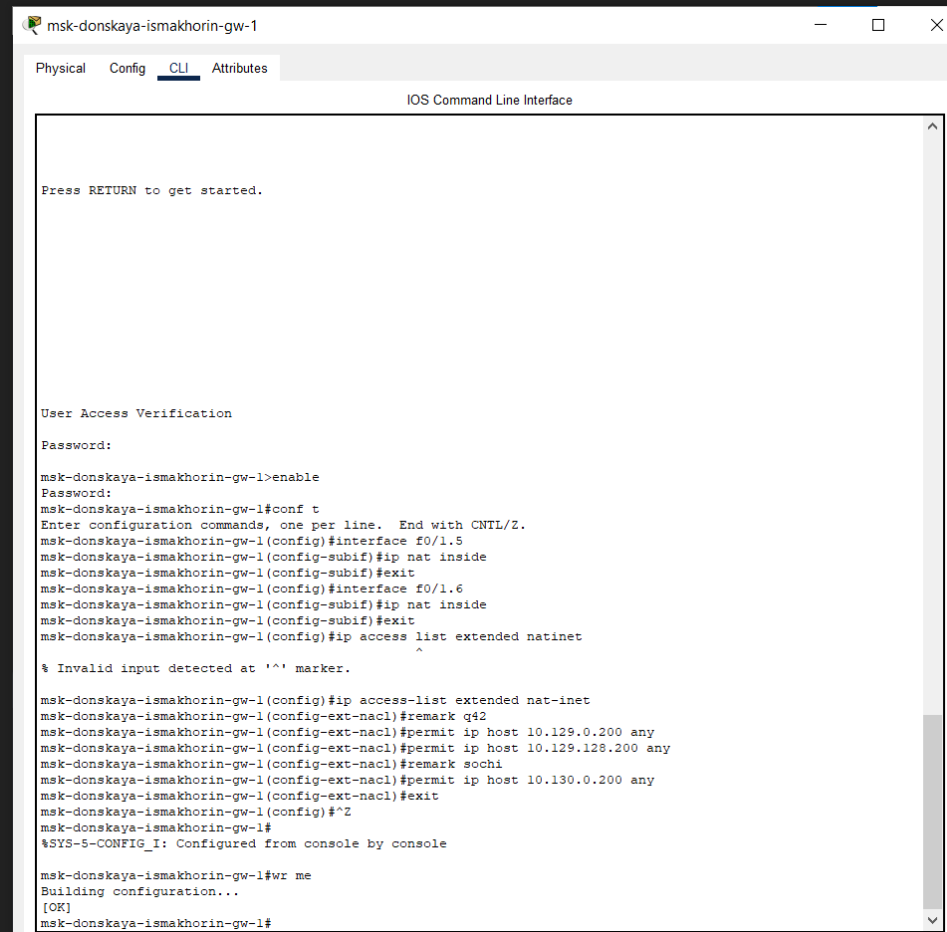
msk-hostel-ismak-gw-1>enabke
Translating "enabke"...domain server (255.255.255.255)msk-hostel-ismak-
gw-1>msk-hostel-ismak-gw-1>
% Unknown command or computer name, or unable to find computer address

msk-hostel-ismak-gw-1>enable
Password:
msk-hostel-ismak-gw-1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
msk-hostel-ismak-gw-1(config)#ip routing
msk-hostel-ismak-gw-1(config)#ip route 0.0.0.0 0.0.0.0 10.129.1.1
msk-hostel-ismak-gw-1(config)#^Z
msk-hostel-ismak-gw-1#
%SYS-5-CONFIG_I: Configured from console by console

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

Рис. 1.27. Настройка интерфейсов маршрутизирующего коммутатора msk-hostel-ismak-gw-1.

Настройка NAT



The screenshot shows a network configuration window titled "msk-donskaya-ismakhorin-gw-1". It has tabs for "Physical", "Config", "CLI", and "Attributes", with "CLI" selected. The main area is labeled "IOS Command Line Interface". The text inside the window shows the following sequence of commands and prompts:

```
Press RETURN to get started.

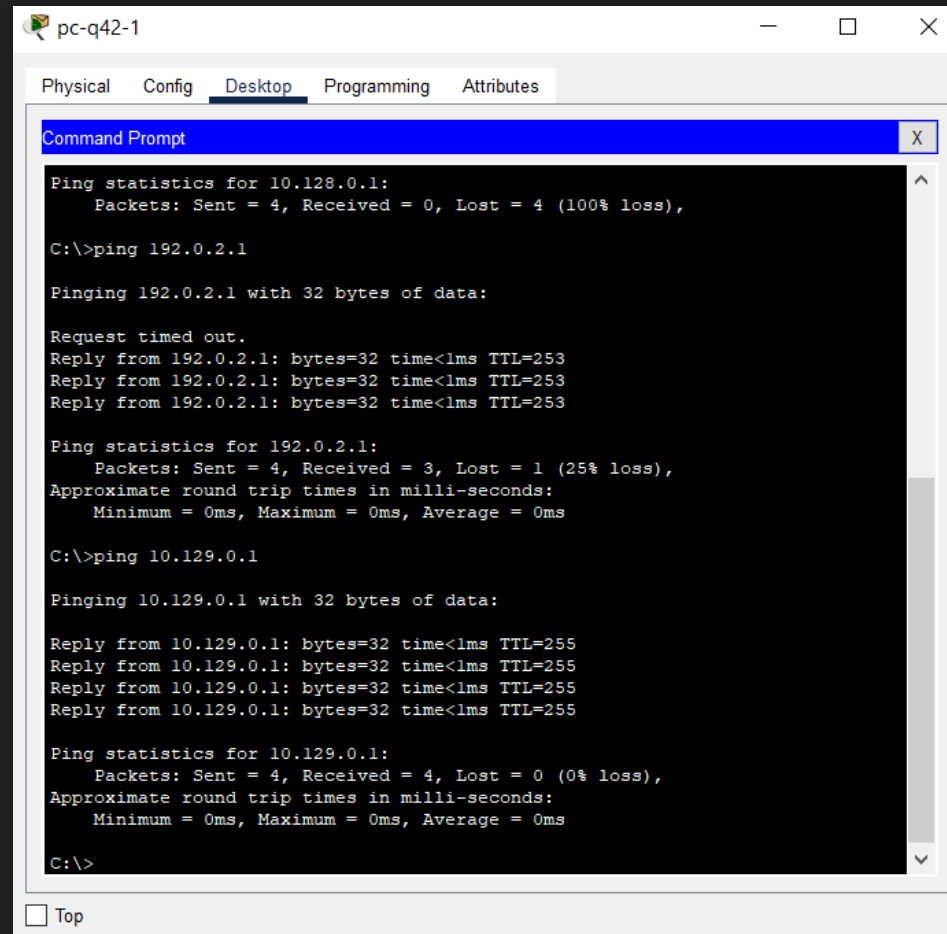
User Access Verification
Password:

msk-donskaya-ismakhorin-gw-1>enable
Password:
msk-donskaya-ismakhorin-gw-1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
msk-donskaya-ismakhorin-gw-1(config)#interface f0/1.5
msk-donskaya-ismakhorin-gw-1(config-subif)#ip nat inside
msk-donskaya-ismakhorin-gw-1(config-subif)#exit
msk-donskaya-ismakhorin-gw-1(config)#interface f0/1.6
msk-donskaya-ismakhorin-gw-1(config-subif)#ip nat inside
msk-donskaya-ismakhorin-gw-1(config-subif)#exit
msk-donskaya-ismakhorin-gw-1(config)#ip access list extended natinet
msk-donskaya-ismakhorin-gw-1(config-ext-nacl)#remark q42
msk-donskaya-ismakhorin-gw-1(config-ext-nacl)#permit ip host 10.129.0.200 any
msk-donskaya-ismakhorin-gw-1(config-ext-nacl)#permit ip host 10.129.128.200 any
msk-donskaya-ismakhorin-gw-1(config-ext-nacl)#remark sochi
msk-donskaya-ismakhorin-gw-1(config-ext-nacl)#permit ip host 10.130.0.200 any
msk-donskaya-ismakhorin-gw-1(config-ext-nacl)#exit
msk-donskaya-ismakhorin-gw-1(config)#^Z
%SYS-5-CONFIG_I: Configured from console by console

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

Рис. 1.28. Настройка NAT на маршрутизаторе msk-donskaya-ismakhorin-gw-1.

Настройка NAT



The screenshot shows a Windows Command Prompt window titled "pc-q42-1" with tabs for Physical, Config, Desktop, Programming, and Attributes. The Desktop tab is active, and a Command Prompt window is open. The Command Prompt shows the following output:

```
Command Prompt
Ping statistics for 10.128.0.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 192.0.2.1

Pinging 192.0.2.1 with 32 bytes of data:

Request timed out.
Reply from 192.0.2.1: bytes=32 time<1ms TTL=253
Reply from 192.0.2.1: bytes=32 time<1ms TTL=253
Reply from 192.0.2.1: bytes=32 time<1ms TTL=253

Ping statistics for 192.0.2.1:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 10.129.0.1

Pinging 10.129.0.1 with 32 bytes of data:

Reply from 10.129.0.1: bytes=32 time<1ms TTL=255
Reply from 10.129.0.1: bytes=32 time<1ms TTL=255
Reply from 10.129.0.1: bytes=32 time<1ms TTL=255
Reply from 10.129.0.1: bytes=32 time<1ms TTL=255

Ping statistics for 10.129.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

Рис. 1.29. Контрольная проверка.

ВЫВОД

- 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.

Спасибо за внимание!