МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ

НАВЧАЛЬНО-НАУКОВИЙ КОМПЛЕКС

«ІНСТИТУТ ПРИКЛАДНОГО СИСТЕМНОГО АНАЛІЗУ»

НАЦІОНАЛЬНОГО ТЕХНІЧНОГО УНІВЕРСИТЕТУ УКРАЇНИ

«КИЇВСЬКИЙ ПОЛІТЕХНІЧНИЙ ІНСТИТУТ ІМЕНІ ІГОРЯ СІКОРСЬКОГО»

КАФЕДРА МАТЕМАТИЧНИХ МЕТОДІВ СИСТЕМНОГО АНАЛІЗУ

Практична робота №4

з курсу «Комп'ютерні мережі»

Виконав студент 3 курсу

групи КА-71

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Київ – 2020 р.

No. Time Source Destination Protocol Length Info
68 9.218024 192.168.0.101 143.89.14.1 ICMP 74 Echo (ping) request id=0x0001, seq=12/3072, ttl=128
(no response found!)
Frame 68: 74 bytes on wire (592 bits), 74 bytes captured (592 bits) on interface \Device\NPF_{FE4A490D-1EF2-4034-8E18-5B6AA5EF580E}, id
0
Interface id: 0 (\Device\NPF_{FE4A490D-1EF2-4034-8E18-5B6AA5EF580E})
Interface name: \Device\NPF_{FE4A490D-1EF2-4034-8E18-5B6AA5EF580E}
Interface description: Беспроводная сеть
Encapsulation type: Ethernet (1)
Arrival Time: May 13, 2020 20:48:39.847213000 Финляндия (лето)
[Time shift for this packet: 0.000000000 seconds]
Epoch Time: 1589392119.847213000 seconds
[Time delta from previous captured frame: 0.009166000 seconds]
[Time delta from previous displayed frame: 4.579895000 seconds]
[Time since reference or first frame: 9.218024000 seconds]
Frame Number: 68
Frame Length: 74 bytes (592 bits)
Capture Length: 74 bytes (592 bits)
[Frame is marked: False]
[Frame is ignored: False]
[Protocols in frame: eth:ethertype:ip:icmp:data]
[Coloring Rule Name: ICMP]
[Coloring Rule String: icmp || icmpv6]
Ethernet II, Src: AzureWav_89:a0:8f (f0:03:8c:89:a0:8f), Dst: Tp-LinkT_2c:6b:d0 (30:b5:c2:2c:6b:d0)
Destination: Tp-LinkT_2c:6b:d0 (30:b5:c2:2c:6b:d0)
Address: Tp-LinkT_2c:6b:d0 (30:b5:c2:2c:6b:d0)
.... ..0. .... = LG bit: Globally unique address (factory default)
....0 .... = IG bit: Individual address (unicast)
Source: AzureWav_89:a0:8f (f0:03:8c:89:a0:8f)
Address: AzureWav_89:a0:8f (f0:03:8c:89:a0:8f)
.... ..0. .... = LG bit: Globally unique address (factory default)
....0 .... = IG bit: Individual address (unicast)
Type: IPv4 (0x0800)
Internet Protocol Version 4, Src: 192.168.0.101, Dst: 143.89.14.1
0100 .... = Version: 4
.... 0101 = Header Length: 20 bytes (5)
Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
0000 00.. = Differentiated Services Codepoint: Default (0)
.... ..00 = Explicit Congestion Notification: Not ECN-Capable Transport (0)
Total Length: 60
Identification: 0x8e6b (36459)
Flags: 0x0000
0... .... = Reserved bit: Not set
.0.. .... = Don't fragment: Not set
..0. .... = More fragments: Not set
Fragment offset: 0
Time to live: 128
Protocol: ICMP (1)
Header checksum: 0x4dee [validation disabled]
[Header checksum status: Unverified]
Source: 192.168.0.101
Destination: 143.89.14.1
Internet Control Message Protocol
Type: 8 (Echo (ping) request)
Code: 0
Checksum: 0x4d4f [correct]
[Checksum Status: Good]
Identifier (BE): 1 (0x0001)
Identifier (LE): 256 (0x0100)
Sequence number (BE): 12 (0x000c)
Sequence number (LE): 3072 (0x0c00)
[No response seen]
[Expert Info (Warning/Sequence): No response seen to ICMP request]
[No response seen to ICMP request]
[Severity level: Warning]
[Group: Sequence]
Data (32 bytes)
0000 61 62 63 64 65 66 67 68 69 6a 6b 6c 6d 6e 6f 70 abcdefghijklmnop
0010 71 72 73 74 75 76 77 61 62 63 64 65 66 67 68 69 qrstuvwabcdefghi
Data: 6162636465666768696a6b6c6d6e6f707172737475767761…
[Length: 32]

1. 192.168.0.101 143.89.14.1

2. ICMP Це протокол мережевого рівня.

3. Тип 8, код 0 по 2 байти

4. Пакети-відповіді не отримано(див дамп). Має бути так: Type 0,Code 0,Response Time,По два байти

No. Time Source Destination Protocol Length Info
47 9.762141 192.168.0.101 128.93.162.63 ICMP 106 Echo (ping) request id=0x0001, seq=121/30976, ttl=1
(no response found!)
Frame 47: 106 bytes on wire (848 bits), 106 bytes captured (848 bits) on interface \Device\NPF_{FE4A490D-1EF2-4034-8E18-5B6AA5EF580E},
id 0
Ethernet II, Src: AzureWav_89:a0:8f (f0:03:8c:89:a0:8f), Dst: Tp-LinkT_2c:6b:d0 (30:b5:c2:2c:6b:d0)
Internet Protocol Version 4, Src: 192.168.0.101, Dst: 128.93.162.63
0100 .... = Version: 4
.... 0101 = Header Length: 20 bytes (5)
Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
Total Length: 92
Identification: 0x65e0 (26080)
Flags: 0x0000
Fragment offset: 0
Time to live: 1
[Expert Info (Note/Sequence): "Time To Live" only 1]
Protocol: ICMP (1)
Header checksum: 0x7017 [validation disabled]
[Header checksum status: Unverified]
Source: 192.168.0.101
Destination: 128.93.162.63
Internet Control Message Protocol
Type: 8 (Echo (ping) request)
Code: 0
Checksum: 0xf785 [correct]
[Checksum Status: Good]
Identifier (BE): 1 (0x0001)
Identifier (LE): 256 (0x0100)
Sequence number (BE): 121 (0x0079)
Sequence number (LE): 30976 (0x7900)
[No response seen]
[Expert Info (Warning/Sequence): No response seen to ICMP request]
Data (64 bytes)
0000 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ....
0010 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ....
0020 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ....
0030 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ....
Data: 00000000000000000000000000000000000000000000000000…
[Length: 64]
No. Time Source Destination Protocol Length Info
205 29.624308 192.93.122.19 192.168.0.101 ICMP 70 Time-to-live exceeded (Time to live exceeded in
transit)
Frame 205: 70 bytes on wire (560 bits), 70 bytes captured (560 bits) on interface \Device\NPF_{FE4A490D-1EF2-4034-8E18-5B6AA5EF580E}, id
0 Ethernet II, Src: Tp-LinkT_2c:6b:d0 (
30:b5:c2:2c:6b:d0), Dst: AzureWav_89:a0:8f (
f0:03:8c:89:a0:8f)
Internet Protocol Version 4, Src: 192.93.122.19, Dst: 192.168.0.101
0100 .... = Version: 4
.... 0101 = Header Length: 20 bytes (5)
Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
Total Length: 56
Identification: 0xd760 (55136)
Flags: 0x0000
Fragment offset: 0
Time to live: 243
Protocol: ICMP (1)
Header checksum: 0xf4e5 [validation disabled]
[Header checksum status: Unverified]
Source: 192.93.122.19
Destination: 192.168.0.101
Internet Control Message Protocol
Type: 11 (Time-to-live exceeded)
Code: 0 (Time to live exceeded in transit)
Checksum: 0xf4ff [correct]
[Checksum Status: Good]
Unused: 00000000
Internet Protocol Version 4, Src: 192.168.0.101, Dst: 128.93.162.63
0100 .... = Version: 4
.... 0101 = Header Length: 20 bytes (5)
Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
Total Length: 92

Identification: 0x65fd (26109)
Flags: 0x0000
Fragment offset: 0
Time to live: 1
[Expert Info (Note/Sequence): "Time To Live" only 1]
Protocol: ICMP (1)
Header checksum: 0x6ffa [validation disabled]
[Header checksum status: Unverified]
Source: 192.168.0.101
Destination: 128.93.162.63
Internet Control Message Protocol
Type: 8 (Echo (ping) request)
Code: 0
Checksum: 0xf768 [unverified] [in ICMP error packet]
[Checksum Status: Unverified]
Identifier (BE): 1 (0x0001)
Identifier (LE): 256 (0x0100)
Sequence number (BE): 150 (0x0096)
Sequence number (LE): 38400 (0x9600)
No. Time Source Destination Protocol Length Info
212 30.815863 128.93.162.63 192.168.0.101 ICMP 106 Echo (ping) reply id=0x0001, seq=151/38656, ttl=52
(request in 211)
Frame 212: 106 bytes on wire (848 bits), 106 bytes captured (848 bits) on interface \Device\NPF_{FE4A490D-1EF2-4034-8E18-5B6AA5EF580E},
id 0
Ethernet II, Src: Tp-LinkT_2c:6b:d0 (30:b5:c2:2c:6b:d0), Dst: AzureWav_89:a0:8f (f0:03:8c:89:a0:8f)
Internet Protocol Version 4, Src: 128.93.162.63, Dst: 192.168.0.101
0100 .... = Version: 4
.... 0101 = Header Length: 20 bytes (5)
Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
Total Length: 92
Identification: 0xa827 (43047)
Flags: 0x0000
Fragment offset: 0
Time to live: 52
Protocol: ICMP (1)
Header checksum: 0xfacf [validation disabled]
[Header checksum status: Unverified]
Source: 128.93.162.63
Destination: 192.168.0.101
Internet Control Message Protocol
Type: 0 (Echo (ping) reply)
Code: 0
Checksum: 0xff67 [correct]
[Checksum Status: Good]
Identifier (BE): 1 (0x0001)
Identifier (LE): 256 (0x0100)
Sequence number (BE): 151 (0x0097)
Sequence number (LE): 38656 (0x9700)
[Request frame: 211]
[Response time: 54,479 ms]
Data (64 bytes)
0000 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ....
0010 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ....
0020 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ....
0030 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ....
Data: 00000000000000000000000000000000000000000000000000…
[Length: 64]
No. Time Source Destination Protocol Length Info
214 30.879634 128.93.162.63 192.168.0.101 ICMP 106 Echo (ping) reply id=0x0001, seq=152/38912, ttl=52
(request in 213)
Frame 214: 106 bytes on wire (848 bits), 106 bytes captured (848 bits) on interface \Device\NPF_{FE4A490D-1EF2-4034-8E18-5B6AA5EF580E},
id 0
Ethernet II, Src: Tp-LinkT_2c:6b:d0 (30:b5:c2:2c:6b:d0), Dst: AzureWav_89:a0:8f (f0:03:8c:89:a0:8f)
Internet Protocol Version 4, Src: 128.93.162.63, Dst: 192.168.0.101
0100 .... = Version: 4
.... 0101 = Header Length: 20 bytes (5)
Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
Total Length: 92
Identification: 0xa835 (43061)
Flags: 0x0000
Fragment offset: 0
Time to live: 52
Protocol: ICMP (1)
Header checksum: 0xfac1 [validation disabled]
[Header checksum status: Unverified]
Source: 128.93.162.63
Destination: 192.168.0.101

Internet Control Message Protocol
Type: 0 (Echo (ping) reply)
Code: 0
Checksum: 0xff66 [correct]
[Checksum Status: Good]
Identifier (BE): 1 (0x0001)
Identifier (LE): 256 (0x0100)
Sequence number (BE): 152 (0x0098)
Sequence number (LE): 38912 (0x9800)
[Request frame: 213]
[Response time: 59,313 ms]
Data (64 bytes)
0000 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ....
0010 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ....
0020 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ....
0030 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ....
Data: 00000000000000000000000000000000000000000000000000…
[Length: 64]
No. Time Source Destination Protocol Length Info
216 30.934659 128.93.162.63 192.168.0.101 ICMP 106 Echo (ping) reply id=0x0001, seq=153/39168, ttl=52
(request in 215)
Frame 216: 106 bytes on wire (848 bits), 106 bytes captured (848 bits) on interface \Device\NPF_{FE4A490D-1EF2-4034-8E18-5B6AA5EF580E},
id 0
Ethernet II, Src: Tp-LinkT_2c:6b:d0 (30:b5:c2:2c:6b:d0), Dst: AzureWav_89:a0:8f (f0:03:8c:89:a0:8f)
Internet Protocol Version 4, Src: 128.93.162.63, Dst: 192.168.0.101
0100 .... = Version: 4
.... 0101 = Header Length: 20 bytes (5)
Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
Total Length: 92
Identification: 0xa839 (43065)
Flags: 0x0000
Fragment offset: 0
Time to live: 52
Protocol: ICMP (1)
Header checksum: 0xfabd [validation disabled]
[Header checksum status: Unverified]
Source: 128.93.162.63
Destination: 192.168.0.101
Internet Control Message Protocol
Type: 0 (Echo (ping) reply)
Code: 0
Checksum: 0xff65 [correct]
[Checksum Status: Good]
Identifier (BE): 1 (0x0001)
Identifier (LE): 256 (0x0100)
Sequence number (BE): 153 (0x0099)
Sequence number (LE): 39168 (0x9900)
[Request frame: 215]
[Response time: 52,989 ms]
Data (64 bytes)
0000 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ....
0010 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ....
0020 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ....
0030 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ....
Data: 00000000000000000000000000000000000000000000000000…
        [Length: 64]

5. 192.168.0.101 128.93.162.63

6. 4

7. Так, обсягом даних: Data (64 bytes) для tracert та Data (32 bytes) для ping

8. Type: 11 (Time-to-live exceeded) Code: 0 (Time to live exceeded in transit)

9. А з помилкою був: Type: 11 (Time-to-live exceeded)Тому що в першому випадку Ехо-відповідь, а в другому час життя пакету став рівний 0 під час транспортування

10. 61 ms te1-1-inria-rtr-021.noc.renater.fr[193.51.177.107], так можна, але дуже приблизно