Vježba 2: Osnovna analiza mrežnog prometa

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3.c

Pripreme

Što je i čemu služi protokol ARP?

Address resolution protocol, on povezuje MAC I IP adrese.

Što je i čemu služi protokol ICMP?

Internet control message protocol koji je ugrađen u svaki IP modul, prijavljuje greške.

Što znaš o naredbi ping?

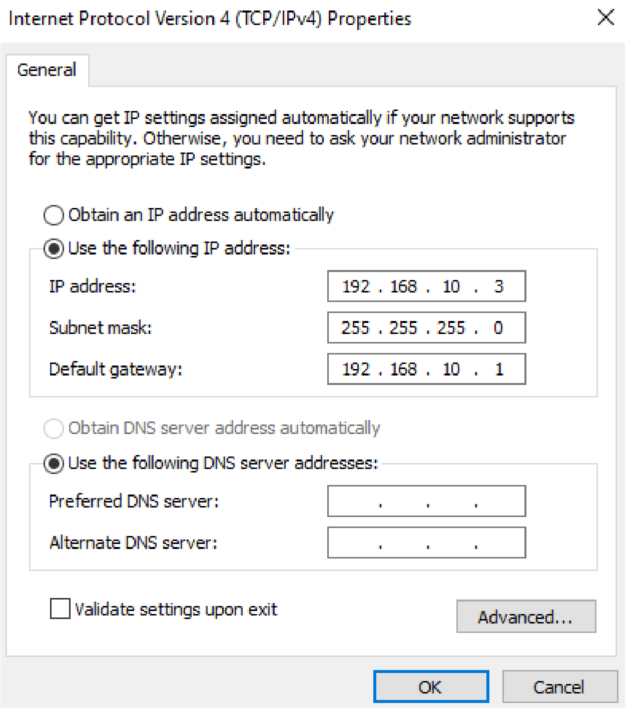
Jedna od glavnih dijagnstičkih naredba koje koristimo da provjerimo je li računalo spojeno na internet.

Izvođenje vježba

1.Povezati dva susjedna računala odgovarajućim kabelom te uspostaviti P2P spoj.

Jesmo.

2.Konfigurirati računala za rad u mreži, pri čemu koristiti adresnu shemu prema tablici.


Internet Protocol Version 4 (TCP/IPv4) Properties

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

○ Obtain an IP address automatically

● Use the following IP address:

IP address: 192 . 168 . 10 . 3

Subnet mask: 255 . 255 . 255 . 0

Default gateway: 192 . 168 . 10 . 1

○ Obtain DNS server address automatically

● Use the following DNS server addresses:

Preferred DNS server: . . .

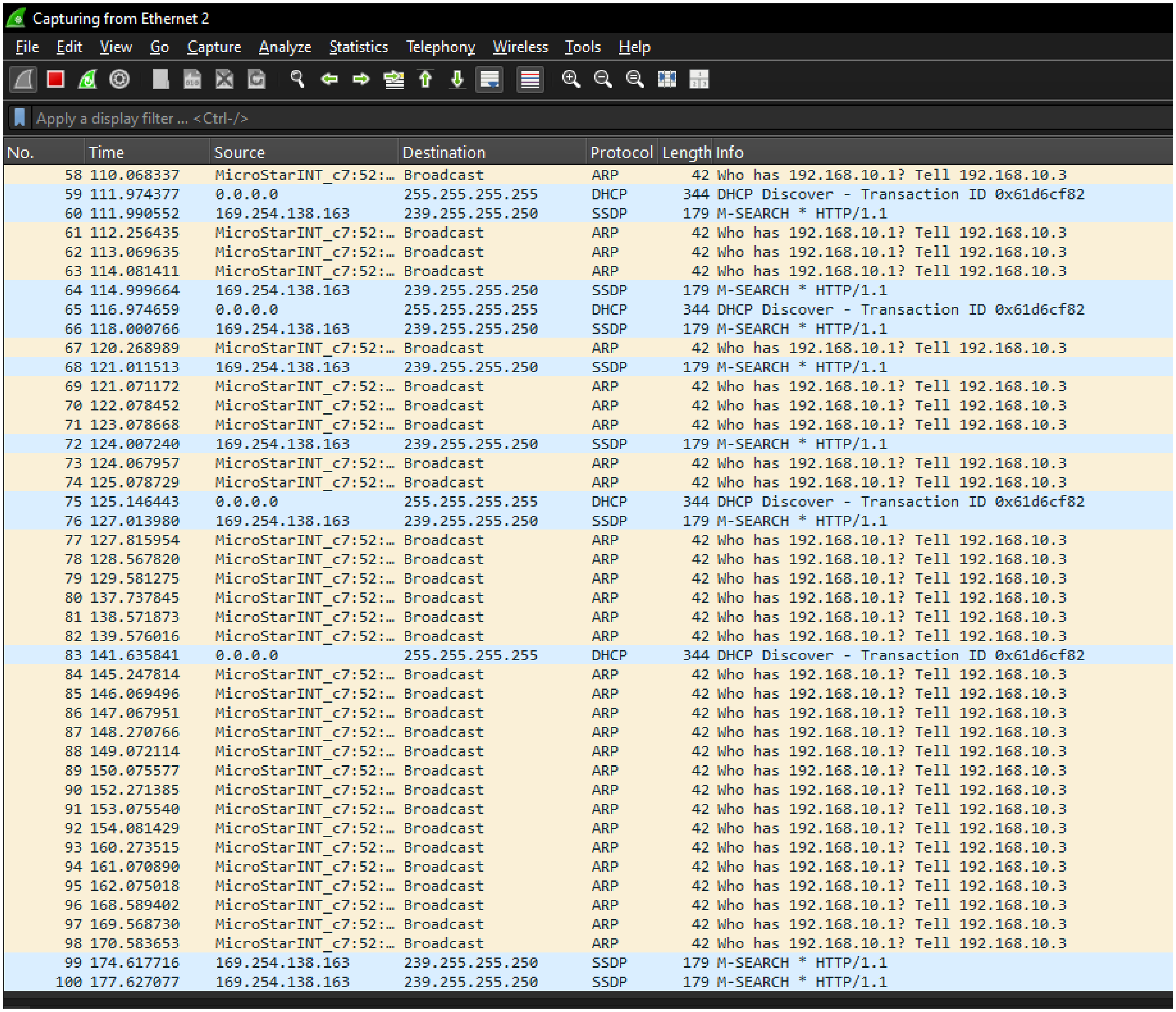
Alternate DNS server: . . .

□ Validate settings upon exit

3.Pokrenuti program Wireshark. Pričekati da se prikaže prvih dvadesetak redaka, a onda zaustaviti hvatanje (Capture – Stop).

a)Koliko je točno okvira Wireshark „uhvatio“?

100



```
No.     Time        Source               Destination          Protocol Length Info
     58 110.068337  MicroStarINT_c7:52:… Broadcast            ARP          42 Who has 192.168.10.1? Tell 192.168.10.3
     59 111.974377  0.0.0.0              255.255.255.255      DHCP        344 DHCP Discover - Transaction ID 0x61d6cf82
     60 111.990552  169.254.138.163      239.255.255.250      SSDP        179 M-SEARCH * HTTP/1.1
     61 112.256435  MicroStarINT_c7:52:… Broadcast            ARP          42 Who has 192.168.10.1? Tell 192.168.10.3
     62 113.069635  MicroStarINT_c7:52:… Broadcast            ARP          42 Who has 192.168.10.1? Tell 192.168.10.3
     63 114.081411  MicroStarINT_c7:52:… Broadcast            ARP          42 Who has 192.168.10.1? Tell 192.168.10.3
     64 114.999664  169.254.138.163      239.255.255.250      SSDP        179 M-SEARCH * HTTP/1.1
     65 116.974659  0.0.0.0              255.255.255.255      DHCP        344 DHCP Discover - Transaction ID 0x61d6cf82
     66 118.000766  169.254.138.163      239.255.255.250      SSDP        179 M-SEARCH * HTTP/1.1
     67 120.268989  MicroStarINT_c7:52:… Broadcast            ARP          42 Who has 192.168.10.1? Tell 192.168.10.3
     68 121.011513  169.254.138.163      239.255.255.250      SSDP        179 M-SEARCH * HTTP/1.1
     69 121.071172  MicroStarINT_c7:52:… Broadcast            ARP          42 Who has 192.168.10.1? Tell 192.168.10.3
     70 122.078452  MicroStarINT_c7:52:… Broadcast            ARP          42 Who has 192.168.10.1? Tell 192.168.10.3
     71 123.078668  MicroStarINT_c7:52:… Broadcast            ARP          42 Who has 192.168.10.1? Tell 192.168.10.3
     72 124.007240  169.254.138.163      239.255.255.250      SSDP        179 M-SEARCH * HTTP/1.1
     73 124.067957  MicroStarINT_c7:52:… Broadcast            ARP          42 Who has 192.168.10.1? Tell 192.168.10.3
     74 125.078729  MicroStarINT_c7:52:… Broadcast            ARP          42 Who has 192.168.10.1? Tell 192.168.10.3
     75 125.146443  0.0.0.0              255.255.255.255      DHCP        344 DHCP Discover - Transaction ID 0x61d6cf82
     76 127.013980  169.254.138.163      239.255.255.250      SSDP        179 M-SEARCH * HTTP/1.1
     77 127.815954  MicroStarINT_c7:52:… Broadcast            ARP          42 Who has 192.168.10.1? Tell 192.168.10.3
     78 128.567820  MicroStarINT_c7:52:… Broadcast            ARP          42 Who has 192.168.10.1? Tell 192.168.10.3
     79 129.581275  MicroStarINT_c7:52:… Broadcast            ARP          42 Who has 192.168.10.1? Tell 192.168.10.3
     80 137.737845  MicroStarINT_c7:52:… Broadcast            ARP          42 Who has 192.168.10.1? Tell 192.168.10.3
     81 138.571873  MicroStarINT_c7:52:… Broadcast            ARP          42 Who has 192.168.10.1? Tell 192.168.10.3
     82 139.576016  MicroStarINT_c7:52:… Broadcast            ARP          42 Who has 192.168.10.1? Tell 192.168.10.3
     83 141.635841  0.0.0.0              255.255.255.255      DHCP        344 DHCP Discover - Transaction ID 0x61d6cf82
     84 145.247814  MicroStarINT_c7:52:… Broadcast            ARP          42 Who has 192.168.10.1? Tell 192.168.10.3
     85 146.069496  MicroStarINT_c7:52:… Broadcast            ARP          42 Who has 192.168.10.1? Tell 192.168.10.3
     86 147.067951  MicroStarINT_c7:52:… Broadcast            ARP          42 Who has 192.168.10.1? Tell 192.168.10.3
     87 148.270766  MicroStarINT_c7:52:… Broadcast            ARP          42 Who has 192.168.10.1? Tell 192.168.10.3
     88 149.072114  MicroStarINT_c7:52:… Broadcast            ARP          42 Who has 192.168.10.1? Tell 192.168.10.3
     89 150.075577  MicroStarINT_c7:52:… Broadcast            ARP          42 Who has 192.168.10.1? Tell 192.168.10.3
     90 152.271385  MicroStarINT_c7:52:… Broadcast            ARP          42 Who has 192.168.10.1? Tell 192.168.10.3
     91 153.075540  MicroStarINT_c7:52:… Broadcast            ARP          42 Who has 192.168.10.1? Tell 192.168.10.3
     92 154.081429  MicroStarINT_c7:52:… Broadcast            ARP          42 Who has 192.168.10.1? Tell 192.168.10.3
     93 160.273515  MicroStarINT_c7:52:… Broadcast            ARP          42 Who has 192.168.10.1? Tell 192.168.10.3
     94 161.070890  MicroStarINT_c7:52:… Broadcast            ARP          42 Who has 192.168.10.1? Tell 192.168.10.3
     95 162.075018  MicroStarINT_c7:52:… Broadcast            ARP          42 Who has 192.168.10.1? Tell 192.168.10.3
     96 168.589402  MicroStarINT_c7:52:… Broadcast            ARP          42 Who has 192.168.10.1? Tell 192.168.10.3
     97 169.568730  MicroStarINT_c7:52:… Broadcast            ARP          42 Who has 192.168.10.1? Tell 192.168.10.3
     98 170.583653  MicroStarINT_c7:52:… Broadcast            ARP          42 Who has 192.168.10.1? Tell 192.168.10.3
     99 174.617716  169.254.138.163      239.255.255.250      SSDP        179 M-SEARCH * HTTP/1.1
    100 177.627077  169.254.138.163      239.255.255.250      SSDP        179 M-SEARCH * HTTP/1.1
```

b) Koje su oznake protokola na tim okvirima?

DHCP ,ARP, SSDP.

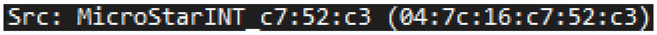
c) Koristeći dostupne informacije sa predavanja/Interneta opiši kratko funkcije tih protokola.

ARP povezuje MAC i IP adrese, DHCP dodjeljuje IP adrese, a SSDP

d) Analiziraj okvir koji u sebi nosi:

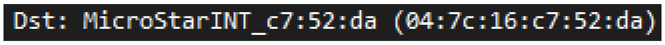
ARP paket (protokol) request te ispiši:

- polazišnu MAC adresu



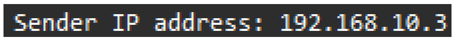
```
Src: MicroStarINT_c7:52:c3 (04:7c:16:c7:52:c3)
```

- odredišnu MAC adresu



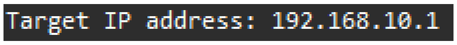
```
Dst: MicroStarINT_c7:52:da (04:7c:16:c7:52:da)
```

- polazišnu IP adresu



```
Sender IP address: 192.168.10.3
```

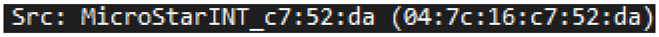
- odredišnu IP adresu



```
Target IP address: 192.168.10.1
```

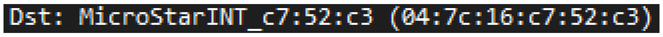
ARP paket (protokol) reply te ispiši:

- polazišnu MAC adresu



```
Src: MicroStarINT_c7:52:da (04:7c:16:c7:52:da)
```

- odredišnu MAC adresu

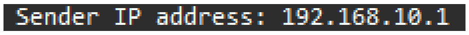


```
Dst: MicroStarINT_c7:52:c3 (04:7c:16:c7:52:c3)
```

- Kolika je veličina svake od ovih adresa?

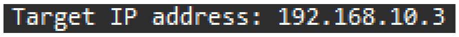
32 bita

- polazišnu IP adresu



```
Sender IP address: 192.168.10.1
```

- odredišnu IP adresu



```
Target IP address: 192.168.10.3
```

e) Kako glasi odredišna MAC adresa prvog Ethernet okvira kod ARP protokola i zašto?

4. U istom spoju računala pomoću Wiresharka analiziraj ICMP promet korištenjem naredbe ping sa jednog računala na drugo.

a) Koliko je ICMP echo i reply paketa?

b) Koji protokol pokreće naredba ping?

c) Sastavni dio kojeg protokola je ICMP protokol?

d) U koji okvir je enkapsuliran IP paket?

Izaberi jedan redak koji se odnosi na protokol ICMP, ispiši njegov sadržaj te odgovori na slijedeća pitanja:
e) Koja je polazišna IP adresa?

f) Koja je odredišna IP adresa?

g) Koja je MAC adresa polazišnog uređaja?

h) Koja je MAC adresa odredišnog uređaja?

i) Koja je oznaka vrste podataka u Ethernet okviru?

j) Koja je veličina IP adrese, a koja MAC adrese u okvirima/paketima?

k) Koja je veličina IP paketa kod ICMP protokola?

l) Koja je veličina podataka u IP paketu kod ICMP protokola?

m) Postavi filter da se prati samo ICMP protokol.

n) Koliko je ICMP echo i reply paketa?

o) Koji protokol pokreće naredba ping?

p) Sastavni dio kojeg protokola je protokol ICMP?

q) U koji okvir je enkapsuliran IP paket?