

Презентация лабораторной работы №8

Бакулин Никита 1032201747

Цель работы

- Приобретение практических навыков по настройке динамического распределения IP-адресов посредством протокола DHCP

Задачи

- Добавить DNS-записи для домена `donskaya.rudn.ru` на сервер `dns`.
- Настроить DHCP-сервис на маршрутизаторе.
- Заменить в конфигурации конечных устройствах статическое распределение адресов на динамическое.

Результаты выполнения

- Добавить DNS-записи для домена `donskaya.rudn.ru` на сервер `dns`.

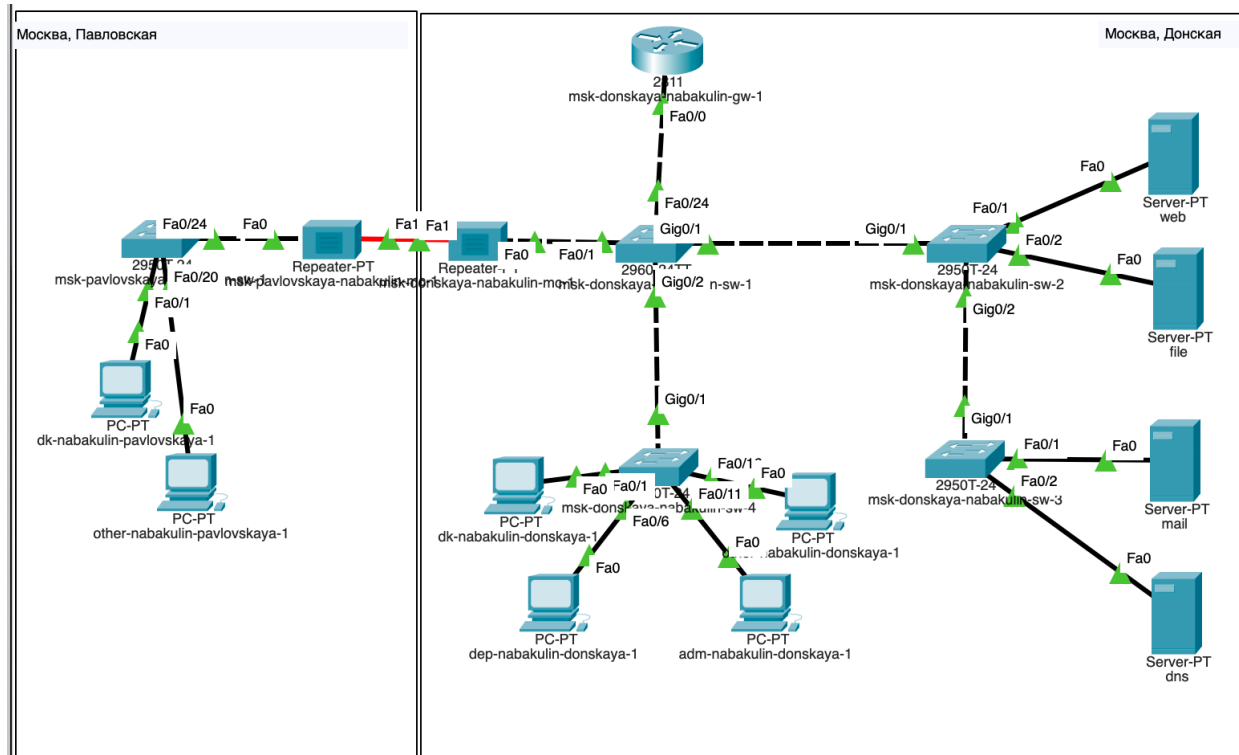


Рис. 1

dns

Physical Config **Services** Desktop Programming Attributes

DNS

DNS Service ☒ On ☐ Off

Resource Records

Name Type A Record

Address

Add Save Remove

| No. | Name | Type | Detail |
|-----|-----------------------|----------|------------|
| 0 | dns.donskaya.rudn.ru | A Record | 10.128.0.5 |
| 1 | file.donskaya.rudn.ru | A Record | 10.128.0.3 |
| 2 | mail.donskaya.rudn.ru | A Record | 10.128.0.4 |
| 3 | www.donskaya.rudn.ru | A Record | 10.128.0.2 |

Рис. 2

Результаты выполнения

• Настроить DHCP-сервис на маршрутизаторе.

```
msk-donskaya-nabakulin-gw-1>enable
Password:
msk-donskaya-nabakulin-gw-1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
msk-donskaya-nabakulin-gw-1(config)#ip name server 10.128.0.5
^
% Invalid input detected at '^' marker.

msk-donskaya-nabakulin-gw-1(config)#ip name-server 10.128.0.5
msk-donskaya-nabakulin-gw-1(config)#service dhcp
msk-donskaya-nabakulin-gw-1(config)#ip dhcp pool dk
msk-donskaya-nabakulin-gw-1(dhcp-config)#network 10.128.3.0 255.255.255.0
msk-donskaya-nabakulin-gw-1(dhcp-config)#default-router 10.128.3.1
msk-donskaya-nabakulin-gw-1(dhcp-config)#dns-server 10.128.0.5
msk-donskaya-nabakulin-gw-1(dhcp-config)#exit
msk-donskaya-nabakulin-gw-1(config)#ip dhcp excluded-address 10.128.3.1 10.128.3.29
msk-donskaya-nabakulin-gw-1(config)#ip dhcp excluded-address 10.128.3.200 10.128.3.254
msk-donskaya-nabakulin-gw-1(dhcp-config)#ip dhcp pool departments
msk-donskaya-nabakulin-gw-1(dhcp-config)#network 10.128.4.0 255.255.255.0
msk-donskaya-nabakulin-gw-1(dhcp-config)#default-router 10.128.4.1
msk-donskaya-nabakulin-gw-1(dhcp-config)#dns-server 10.128.0.5
msk-donskaya-nabakulin-gw-1(dhcp-config)#exit
msk-donskaya-nabakulin-gw-1(config)#ip dhcp excluded-address 10.128.4.1 10.128.4.29
msk-donskaya-nabakulin-gw-1(config)#ip dhcp excluded-address 10.128.4.200 10.128.4.254
msk-donskaya-nabakulin-gw-1(dhcp-config)#ip dhcp pool adm
msk-donskaya-nabakulin-gw-1(dhcp-config)#network 10.128.5.0 255.255.255.0
msk-donskaya-nabakulin-gw-1(dhcp-config)#default-router 10.128.5.1
msk-donskaya-nabakulin-gw-1(dhcp-config)#dns-server 10.128.0.5
msk-donskaya-nabakulin-gw-1(dhcp-config)#exit
msk-donskaya-nabakulin-gw-1(config)#ip dhcp excluded-address 10.128.5.1 10.128.5.29
msk-donskaya-nabakulin-gw-1(config)#ip dhcp excluded-address 10.128.5.200 10.128.5.254
msk-donskaya-nabakulin-gw-1(dhcp-config)#ip dhcp pool other
msk-donskaya-nabakulin-gw-1(dhcp-config)#network 10.128.6.0 255.255.255.0
msk-donskaya-nabakulin-gw-1(dhcp-config)#default-router 10.128.6.1
msk-donskaya-nabakulin-gw-1(dhcp-config)#dns-server 10.128.0.5
msk-donskaya-nabakulin-gw-1(dhcp-config)#exit
msk-donskaya-nabakulin-gw-1(config)#ip dhcp excluded-address 10.128.6.1 10.128.6.29
msk-donskaya-nabakulin-gw-1(config)#ip dhcp excluded-address 10.128.6.200 10.128.6.254
```

Рис. 3

```
msk-donskaya-nabakulin-gw-1#sh ip dhcp pool
```

```
Pool dk :
Utilization mark (high/low) : 100 / 0
Subnet size (first/next) : 0 / 0
Total addresses : 254
Leased addresses : 0
Excluded addresses : 8
Pending event : none
```

```
1 subnet is currently in the pool
Current index IP address range Leased/Excluded/Total
10.128.3.1 10.128.3.1 - 10.128.3.254 0 / 8 / 254
```

```
Pool departments :
Utilization mark (high/low) : 100 / 0
Subnet size (first/next) : 0 / 0
Total addresses : 254
Leased addresses : 0
Excluded addresses : 8
Pending event : none
```

```
1 subnet is currently in the pool
Current index IP address range Leased/Excluded/Total
10.128.4.1 10.128.4.1 - 10.128.4.254 0 / 8 / 254
```

```
Pool adm :
Utilization mark (high/low) : 100 / 0
Subnet size (first/next) : 0 / 0
Total addresses : 254
Leased addresses : 0
Excluded addresses : 8
Pending event : none
```

```
1 subnet is currently in the pool
Current index IP address range Leased/Excluded/Total
10.128.5.1 10.128.5.1 - 10.128.5.254 0 / 8 / 254
```

```
Pool other :
Utilization mark (high/low) : 100 / 0
Subnet size (first/next) : 0 / 0
Total addresses : 254
Leased addresses : 0
Excluded addresses : 8
Pending event : none
```

```
1 subnet is currently in the pool
Current index IP address range Leased/Excluded/Total
10.128.6.1 10.128.6.1 - 10.128.6.254 0 / 8 / 254
```

Рис. 4

Результаты выполнения

- Заменить в конфигурации оконечных устройствах статическое распределение адресов на динамическое.

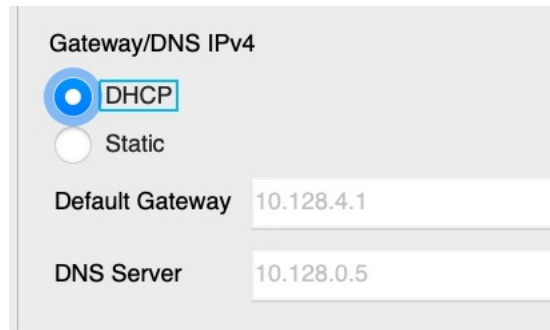


Рис. 5

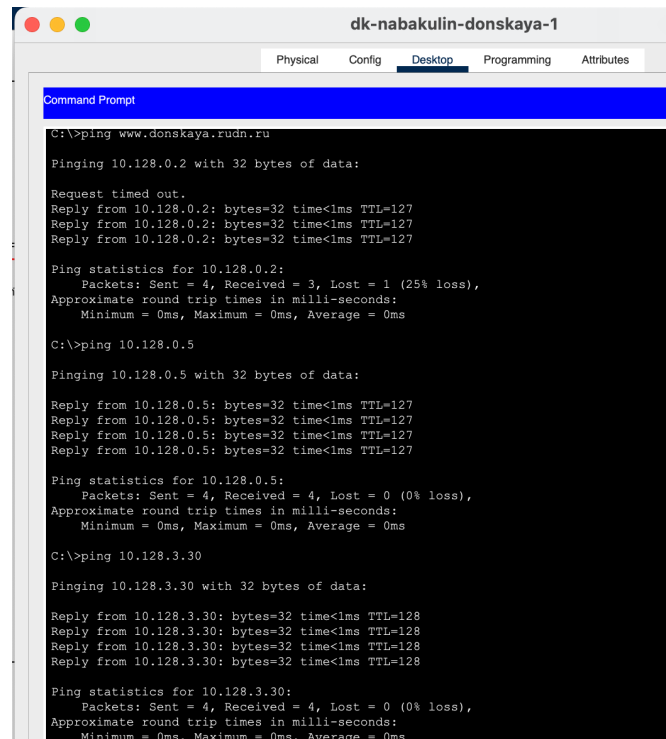


Рис. 6

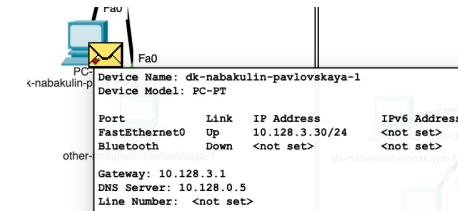


Рис. 7

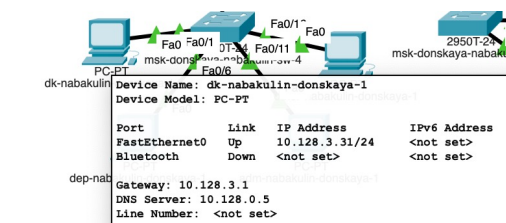


Рис. 8

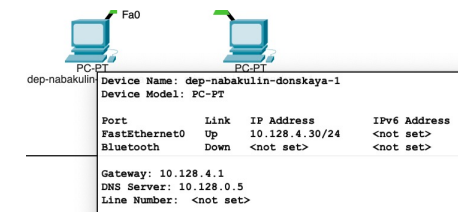


Рис. 9

Результаты выполнения

- Заменить в конфигурации конечных устройств статическое распределение адресов на динамическое.

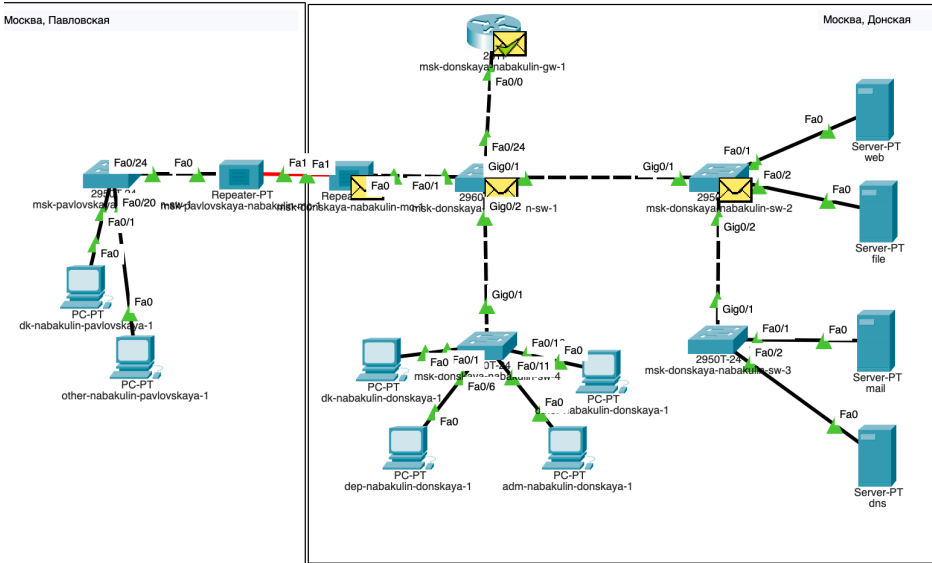


Рис. 10

| | |
|---|---|
| At Device: dk-nabakulin-donskaya-1 Source: dk-nabakulin-donskaya-1 Destination: 255.255.255.255 | |
| In Layers | Out Layers |
| Layer7 | Layer 7: DHCP Packet Server: 0.0.0.0, Client: 0.0.0.0 |
| Layer6 | Layer6 |
| Layer5 | Layer5 |
| Layer4 | Layer 4: UDP Src Port: 68, Dst Port: 67 |
| Layer3 | Layer 3: IP Header Src. IP: 0.0.0.0, Dest. IP: 255.255.255.255 |
| Layer2 | Layer 2: Ethernet II Header 0001.43DC.AD22 >> FFFF.FFFF.FFFF |
| Layer1 | Layer 1: Port(s): |

1. The DHCP client constructs a Discover packet and sends it out.

Рис. 11

| | |
|---|-------------------|
| At Device: msk-donskaya-nabakulin-gw-1 Source: dk-nabakulin-donskaya-1 Destination: 255.255.255.255 | |
| In Layers | Out Layers |
| Layer 7: DHCP Packet Server: 0.0.0.0, Client: 0.0.0.0 | Layer7 |
| Layer6 | Layer6 |
| Layer5 | Layer5 |
| Layer 4: UDP Src Port: 68, Dst Port: 67 | Layer4 |
| Layer 3: IP Header Src. IP: 0.0.0.0, Dest. IP: 255.255.255.255 | Layer3 |
| Layer 2: Dot1q Header 0001.43DC.AD22 >> FFFF.FFFF.FFFF | Layer2 |
| Layer 1: Port FastEthernet0/0 | Layer1 |

1. The packet is a DHCP packet. The DHCP server processes it.
2. The DHCP server received a DHCP Release packet.
3. The DHCP server releases the lease.

Рис. 12

| | |
|---|---|
| At Device: dk-nabakulin-donskaya-1 Source: msk-donskaya-nabakulin-gw-1 Destination: Broadcast | |
| In Layers | Out Layers |
| Layer 7: DHCP Packet Server: 10.128.3.1, Client: 0.0.0.0 | Layer 7: DHCP Packet Server: 10.128.3.1, Client: 0.0.0.0 |
| Layer6 | Layer6 |
| Layer5 | Layer5 |
| Layer 4: UDP Src Port: 67, Dst Port: 68 | Layer 4: UDP Src Port: 68, Dst Port: 67 |
| Layer 3: IP Header Src. IP: 10.128.3.1, Dest. IP: 255.255.255.255 | Layer 3: IP Header Src. IP: 0.0.0.0, Dest. IP: 255.255.255.255 |
| Layer 2: Ethernet II Header 0006.2A0A.B601 >> FFFF.FFFF.FFFF | Layer 2: Ethernet II Header 0001.43DC.AD22 >> FFFF.FFFF.FFFF |
| Layer 1: Port FastEthernet0 | Layer 1: Port(s): FastEthernet0 |

1. The packet is a DHCP packet. The DHCP client processes it.
2. The DHCP client received a DHCP offer packet.

Рис. 13

| | |
|---|-------------------|
| At Device: dk-nabakulin-donskaya-1 Source: msk-donskaya-nabakulin-gw-1 Destination: Broadcast | |
| In Layers | Out Layers |
| Layer 7: DHCP Packet Server: 10.128.3.1, Client: 0.0.0.0 | Layer7 |
| Layer6 | Layer6 |
| Layer5 | Layer5 |
| Layer 4: UDP Src Port: 67, Dst Port: 68 | Layer4 |
| Layer 3: IP Header Src. IP: 10.128.3.1, Dest. IP: 255.255.255.255 | Layer3 |
| Layer 2: Ethernet II Header 0006.2A0A.B601 >> FFFF.FFFF.FFFF | Layer2 |
| Layer 1: Port FastEthernet0 | Layer1 |

1. The packet is a DHCP packet. The DHCP client processes it.
2. The DHCP client received a DHCP acknowledge packet.
3. The DHCP client receives an Ack packet and sets its IP address configuration.

Рис. 14