

1. Задание на расчет сетей. Можно пользоваться калькулятором <http://jodies.de/ipcalc> (но он не сможет полностью решить задачу за вас). Cisco Packet Tracer не понадобится. Требуется:
  - а) разбить сеть 192.168.1.0 на 2 подсети, на 4, на 8
  - б) найти, сколько хостов будет в сети 172.16.1.0/25, в сети 10.0.0.0/26
  - в) найти бродкаст-адрес в сети 10.0.0.0/30, в сети 10.255.255.124/30
  - г) найти адрес и маску первой и последней сетей, если:
    - \* разбить 192.168.0.0/24 на 16 сетей,
    - \* разбить сеть 100.64.0.0/25 на 8 сетей
2. На всех маршрутизаторах настроить динамическую маршрутизацию с помощью протокола RIP2. Ответ должен содержать sh ip ro и команды с которыми вы настроили . rip v2. Учтите, что если используете файл, в котором настроена статическая маршрутизация, ее нужно удалить через no ip route

1. Разбиваю сети на подсети.

**а)** На 2 сети:

192.168.1.0/24 ->

192.168.1.0/25, 192.168.1.128/25

На 4 подсети:

192.168.1.0/24 -> 192.168.1.0/26, 192.168.1.64/26, 192.168.1.128/26, 192.168.1.192/26

На 8 подсетей:

192.168.1.0/24 -> 192.168.1.0/27, 192.168.1.32/27, 192.168.1.64/27, 192.168.1.96/27,

192.168.1.128/27, 192.168.1.160/27, 192.168.1.192/27, 192.168.1.224/27

**б)** в сети 172.16.1.0/25 будет 126 хостов

в сети 10.0.0.0/26 будет 62 хоста

**в)** бродкаст-адрес в сети 10.0.0.0/30 = 10.0.0.3/30

бродкаст-адрес в сети 10.255.255.124/30 = 10.255.255.127/30

**г)** Если разбить 192.168.0.0/24 на 16 сетей, то адрес и маска первой сети будет 192.168.0.0/28, последней - 192.168.0.240/28;

Если разбить 100.64.0.0/25 на 8 сетей, то адрес и маска первой сети будет 100.64.0.0/28, последней - 100.64.0.112/28.

2. Конфигурация протокола RIP

**Router0**

Router>en

Router#conf t

Enter configuration commands, one per line. End with CNTL/Z.

```
Router(config)#no ip route 192.168.2.0 255.255.255.0 172.17.70.2
```

```
Router(config)#no ip route 192.168.3.0 255.255.255.0 172.17.70.2
```

```
Router(config)#router rip
```

```
Router(config-router)#ver
```

```
Router(config-router)#version 2
```

```
Router(config-router)#network 192.168.1.0
```

```
Router(config-router)#network 172.17.0.0
```

```
Router(config-router)#network 172.16.0.0
```

```
Router(config-router)#no net
```

```
Router(config-router)#no network 192.168.1.3
```

```
Router(config-router)#do sh ip ro
```

```
C 172.16.0.0/16 is directly connected, FastEthernet5/0
```

```
C 172.17.0.0/16 is directly connected, FastEthernet4/0
```

```
R 172.18.0.0/16 [120/1] via 172.17.70.2, 00:00:02, FastEthernet4/0
```

```
[120/1] via 172.16.70.2, 00:00:07, FastEthernet5/0
```

```
C 192.168.1.0/24 is directly connected, FastEthernet0/0
```

```
R 192.168.2.0/24 [120/1] via 172.17.70.2, 00:00:02, FastEthernet4/0
```

```
R 192.168.3.0/24 [120/1] via 172.16.70.2, 00:00:07, FastEthernet5/0
```

## **Router1**

```
Router>en
```

```
Router#conf t
```

Enter configuration commands, one per line. End with CNTL/Z.

```
Router(config)#no ip route 192.168.1.0 255.255.255.0 172.18.70.2
```

```
Router(config)#no ip route 192.168.3.0 255.255.255.0 172.18.70.2
```

```
Router(config)#router rip
```

```
Router(config-router)#vers
```

```
Router(config-router)#version 2
```

```
Router(config-router)#no network 192.168.2.0
```

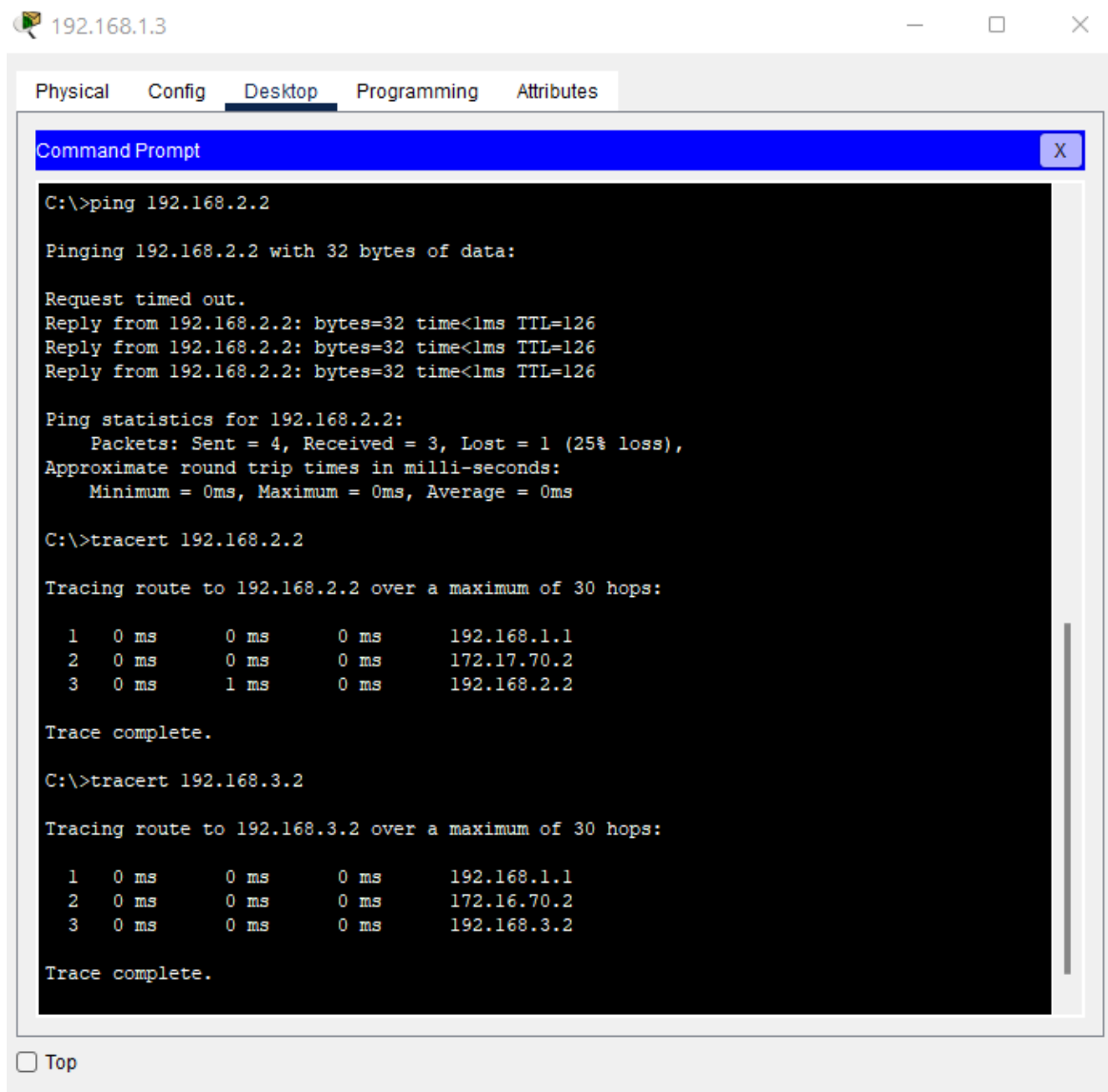
```
Router(config-router)#network 172.17.70.0
```

```
Router(config-router)#network 172.18.70.0
Router(config-router)#do sh ip ro
R 172.16.0.0/16 [120/1] via 172.17.70.1, 00:00:12, FastEthernet4/0
[120/1] via 172.18.70.2, 00:00:07, FastEthernet5/0
C 172.17.0.0/16 is directly connected, FastEthernet4/0
C 172.18.0.0/16 is directly connected, FastEthernet5/0
R 192.168.1.0/24 [120/1] via 172.17.70.1, 00:00:12, FastEthernet4/0
C 192.168.2.0/24 is directly connected, FastEthernet0/0
R 192.168.3.0/24 [120/1] via 172.18.70.2, 00:00:07, FastEthernet5/0
```

## **Router2**

```
Router>
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip route 192.168.1.0 255.255.255.0 172.16.70.1
Router(config)#no ip route 192.168.2.0 255.255.255.0 172.16.70.1
Router(config)#router rip
Router(config-router)#version 2
Router(config-router)#no network 192.168.3.0
Router(config-router)#network 172.16.70.0
Router(config-router)#network 172.18.70.0
Router(config-router)#do sh ip ro
C 172.16.0.0/16 is directly connected, FastEthernet5/0
R 172.17.0.0/16 [120/1] via 172.18.70.1, 00:00:13, FastEthernet4/0
[120/1] via 172.16.70.1, 00:00:12, FastEthernet5/0
C 172.18.0.0/16 is directly connected, FastEthernet4/0
R 192.168.1.0/24 [120/1] via 172.16.70.1, 00:00:12, FastEthernet5/0
R 192.168.2.0/24 [120/1] via 172.18.70.1, 00:00:13, FastEthernet4/0
C 192.168.3.0/24 is directly connected, FastEthernet0/0
```

Проверяю... Работает:



Далее настрою DHCP на Router0-2, а на всех PC включаю получение адреса от DHCP.

### Router0

```
Router(config-router)#exit
```

```
Router(config)#ip dhcp pool r0-pool
```

```
Router(dhcp-config)#network 192.168.1.0 255.255.255.0
```

```
Router(dhcp-config)#defau
```

```
Router(dhcp-config)#default-router 192.168.1.1
```

### Router1

```
Router(config)#ip dhcp pool r1-pool
```

```
Router(dhcp-config)#network 192.168.2.0 255.255.255.0
```

```
Router(dhcp-config)#defa
```

```
Router(dhcp-config)#default-router 192.168.2.1
```

## Router2

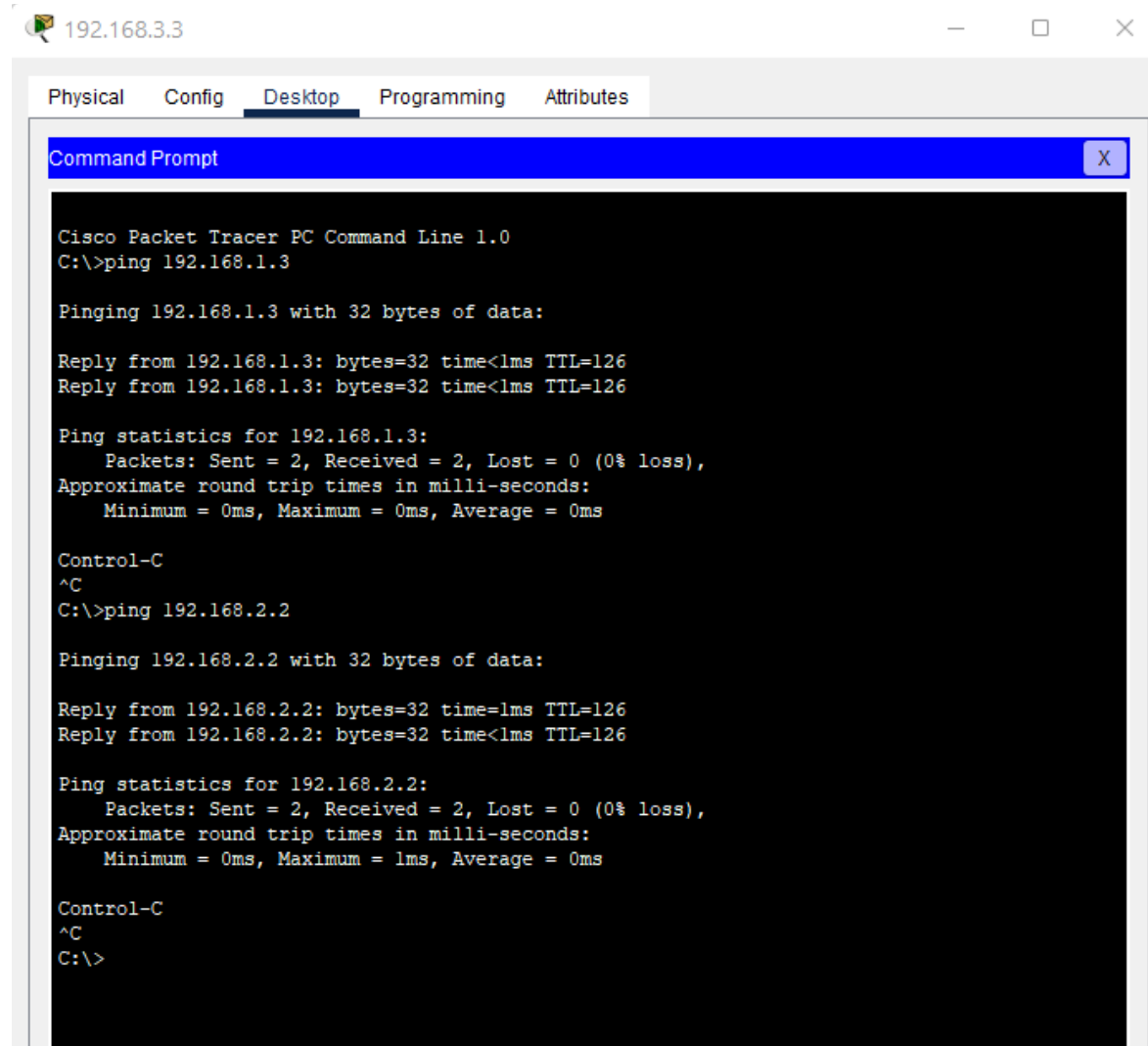
```
Router(config)#ip dhcp pool r2-pool
```

```
Router(dhcp-config)#network 192.168.3.0 255.255.255.0
```

```
Router(dhcp-config)#defa
```

```
Router(dhcp-config)#default-router 192.168.3.1
```

Проверяю доступность (для разнообразия, с другого PC:



The screenshot shows a Cisco Packet Tracer PC Command Line window for a PC with IP 192.168.3.3. The window has tabs for Physical, Config, Desktop, Programming, and Attributes. The Desktop tab is active, showing a Command Prompt window. The Command Prompt displays the output of two ping commands: 'ping 192.168.1.3' and 'ping 192.168.2.2'. Both pings are successful, showing 0% loss and 0ms round trip times. The user also presses Control-C (^C) after each ping command.

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.3

Pinging 192.168.1.3 with 32 bytes of data:

Reply from 192.168.1.3: bytes=32 time<1ms TTL=126
Reply from 192.168.1.3: bytes=32 time<1ms TTL=126

Ping statistics for 192.168.1.3:
    Packets: Sent = 2, Received = 2, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

Control-C
^C
C:\>ping 192.168.2.2

Pinging 192.168.2.2 with 32 bytes of data:

Reply from 192.168.2.2: bytes=32 time=1ms TTL=126
Reply from 192.168.2.2: bytes=32 time<1ms TTL=126

Ping statistics for 192.168.2.2:
    Packets: Sent = 2, Received = 2, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

Control-C
^C
C:\>
```