

# Wireshark

## 1. UDP

bootp							
No.	Time	Source	Destination	Protocol	Length	Info	
24	3.700709	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover	- Transaction ID 0xb21bf1c9
37	4.294262	192.168.0.1	255.255.255.255	DHCP	590	DHCP Offer	- Transaction ID 0xb21bf1c9
38	4.296380	0.0.0.0	255.255.255.255	DHCP	350	DHCP Request	- Transaction ID 0xb21bf1c9
42	4.893969	192.168.0.1	255.255.255.255	DHCP	590	DHCP ACK	- Transaction ID 0xb21bf1c9

> Frame 24: 342 bytes on wire (2736 bits), 342 bytes captured (2736 bits) on interface \Device\NPF\_{7BD2C2D4-8B0A-4EFA-A9C9-CA42812E314C}, id 0

> Ethernet II, Src: IntelCor\_99:0d:6d (b4:6b:fc:99:0d:6d), Dst: Broadcast (ff:ff:ff:ff:ff:ff)

> 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 (Discover)

## 2. b4:6b:fc:99:0d:6d

bootp							
No.	Time	Source	Destination	Protocol	Length	Info	
24	3.700709	0.0.0.0	255.255.255.255	DHCP	342	DHCP Discover	- Transaction ID 0xb21bf1c9
37	4.294262	192.168.0.1	255.255.255.255	DHCP	590	DHCP Offer	- Transaction ID 0xb21bf1c9
38	4.296380	0.0.0.0	255.255.255.255	DHCP	350	DHCP Request	- Transaction ID 0xb21bf1c9
42	4.893969	192.168.0.1	255.255.255.255	DHCP	590	DHCP ACK	- Transaction ID 0xb21bf1c9

> Frame 38: 350 bytes on wire (2800 bits), 350 bytes captured (2800 bits) on interface \Device\NPF\_{7BD2C2D4-8B0A-4EFA-A9C9-CA42812E314C}, id 0

> Ethernet II, Src: IntelCor\_99:0d:6d (b4:6b:fc:99:0d:6d), Dst: Broadcast (ff:ff:ff:ff:ff:ff)

> Destination: Broadcast (ff:ff:ff:ff:ff:ff)

> Source: IntelCor\_99:0d:6d (b4:6b:fc:99:0d:6d)

> Type: IPv4 (0x0800)

> 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)

## 3. Transaction ID: 0xb21bf1c9. Служит для идентификации общения между хостами

ports: 0

Transaction ID: 0xb21bf1c9

Seconds elapsed: 0

## 4. Для отправления используется 255.255.255.255 (broadcast), у моего компьютера ip в начале 0.0.0.0

## 5. 192.168.0.1

6. Периодически устройства могут уходить из сети, если не освобождать ip адреса, то они могут закончиться, даже если всего используется в данный момент немного. Мой выдан на 2 часа.

> Option: (54) DHCP Server Identifier (192.168.0.1)

✓ Option: (51) IP Address Lease Time

Length: 4

IP Address Lease Time: (7200s) 2 hours

> Option: (6) Domain Name Server

## Проверка целостности пакетов

```
Test on: I have an apple.
```

```
-----
```

```
Data: I hav
```

```
CRC32: 68241cea
```

```
Data with noise: A hav
```

```
CRC validation: false
```

```
-----
```

```
Data: e an
```

```
CRC32: 6b9bfcc1
```

```
Data with noise: d an
```

```
CRC validation: false
```

```
-----
```

```
Data: apple
```

```
CRC32: 58d6eacd
```

```
Data with noise: apple
```

```
CRC validation: true
```

```
-----
```

```
Data: .
```

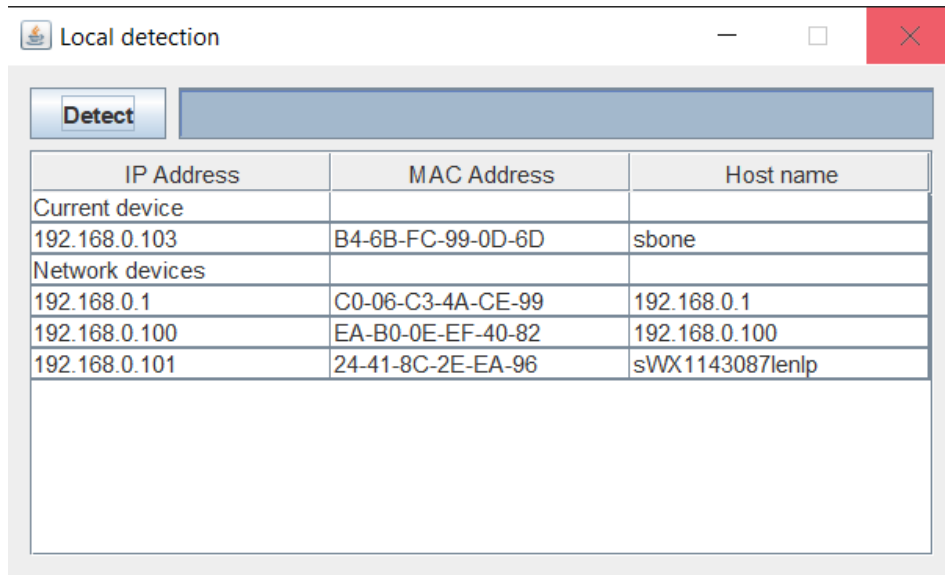
```
CRC32: 74
```

```
Data with noise: ,
```

```
CRC validation: false
```

```
-----
```

# Определение всех компьютеров в сети



The screenshot shows a window titled "Local detection" with a "Detect" button and a table of network information. The table has three columns: IP Address, MAC Address, and Host name. It lists the current device and several network devices on the 192.168.0.103 network.

IP Address	MAC Address	Host name
Current device		
192.168.0.103	B4-6B-FC-99-0D-6D	sbone
Network devices		
192.168.0.1	C0-06-C3-4A-CE-99	192.168.0.1
192.168.0.100	EA-B0-0E-EF-40-82	192.168.0.100
192.168.0.101	24-41-8C-2E-EA-96	sWX1143087lenlp

## Задачи

1.

- a.  $(Np(1-p)^{N-1})' = N(1-p)^{N-1} - N(N-1)p(1-p)^{N-2} = 0$   
 $\Rightarrow (1-p)^{N-1} = (N-1)p(1-p)^{N-2} \Rightarrow p = 1; 1-p = (N-1)p$   
При  $p = 1$  очевидно эффективность 0, поэтому это не подходит.  
 $1 = Np \Rightarrow p = \frac{1}{N}$

- b. Подставим:  $N \cdot \frac{1}{N} \cdot (1 - \frac{1}{N})^{N-1} = (1 - \frac{1}{N})^{N-1}$ . Теперь нужно устремить  $N$  к бесконечности. Воспользуемся известным фактом  
$$\lim_{N \rightarrow \infty} (1 + \frac{-1}{N})^N \cdot \frac{N}{N-1} = e^{-1} \cdot 1 = e^{-1}$$