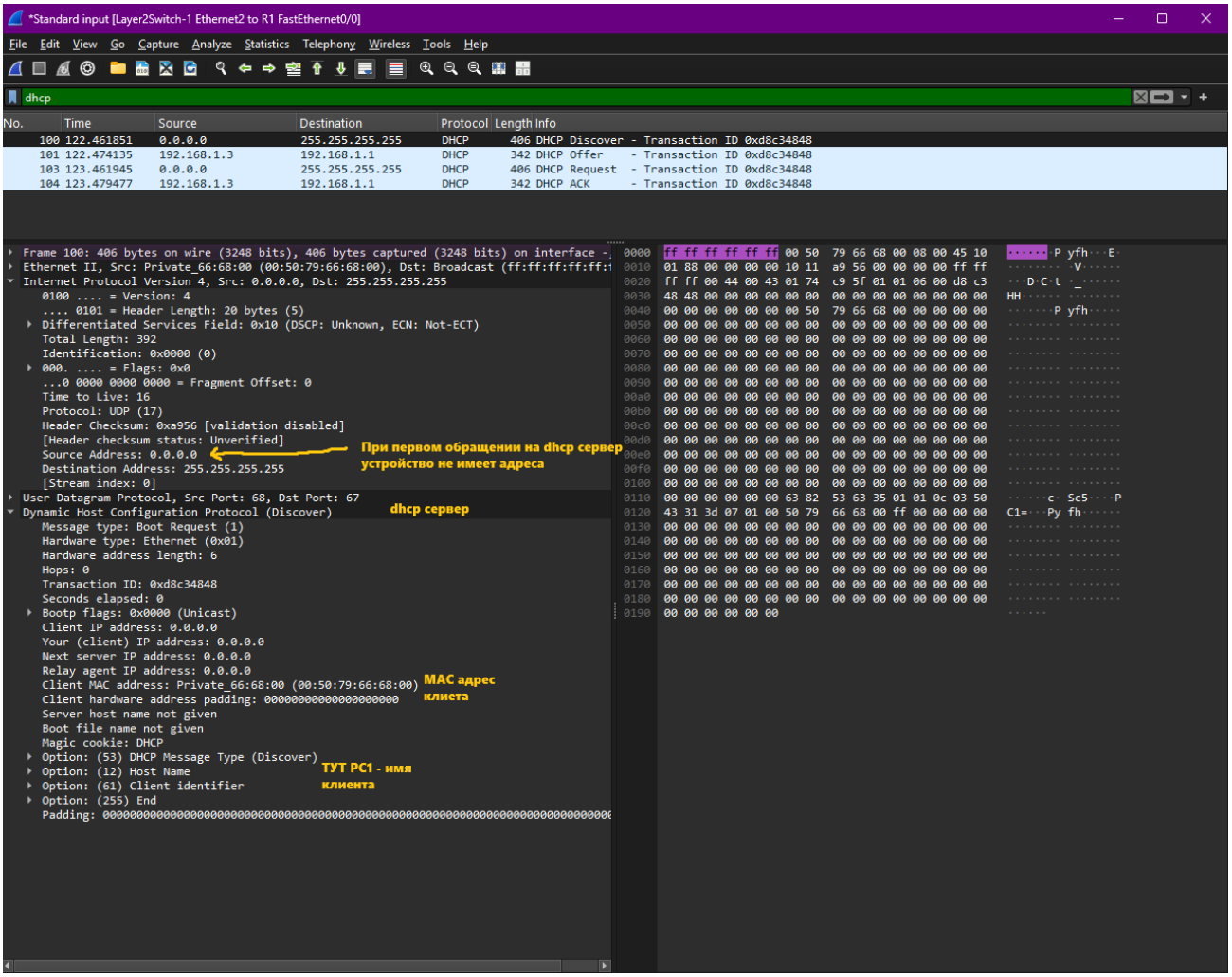
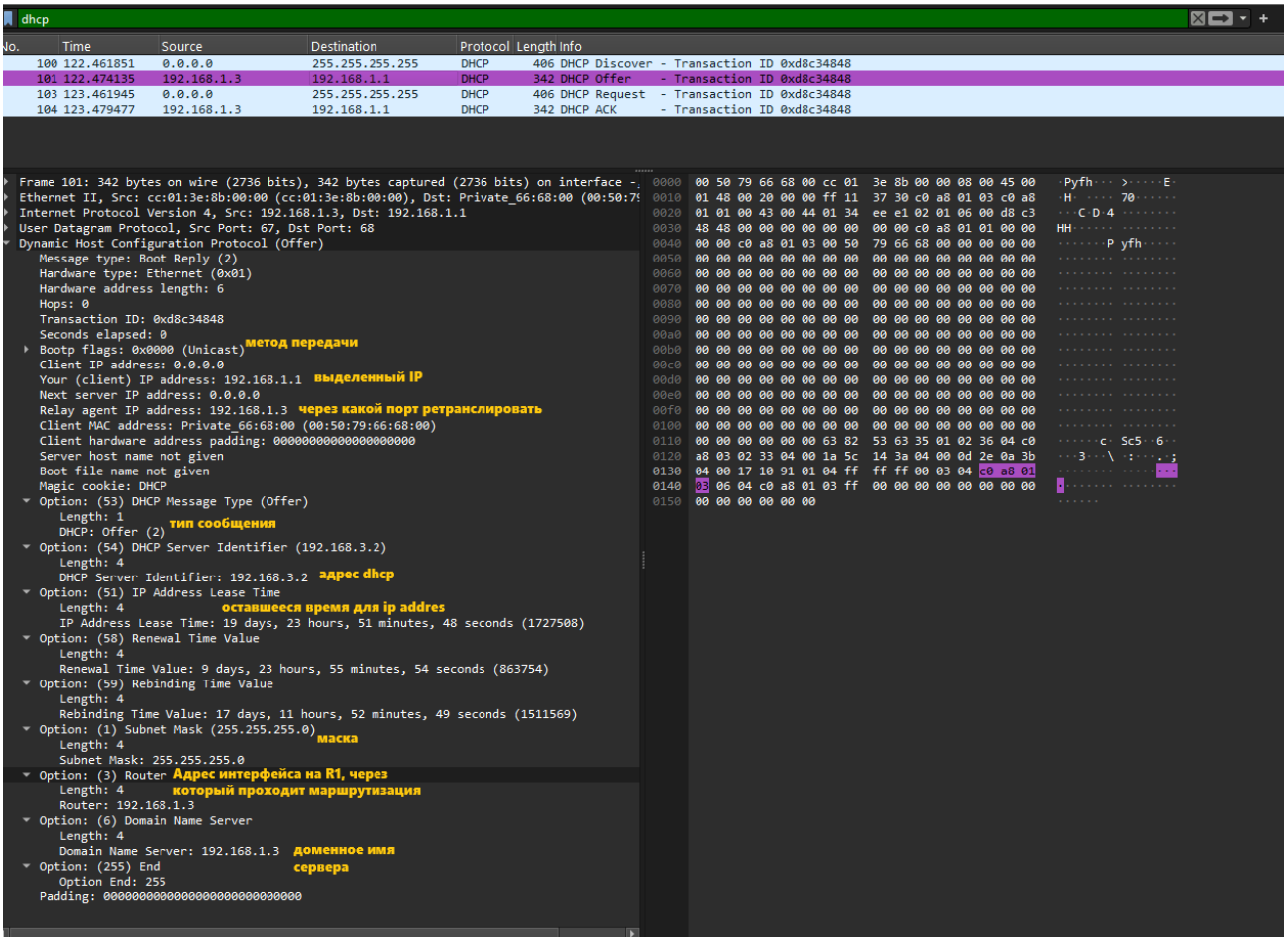
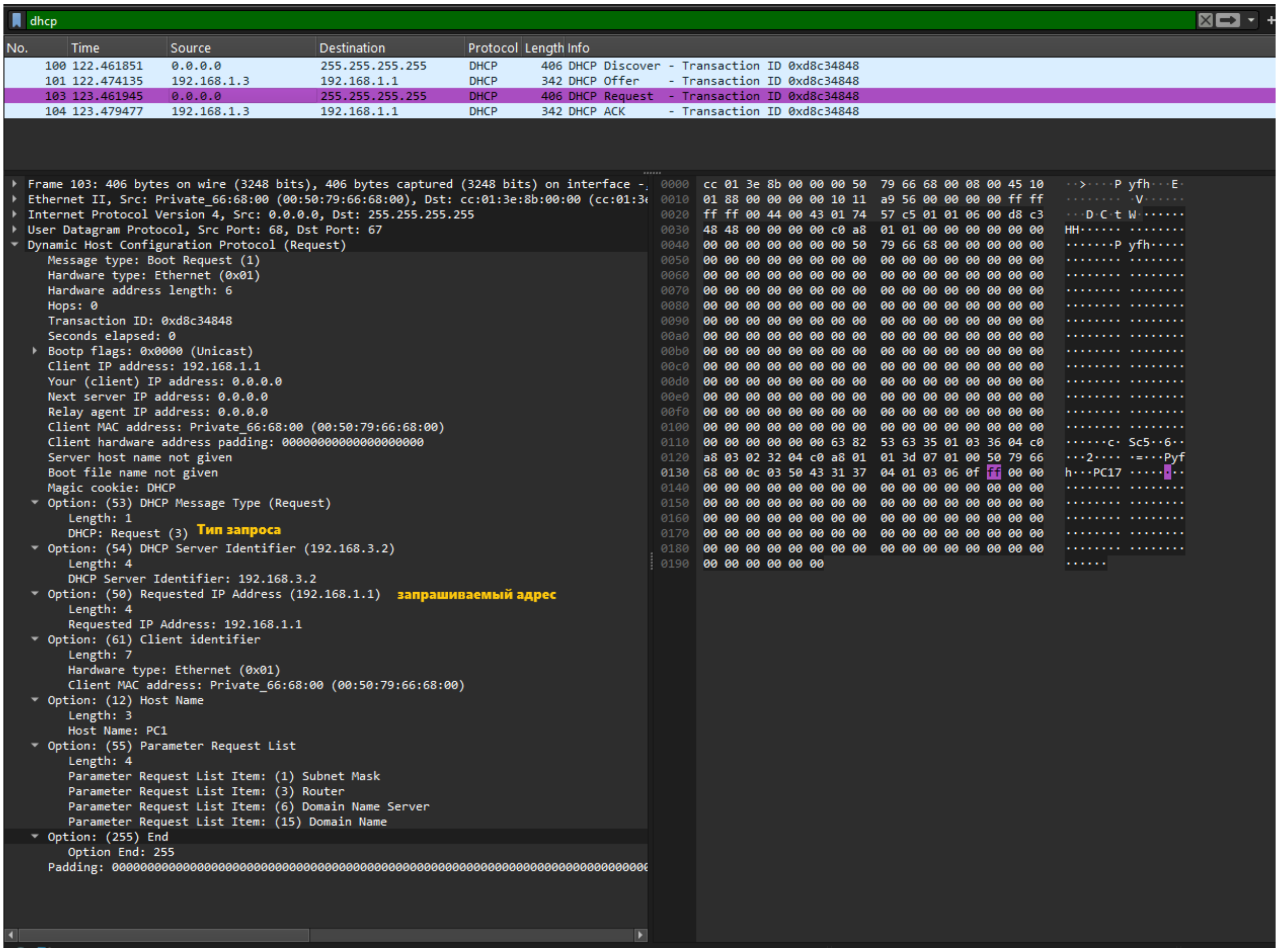
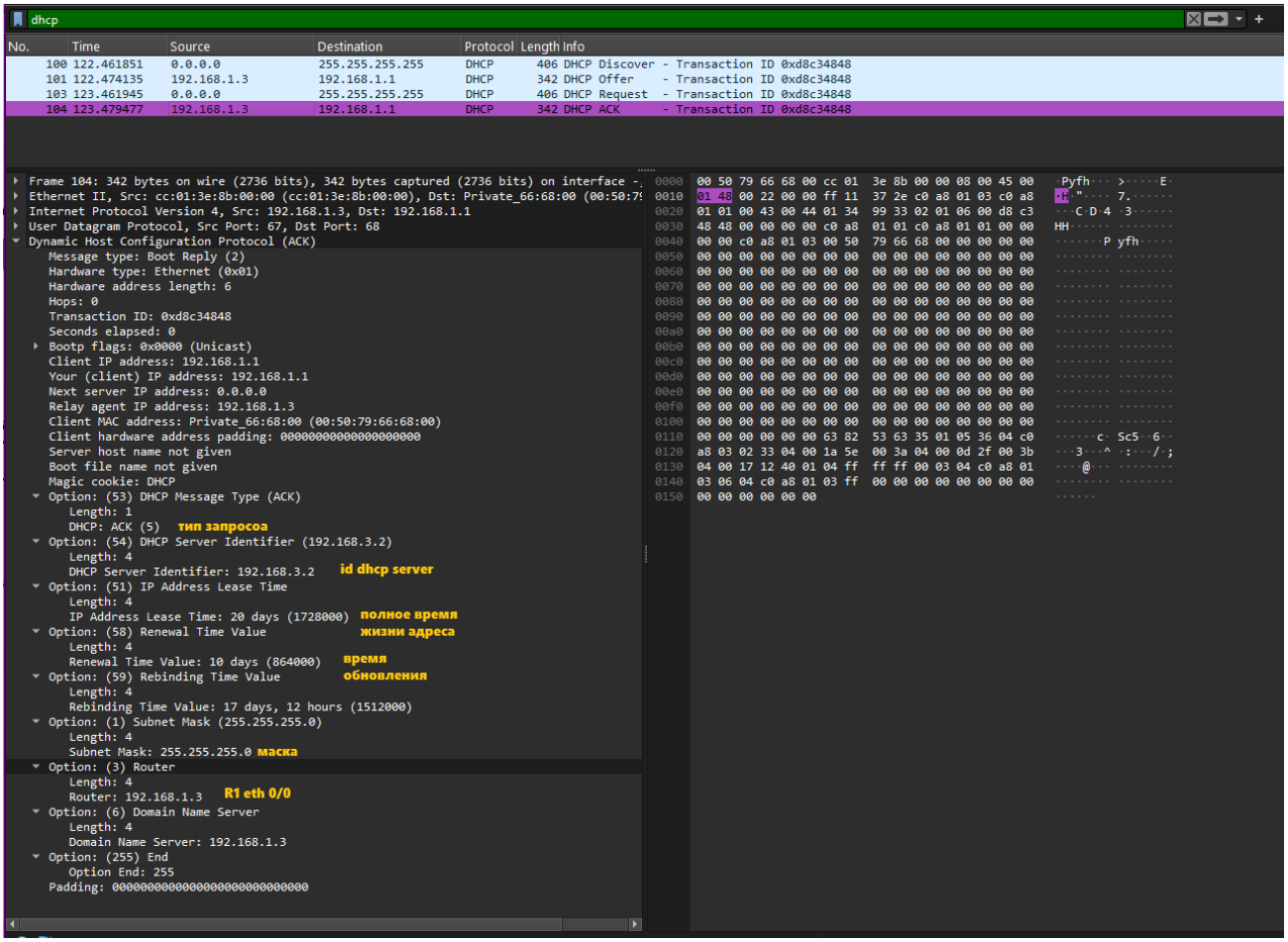

*Standard input [Layer2Switch-1 Ethernet2 to R1 FastEthernet0/0]
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help
dhcp
No. Time Source Destination Protocol Length Info
100 122.461851 0.0.0.0 255.255.255.255 DHCP 406 DHCP Discover - Transaction ID 0xd8c34848
101 122.474135 192.168.1.3 192.168.1.1 DHCP 342 DHCP Offer - Transaction ID 0xd8c34848
103 123.461945 0.0.0.0 255.255.255.255 DHCP 406 DHCP Request - Transaction ID 0xd8c34848
104 123.479477 192.168.1.3 192.168.1.1 DHCP 342 DHCP ACK - Transaction ID 0xd8c34848
Frame 100: 406 bytes on wire (3248 bits), 406 bytes captured (3248 bits) on interface -
Ethernet II, Src: Private_66:68:00 (00:50:79:66:68:00), Dst: Broadcast (ff:ff:ff:ff:ff:
Internet Protocol Version 4, Src: 0.0.0.0, Dst: 255.255.255.255
0100 .... = Version: 4
.... 0101 = Header Length: 20 bytes (5)
Differentiated Services Field: 0x10 (DSCP: Unknown, ECN: Not-ECT)
Total Length: 392
Identification: 0x0000 (0)
000. .... = Flags: 0x0
...0 0000 0000 0000 = Fragment Offset: 0
Time to Live: 16
Protocol: UDP (17)
Header Checksum: 0xa956 [validation disabled]
[Header checksum status: Unverified]
Source Address: 0.0.0.0
При первом обращении на dhcp сервер устройство не имеет адреса
Destination Address: 255.255.255.255
[Stream index: 0]
User Datagram Protocol, Src Port: 68, Dst Port: 67
Dynamic Host Configuration Protocol (Discover)
dhcp сервер
Message type: Boot Request (1)
Hardware type: Ethernet (0x01)
Hardware address length: 6
Hops: 0
Transaction ID: 0xd8c34848
Seconds elapsed: 0
Bootp flags: 0x0000 (Unicast)
Client IP address: 0.0.0.0
Your (client) IP address: 0.0.0.0
Next server IP address: 0.0.0.0
Relay agent IP address: 0.0.0.0
Client MAC address: Private_66:68:00 (00:50:79:66:68:00)
MAC адрес клиета
Client hardware address padding: 00000000000000000000
Server host name not given
Boot file name not given
Magic cookie: DHCP
Option: (53) DHCP Message Type (Discover)
Option: (12) Host Name
ТУТ PC1 - имя клиента
Option: (61) Client identifier
Option: (255) End
Padding: 0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
0000 ff ff ff ff ff ff 00 50 79 66 68 00 08 00 45 10
0010 01 88 00 00 00 00 10 11 a9 56 00 00 00 00 ff ff
0020 ff ff 00 44 00 43 01 74 c9 5f 01 01 06 00 d8 c3
0030 48 48 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0040 00 00 00 00 00 00 00 50 79 66 68 00 00 00 00 00
0050 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0060 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0070 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0080 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0090 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00a0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00b0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00c0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00d0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00e0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00f0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0100 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0110 00 00 00 00 00 00 63 82 53 63 35 01 01 0c 03 50
0120 43 31 3d 07 01 00 50 79 66 68 00 ff 00 00 00 00
0130 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0140 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0150 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0160 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0170 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0180 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0190 00 00 00 00 00 00


dhcp
No. Time Source Destination Protocol Length Info
100 122.461851 0.0.0.0 255.255.255.255 DHCP 406 DHCP Discover - Transaction ID 0xd8c34848
101 122.474135 192.168.1.3 192.168.1.1 DHCP 342 DHCP Offer - Transaction ID 0xd8c34848
103 123.461945 0.0.0.0 255.255.255.255 DHCP 406 DHCP Request - Transaction ID 0xd8c34848
104 123.479477 192.168.1.3 192.168.1.1 DHCP 342 DHCP ACK - Transaction ID 0xd8c34848
Frame 101: 342 bytes on wire (2736 bits), 342 bytes captured (2736 bits) on interface -
Ethernet II, Src: cc:01:3e:8b:00:00 (cc:01:3e:8b:00:00), Dst: Private_66:68:00 (00:50:7
Internet Protocol Version 4, Src: 192.168.1.3, Dst: 192.168.1.1
User Datagram Protocol, Src Port: 67, Dst Port: 68
Dynamic Host Configuration Protocol (Offer)
Message type: Boot Reply (2)
Hardware type: Ethernet (0x01)
Hardware address length: 6
Hops: 0
Transaction ID: 0xd8c34848
Seconds elapsed: 0
Bootp flags: 0x0000 (Unicast)
метод передачи
Client IP address: 0.0.0.0
Your (client) IP address: 192.168.1.1
выделенный IP
Next server IP address: 0.0.0.0
Relay agent IP address: 192.168.1.3
через какой порт ретранслировать
Client MAC address: Private_66:68:00 (00:50:79:66:68:00)
Client hardware address padding: 00000000000000000000
Server host name not given
Boot file name not given
Magic cookie: DHCP
Option: (53) DHCP Message Type (Offer)
Length: 1
DHCP: Offer (2)
тип сообщения
Option: (54) DHCP Server Identifier (192.168.3.2)
Length: 4
DHCP Server Identifier: 192.168.3.2
адрес dhcp
Option: (51) IP Address Lease Time
Length: 4
оставшееся время для ip addres
IP Address Lease Time: 19 days, 23 hours, 51 minutes, 48 seconds (1727508)
Option: (58) Renewal Time Value
Length: 4
Renewal Time Value: 9 days, 23 hours, 55 minutes, 54 seconds (863754)
Option: (59) Rebinding Time Value
Length: 4
Rebinding Time Value: 17 days, 11 hours, 52 minutes, 49 seconds (1511569)
Option: (1) Subnet Mask (255.255.255.0)
маска
Length: 4
Subnet Mask: 255.255.255.0
Option: (3) Router
Адрес интерфейса на R1, через
Length: 4
который проходит маршрутизация
Router: 192.168.1.3
Option: (6) Domain Name Server
Length: 4
Domain Name Server: 192.168.1.3
доменное имя
Option: (255) End
сервера
Option End: 255
Padding: 00000000000000000000000000000000
0000 00 50 79 66 68 00 cc 01 3e 8b 00 00 08 00 45 00 Pyfh > E
0010 01 48 00 20 00 00 ff 11 37 30 c0 a8 01 03 c0 a8 H 70
0020 01 01 00 43 00 44 01 34 ee e1 02 01 06 00 d8 c3 C D 4
0030 48 48 00 00 00 00 00 00 00 00 c0 a8 01 01 00 00 HH
0040 00 00 c0 a8 01 03 00 50 79 66 68 00 00 00 00 00 Pyfh
0050 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0060 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0070 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0080 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0090 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00a0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00b0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00c0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00d0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00e0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00f0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0100 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0110 00 00 00 00 00 00 63 82 53 63 35 01 02 36 04 c0 c Sc5 6
0120 a8 03 02 33 04 00 1a 5c 14 3a 04 00 0d 2e 0a 3b 3 \ : ;
0130 04 00 17 10 91 01 04 ff ff ff 00 03 04 c0 a8 01
0140 03 06 04 c0 a8 01 03 ff 00 00 00 00 00 00 00 00
0150 00 00 00 00 00 00


dhcp
No. Time Source Destination Protocol Length Info
100 122.461851 0.0.0.0 255.255.255.255 DHCP 406 DHCP Discover - Transaction ID 0xd8c34848
101 122.474135 192.168.1.3 192.168.1.1 DHCP 342 DHCP Offer - Transaction ID 0xd8c34848
103 123.461945 0.0.0.0 255.255.255.255 DHCP 406 DHCP Request - Transaction ID 0xd8c34848
104 123.479477 192.168.1.3 192.168.1.1 DHCP 342 DHCP ACK - Transaction ID 0xd8c34848
Frame 103: 406 bytes on wire (3248 bits), 406 bytes captured (3248 bits) on interface -
Ethernet II, Src: Private_66:68:00 (00:50:79:66:68:00), Dst: cc:01:3e:8b:00:00 (cc:01:3e
Internet Protocol Version 4, Src: 0.0.0.0, Dst: 255.255.255.255
User Datagram Protocol, Src Port: 68, Dst Port: 67
Dynamic Host Configuration Protocol (Request)
Message type: Boot Request (1)
Hardware type: Ethernet (0x01)
Hardware address length: 6
Hops: 0
Transaction ID: 0xd8c34848
Seconds elapsed: 0
Bootp flags: 0x0000 (Unicast)
Client IP address: 192.168.1.1
Your (client) IP address: 0.0.0.0
Next server IP address: 0.0.0.0
Relay agent IP address: 0.0.0.0
Client MAC address: Private_66:68:00 (00:50:79:66:68:00)
Client hardware address padding: 00000000000000000000
Server host name not given
Boot file name not given
Magic cookie: DHCP
Option: (53) DHCP Message Type (Request)
Length: 1
DHCP: Request (3)
Тип запроса
Option: (54) DHCP Server Identifier (192.168.3.2)
Length: 4
DHCP Server Identifier: 192.168.3.2
Option: (50) Requested IP Address (192.168.1.1)
запрашиваемый адрес
Length: 4
Requested IP Address: 192.168.1.1
Option: (61) Client identifier
Length: 7
Hardware type: Ethernet (0x01)
Client MAC address: Private_66:68:00 (00:50:79:66:68:00)
Option: (12) Host Name
Length: 3
Host Name: PC1
Option: (55) Parameter Request List
Length: 4
Parameter Request List Item: (1) Subnet Mask
Parameter Request List Item: (3) Router
Parameter Request List Item: (6) Domain Name Server
Parameter Request List Item: (15) Domain Name
Option: (255) End
Option End: 255



Команды:

ДЛЯ R1:

enable

configure

interface FastEthernet 0/0

ip address 192.168.1.3 255.255.255.0

interface FastEthernet 1/0

ip address 192.168.3.3 255.255.255.0

interface FastEthernet 2/0

ip address 192.168.2.3 255.255.255.0

устанавливаем статическую маршрутизацию для тех, у кого цель lan 3,

отправлять на адрес порта eth 0/0 Route 2

ip route 192.168.3.0 255.255.255.0 192.168.3.2

interface FastEthernet 0/0

ip helper-address 192.168.3.2

interface FastEthernet 2/0

ip helper-address 192.168.3.2

ДЛЯ R2:

enable

configure

присваиваем адрес порту

interface FastEthernet 0/0

ip address 192.168.3.2 255.255.255.0

wr memory

ip dhcp pool LAN1pool

network 192.168.1.0 255.255.255.0

default-router 192.168.1.3

dns-server 192.168.1.3

lease 20

создаем пул для lan2 из которого будем черпать адреса.

ip dhcp pool LAN2pool

network 192.168.2.0 255.255.255.0

устанавливаем адрес, куда нужно перенаправить запрос

default-router 192.168.2.3

dns-server 192.168.2.3

время жизни адреса в днях

lease 20

Исключаем эти адреса из пула, они уже заданы для интерфейсов маршрутизатора:

ip dhcp excluded-address 192.168.1.3

ip dhcp excluded-address 192.168.2.3

Устанавливаем статическую маршрутизацию, чтоб запросы, которые идут в подсети 1.0 или 2.0 перенаправлялись на первый маршрутизатор eth 1/0

ip route 192.168.1.0 255.255.255.0 192.168.3.3

ip route 192.168.2.0 255.255.255.0 192.168.3.3

PC1> ip dhcp – Запросили адрес

DORA IP 192.168.1.1/24 GW 192.168.1.3

PC1> ping 192.168.1.2 пинганули другие пк

84 bytes from 192.168.1.2 icmp_seq=1 ttl=64 time=15.409 ms

84 bytes from 192.168.1.2 icmp_seq=2 ttl=64 time=7.350 ms

84 bytes from 192.168.1.2 icmp_seq=3 ttl=64 time=7.844 ms

84 bytes from 192.168.1.2 icmp_seq=4 ttl=64 time=0.669 ms

84 bytes from 192.168.1.2 icmp_seq=5 ttl=64 time=0.869 ms

PC1> ping 192.168.2.2

84 bytes from 192.168.2.2 icmp_seq=1 ttl=63 time=27.965 ms

84 bytes from 192.168.2.2 icmp_seq=2 ttl=63 time=15.176 ms

84 bytes from 192.168.2.2 icmp_seq=3 ttl=63 time=15.227 ms

84 bytes from 192.168.2.2 icmp_seq=4 ttl=63 time=15.147 ms

84 bytes from 192.168.2.2 icmp_seq=5 ttl=63 time=14.738 ms

PC1> ping 192.168.2.1

84 bytes from 192.168.2.1 icmp_seq=1 ttl=63 time=30.007 ms
84 bytes from 192.168.2.1 icmp_seq=2 ttl=63 time=18.135 ms
84 bytes from 192.168.2.1 icmp_seq=3 ttl=63 time=21.842 ms
84 bytes from 192.168.2.1 icmp_seq=4 ttl=63 time=15.524 ms
84 bytes from 192.168.2.1 icmp_seq=5 ttl=63 time=15.109 ms

PC2> ip dhcp
DDORA IP 192.168.1.2/24 GW 192.168.1.3

PC2> ping 192.168.1.1

84 bytes from 192.168.1.1 icmp_seq=1 ttl=64 time=0.627 ms
84 bytes from 192.168.1.1 icmp_seq=2 ttl=64 time=0.688 ms
84 bytes from 192.168.1.1 icmp_seq=3 ttl=64 time=0.562 ms
84 bytes from 192.168.1.1 icmp_seq=4 ttl=64 time=1.906 ms
84 bytes from 192.168.1.1 icmp_seq=5 ttl=64 time=0.654 ms

PC2> ping 192.168.2.1

84 bytes from 192.168.2.1 icmp_seq=1 ttl=63 time=11.660 ms
84 bytes from 192.168.2.1 icmp_seq=2 ttl=63 time=15.221 ms
84 bytes from 192.168.2.1 icmp_seq=3 ttl=63 time=15.543 ms
84 bytes from 192.168.2.1 icmp_seq=4 ttl=63 time=15.038 ms

84 bytes from 192.168.2.1 icmp_seq=5 ttl=63 time=15.047 ms

PC2> ping 192.168.2.2

84 bytes from 192.168.2.2 icmp_seq=1 ttl=63 time=13.330 ms
84 bytes from 192.168.2.2 icmp_seq=2 ttl=63 time=15.278 ms
84 bytes from 192.168.2.2 icmp_seq=3 ttl=63 time=15.143 ms
84 bytes from 192.168.2.2 icmp_seq=4 ttl=63 time=14.580 ms
84 bytes from 192.168.2.2 icmp_seq=5 ttl=63 time=15.386 ms

PC3> ip dhcp
DDORA IP 192.168.2.2/24 GW 192.168.2.3

PC3> ping 192.168.1.1

84 bytes from 192.168.1.1 icmp_seq=1 ttl=63 time=16.359 ms
84 bytes from 192.168.1.1 icmp_seq=2 ttl=63 time=14.840 ms
84 bytes from 192.168.1.1 icmp_seq=3 ttl=63 time=14.331 ms
84 bytes from 192.168.1.1 icmp_seq=4 ttl=63 time=14.863 ms
84 bytes from 192.168.1.1 icmp_seq=5 ttl=63 time=14.488 ms

PC3> ping 192.168.1.2

84 bytes from 192.168.1.2 icmp_seq=1 ttl=63 time=27.401 ms
84 bytes from 192.168.1.2 icmp_seq=2 ttl=63 time=15.181 ms
84 bytes from 192.168.1.2 icmp_seq=3 ttl=63 time=14.916 ms

84 bytes from 192.168.1.2 icmp_seq=4 ttl=63 time=14.290 ms
84 bytes from 192.168.1.2 icmp_seq=5 ttl=63 time=15.990 ms

PC3> ping 192.168.2.1

84 bytes from 192.168.2.1 icmp_seq=1 ttl=64 time=0.536 ms
84 bytes from 192.168.2.1 icmp_seq=2 ttl=64 time=0.624 ms
84 bytes from 192.168.2.1 icmp_seq=3 ttl=64 time=0.549 ms
84 bytes from 192.168.2.1 icmp_seq=4 ttl=64 time=0.550 ms
84 bytes from 192.168.2.1 icmp_seq=5 ttl=64 time=1.622 ms
PC4> ip dhcp
DDORA IP 192.168.2.1/24 GW 192.168.2.3

PC4> ping 192.168.1.1

84 bytes from 192.168.1.1 icmp_seq=1 ttl=63 time=14.667 ms
84 bytes from 192.168.1.1 icmp_seq=2 ttl=63 time=15.380 ms
84 bytes from 192.168.1.1 icmp_seq=3 ttl=63 time=15.056 ms
84 bytes from 192.168.1.1 icmp_seq=4 ttl=63 time=14.479 ms
84 bytes from 192.168.1.1 icmp_seq=5 ttl=63 time=15.221 ms

PC4> ip dhcp
DORA IP 192.168.2.1/24 GW 192.168.2.3

PC4> ping 192.168.1.1

84 bytes from 192.168.1.1 icmp_seq=1 ttl=63 time=14.657 ms
84 bytes from 192.168.1.1 icmp_seq=2 ttl=63 time=15.083 ms

84 bytes from 192.168.1.1 icmp_seq=3 ttl=63 time=14.747 ms
84 bytes from 192.168.1.1 icmp_seq=4 ttl=63 time=15.205 ms
84 bytes from 192.168.1.1 icmp_seq=5 ttl=63 time=14.736 ms

PC4> ping 192.168.1.2

84 bytes from 192.168.1.2 icmp_seq=1 ttl=63 time=15.782 ms
84 bytes from 192.168.1.2 icmp_seq=2 ttl=63 time=15.781 ms
84 bytes from 192.168.1.2 icmp_seq=3 ttl=63 time=14.618 ms
84 bytes from 192.168.1.2 icmp_seq=4 ttl=63 time=17.462 ms
84 bytes from 192.168.1.2 icmp_seq=5 ttl=63 time=14.925 ms

PC4> ping 192.168.2.2

84 bytes from 192.168.2.2 icmp_seq=1 ttl=64 time=3.912 ms
84 bytes from 192.168.2.2 icmp_seq=2 ttl=64 time=7.549 ms
84 bytes from 192.168.2.2 icmp_seq=3 ttl=64 time=3.781 ms
84 bytes from 192.168.2.2 icmp_seq=4 ttl=64 time=2.302 ms
84 bytes from 192.168.2.2 icmp_seq=5 ttl=64 time=6.978 ms