

Οικονομικό Πανεπιστήμιο Αθηνών, Τμήμα Πληροφορικής

Μάθημα: Δίκτυα Επικοινωνιών

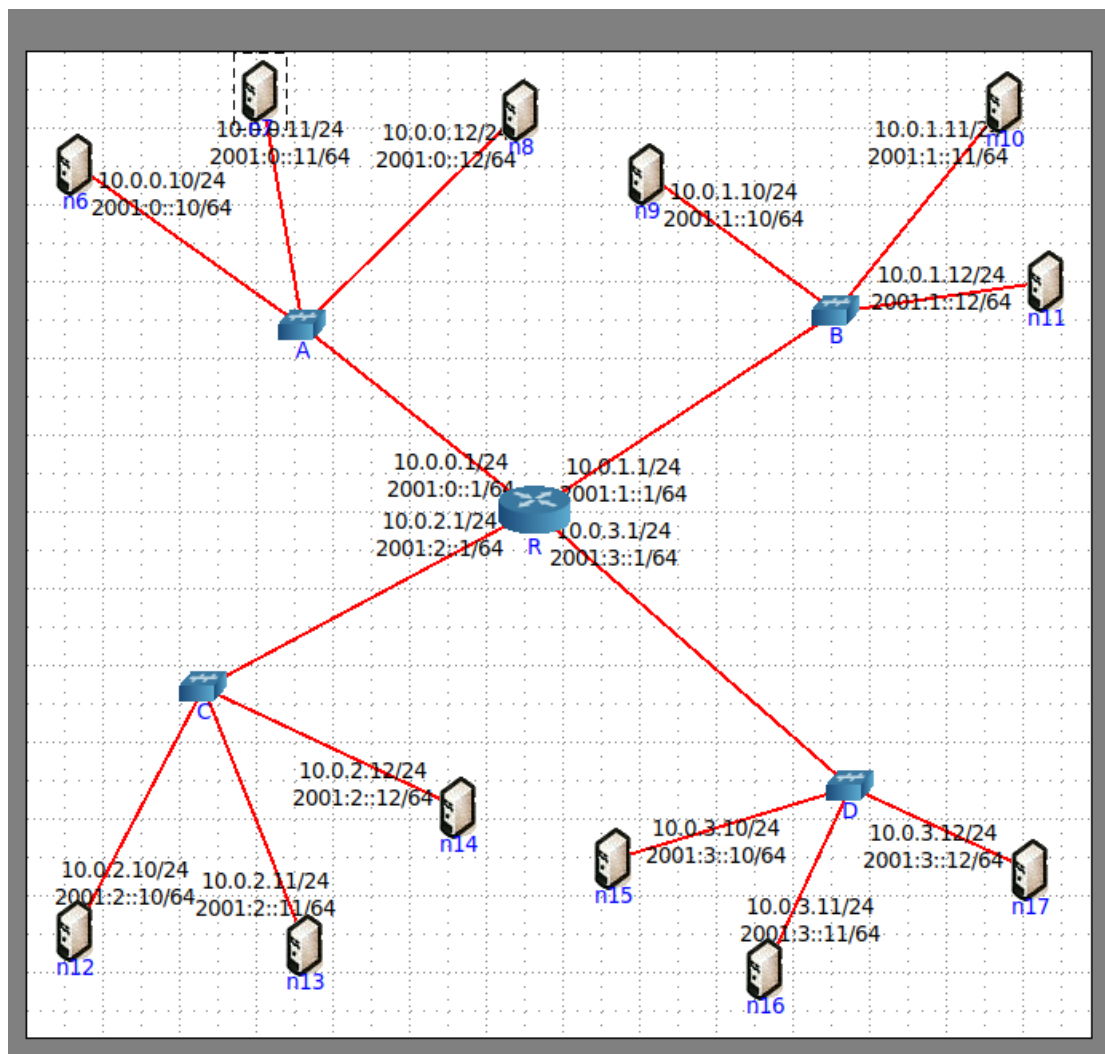
Ακαδημαϊκό έτος: 2022-23

Υπεύθυνοι φοιτητές: Μαρία Κονταράτου (3200078), Γεώργιος Κουμουνδούρος (3200083)

2^η Εργασία

1)

Το ενσύρματο δίκτυο που δημιουργήσαμε είναι το παρακάτω



2) Για την αποστολή αρχείων δημιουργήσαμε το παρακάτω traffic flow. Στο οποίο χρησιμοποιούμε transfer protocol UDP και το preset pattern 100kbps.

The screenshot shows the 'Edit traffic flow' window with the following configuration:

- Flow configuration:**
 - name: file transfer
 - flow number: 2
 - start time: 0.0
 - stop time: (empty)
- source:**
 - source node: n9
 - IP: 10.0.1.10
 - port: 5000
 - protocol: UDP
 - TOS: (empty)
 - pattern: presets → PERIODIC [10.0 1250]
 - log file: (empty)
- destination:**
 - destination node: n14
 - clear: (button)
 - IP: 10.0.2.12
 - port: 5000
 - log file: /var/log/mgen2.log
- additional MGEN parameters:** (empty text box)
- Buttons:** Apply, Cancel

Για το push-to-talk voice communications δημιουργήσαμε το παρακάτω traffic flow. Στο οποίο χρησιμοποιούμε transfer protocol UDP και το preset pattern Burst.

The screenshot shows the 'Edit traffic flow' window with the following configuration:

- Flow configuration:**
 - name: push-to-talk
 - flow number: 1
 - start time: 0.0
 - stop time: (empty)
- source:**
 - source node: n6
 - IP: 10.0.0.10
 - port: 5000
 - protocol: UDP
 - TOS: (empty)
 - pattern: presets → BURST [REGULAR 15.0 P]
 - log file: (empty)
- destination:**
 - destination node: n17
 - clear: (button)
 - IP: 10.0.3.12
 - port: 5000
 - log file: /var/log/mgen1.log
- additional MGEN parameters:** (empty text box)
- Buttons:** Apply, Cancel

Για το video streaming δημιουργήσαμε το παρακάτω traffic flow. Στο οποίο χρησιμοποιούνται transfer protocol TCP και το preset pattern 100kbps.

Edit traffic flow

Flow configuration

name flow number start time stop time

source

source node

IP port

protocol TOS

pattern

log file

destination

destination node

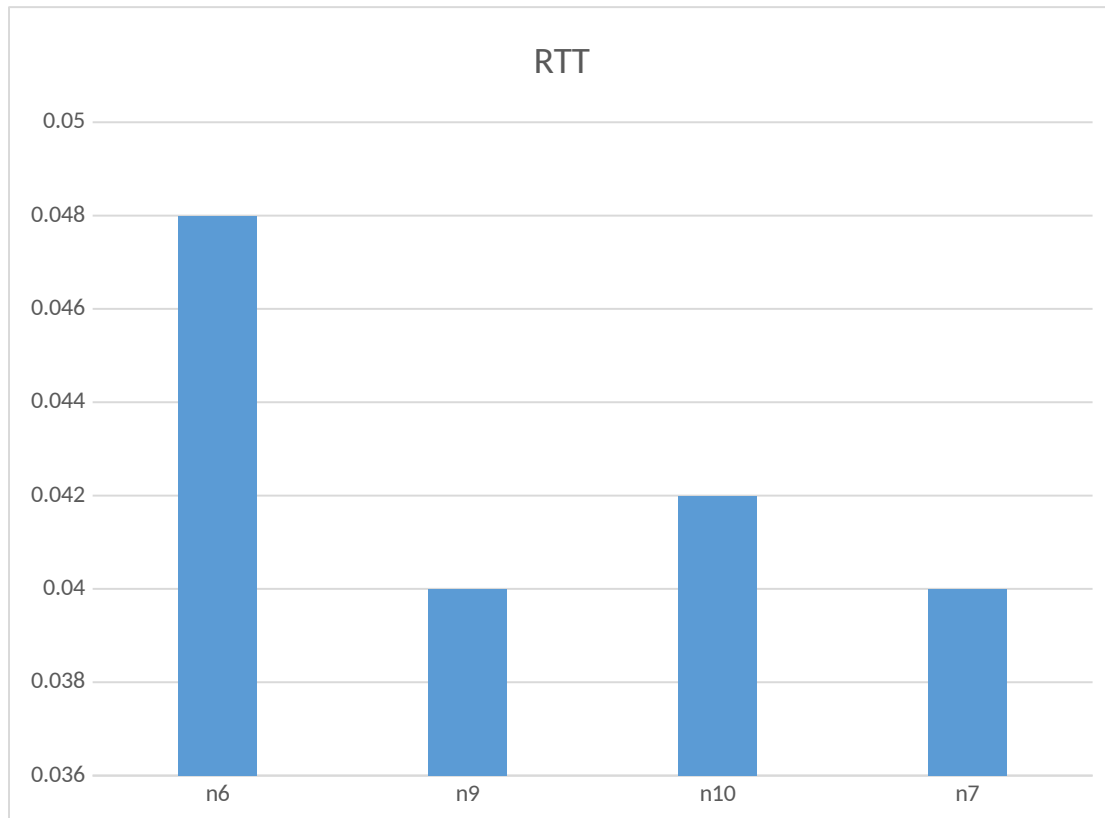
IP port

log file

additional MGEN parameters

3)

a) Το διάγραμμα για τις μετρήσεις καθυστέρησης και τα αντίστοιχα ping σε screenshots.



```
root@n6: /tmp/pycore.33509/n6.conf
File Edit View Search Terminal Help
64 bytes from 10.0.3.12: icmp_seq=23 ttl=63 time=0.048 ms
64 bytes from 10.0.3.12: icmp_seq=24 ttl=63 time=0.033 ms
64 bytes from 10.0.3.12: icmp_seq=25 ttl=63 time=0.046 ms
64 bytes from 10.0.3.12: icmp_seq=26 ttl=63 time=0.047 ms
64 bytes from 10.0.3.12: icmp_seq=27 ttl=63 time=0.048 ms
64 bytes from 10.0.3.12: icmp_seq=28 ttl=63 time=0.055 ms
64 bytes from 10.0.3.12: icmp_seq=29 ttl=63 time=0.055 ms
64 bytes from 10.0.3.12: icmp_seq=30 ttl=63 time=0.050 ms
64 bytes from 10.0.3.12: icmp_seq=31 ttl=63 time=0.048 ms
64 bytes from 10.0.3.12: icmp_seq=32 ttl=63 time=0.058 ms
64 bytes from 10.0.3.12: icmp_seq=33 ttl=63 time=0.054 ms
64 bytes from 10.0.3.12: icmp_seq=34 ttl=63 time=0.052 ms
64 bytes from 10.0.3.12: icmp_seq=35 ttl=63 time=0.045 ms
64 bytes from 10.0.3.12: icmp_seq=36 ttl=63 time=0.050 ms
64 bytes from 10.0.3.12: icmp_seq=37 ttl=63 time=0.039 ms
64 bytes from 10.0.3.12: icmp_seq=38 ttl=63 time=0.052 ms
64 bytes from 10.0.3.12: icmp_seq=39 ttl=63 time=0.037 ms
64 bytes from 10.0.3.12: icmp_seq=40 ttl=63 time=0.026 ms
^C
10 --- 10.0.3.12 ping statistics ---
11 40 packets transmitted, 40 received, 0% packet loss, time 39917ms
rtt min/avg/max/mdev = 0.026/0.048/0.058/0.006 ms
root@n6: /tmp/pycore.33509/n6.conf# ^C
root@n6: /tmp/pycore.33509/n6.conf#
```

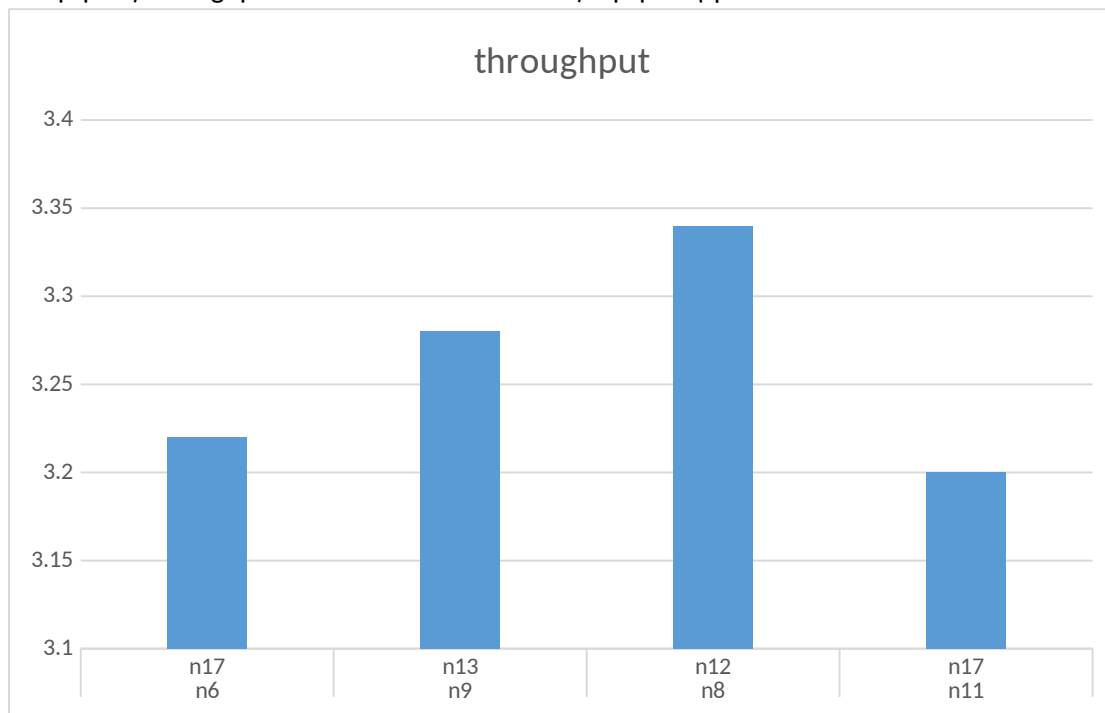
```
root@n10: /tmp/pycore.33509/n10.conf
File Edit View Search Terminal Help
64 bytes from 10.0.2.12: icmp_seq=21 ttl=63 time=0.051 ms
64 bytes from 10.0.2.12: icmp_seq=22 ttl=63 time=0.040 ms
64 bytes from 10.0.2.12: icmp_seq=23 ttl=63 time=0.028 ms
64 bytes from 10.0.2.12: icmp_seq=24 ttl=63 time=0.030 ms
64 bytes from 10.0.2.12: icmp_seq=25 ttl=63 time=0.054 ms
64 bytes from 10.0.2.12: icmp_seq=26 ttl=63 time=0.045 ms
64 bytes from 10.0.2.12: icmp_seq=27 ttl=63 time=0.050 ms
64 bytes from 10.0.2.12: icmp_seq=28 ttl=63 time=0.027 ms
64 bytes from 10.0.2.12: icmp_seq=29 ttl=63 time=0.031 ms
64 bytes from 10.0.2.12: icmp_seq=30 ttl=63 time=0.042 ms
64 bytes from 10.0.2.12: icmp_seq=31 ttl=63 time=0.054 ms
64 bytes from 10.0.2.12: icmp_seq=32 ttl=63 time=0.022 ms
64 bytes from 10.0.2.12: icmp_seq=33 ttl=63 time=0.031 ms
64 bytes from 10.0.2.12: icmp_seq=34 ttl=63 time=0.034 ms
64 bytes from 10.0.2.12: icmp_seq=35 ttl=63 time=0.045 ms
64 bytes from 10.0.2.12: icmp_seq=36 ttl=63 time=0.024 ms
64 bytes from 10.0.2.12: icmp_seq=37 ttl=63 time=0.030 ms
64 bytes from 10.0.2.12: icmp_seq=38 ttl=63 time=0.029 ms
64 bytes from 10.0.2.12: icmp_seq=39 ttl=63 time=0.033 ms
^C
--- 10.0.2.12 ping statistics ---
39 packets transmitted, 39 received, 0% packet loss, time 38951ms
rtt min/avg/max/mdev = 0.022/0.042/0.217/0.032 ms
root@n10: /tmp/pycore.33509/n10.conf#
```

```
root@n9: /tmp/pycore.33509/n9.conf
File Edit View Search Terminal Help
64 bytes from 10.0.3.12: icmp_seq=9 ttl=63 time=0.042 ms
64 bytes from 10.0.3.12: icmp_seq=10 ttl=63 time=0.031 ms
64 bytes from 10.0.3.12: icmp_seq=11 ttl=63 time=0.045 ms
64 bytes from 10.0.3.12: icmp_seq=12 ttl=63 time=0.025 ms
64 bytes from 10.0.3.12: icmp_seq=13 ttl=63 time=0.033 ms
64 bytes from 10.0.3.12: icmp_seq=14 ttl=63 time=0.049 ms
64 bytes from 10.0.3.12: icmp_seq=15 ttl=63 time=0.041 ms
64 bytes from 10.0.3.12: icmp_seq=16 ttl=63 time=0.024 ms
64 bytes from 10.0.3.12: icmp_seq=17 ttl=63 time=0.035 ms
64 bytes from 10.0.3.12: icmp_seq=18 ttl=63 time=0.026 ms
64 bytes from 10.0.3.12: icmp_seq=19 ttl=63 time=0.033 ms
64 bytes from 10.0.3.12: icmp_seq=20 ttl=63 time=0.035 ms
64 bytes from 10.0.3.12: icmp_seq=21 ttl=63 time=0.037 ms
64 bytes from 10.0.3.12: icmp_seq=22 ttl=63 time=0.032 ms
64 bytes from 10.0.3.12: icmp_seq=23 ttl=63 time=0.040 ms
64 bytes from 10.0.3.12: icmp_seq=24 ttl=63 time=0.045 ms
64 bytes from 10.0.3.12: icmp_seq=25 ttl=63 time=0.044 ms
64 bytes from 10.0.3.12: icmp_seq=26 ttl=63 time=0.056 ms
64 bytes from 10.0.3.12: icmp_seq=27 ttl=63 time=0.033 ms
^C
--- 10.0.3.12 ping statistics ---
27 packets transmitted, 27 received, 0% packet loss, time 26622ms
rtt min/avg/max/mdev = 0.024/0.038/0.061/0.010 ms
root@n9: /tmp/pycore.33509/n9.conf#
```

```
root@n7: /tmp/pycore.33509/n7.conf
File Edit View Search Terminal Help
64 bytes from 10.0.2.11: icmp_seq=18 ttl=63 time=0.039 ms
64 bytes from 10.0.2.11: icmp_seq=19 ttl=63 time=0.034 ms
64 bytes from 10.0.2.11: icmp_seq=20 ttl=63 time=0.041 ms
64 bytes from 10.0.2.11: icmp_seq=21 ttl=63 time=0.036 ms
64 bytes from 10.0.2.11: icmp_seq=22 ttl=63 time=0.047 ms
64 bytes from 10.0.2.11: icmp_seq=23 ttl=63 time=0.027 ms
64 bytes from 10.0.2.11: icmp_seq=24 ttl=63 time=0.051 ms
64 bytes from 10.0.2.11: icmp_seq=25 ttl=63 time=0.026 ms
64 bytes from 10.0.2.11: icmp_seq=26 ttl=63 time=0.048 ms
64 bytes from 10.0.2.11: icmp_seq=27 ttl=63 time=0.039 ms
64 bytes from 10.0.2.11: icmp_seq=28 ttl=63 time=0.050 ms
64 bytes from 10.0.2.11: icmp_seq=29 ttl=63 time=0.027 ms
64 bytes from 10.0.2.11: icmp_seq=30 ttl=63 time=0.033 ms
64 bytes from 10.0.2.11: icmp_seq=31 ttl=63 time=0.037 ms
64 bytes from 10.0.2.11: icmp_seq=32 ttl=63 time=0.033 ms
64 bytes from 10.0.2.11: icmp_seq=33 ttl=63 time=0.029 ms
64 bytes from 10.0.2.11: icmp_seq=34 ttl=63 time=0.052 ms
64 bytes from 10.0.2.11: icmp_seq=35 ttl=63 time=0.035 ms
64 bytes from 10.0.2.11: icmp_seq=36 ttl=63 time=0.045 ms
^C
--- 10.0.2.11 ping statistics ---
36 packets transmitted, 36 received, 0% packet loss, time 35844ms
rtt min/avg/max/mdev = 0.025/0.040/0.135/0.019 ms
root@n7: /tmp/pycore.33509/n7.conf#
```

b)

Μετρήσεις throughput ανά source-destination ζευγάρι κόμβων



c) Μετρήσεις packet loss ανά traffic flow

Για αυτές τις μετρήσεις βάλαμε σε κάποιες γραμμές loss για να υπάρξουν τα ακόλουθα αποτελέσματα.

```
root@n7: /tmp/pycore.33509/n7.conf
File Edit View Search Terminal Help
64 bytes from 10.0.3.10: icmp_seq=1085 ttl=63 time=0.035 ms
64 bytes from 10.0.3.10: icmp_seq=1086 ttl=63 time=0.033 ms
64 bytes from 10.0.3.10: icmp_seq=1087 ttl=63 time=0.035 ms
64 bytes from 10.0.3.10: icmp_seq=1088 ttl=63 time=0.043 ms
64 bytes from 10.0.3.10: icmp_seq=1089 ttl=63 time=0.053 ms
64 bytes from 10.0.3.10: icmp_seq=1090 ttl=63 time=0.030 ms
64 bytes from 10.0.3.10: icmp_seq=1091 ttl=63 time=0.033 ms
64 bytes from 10.0.3.10: icmp_seq=1092 ttl=63 time=0.039 ms
64 bytes from 10.0.3.10: icmp_seq=1093 ttl=63 time=0.049 ms
64 bytes from 10.0.3.10: icmp_seq=1094 ttl=63 time=0.030 ms
64 bytes from 10.0.3.10: icmp_seq=1095 ttl=63 time=0.030 ms
64 bytes from 10.0.3.10: icmp_seq=1096 ttl=63 time=0.037 ms
64 bytes from 10.0.3.10: icmp_seq=1097 ttl=63 time=0.035 ms
64 bytes from 10.0.3.10: icmp_seq=1098 ttl=63 time=0.052 ms
64 bytes from 10.0.3.10: icmp_seq=1099 ttl=63 time=0.032 ms
64 bytes from 10.0.3.10: icmp_seq=1100 ttl=63 time=0.059 ms
^C
--- 10.0.3.10 ping statistics ---
1100 packets transmitted, 1087 received, 1% packet loss, time 1125537ms
rtt min/avg/max/mdev = 0.022/0.041/0.313/0.023 ms
root@n7: /tmp/pycore.33509/n7.conf#
```

```
root@n11: /tmp/pycore.33509/n11.conf
File Edit View Search Terminal Help
64 bytes from 10.0.2.12: icmp_seq=229 ttl=63 time=0.053 ms
64 bytes from 10.0.2.12: icmp_seq=230 ttl=63 time=0.050 ms
64 bytes from 10.0.2.12: icmp_seq=231 ttl=63 time=0.056 ms
64 bytes from 10.0.2.12: icmp_seq=232 ttl=63 time=0.041 ms
64 bytes from 10.0.2.12: icmp_seq=233 ttl=63 time=0.055 ms
64 bytes from 10.0.2.12: icmp_seq=234 ttl=63 time=0.051 ms
64 bytes from 10.0.2.12: icmp_seq=235 ttl=63 time=0.056 ms
64 bytes from 10.0.2.12: icmp_seq=236 ttl=63 time=0.056 ms
64 bytes from 10.0.2.12: icmp_seq=237 ttl=63 time=0.048 ms
64 bytes from 10.0.2.12: icmp_seq=238 ttl=63 time=0.045 ms
64 bytes from 10.0.2.12: icmp_seq=239 ttl=63 time=0.055 ms
64 bytes from 10.0.2.12: icmp_seq=240 ttl=63 time=0.049 ms
64 bytes from 10.0.2.12: icmp_seq=241 ttl=63 time=0.061 ms
64 bytes from 10.0.2.12: icmp_seq=242 ttl=63 time=0.063 ms
64 bytes from 10.0.2.12: icmp_seq=243 ttl=63 time=0.051 ms
64 bytes from 10.0.2.12: icmp_seq=244 ttl=63 time=0.056 ms
64 bytes from 10.0.2.12: icmp_seq=245 ttl=63 time=0.050 ms
64 bytes from 10.0.2.12: icmp_seq=246 ttl=63 time=0.051 ms
64 bytes from 10.0.2.12: icmp_seq=247 ttl=63 time=0.052 ms
^C
--- 10.0.2.12 ping statistics ---
247 packets transmitted, 244 received, 1% packet loss, time 251902ms
rtt min/avg/max/mdev = 0.031/0.052/0.124/0.008 ms
root@n11: /tmp/pycore.33509/n11.conf#
```



```
root@n9: /tmp/pycore.33509/n9.conf
File Edit View Search Terminal Help
64 bytes from 10.0.3.12: icmp_seq=116 ttl=63 time=0.054 ms
64 bytes from 10.0.3.12: icmp_seq=117 ttl=63 time=0.056 ms
64 bytes from 10.0.3.12: icmp_seq=118 ttl=63 time=0.051 ms
64 bytes from 10.0.3.12: icmp_seq=119 ttl=63 time=0.056 ms
64 bytes from 10.0.3.12: icmp_seq=120 ttl=63 time=0.054 ms
64 bytes from 10.0.3.12: icmp_seq=121 ttl=63 time=0.055 ms
64 bytes from 10.0.3.12: icmp_seq=122 ttl=63 time=0.057 ms
64 bytes from 10.0.3.12: icmp_seq=123 ttl=63 time=0.053 ms
64 bytes from 10.0.3.12: icmp_seq=124 ttl=63 time=0.057 ms
64 bytes from 10.0.3.12: icmp_seq=125 ttl=63 time=0.049 ms
64 bytes from 10.0.3.12: icmp_seq=126 ttl=63 time=0.050 ms
64 bytes from 10.0.3.12: icmp_seq=127 ttl=63 time=0.054 ms
64 bytes from 10.0.3.12: icmp_seq=128 ttl=63 time=0.057 ms
64 bytes from 10.0.3.12: icmp_seq=129 ttl=63 time=0.041 ms
64 bytes from 10.0.3.12: icmp_seq=130 ttl=63 time=0.051 ms
64 bytes from 10.0.3.12: icmp_seq=131 ttl=63 time=0.044 ms
64 bytes from 10.0.3.12: icmp_seq=132 ttl=63 time=0.047 ms
64 bytes from 10.0.3.12: icmp_seq=133 ttl=63 time=0.048 ms
64 bytes from 10.0.3.12: icmp_seq=134 ttl=63 time=0.048 ms
^C
--- 10.0.3.12 ping statistics ---
134 packets transmitted, 133 received, 0% packet loss, time 136195ms
rtt min/avg/max/mdev = 0.036/0.054/0.162/0.016 ms
root@n9: /tmp/pycore.33509/n9.conf#
```

4) Για αυτό το ερώτημα κάναμε capture τα εξής traffic flows στο δίκτυο

- n6→n17
- n6→n14
- n9→n17

5)

The screenshot shows the Netcaps application window. The menu bar includes File, Edit, View, Go, Capture, Analyze, Statistics, Telephony, Wireless, Tools, and Help. Below the menu is a toolbar with various icons for file operations, capture, and analysis. A search bar at the top right allows for applying display filters. The main pane displays a table of captured packets with columns for No., Time, Source, Destination, Protocol, and Length. The packets are filtered to show only ICMP and OSPF traffic. The table lists 24 packets, including Echo (ping) requests and replies, Hello Packets, and Router Solicitations. Below the table, a summary of the selected frame (Frame 1) is shown, indicating it is 98 bytes on wire (784 bits) and was captured on interface 0. The summary also shows the Ethernet II header, Internet Protocol Version 4 header, and Internet Control Message Protocol header. At the bottom, a hex dump of the packet data is displayed, showing the raw bytes of the ICMP Echo request.

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000000	10.0.0.10	10.0.3.12	ICMP	98	Echo (ping) request id=0x0025, seq=80/20480, ttl=63 (reply in 2)
2	0.000000020	10.0.3.12	10.0.0.10	ICMP	98	Echo (ping) reply id=0x0025, seq=80/20480, ttl=64 (request in 1)
3	1.027662159	10.0.0.10	10.0.3.12	ICMP	98	Echo (ping) request id=0x0025, seq=81/20736, ttl=63 (reply in 4)
4	1.027662374	10.0.3.12	10.0.0.10	ICMP	98	Echo (ping) reply id=0x0025, seq=81/20736, ttl=64 (request in 3)
5	1.494204156	10.0.3.1	224.0.0.5	OSPF	78	Hello Packet
6	2.047547079	10.0.0.10	10.0.3.12	ICMP	98	Echo (ping) request id=0x0025, seq=82/20992, ttl=63 (reply in 7)
7	2.047550803	10.0.3.12	10.0.0.10	ICMP	98	Echo (ping) reply id=0x0025, seq=82/20992, ttl=64 (request in 6)
8	3.073279390	10.0.0.10	10.0.3.12	ICMP	98	Echo (ping) request id=0x0025, seq=83/21248, ttl=63 (reply in 9)
9	3.073291164	10.0.3.12	10.0.0.10	ICMP	98	Echo (ping) reply id=0x0025, seq=83/21248, ttl=64 (request in 8)
10	3.496020735	10.0.3.1	224.0.0.5	OSPF	78	Hello Packet
11	4.096164194	10.0.0.10	10.0.3.12	ICMP	98	Echo (ping) request id=0x0025, seq=84/21504, ttl=63 (reply in 12)
12	4.096176048	10.0.3.12	10.0.0.10	ICMP	98	Echo (ping) reply id=0x0025, seq=84/21504, ttl=64 (request in 11)
13	5.119553334	10.0.0.10	10.0.3.12	ICMP	98	Echo (ping) request id=0x0025, seq=85/21760, ttl=63 (reply in 14)
14	5.119565448	10.0.3.12	10.0.0.10	ICMP	98	Echo (ping) reply id=0x0025, seq=85/21760, ttl=64 (request in 13)
15	5.497257649	10.0.3.1	224.0.0.5	OSPF	78	Hello Packet
16	6.143679793	10.0.0.10	10.0.3.12	ICMP	98	Echo (ping) request id=0x0025, seq=86/22016, ttl=63 (reply in 17)
17	6.143724470	10.0.3.12	10.0.0.10	ICMP	98	Echo (ping) reply id=0x0025, seq=86/22016, ttl=64 (request in 16)
18	6.499939318	fe80::200:ff:feaa:e	ff02::2	ICMPv6	70	Router Solicitation from 00:00:00:aa:00:0e
19	7.168058358	10.0.0.10	10.0.3.12	ICMP	98	Echo (ping) request id=0x0025, seq=87/22272, ttl=63 (reply in 20)
20	7.168070652	10.0.3.12	10.0.0.10	ICMP	98	Echo (ping) reply id=0x0025, seq=87/22272, ttl=64 (request in 19)
21	7.365047028	fe80::200:ff:feaa:3	ff02::5	OSPF	90	Hello Packet
22	7.498695176	10.0.3.1	224.0.0.5	OSPF	78	Hello Packet
23	8.191526881	10.0.0.10	10.0.3.12	ICMP	98	Echo (ping) request id=0x0025, seq=88/22528, ttl=63 (reply in 24)
24	8.191539495	10.0.3.12	10.0.0.10	ICMP	98	Echo (ping) reply id=0x0025, seq=88/22528, ttl=64 (request in 23)

The screenshot shows the Netcaps2 application window. The menu bar includes File, Edit, View, Go, Capture, Analyze, Statistics, Telephony, Wireless, Tools, and Help. Below the menu is a toolbar with various icons for file operations, capture, and analysis. A search bar at the top right allows for applying display filters. The main pane displays a table of captured packets with columns for No., Time, Source, Destination, Protocol, and Length. The packets are filtered to show only ARP, ICMP, and OSPF traffic. The table lists 24 packets, including ARP requests, Echo (ping) requests and replies, Hello Packets, and Router Solicitations. Below the table, a summary of the selected frame (Frame 1) is shown, indicating it is 42 bytes on wire (336 bits) and was captured on interface 0. The summary also shows the Ethernet II header, Internet Protocol Version 4 header, and Address Resolution Protocol header. At the bottom, a hex dump of the packet data is displayed, showing the raw bytes of the ARP request.

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000000	00:00:00:aa:00:0f	00:00:00:aa:00:03	ARP	42	Who has 10.0.3.1? Tell 10.0.3.12
2	0.000000055	00:00:00:aa:00:03	00:00:00:aa:00:0f	ARP	42	10.0.3.1 is at 00:00:00:aa:00:03
3	0.000000132	10.0.1.10	10.0.3.12	ICMP	98	Echo (ping) request id=0x002d, seq=47/12032, ttl=63 (reply in 4)
4	0.000105578	10.0.3.12	10.0.1.10	ICMP	98	Echo (ping) reply id=0x002d, seq=47/12032, ttl=64 (request in 3)
5	1.023888099	10.0.1.10	10.0.3.12	ICMP	98	Echo (ping) request id=0x002d, seq=48/12288, ttl=63 (reply in 6)
6	1.023899613	10.0.3.12	10.0.1.10	ICMP	98	Echo (ping) reply id=0x002d, seq=48/12288, ttl=64 (request in 5)
7	1.217243194	10.0.3.1	224.0.0.5	OSPF	78	Hello Packet
8	2.047708161	10.0.1.10	10.0.3.12	ICMP	98	Echo (ping) request id=0x002d, seq=49/12544, ttl=63 (reply in 9)
9	2.047718646	10.0.3.12	10.0.1.10	ICMP	98	Echo (ping) reply id=0x002d, seq=49/12544, ttl=64 (request in 8)
10	3.071557956	10.0.1.10	10.0.3.12	ICMP	98	Echo (ping) request id=0x002d, seq=50/12800, ttl=63 (reply in 11)
11	3.071570460	10.0.3.12	10.0.1.10	ICMP	98	Echo (ping) reply id=0x002d, seq=50/12800, ttl=64 (request in 10)
12	3.217944266	10.0.3.1	224.0.0.5	OSPF	78	Hello Packet
13	4.101791077	10.0.1.10	10.0.3.12	ICMP	98	Echo (ping) request id=0x002d, seq=51/13056, ttl=63 (reply in 14)
14	4.101802621	10.0.3.12	10.0.1.10	ICMP	98	Echo (ping) reply id=0x002d, seq=51/13056, ttl=64 (request in 13)
15	5.120406189	10.0.1.10	10.0.3.12	ICMP	98	Echo (ping) request id=0x002d, seq=52/13312, ttl=63 (reply in 16)
16	5.120418612	10.0.3.12	10.0.1.10	ICMP	98	Echo (ping) reply id=0x002d, seq=52/13312, ttl=64 (request in 15)
17	5.218912274	10.0.3.1	224.0.0.5	OSPF	78	Hello Packet
18	6.143295113	10.0.1.10	10.0.3.12	ICMP	98	Echo (ping) request id=0x002d, seq=53/13568, ttl=63 (reply in 19)
19	6.143300597	10.0.3.12	10.0.1.10	ICMP	98	Echo (ping) reply id=0x002d, seq=53/13568, ttl=64 (request in 18)
20	7.167883470	10.0.1.10	10.0.3.12	ICMP	98	Echo (ping) request id=0x002d, seq=54/13824, ttl=63 (reply in 21)
21	7.167895085	10.0.3.12	10.0.1.10	ICMP	98	Echo (ping) reply id=0x002d, seq=54/13824, ttl=64 (request in 20)
22	7.219768027	10.0.3.1	224.0.0.5	OSPF	78	Hello Packet
23	8.191746663	10.0.1.10	10.0.3.12	ICMP	98	Echo (ping) request id=0x002d, seq=55/14080, ttl=63 (reply in 24)
24	8.191758747	10.0.3.12	10.0.1.10	ICMP	98	Echo (ping) reply id=0x002d, seq=55/14080, ttl=64 (request in 23)

Netcaps3

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Apply a display filter ... <Ctrl-/> Expression...

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000000	10.0.0.10	10.0.2.12	ICMP	98	Echo (ping) request id=0x002e, seq=41/10496, ttl=63 (reply in 2)
2	0.000012954	10.0.2.12	10.0.0.10	ICMP	98	Echo (ping) reply id=0x002e, seq=41/10496, ttl=64 (request in 1)
3	1.024833870	10.0.0.10	10.0.2.12	ICMP	98	Echo (ping) request id=0x002e, seq=42/10752, ttl=63 (reply in 4)
4	1.024846264	10.0.2.12	10.0.0.10	ICMP	98	Echo (ping) reply id=0x002e, seq=42/10752, ttl=64 (request in 3)
5	1.060015711	10.0.2.1	224.0.0.5	OSPF	78	Hello Packet
6	2.047729759	10.0.0.10	10.0.2.12	ICMP	98	Echo (ping) request id=0x002e, seq=43/11008, ttl=63 (reply in 7)
7	2.047742023	10.0.2.12	10.0.0.10	ICMP	98	Echo (ping) reply id=0x002e, seq=43/11008, ttl=64 (request in 6)
8	3.060045730	10.0.2.1	224.0.0.5	OSPF	78	Hello Packet
9	3.071648578	10.0.0.10	10.0.2.12	ICMP	98	Echo (ping) request id=0x002e, seq=44/11264, ttl=63 (reply in 10)
10	3.071662371	10.0.2.12	10.0.0.10	ICMP	98	Echo (ping) reply id=0x002e, seq=44/11264, ttl=64 (request in 9)
11	4.095468146	10.0.0.10	10.0.2.12	ICMP	98	Echo (ping) request id=0x002e, seq=45/11520, ttl=63 (reply in 12)
12	4.095481100	10.0.2.12	10.0.0.10	ICMP	98	Echo (ping) reply id=0x002e, seq=45/11520, ttl=64 (request in 11)
13	4.060631840	fe80::200:ff:feaa:2	ff02::5	OSPF	90	Hello Packet
14	5.061711921	10.0.2.1	224.0.0.5	OSPF	78	Hello Packet
15	5.120252596	10.0.0.10	10.0.2.12	ICMP	98	Echo (ping) request id=0x002e, seq=46/11776, ttl=63 (reply in 16)
16	5.120263670	10.0.2.12	10.0.0.10	ICMP	98	Echo (ping) reply id=0x002e, seq=46/11776, ttl=64 (request in 15)
17	6.143473223	10.0.0.10	10.0.2.12	ICMP	98	Echo (ping) request id=0x002e, seq=47/12032, ttl=63 (reply in 18)
18	6.143484397	10.0.2.12	10.0.0.10	ICMP	98	Echo (ping) reply id=0x002e, seq=47/12032, ttl=64 (request in 17)
19	7.062595659	10.0.2.1	224.0.0.5	OSPF	78	Hello Packet
20	7.167916323	10.0.0.10	10.0.2.12	ICMP	98	Echo (ping) request id=0x002e, seq=48/12288, ttl=63 (reply in 21)
21	7.167927787	10.0.2.12	10.0.0.10	ICMP	98	Echo (ping) reply id=0x002e, seq=48/12288, ttl=64 (request in 20)
22	7.231532439	00:00:00:aa:00:0c	00:00:00:aa:00:02	ARP	42	Who has 10.0.2.1? Tell 10.0.2.12
23	7.231557727	00:00:00:aa:00:02	00:00:00:aa:00:0c	ARP	42	10.0.2.1 is at 00:00:00:aa:00:0c
24	8.191704278	10.0.0.10	10.0.2.12	ICMP	98	Echo (ping) request id=0x002e, seq=49/12544, ttl=63 (reply in 25)

► Frame 1: 98 bytes on wire (784 bits), 98 bytes captured (784 bits) on interface 0
► Ethernet II, Src: 00:00:00:aa:00:02 (00:00:00:aa:00:02), Dst: 00:00:00:aa:00:0c (00:00:00:aa:00:0c)
► Internet Protocol Version 4, Src: 10.0.0.10, Dst: 10.0.2.12
► Internet Control Message Protocol

0000 00 00 00 aa 00 0c 00 00 00 aa 00 02 08 00 45 00E
0010 00 54 0c c5 40 00 3f 01 48 ce 0a 00 00 0a 00 00 ..T..@?..H.....
0020 02 0c 08 00 ac 35 00 2e 00 29 fd a0 cd 63 00 005..}...C..
0030 00 00 ba 9b 07 00 00 00 00 00 10 11 12 13 14 15
0040 16 17 18 19 1a 1b 1c 1d 1e 1f 20 21 22 23 24 25!##\$%
0050 26 27 28 29 2a 2b 2c 2d 2e 2f 30 31 32 33 34 35 &()*+,-./012345
0060 36 37 67

Netcaps3 Packets: 264 · Displayed: 264 (100.0%) Profile: Default