Brezžična in Mobilna Omrežja
Študijsko leto 2020/2021

2. Domača naloga

Poročilo domače naloge

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Novo mesto, 6. april 2021
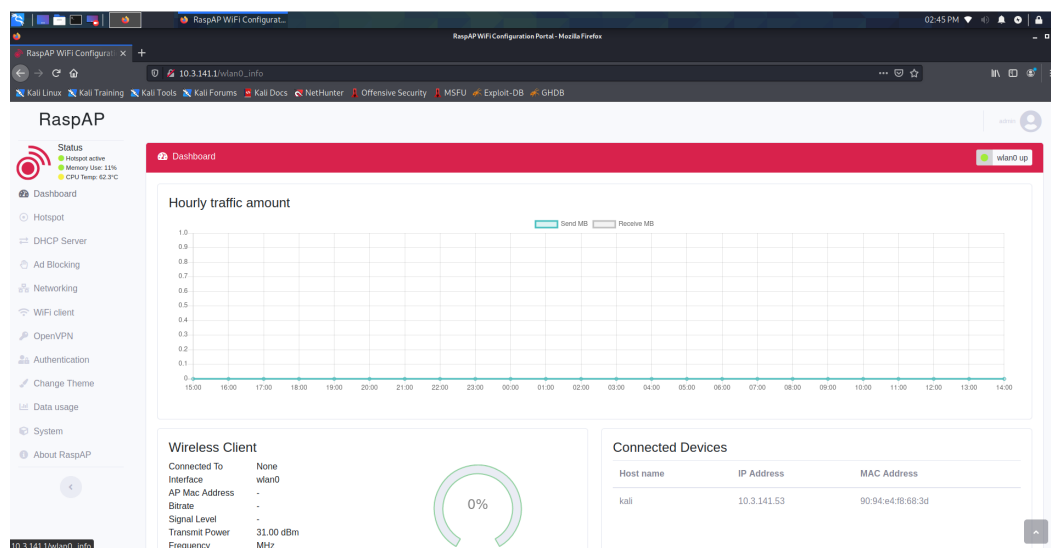
Kazalo

1 Navodilo domače naloge

Pri izdelavi domače naloge smo morali konfigurirati RaspAP dostopno točko na Raspberry Pi, ki smo ga dobili po pošti. Nato smo se morali z virtualko povezati na le to omrežje in z iperf generirati promet in narediti analizo omrežja

2 Rezultati domače naloge

2.1 Konfiguracija omrežja

V omrežju sem nato menjal standarda 802.11b in 802.11g na zavihku hotspot in nato pritisnil gumb refresh network.

2.2 Analiza 802.11g TCP

Z ukazom *iperf -s -i 1* sem na Raspberry Pi-u zagnal iperf strežnik, nato sem z ukazom *iperf -c 10.3.141.1* zagnal iperf zahtevo na virtualki.

Rezultati so sledeči:


```
[ 3] local 10.3.141.1 port 5001 connected with 10.3.141.53 port 36186
[ ID] Interval       Transfer     Bandwidth       Jitter   Lost/Total Datagrams
[ 3]  0.0-10.0 sec  1.25 MBytes  1.05 Mbits/sec  1.062 ms    4/  895 (0.45%)
^Cpi@raspberrypi:~ $ iperf -s -i 1
------------------------------------------------------------
Server listening on TCP port 5001
TCP window size: 85.3 KByte (default)
------------------------------------------------------------
[ 4] local 10.3.141.1 port 5001 connected with 10.3.141.53 port 59224
[ ID] Interval       Transfer     Bandwidth
[ 4]  0.0- 1.0 sec   327 KBytes  2.68 Mbits/sec
[ 4]  1.0- 2.0 sec   294 KBytes  2.41 Mbits/sec
[ 4]  2.0- 3.0 sec   315 KBytes  2.58 Mbits/sec
[ 4]  3.0- 4.0 sec   328 KBytes  2.69 Mbits/sec
[ 4]  4.0- 5.0 sec   320 KBytes  2.62 Mbits/sec
[ 4]  5.0- 6.0 sec   308 KBytes  2.53 Mbits/sec
[ 4]  6.0- 7.0 sec   303 KBytes  2.48 Mbits/sec
[ 4]  7.0- 8.0 sec   293 KBytes  2.40 Mbits/sec
[ 4]  8.0- 9.0 sec   298 KBytes  2.44 Mbits/sec
[ 4]  9.0-10.0 sec   290 KBytes  2.37 Mbits/sec
[ 4] 10.0-11.0 sec   286 KBytes  2.34 Mbits/sec
[ 4]  0.0-11.3 sec  3.38 MBytes  2.50 Mbits/sec
```

2.3   Analiza 802.11g UDP

Z ukazom *iperf -s -i 1 -u* sem na Raspberry Pi-u zagnal iperf strežnik na UDP, nato sem z ukazom *iperf -c 10.3.141.1 -u* zagnal iperf zahtevo na virtualki.

Rezultati so sledeči:


```
[ 4]  8.0- 9.0 sec   298 KBytes  2.44 Mbits/sec
[ 4]  9.0-10.0 sec   290 KBytes  2.37 Mbits/sec
[ 4] 10.0-11.0 sec   286 KBytes  2.34 Mbits/sec
[ 4]  0.0-11.3 sec  3.38 MBytes  2.50 Mbits/sec
^Cpi@raspberrypi:~ $ iperf -s -i 1 -u
------------------------------------------------------------
Server listening on UDP port 5001
Receiving 1470 byte datagrams
UDP buffer size:  160 KByte (default)
------------------------------------------------------------
[ 3] local 10.3.141.1 port 5001 connected with 10.3.141.53 port 44368
[ ID] Interval       Transfer     Bandwidth       Jitter   Lost/Total Datagrams
[ 3]  0.0- 1.0 sec   125 KBytes  1.02 Mbits/sec  0.634 ms    5/   92 (5.4%)
[ 3]  1.0- 2.0 sec   128 KBytes  1.05 Mbits/sec  1.334 ms    0/   89 (0%)
[ 3]  2.0- 3.0 sec   128 KBytes  1.05 Mbits/sec  1.114 ms    0/   89 (0%)
[ 3]  3.0- 4.0 sec   128 KBytes  1.05 Mbits/sec  0.895 ms    0/   89 (0%)
[ 3]  4.0- 5.0 sec   128 KBytes  1.05 Mbits/sec  1.137 ms    0/   89 (0%)
[ 3]  5.0- 6.0 sec   128 KBytes  1.05 Mbits/sec  1.301 ms    0/   89 (0%)
[ 3]  6.0- 7.0 sec   129 KBytes  1.06 Mbits/sec  1.121 ms    0/   90 (0%)
[ 3]  7.0- 8.0 sec   128 KBytes  1.05 Mbits/sec  0.980 ms    0/   89 (0%)
[ 3]  8.0- 9.0 sec   128 KBytes  1.05 Mbits/sec  0.905 ms    0/   89 (0%)
[ 3]  9.0-10.0 sec   128 KBytes  1.05 Mbits/sec  0.802 ms    0/   89 (0%)
[ 3]  0.0-10.0 sec  1.25 MBytes  1.05 Mbits/sec  0.773 ms    5/  895 (0.56%)
```

2.4 Analiza 802.11b TCP

Z ukazom *iperf -s -i 1* sem na Raspberry Pi-u zagnal iperf strežnik, nato sem z ukazom *iperf -c 10.3.141.1* zagnal iperf zahtevo na virtualki.

Rezultati so sledeči:

```
[  3]  6.0- 7.0 sec   128 KBytes  1.05 Mbits/sec   1.047 ms    0/    89 (0%)
[  3]  7.0- 8.0 sec   128 KBytes  1.05 Mbits/sec   0.954 ms    0/    89 (0%)
[  3]  8.0- 9.0 sec   128 KBytes  1.05 Mbits/sec   0.646 ms    0/    89 (0%)
[  3]  9.0-10.0 sec   128 KBytes  1.05 Mbits/sec   0.785 ms    0/    89 (0%)
[  3]  0.0-10.0 sec  1.25 MBytes  1.05 Mbits/sec   0.821 ms    4/   895 (0.45%)
^Cpi@raspberrypi:~ $ iperf -s -i 1
------------------------------------------------------------
Server listening on TCP port 5001
TCP window size: 85.3 KByte (default)
------------------------------------------------------------
[  4] local 10.3.141.1 port 5001 connected with 10.3.141.53 port 59228
[ ID] Interval       Transfer     Bandwidth
[  4]  0.0- 1.0 sec  63.7 KBytes   522 Kbits/sec
[  4]  1.0- 2.0 sec  60.8 KBytes   498 Kbits/sec
[  4]  2.0- 3.0 sec  0.00 Bytes   0.00 bits/sec
[  4]  3.0- 4.0 sec  59.4 KBytes   487 Kbits/sec
[  4]  4.0- 5.0 sec  0.00 Bytes   0.00 bits/sec
[  4]  5.0- 6.0 sec  60.8 KBytes   498 Kbits/sec
[  4]  6.0- 7.0 sec  36.8 KBytes   301 Kbits/sec
[  4]  7.0- 8.0 sec   247 KBytes  2.03 Mbits/sec
[  4]  8.0- 9.0 sec   233 KBytes  1.91 Mbits/sec
[  4]  9.0-10.0 sec   267 KBytes  2.19 Mbits/sec
[  4]  0.0-10.9 sec  1.24 MBytes   955 Kbits/sec
^Cpi@raspberrypi:~ $
```

2.5 Analiza 802.11b UDP

Z ukazom *iperf -s -i 1 -u* sem na Raspberry Pi-u zagnal iperf strežnik na UDP, nato sem z ukazom *iperf -c 10.3.141.1 -u* zagnal iperf zahtevo na virtualki.

Rezultati so sledeči:


```
[  4]   7.0- 8.0 sec    247 KBytes   2.03 Mbits/sec
[  4]   8.0- 9.0 sec    233 KBytes   1.91 Mbits/sec
[  4]   9.0-10.0 sec    267 KBytes   2.19 Mbits/sec
[  4]   0.0-10.9 sec   1.24 MBytes    955 Kbits/sec
^Cpi@raspberrypi:~ $ iperf -s -i 1 -u
------------------------------------------------------------
Server listening on UDP port 5001
Receiving 1470 byte datagrams
UDP buffer size:  160 KByte (default)
------------------------------------------------------------
[  3] local 10.3.141.1 port 5001 connected with 10.3.141.53 port 40510
[ ID] Interval        Transfer     Bandwidth        Jitter   Lost/Total Datagrams
[  3]   0.0- 1.0 sec    129 KBytes   1.06 Mbits/sec   1.417 ms    2/   92 (2.2%)
[  3]   1.0- 2.0 sec    128 KBytes   1.05 Mbits/sec   1.348 ms    0/   89 (0%)
[  3]   2.0- 3.0 sec    128 KBytes   1.05 Mbits/sec   0.652 ms    0/   89 (0%)
[  3]   3.0- 4.0 sec    129 KBytes   1.06 Mbits/sec   0.858 ms    0/   90 (0%)
[  3]   4.0- 5.0 sec    128 KBytes   1.05 Mbits/sec   0.765 ms    0/   89 (0%)
[  3]   5.0- 6.0 sec    128 KBytes   1.05 Mbits/sec   0.760 ms    0/   89 (0%)
[  3]   6.0- 7.0 sec    128 KBytes   1.05 Mbits/sec   0.734 ms    0/   89 (0%)
[  3]   7.0- 8.0 sec    128 KBytes   1.05 Mbits/sec   0.865 ms    0/   89 (0%)
[  3]   8.0- 9.0 sec    128 KBytes   1.05 Mbits/sec   0.914 ms    0/   89 (0%)
[  3]   9.0-10.0 sec    129 KBytes   1.06 Mbits/sec   1.028 ms    0/   90 (0%)
[  3]   0.0-10.0 sec   1.25 MBytes   1.05 Mbits/sec   1.028 ms    2/  895 (0.22%)
^Cpi@raspberrypi:~ $
```

Literatura