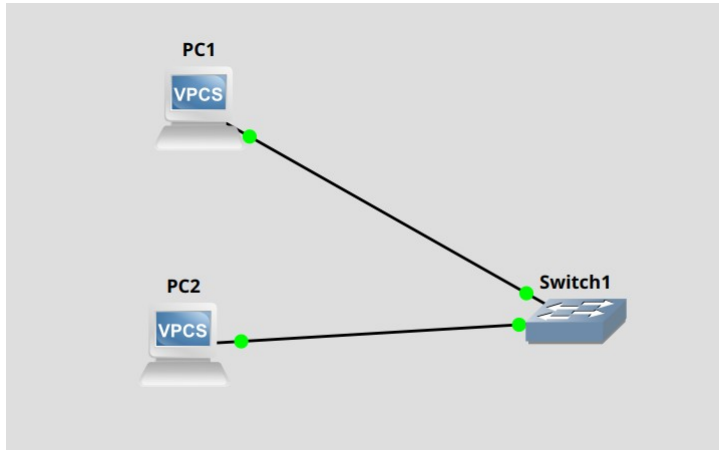


Лабораторная работа 1

2) Создать простейшую сеть, состоящую из 1 коммутатора и 2 компьютеров, назначить им произвольные ip адреса из одной сети



На PC1 ip 192.168.3.2 255.255.255.0

На PC2 ip 192.168.3.3 255.255.255.0

3) Запустить симуляцию, выполнить команду ping с одного из компьютеров, используя ip адрес второго компьютера

ping 192.168.3.3

```
PC1> ping 192.168.3.3
84 bytes from 192.168.3.3 icmp_seq=1 ttl=64 time=0.168 ms
84 bytes from 192.168.3.3 icmp_seq=2 ttl=64 time=0.137 ms
84 bytes from 192.168.3.3 icmp_seq=3 ttl=64 time=0.181 ms
84 bytes from 192.168.3.3 icmp_seq=4 ttl=64 time=0.207 ms
84 bytes from 192.168.3.3 icmp_seq=5 ttl=64 time=0.146 ms
PC1> 
```

4) Перехватить трафик протокола arp на всех линках(nb!), задокументировать и проанализировать заголовки пакетов в программе Wireshark, для фильтрации трафика, относящегося к указанному протоколу использовать фильтры Wireshark

Пингуем с PC2 (192.168.3.3) PC1 (192.168.3.2)

ARP запрос (кто имеет ip 192.168.3.2 ?).

Dest mac широковещательный.

Src mac : адрес PC2.

Поля заголовка ARP:

Hardware type : 0001 для Ethernet

Protocol type: адрес для какого протокола мы запрашиваем (0x0800 для Ipv4)

Hardware size : 6 — длина физического адреса

Protocol size : 4 — длина ipv4 адреса

Opcode : 1 — запрос

Sender mac — наш mac

Sender Ip: наш ip

Target mac : broadcast

Target ip: ip адрес для которого нужно узнать mac адрес

15	65.180022	00:50:79:66:68:00	Broadcast	ARP	64	Who has 192.168.3.2? Tell 192.168.3.3
16	65.180309	00:50:79:66:68:01	00:50:79:66:68:00	ARP	64	192.168.3.2 is at 00:50:79:66:68:01

▶ Frame 15: 64 bytes on wire (512 bits), 64 bytes captured on interface 0	0000	ff ff ff ff ff 00 50 79 66 68 00 08 06 00 01	.....P yfh..
▼ Ethernet II, Src: 00:50:79:66:68:00 (00:50:79:66:68:00), Dst: 00:50:79:66:68:01 (00:50:79:66:68:01)	0010	08 00 06 04 00 01 00 50 79 66 68 00 c0 a8 03 03	.....P yfh..
▶ Destination: Broadcast (ff:ff:ff:ff:ff:ff)	0020	ff ff ff ff ff c0 a8 03 02 00 00 00 00 00 00	.....P yfh..
▶ Source: 00:50:79:66:68:00 (00:50:79:66:68:00)	0030	00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
Type: ARP (0x0806)			
Padding: 00000000000000000000000000000000			
Frame check sequence: 0x00000000 [unverified]			
[FCS Status: Unverified]			
▼ Address Resolution Protocol (request)			
Hardware type: Ethernet (1)			
Protocol type: IPv4 (0x0800)			
Hardware size: 6			
Protocol size: 4			
Opcode: request (1)			
Sender MAC address: 00:50:79:66:68:00 (00:50:79:66:68:00)			
Sender IP address: 192.168.3.3			
Target MAC address: Broadcast (ff:ff:ff:ff:ff:ff)			
Target IP address: 192.168.3.2			

PC1 отвечает:

15	65.180022	00:50:79:66:68:00	Broadcast	ARP	64	Who has 192.168.3.2? Tell 192.168.3.3
16	65.180309	00:50:79:66:68:01	00:50:79:66:68:00	ARP	64	192.168.3.2 is at 00:50:79:66:68:01

▶ Frame 16: 64 bytes on wire (512 bits), 64 bytes captured on interface 0	0000	00 50 79 66 68 00 00 50 79 66 68 01 08 06 00 01	Pyfh..P yfh..
▼ Ethernet II, Src: 00:50:79:66:68:01 (00:50:79:66:68:01), Dst: 00:50:79:66:68:00 (00:50:79:66:68:00)	0010	08 00 06 04 00 02 00 50 79 66 68 01 c0 a8 03 02	.....P yfh..
▶ Destination: 00:50:79:66:68:00 (00:50:79:66:68:00)	0020	00 50 79 66 68 00 c0 a8 03 03 00 00 00 00 00 00	Pyfh.....
▶ Source: 00:50:79:66:68:01 (00:50:79:66:68:01)	0030	00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
Type: ARP (0x0806)			
Padding: 00000000000000000000000000000000			
Frame check sequence: 0x00000000 [unverified]			
[FCS Status: Unverified]			
▼ Address Resolution Protocol (reply)			
Hardware type: Ethernet (1)			
Protocol type: IPv4 (0x0800)			
Hardware size: 6			
Protocol size: 4			
Opcode: reply (2)			
Sender MAC address: 00:50:79:66:68:01 (00:50:79:66:68:01)			
Sender IP address: 192.168.3.2			
Target MAC address: 00:50:79:66:68:00 (00:50:79:66:68:00)			
Target IP address: 192.168.3.3			

Target mac и target ip — адреса PC2

На другом линке никаких отличий нет потому что коммутатор не модифицирует пакеты а просто пересылает их:

[illegible]

	15	65.179985	00:50:79:66:68:00	Broadcast	ARP	64 who has 192.168.3.2? Tell 192.168.3.3
	16	65.180292	00:50:79:66:68:01	00:50:79:66:68:00	ARP	64 192.168.3.2 is at 00:50:79:66:68:01
>	Frame 16:	64 bytes on wire (512 bits), 64 bytes captured from interface eth0 on interface eth0				
->	Ethernet II, Src:	00:50:79:66:68:01 (00:50:79:66:68:01) Destination: 00:50:79:66:68:00 (00:50:79:66:68:00)				
>	Source:	00:50:79:66:68:01 (00:50:79:66:68:01) Type: ARP (0x0806)				
	Type:	ARP (0x0806)				
	Padding:	00000000000000000000000000000000 [unverified]				
	[FCS Status:	Unverified]				
->	Address Resolution Protocol (reply)					
	Hardware type:	Ethernet (1)				
	Protocol type:	IPv4 (0x0800)				
	Hardware size:	6				
	Protocol size:	4				
	Opcodes:	reply (2)				
	Sender MAC address:	00:50:79:66:68:01 (00:50:79:66:68:01)				
	Sender IP address:	192.168.3.2				
	Target MAC address:	00:50:79:66:68:00 (00:50:79:66:68:00)				
	Target IP address:	192.168.3.3				

Также хосты при включении рассылают *Gratuitous ARP*:

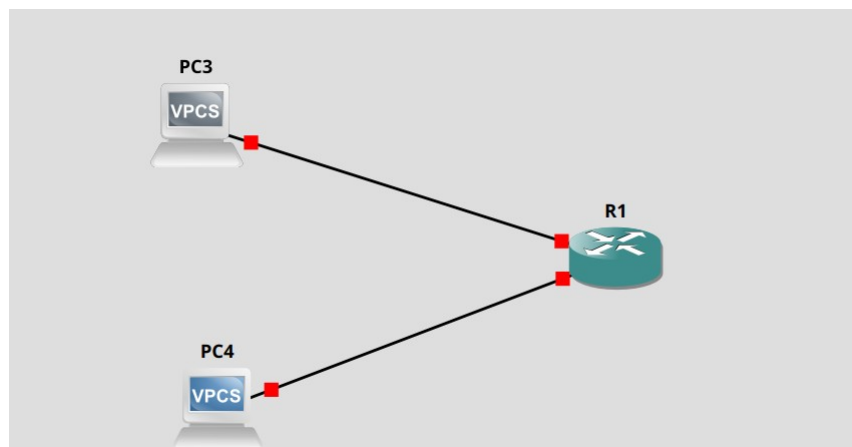
Time	Source	Destination	Protocol	Length	Info
11.16.529029	00:50:79:66:68:01	Broadcast	ARP	64	Gratuitous ARP for 192.168.3.2 (Request)
12.16.574941	00:50:79:66:68:00	Broadcast	ARP	64	Gratuitous ARP for 192.168.3.3 (Request)
13.17.529891	00:50:79:66:68:01	Broadcast	ARP	64	Gratuitous ARP for 192.168.3.2 (Request)
14.17.575644	00:50:79:66:68:00	Broadcast	ARP	64	Gratuitous ARP for 192.168.3.3 (Request)
15.65.180022	00:50:79:66:68:00	Broadcast	ARP	64	Who has 192.168.3.2? Tell 192.168.3.3
16.65.180309	00:50:79:66:68:01	00:50:79:66:68:00	ARP	64	192.168.3.2 is at 00:50:79:66:68:01


```

> Frame 12: 64 bytes on wire (512 bits), 64 bytes captured on interface 0
> Ethernet II, Src: 00:50:79:66:68:00 (00:50:79:66:68:00), Dst: 00:50:79:66:68:01 (00:50:79:66:68:01)
  > Destination: Broadcast (ff:ff:ff:ff:ff:ff)
  > Source: 00:50:79:66:68:00 (00:50:79:66:68:00)
    Type: ARP (0x0806)
    Padding: 00000000000000000000000000000000
    Frame check sequence: 0x00000000 [unverified]
    [FCS Status: Unverified]
> Address Resolution Protocol (request/gratuitous ARP)
  Hardware type: Ethernet (1)
  Protocol type: IPv4 (0x0800)
  Hardware size: 6
  Protocol size: 4
  Opcode: request (1)
  [Is gratuitous: True]
  Sender MAC address: 00:50:79:66:68:00 (00:50:79:66:68:00)
  Sender IP address: 192.168.3.3
  Target MAC address: Broadcast (ff:ff:ff:ff:ff:ff)
  Target IP address: 192.168.3.3
  
```

В них ip отправителя и получателя совпадают. Они нужны для обнаружение конфликтов IP-адресов (проверяем не занят ли этот адрес).

5) Создать простейшую сеть, состоящую из 1 маршрутизатора и 2 компьютеров, назначить им произвольные ip адреса из разных сетей



PC3 : ip 192.168.3.2 192.168.3.1 24

```
PC4: ip 192.168.4.2 192.168.4.1 24
```

На маршрутизаторе задаем адреса для интерфейсов и включаем их.

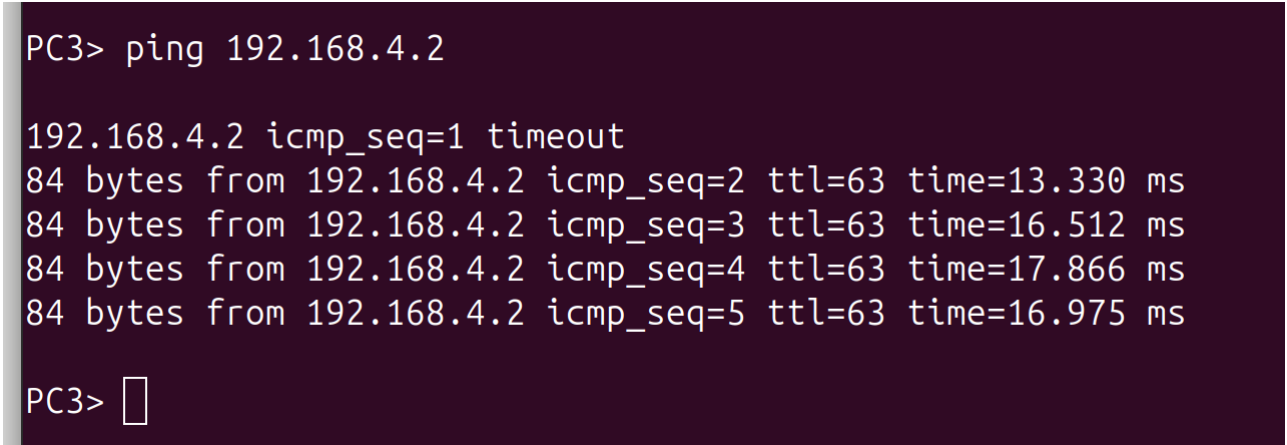
conf t

```
interface FastEthernet0/0
```

```
ip address 192.168.3.1 255.255.255.0
exit
interface FastEthernet1/0
ip address 192.168.4.1 255.255.255.0
end
copy running-config startup-config
```

6) Запустить симуляцию, выполнить команду ping с одного из компьютеров, используя IP-адрес второго компьютера

```
ping 192.168.4.2
```



```
PC3> ping 192.168.4.2

192.168.4.2 icmp_seq=1 timeout
84 bytes from 192.168.4.2 icmp_seq=2 ttl=63 time=13.330 ms
84 bytes from 192.168.4.2 icmp_seq=3 ttl=63 time=16.512 ms
84 bytes from 192.168.4.2 icmp_seq=4 ttl=63 time=17.866 ms
84 bytes from 192.168.4.2 icmp_seq=5 ttl=63 time=16.975 ms

PC3> 
```

7) Перехватить трафик протокола arp и icmp на всех линках(nb!), задокументировать и проанализировать заголовки пакетов в программе Wireshark, для фильтрации трафика, относящегося к указанному протоколу использовать фильтры Wireshark

1. PC3 отправляет arp запрос чтобы выяснить mac адрес шлюза (Target ip: 192.168.3.1) куда нужно отправить icmp запрос:


```

22 134.826652    00:50:79:66:68:03 Broadcast ARP      64 Who has 192.168.3.1? Tell 192.168.3.
23 134.846718    cc:01:76:0b:00:00 00:50:79:66:68:03 ARP      60 192.168.3.1 is at cc:01:76:0b:00:00

Frame 22: 64 bytes on wire (512 bits), 64 bytes captured (512 bi
Ethernet II, Src: 00:50:79:66:68:03 (00:50:79:66:68:03), Dst: Br
  Destination: Broadcast (ff:ff:ff:ff:ff:ff)
  Source: 00:50:79:66:68:03 (00:50:79:66:68:03)
  Type: ARP (0x0806)
  Padding: 000000000000000000000000000000000000000000000000
  Frame check sequence: 0x00000000 [unverified]
  [FCS Status: Unverified]
Address Resolution Protocol (request)
  Hardware type: Ethernet (1)
  Protocol type: IPv4 (0x0800)
  Hardware size: 6
  Protocol size: 4
  Opcode: request (1)
  Sender MAC address: 00:50:79:66:68:03 (00:50:79:66:68:03)
  Sender IP address: 192.168.3.2
  Target MAC address: Broadcast (ff:ff:ff:ff:ff:ff)
  Target IP address: 192.168.3.1

```

2. Маршрутизатор генерирует agr ответ:

[illegible]

3. Далее РСЗ отправляет істр сообщение:

23	134.846718	cc:01:76:0b:00:00	00:50:79:66:68:03	ARP	60	192.168.3.1	is at cc:01:76:0b:00:00	
24	134.847274	192.168.3.2	192.168.4.2	ICMP	98	Echo (ping)	request	id=0x2468, seq=1/256, ttl=64 (no response found)
25	136.847756	192.168.3.2	192.168.4.2	ICMP	98	Echo (ping)	request	id=0x2668, seq=2/512, ttl=64 (reply in 26)
26	136.861034	192.168.4.2	192.168.3.2	ICMP	98	Echo (ping)	reply	id=0x2668, seq=2/512, ttl=63 (request in 25)
27	137.862066	192.168.3.2	192.168.4.2	ICMP	98	Echo (ping)	request	id=0x2768, seq=3/768, ttl=64 (reply in 28)
28	137.878526	192.168.4.2	192.168.3.2	ICMP	98	Echo (ping)	reply	id=0x2768, seq=3/768, ttl=63 (request in 27)
29	138.879185	192.168.3.2	192.168.4.2	ICMP	98	Echo (ping)	request	id=0x2868, seq=4/1024, ttl=64 (reply in 30)
30	138.896989	192.168.4.2	192.168.3.2	ICMP	98	Echo (ping)	reply	id=0x2868, seq=4/1024, ttl=63 (request in 29)
31	138.937550	cc:01:76:0b:00:00	cc:01:76:0b:00:00	LOOP	60	Reply		

Frame 25: 98 bytes on wire (784 bits), 98 bytes captured (784 bits) on interface 0	0000	cc 01 76 0b 00 00	00 50 79 66 68 03 08 00 45 00	..v...P yfh...E
Ethernet II, Src: 00:50:79:66:68:03 (00:50:79:66:68:03), Dst: cc:01:76:0b:00:00 (cc:01:76:0b:00:00)	0010	00 54 68 25 00 00	40 01 8a 2f c0 a8 03 02 c0 a8	Th%..@. /.....
Destination: cc:01:76:0b:00:00 (cc:01:76:0b:00:00)	0020	04 02 08 00 f9 a1 26 68	00 02 08 09 0a 0b 0c 0d	.....&h.....
Source: 00:50:79:66:68:03 (00:50:79:66:68:03)	0030	0e 0f 10 11 12 13 14 15	16 17 18 19 1a 1b 1c 1d	..!#\$%&'()*+,-./012345 6789;<=>?
Type: IPv4 (0x0800)	0040	1e 1f 20 21 22 23 24 25	26 27 28 29 2a 2b 2c 2d	
Internet Protocol Version 4, Src: 192.168.3.2, Dst: 192.168.4.2	0050	2e 2f 30 31 32 33 34 35	36 37 38 39 3a 3b 3c 3d	
Internet Control Message Protocol	0060	3e 3f		
Type: 8 (Echo (ping) request)				
Code: 0				
Checksum: 0xf9a1 [correct]				
[Checksum Status: Good]				
Identifier (BE): 9832 (0x2668)				
Identifier (LE): 2662 (0x6826)				
Sequence Number (BE): 2 (0x0002)				
Sequence Number (LE): 512 (0x0200)				
[Response frame: 26]				
Data (56 bytes)				

4. Далее маршрутизатор передает пакет на интерфейс который должен переслать это сообщение в другую сеть на адрес 192.168.4.2
Он должен выяснить тас адрес этого узла (192.168.4.2).

5. На другом линке: маршрутизатор генерирует арп запрос на широковещательный тас адрес.

22	134.856788	cc:01:76:0b:00:10	Broadcast	ARP	60	Who has 192.168.4.2? Tell 192.168.4.1	
23	134.856836	00:50:79:66:68:00	cc:01:76:0b:00:10	ARP	60	192.168.4.2 is at 00:50:79:66:68:00	
24	136.850944	192.168.3.2	192.168.4.2	ICMP	98	Echo (ping) request	id=0x2668, seq=2/512, ttl=63 (reply in 25)
25	136.850993	192.168.4.2	192.168.3.2	ICMP	98	Echo (ping) reply	id=0x2668, seq=2/512, ttl=64 (request in 24)
26	137.868446	192.168.3.2	192.168.4.2	ICMP	98	Echo (ping) request	id=0x2768, seq=3/768, ttl=63 (reply in 27)
27	137.868527	192.168.4.2	192.168.3.2	ICMP	98	Echo (ping) reply	id=0x2768, seq=3/768, ttl=64 (request in 26)
28	138.886923	192.168.3.2	192.168.4.2	ICMP	98	Echo (ping) request	id=0x2868, seq=4/1024, ttl=63 (reply in 29)
29	138.887194	192.168.4.2	192.168.3.2	ICMP	98	Echo (ping) reply	id=0x2868, seq=4/1024, ttl=64 (request in 28)

Frame 22: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface 0	0000	ff ff ff ff ff ff cc 01	76 0b 00 10 08 06 00 01	.....v.....
Ethernet II, Src: cc:01:76:0b:00:10 (cc:01:76:0b:00:10), Dst: Broadcast (ff:ff:ff:ff:ff:ff)	0010	08 00 06 04 00 01 c0 01	76 0b 00 10 c0 a8 04 01	.....v.....
Destination: Broadcast (ff:ff:ff:ff:ff:ff)	0020	00 00 00 00 00 00 c0 a8	04 02 00 00 00 00 00 00	.....v.....
Source: cc:01:76:0b:00:10 (cc:01:76:0b:00:10)	0030	00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00	.....v.....
Type: ARP (0x0806)				
Padding: 00000000000000000000000000000000				
Address Resolution Protocol (request)				
Hardware type: Ethernet (1)				
Protocol type: IPv4 (0x0800)				
Hardware size: 6				
Protocol size: 4				
Opcode: request (1)				
Sender MAC address: cc:01:76:0b:00:10 (cc:01:76:0b:00:10)				
Sender IP address: 192.168.4.1				
Target MAC address: 00:00:00:00:00:00 (00:00:00:00:00:00)				
Target IP address: 192.168.4.2				

6. И получает арп ответ от хоста:

22	134.856788	cc:01:76:0b:00:10	Broadcast	ARP	60	Who has 192.168.4.2? Tell 192.168.4.1	
23	134.856836	00:50:79:66:68:00	cc:01:76:0b:00:10	ARP	60	192.168.4.2 is at 00:50:79:66:68:00	
24	136.850944	192.168.3.2	192.168.4.2	ICMP	98	Echo (ping) request	id=0x2668, seq=2/512, ttl=63 (reply in 25)
25	136.850993	192.168.4.2	192.168.3.2	ICMP	98	Echo (ping) reply	id=0x2668, seq=2/512, ttl=64 (request in 24)
26	137.868446	192.168.3.2	192.168.4.2	ICMP	98	Echo (ping) request	id=0x2768, seq=3/768, ttl=63 (reply in 27)
27	137.868527	192.168.4.2	192.168.3.2	ICMP	98	Echo (ping) reply	id=0x2768, seq=3/768, ttl=64 (request in 26)
28	138.886923	192.168.3.2	192.168.4.2	ICMP	98	Echo (ping) request	id=0x2868, seq=4/1024, ttl=63 (reply in 29)
29	138.887194	192.168.4.2	192.168.3.2	ICMP	98	Echo (ping) reply	id=0x2868, seq=4/1024, ttl=64 (request in 28)

Frame 23: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface 0	0000	cc 01 76 0b 00 10 00 50	79 66 68 00 08 06 00 01	..v...P yfh....
Ethernet II, Src: 00:50:79:66:68:00 (00:50:79:66:68:00), Dst: cc:01:76:0b:00:10 (cc:01:76:0b:00:10)	0010	08 00 06 04 00 02 50 79	66 68 00 c0 a8 04 02	.....P yfh....
Destination: cc:01:76:0b:00:10 (cc:01:76:0b:00:10)	0020	cc 01 76 0b 00 10 c0 a8	04 01 00 00 00 00 00 00	.....v.....
Source: 00:50:79:66:68:00 (00:50:79:66:68:00)	0030	00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00	.....v.....
Type: ARP (0x0806)				
Padding: 00000000000000000000000000000000				
Address Resolution Protocol (reply)				
Hardware type: Ethernet (1)				
Protocol type: IPv4 (0x0800)				
Hardware size: 6				
Protocol size: 4				
Opcode: reply (2)				
Sender MAC address: 00:50:79:66:68:00 (00:50:79:66:68:00)				
Sender IP address: 192.168.4.2				
Target MAC address: cc:01:76:0b:00:10 (cc:01:76:0b:00:10)				
Target IP address: 192.168.4.1				

7. После чего маршрутизатор посылает icmp запрос к нужному хосту (PC4):
ttl пакета уменьшился на 1

24	136.850944	192.168.3.2	192.168.4.2	ICMP	98 Echo (ping) request	id=0x2668, seq=2/512, ttl=63 (reply in 25)
25	136.850993	192.168.4.2	192.168.3.2	ICMP	98 Echo (ping) reply	id=0x2668, seq=2/512, ttl=64 (request in 24)
26	137.868446	192.168.3.2	192.168.4.2	ICMP	98 Echo (ping) request	id=0x2768, seq=3/768, ttl=63 (reply in 27)
27	137.868527	192.168.4.2	192.168.3.2	ICMP	98 Echo (ping) reply	id=0x2768, seq=3/768, ttl=64 (request in 26)
28	138.886923	192.168.3.2	192.168.4.2	ICMP	98 Echo (ping) request	id=0x2868, seq=4/1024, ttl=63 (reply in 29)
29	138.887194	192.168.4.2	192.168.3.2	ICMP	98 Echo (ping) reply	id=0x2868, seq=4/1024, ttl=64 (request in 28)

Frame 24: 98 bytes on wire (784 bits), 98 bytes captured (784 b) on interface 0, Ethernet II, Src: cc:01:76:0b:00:10 (cc:01:76:0b:00:10), Dst: cc:01:76:0b:00:10 (cc:01:76:0b:00:10), Protocol: ICMP, Length: 8, Type: Echo (ping) request, TTL: 63, Window: 0, Length: 8, Type: Echo (ping) request, ID: 0x2668, Sequence Number: 2, Total Length: 84, Identification: 0x6825 (26661), Flags: 0x00, Fragment Offset: 0, Time to Live: 63, Protocol: ICMP (1), Header Checksum: 0x8b2f [validation disabled], [Header checksum status: Unverified], Source Address: 192.168.3.2, Destination Address: 192.168.4.2, Internet Control Message Protocol, Type: 8 (Echo (ping) request), Code: 0, Checksum: 0xf9a1 [correct], [Checksum Status: Good], Identifier (BE): 9832 (0x2668)

0000 00 50 79 66 68 00 cc 01 76 0b 00 10 08 00 45 00 Pyfh... v...E
0010 00 54 68 25 00 00 3f 01 8b 2f c0 a8 03 02 c0 a8 Th%..?.. /.....
0020 04 02 08 00 f9 a1 26 68 00 02 08 09 0a 0b 0c 0d&h.....
0030 0e 0f 10 11 12 13 14 15 16 17 18 19 1a 1b 1c 1d .. !"#%&'()*+,-.
0040 1e 1f 20 21 22 23 24 25 26 27 28 29 2a 2b 2c 2d .. !"#%&'()*+,-.
0050 2e 2f 30 31 32 33 34 35 36 37 38 39 3a 3b 3c 3d ./012345 6789;<=
0060 3e 3f >?

8. PC4 генерирует icmp ответ и отправляет обратно. Агр запросов уже не происходит, потому что все заполнили свои таблицы.

25	136.850993	192.168.4.2	192.168.3.2	ICMP	98 Echo (ping) reply	id=0x2668, seq=2/512, ttl=64 (request in 24)
26	137.868446	192.168.3.2	192.168.4.2	ICMP	98 Echo (ping) request	id=0x2768, seq=3/768, ttl=63 (reply in 27)
27	137.868527	192.168.4.2	192.168.3.2	ICMP	98 Echo (ping) reply	id=0x2768, seq=3/768, ttl=64 (request in 26)
28	138.886923	192.168.3.2	192.168.4.2	ICMP	98 Echo (ping) request	id=0x2868, seq=4/1024, ttl=63 (reply in 29)
29	138.887194	192.168.4.2	192.168.3.2	ICMP	98 Echo (ping) reply	id=0x2868, seq=4/1024, ttl=64 (request in 28)

Frame 25: 98 bytes on wire (784 bits), 98 bytes captured (784 b) on interface 0, Ethernet II, Src: 00:50:79:66:68:00 (00:50:79:66:68:00), Dst: cc:01:76:0b:00:10 (cc:01:76:0b:00:10), Protocol: ICMP, Length: 8, Type: Echo (ping) reply, TTL: 64, Window: 0, Length: 8, Type: Echo (ping) reply, ID: 0x2668, Sequence Number: 2, Total Length: 84, Identification: 0x6825 (26661), Flags: 0x00, Fragment Offset: 0, Time to Live: 64, Protocol: ICMP (1), Header Checksum: 0x8b2f [validation disabled], [Header checksum status: Unverified], Source Address: 192.168.4.2, Destination Address: 192.168.3.2, Internet Control Message Protocol, Type: 0 (Echo (ping) reply), Code: 0, Checksum: 0xf9a1 [correct], [Checksum Status: Good], Identifier (BE): 9832 (0x2668), Identifier (LE): 26662 (0x6826), Sequence Number (BE): 2 (0x0002), Sequence Number (LE): 512 (0x0200), [Request frame: 24], [Response time: 0.049 ms], Data (56 bytes)

0000 cc 01 76 0b 00 10 00 50 79 66 68 00 08 00 45 00 ..v...P yfh...E
0010 00 54 68 25 00 00 40 01 8a 2f c0 a8 04 02 c0 a8 Th%..@. /.....
0020 03 02 00 00 01 a2 26 68 00 02 08 09 0a 0b 0c 0d&h.....
0030 0e 0f 10 11 12 13 14 15 16 17 18 19 1a 1b 1c 1d .. !"#%&'()*+,-.
0040 1e 1f 20 21 22 23 24 25 26 27 28 29 2a 2b 2c 2d .. !"#%&'()*+,-.
0050 2e 2f 30 31 32 33 34 35 36 37 38 39 3a 3b 3c 3d ./012345 6789;<=
0060 3e 3f >?

26	136.861034	192.168.4.2	192.168.3.2	ICMP	98 Echo (ping) reply	id=0x2668, seq=2/512, ttl=63 (request in 25)
27	137.862066	192.168.3.2	192.168.4.2	ICMP	98 Echo (ping) request	id=0x2768, seq=3/768, ttl=64 (reply in 28)
28	137.878526	192.168.4.2	192.168.3.2	ICMP	98 Echo (ping) reply	id=0x2768, seq=3/768, ttl=63 (request in 27)
29	138.879185	192.168.3.2	192.168.4.2	ICMP	98 Echo (ping) request	id=0x2868, seq=4/1024, ttl=64 (reply in 30)
30	138.896989	192.168.4.2	192.168.3.2	ICMP	98 Echo (ping) reply	id=0x2868, seq=4/1024, ttl=63 (request in 29)
31	138.937550	cc:01:76:0b:00:00	cc:01:76:0b:00:00	LOOP	60 Reply	

Frame 26: 98 bytes on wire (784 bits), 98 bytes captured (784 b) on interface 0, Ethernet II, Src: cc:01:76:0b:00:00 (cc:01:76:0b:00:00), Dst: 00:50:79:66:68:03 (00:50:79:66:68:03), Protocol: ICMP, Length: 8, Type: Echo (ping) reply, TTL: 63, Window: 0, Length: 8, Type: Echo (ping) reply, ID: 0x2668, Sequence Number: 2, Total Length: 84, Identification: 0x6826 (26662), Flags: 0x00, Fragment Offset: 0, Time to Live: 63, Protocol: ICMP (1), Header Checksum: 0x8b2f [validation disabled], [Header checksum status: Unverified], Source Address: cc:01:76:0b:00:00 (cc:01:76:0b:00:00), Destination Address: 00:50:79:66:68:03 (00:50:79:66:68:03), Internet Control Message Protocol, Type: 0 (Echo (ping) reply), Code: 0, Checksum: 0xf9a1 [correct], [Checksum Status: Good], Identifier (BE): 9832 (0x2668), Identifier (LE): 26662 (0x6826), Sequence Number (BE): 2 (0x0002), Sequence Number (LE): 512 (0x0200), [Request frame: 25], [Response time: 13.278 ms], Data (56 bytes)

0000 00 50 79 66 68 03 cc 01 76 0b 00 00 08 00 45 00 Pyfh... v...E
0010 00 54 68 25 00 00 3f 01 8b 2f c0 a8 04 02 c0 a8 Th%..?.. /.....
0020 03 02 00 00 01 a2 26 68 00 02 08 09 0a 0b 0c 0d&h.....
0030 0e 0f 10 11 12 13 14 15 16 17 18 19 1a 1b 1c 1d .. !"#%&'()*+,-.
0040 1e 1f 20 21 22 23 24 25 26 27 28 29 2a 2b 2c 2d .. !"#%&'()*+,-.
0050 2e 2f 30 31 32 33 34 35 36 37 38 39 3a 3b 3c 3d ./012345 6789;<=
0060 3e 3f >?