

Лабораторная работа №8

Настройка сетевых сервисов. DHCP.

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Новый проект

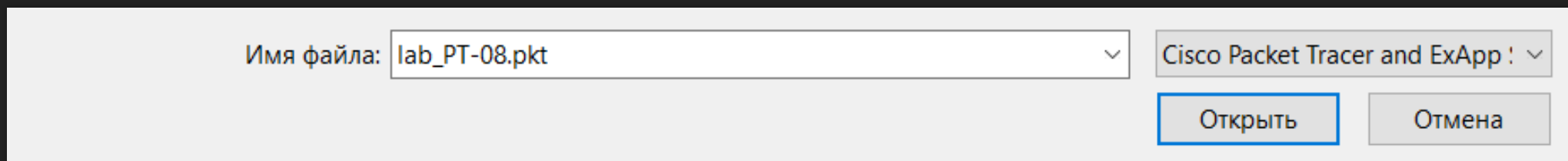


Рис. 1.1. Открытие проекта lab_PT-08.pkt.

Добавление сервера dns

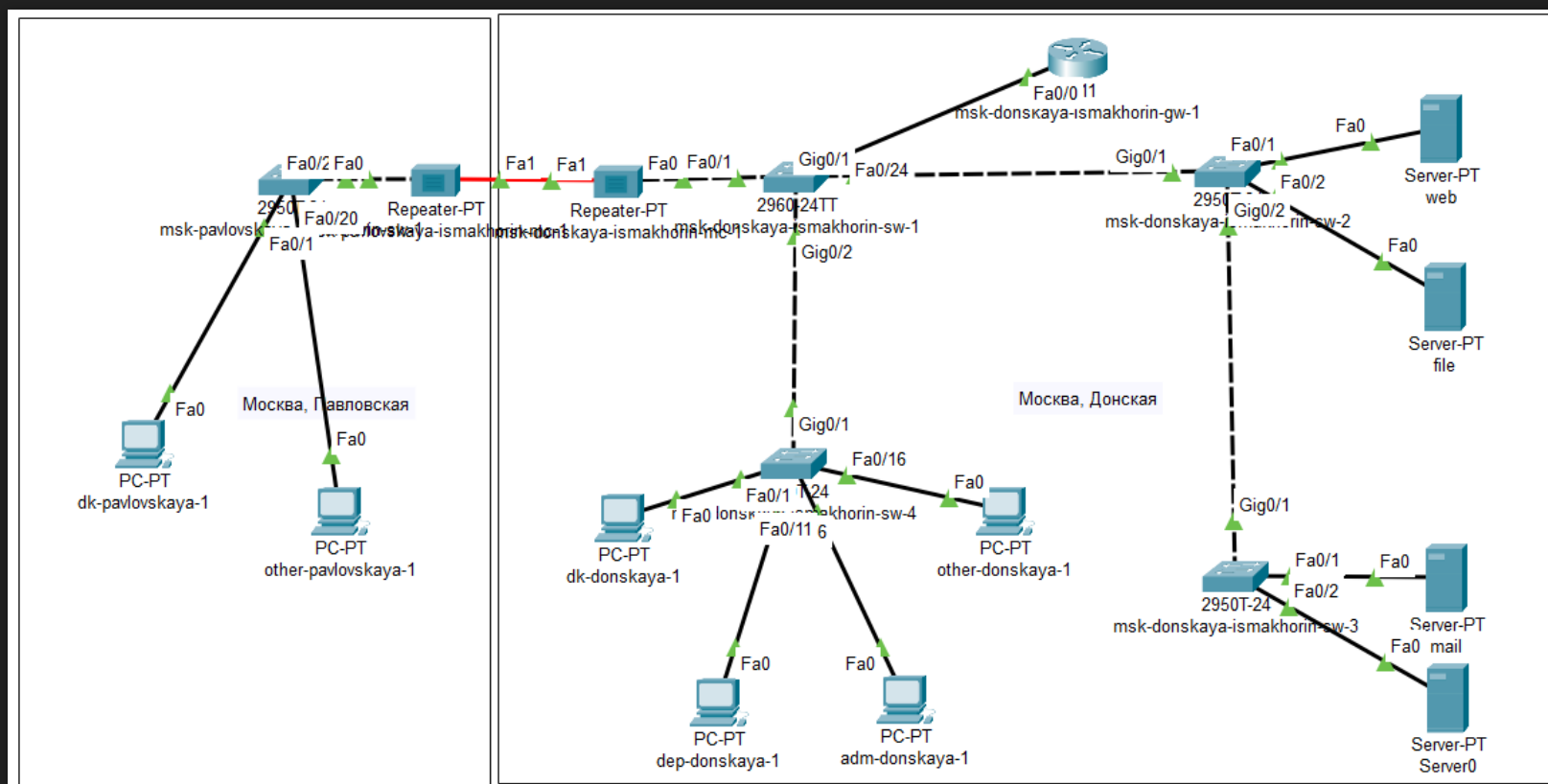


Рис. 1.2. Добавление сервера dns в логическую рабочую область проекта и подключение его к коммутатору msk-donskaya-ismakhorin-sw-3.

Активация порта



The screenshot shows a web-based configuration interface for a network switch, titled "msk-donskaya-ismakhorin-sw-3". The "CLI" tab is selected, displaying the "IOS Command Line Interface". The configuration includes setting up interface Vlan2 with IP address 10.128.1.4, a default gateway of 10.128.1.1, and configuring console and VTY lines with passwords and SSH access. The user has entered the command "int fa0/2" in the CLI, which triggered an error message: "% Invalid input detected at '^' marker." Below this, the user entered "conf t" to enter configuration mode, followed by "int fa0/2" to select the interface. The user then entered "switchport mode access" and "switchport access vlan 3" to activate the port. The interface shows the configuration being applied and saved.

```
!
interface Vlan2
ip address 10.128.1.4 255.255.255.0
!
ip default-gateway 10.128.1.1
!
!
!
line con 0
password 7 0822455D0A16
login
!
line vty 0 4
password 7 0822455D0A16
login
transport input ssh
line vty 5 15
login
!
!
!
end

msk-donskaya-ismakhorin-sw-3#int fa0/2
^
% Invalid input detected at '^' marker.

msk-donskaya-ismakhorin-sw-3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
msk-donskaya-ismakhorin-sw-3(config)#int fa0/2
msk-donskaya-ismakhorin-sw-3(config-if)#switchport mode access
msk-donskaya-ismakhorin-sw-3(config-if)#switchport access vlan 3
msk-donskaya-ismakhorin-sw-3(config-if)#^Z
msk-donskaya-ismakhorin-sw-3#
%SYS-5-CONFIG_I: Configured from console by console

msk-donskaya-ismakhorin-sw-3#wr me
Building configuration...
[OK]
msk-donskaya-ismakhorin-sw-3#
```

Рис. 1.3. Активация порта на коммутаторе.

Настройка конфигурации сервера

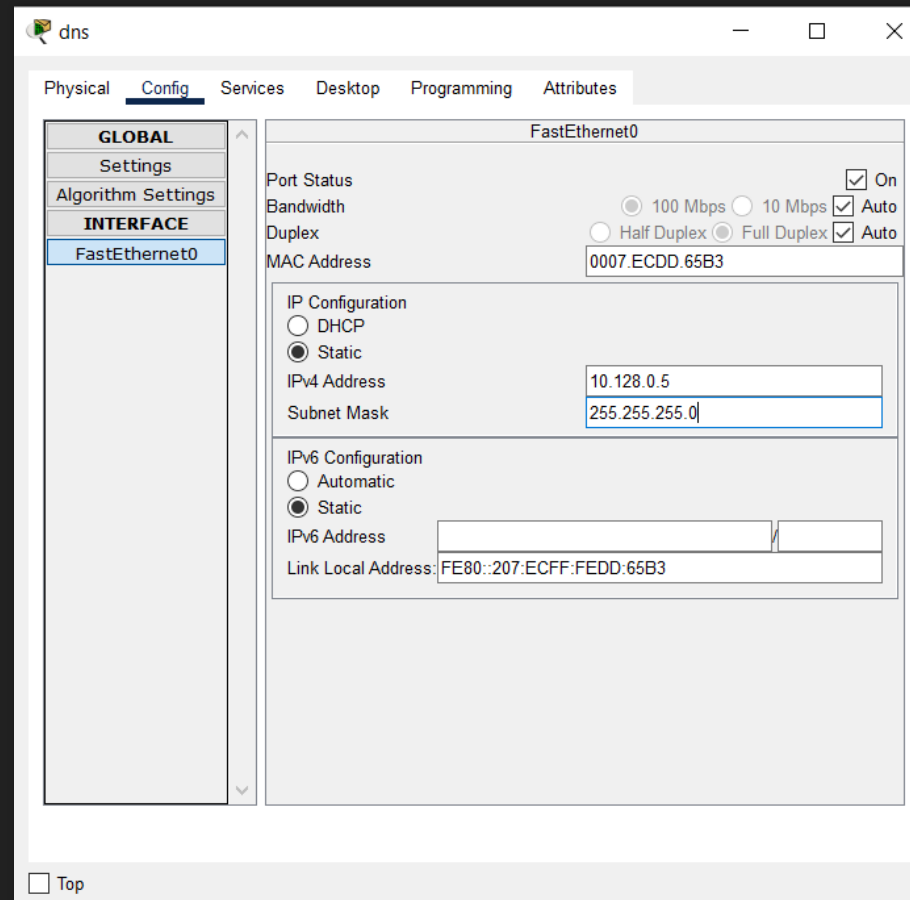


Рис. 1.4. Настройка конфигурации сервера (адрес шлюза - 10.128.0.1, адрес сервера — 10.128.0.5, маска 255.255.255.0).

Настройка сервиса DNS

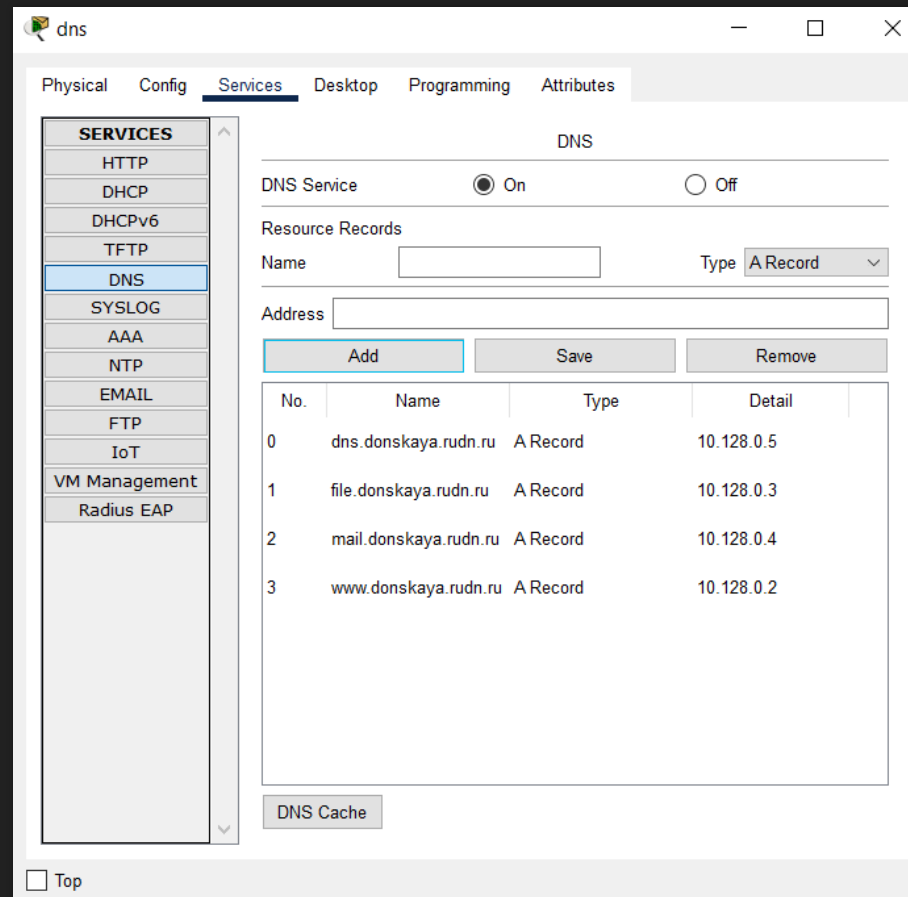
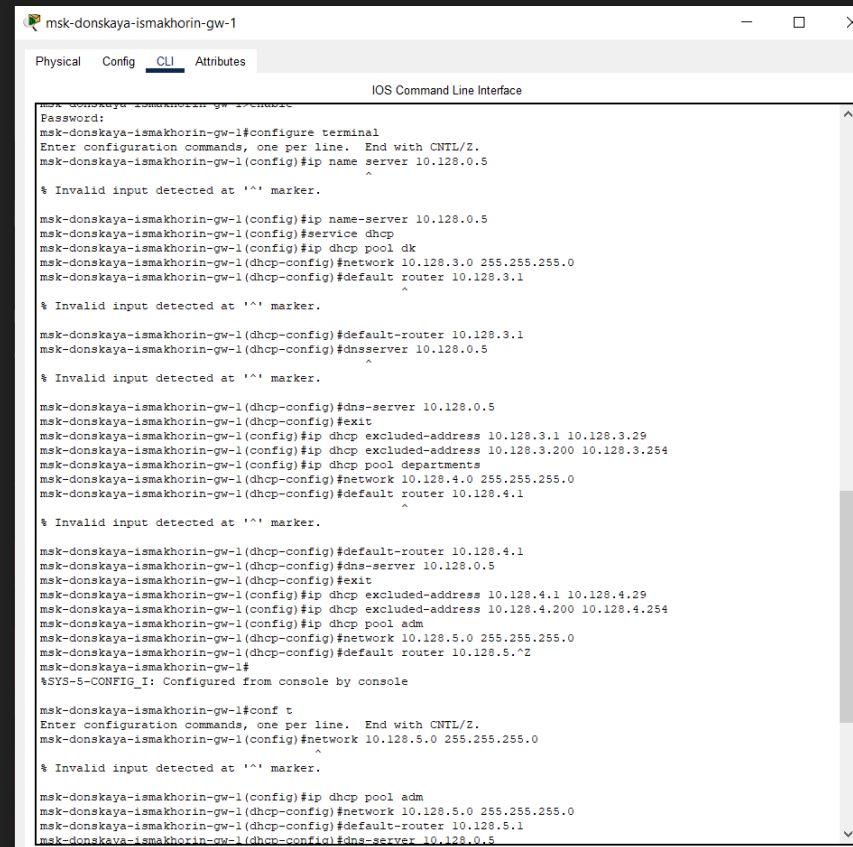


Рис. 1.5. Настройка сервиса DNS (активация службы DNS, выбор типа записи A Record, указание доменного имени и IP-адреса, добавление записи на сервер).

Настройка DHCP-сервиса на маршрутизаторе



```
msk-donskaya-ismakhorin-gw-1
Physical Config CLI Attributes
IOS Command Line Interface
Password:
msk-donskaya-ismakhorin-gw-1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
msk-donskaya-ismakhorin-gw-1(config)#ip name server 10.128.0.5
^
% Invalid input detected at '^' marker.

msk-donskaya-ismakhorin-gw-1(config)#ip name-server 10.128.0.5
msk-donskaya-ismakhorin-gw-1(config)#service dhcp
msk-donskaya-ismakhorin-gw-1(config)#ip dhcp pool dk
msk-donskaya-ismakhorin-gw-1(dhcp-config)#network 10.128.3.0 255.255.255.0
msk-donskaya-ismakhorin-gw-1(dhcp-config)#default-router 10.128.3.1
^
% Invalid input detected at '^' marker.

msk-donskaya-ismakhorin-gw-1(dhcp-config)#default-router 10.128.3.1
msk-donskaya-ismakhorin-gw-1(dhcp-config)#dns-server 10.128.0.5
^
% Invalid input detected at '^' marker.

msk-donskaya-ismakhorin-gw-1(dhcp-config)#dns-server 10.128.0.5
msk-donskaya-ismakhorin-gw-1(dhcp-config)#exit
msk-donskaya-ismakhorin-gw-1(config)#ip dhcp excluded-address 10.128.3.1 10.128.3.29
msk-donskaya-ismakhorin-gw-1(config)#ip dhcp excluded-address 10.128.3.200 10.128.3.254
msk-donskaya-ismakhorin-gw-1(config)#ip dhcp pool departments
msk-donskaya-ismakhorin-gw-1(dhcp-config)#network 10.128.4.0 255.255.255.0
msk-donskaya-ismakhorin-gw-1(dhcp-config)#default-router 10.128.4.1
^
% Invalid input detected at '^' marker.

msk-donskaya-ismakhorin-gw-1(dhcp-config)#default-router 10.128.4.1
msk-donskaya-ismakhorin-gw-1(dhcp-config)#dns-server 10.128.0.5
msk-donskaya-ismakhorin-gw-1(dhcp-config)#exit
msk-donskaya-ismakhorin-gw-1(config)#ip dhcp excluded-address 10.128.4.1 10.128.4.29
msk-donskaya-ismakhorin-gw-1(config)#ip dhcp excluded-address 10.128.4.200 10.128.4.254
msk-donskaya-ismakhorin-gw-1(config)#ip dhcp pool adm
msk-donskaya-ismakhorin-gw-1(dhcp-config)#network 10.128.5.0 255.255.255.0
msk-donskaya-ismakhorin-gw-1(dhcp-config)#default-router 10.128.5.1
msk-donskaya-ismakhorin-gw-1#
%SYS-5-CONFIG_I: Configured from console by console

msk-donskaya-ismakhorin-gw-1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
msk-donskaya-ismakhorin-gw-1(config)#network 10.128.5.0 255.255.255.0
^
% Invalid input detected at '^' marker.

msk-donskaya-ismakhorin-gw-1(config)#ip dhcp pool adm
msk-donskaya-ismakhorin-gw-1(dhcp-config)#network 10.128.5.0 255.255.255.0
msk-donskaya-ismakhorin-gw-1(dhcp-config)#default-router 10.128.5.1
msk-donskaya-ismakhorin-gw-1(dhcp-config)#dns-server 10.128.0.5
```

Рис. 1.6. Настройка DHCP-сервиса на маршрутизаторе (указание IP-адреса DNS-сервера и переход к настройке DHCP. Настройка названия конфигурируемому диапазону адресов, адресу шлюза и DNS-серверу. Настройка пула адресов, исключаемых из динамического распределения).

Замена статического распределение

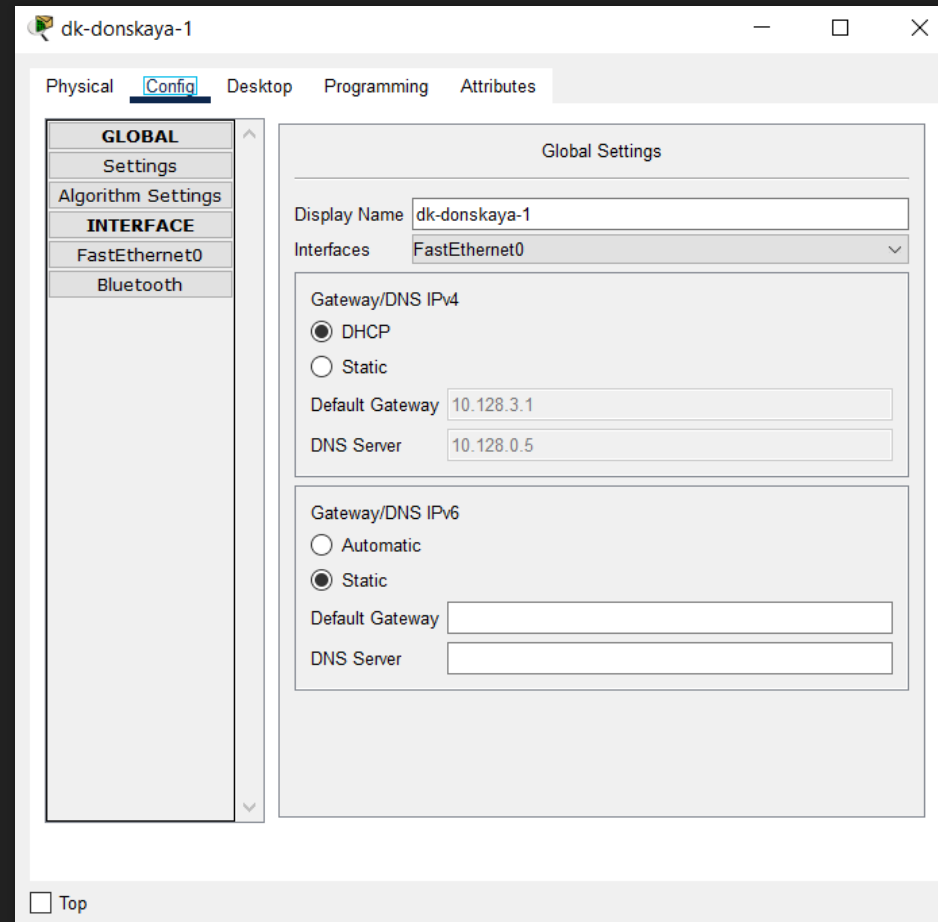
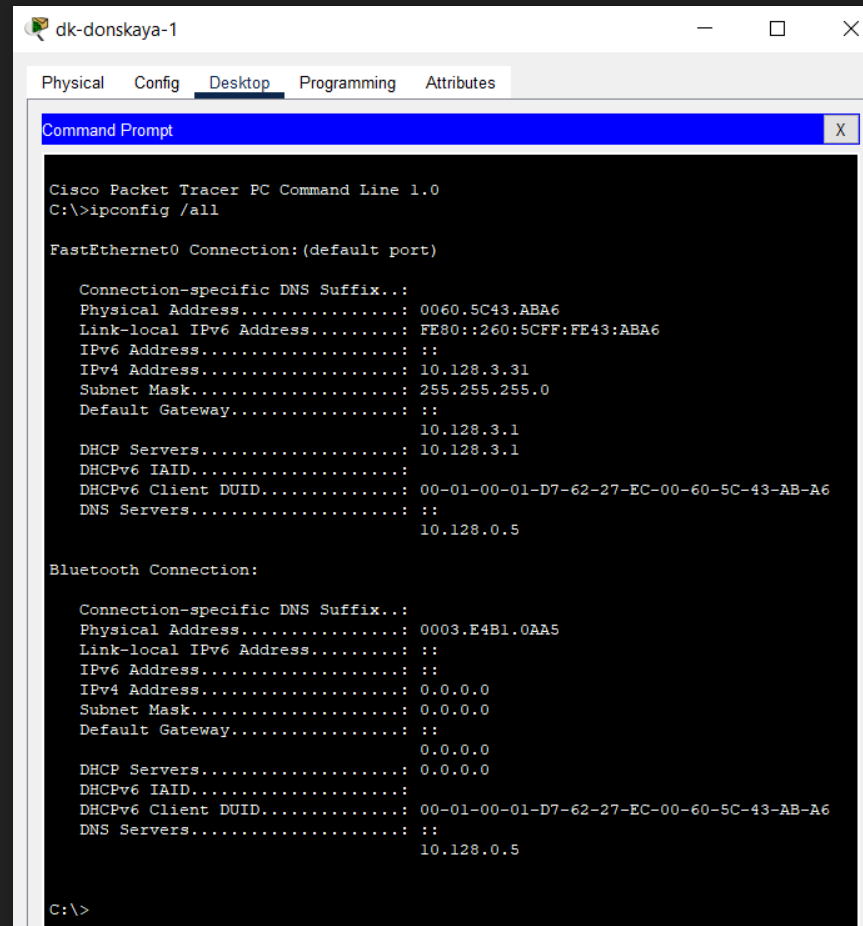


Рис. 1.7. Замена статического распределение адресов на динамическое на оконечных устройствах.

Проверка выделения адресов



The screenshot shows a Cisco Packet Tracer PC Command Line window for a device named 'dk-donskaya-1'. The 'Desktop' tab is selected, and a 'Command Prompt' window is open. The user has entered the command 'ipconfig /all'. The output displays configuration details for two interfaces: 'FastEthernet0' and 'Bluetooth'. Both interfaces show a physical address, a link-local IPv6 address, and an assigned IPv4 address of 10.128.3.31. The subnet mask is 255.255.255.0, and the default gateway is 10.128.3.1. DHCP servers are listed as 10.128.3.1, and DNS servers as 10.128.0.5. The DHCPv6 IAID and Client DUID are also displayed for both interfaces.

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ipconfig /all

FastEthernet0 Connection: (default port)

Connection-specific DNS Suffix...:
Physical Address.....: 0060.5C43.ABA6
Link-local IPv6 Address.....: FE80::260:5CFF:FE43:ABA6
IPv6 Address.....: ::
IPv4 Address.....: 10.128.3.31
Subnet Mask.....: 255.255.255.0
Default Gateway.....: ::
                        10.128.3.1
DHCP Servers.....: 10.128.3.1
DHCPv6 IAID.....:
DHCPv6 Client DUID.....: 00-01-00-01-D7-62-27-EC-00-60-5C-43-AB-A6
DNS Servers.....: ::
                        10.128.0.5

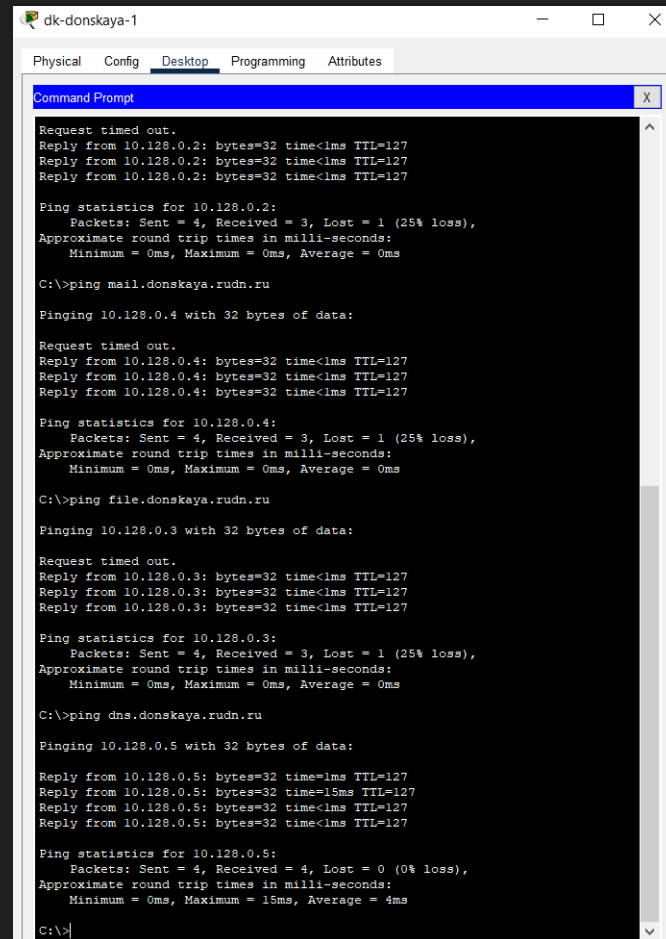
Bluetooth Connection:

Connection-specific DNS Suffix...:
Physical Address.....: 0003.E4B1.0AA5
Link-local IPv6 Address.....: ::
IPv6 Address.....: ::
IPv4 Address.....: 0.0.0.0
Subnet Mask.....: 0.0.0.0
Default Gateway.....: ::
                        0.0.0.0
DHCP Servers.....: 0.0.0.0
DHCPv6 IAID.....:
DHCPv6 Client DUID.....: 00-01-00-01-D7-62-27-EC-00-60-5C-43-AB-A6
DNS Servers.....: ::
                        10.128.0.5

C:\>
```

Рис. 1.8. Проверка выделения адресов оконечным устройствам.

Проверка доступности устройств



```
dk-donskaya-1
Physical Config Desktop Programming Attributes
Command Prompt
Request timed out.
Reply from 10.128.0.2: bytes=32 time<1ms TTL=127
Reply from 10.128.0.2: bytes=32 time<1ms TTL=127
Reply from 10.128.0.2: bytes=32 time<1ms TTL=127
Ping statistics for 10.128.0.2:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>ping mail.donskaya.rudn.ru
Pinging 10.128.0.4 with 32 bytes of data:
Request timed out.
Reply from 10.128.0.4: bytes=32 time<1ms TTL=127
Reply from 10.128.0.4: bytes=32 time<1ms TTL=127
Reply from 10.128.0.4: bytes=32 time<1ms TTL=127
Ping statistics for 10.128.0.4:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>ping file.donskaya.rudn.ru
Pinging 10.128.0.3 with 32 bytes of data:
Request timed out.
Reply from 10.128.0.3: bytes=32 time<1ms TTL=127
Reply from 10.128.0.3: bytes=32 time<1ms TTL=127
Reply from 10.128.0.3: bytes=32 time<1ms TTL=127
Ping statistics for 10.128.0.3:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>ping dns.donskaya.rudn.ru
Pinging 10.128.0.5 with 32 bytes of data:
Reply from 10.128.0.5: bytes=32 time=1ms TTL=127
Reply from 10.128.0.5: bytes=32 time=15ms TTL=127
Reply from 10.128.0.5: bytes=32 time<1ms TTL=127
Reply from 10.128.0.5: bytes=32 time<1ms TTL=127
Ping statistics for 10.128.0.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 15ms, Average = 4ms
C:\>
```

Рис. 1.9. Проверка доступности устройств из разных подсетей.

Изучение запроса

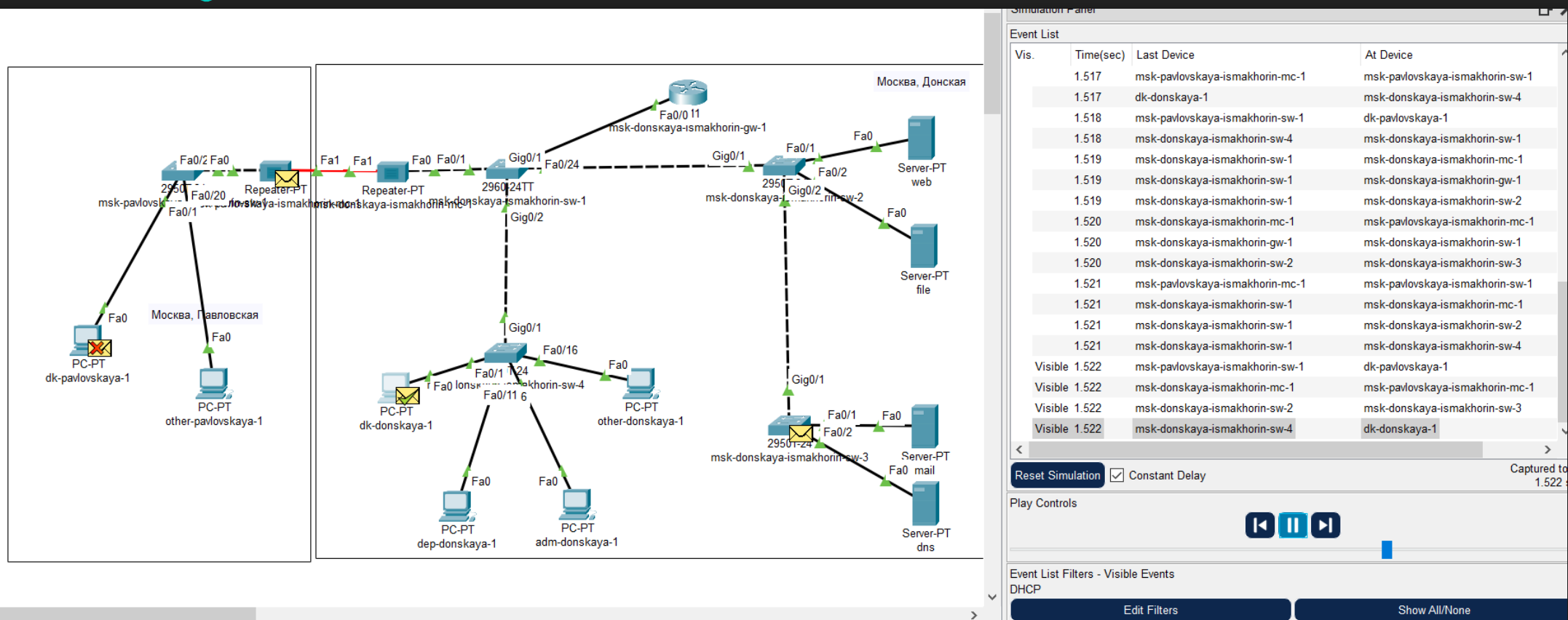


Рис. 1.10. Изучение запроса адреса по протоколу DHCP в режиме симуляции.

ВЫВОД

- В ходе выполнения лабораторной работы мы приобрели практические навыки по настройке динамического распределения IP-адресов посредством протокола DHCP (Dynamic Host Configuration Protocol) в локальной сети.

Спасибо за внимание!