МІНІСТЕРСТВО ОСВІТИ І НАУКИ, МОЛОДІ ТА СПОРТУ УКРАЇНИ

НАВЧАЛЬНО-НАУКОВИЙ КОМПЛЕКС

«ІНСТИТУТ ПРИКЛАДНОГО СИСТЕМНОГО АНАЛІЗУ»

НАЦІОНАЛЬНОГО ТЕХНІЧНОГО УНІВЕРСИТЕТУ УКРАЇНИ

«КИЇВСЬКИЙ ПОЛІТЕХНІЧНИЙ ІНСТИТУТ»

КАФЕДРА МАТЕМАТИЧНИХ МЕТОДІВ СИСТЕМНОГО АНАЛІЗУ

Лабораторна робота №3

з курсу «Комп’ютерні мережі»

тема: «Протокол DNS»

Виконав: студент 3 курсу

групи КА-77

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Київ – 2020р.

**Пакети для відповідей 1-6**

No. Time Source Destination Protocol Length Info

33 2.156526 192.168.0.101 192.168.0.1 DNS 72 Standard query 0x00f6 A www.ietf.org

Frame 33: 72 bytes on wire (576 bits), 72 bytes captured (576 bits) on interface \Device\NPF\_{B00D5FF3-E366-47DF-A1CA-F139AE16F5AE}, id 0

Ethernet II, Src: 12:b3:18:08:af:dd (12:b3:18:08:af:dd), Dst: Tp-LinkT\_34:cf:c2 (c0:4a:00:34:cf:c2)

Internet Protocol Version 4, Src: 192.168.0.101, Dst: 192.168.0.1

User Datagram Protocol, Src Port: 6858, Dst Port: 53

Domain Name System (query)

Transaction ID: 0x00f6

Flags: 0x0100 Standard query

0... .... .... .... = Response: Message is a query

.000 0... .... .... = Opcode: Standard query (0)

.... ..0. .... .... = Truncated: Message is not truncated

.... ...1 .... .... = Recursion desired: Do query recursively

.... .... .0.. .... = Z: reserved (0)

.... .... ...0 .... = Non-authenticated data: Unacceptable

Questions: 1

Answer RRs: 0

Authority RRs: 0

Additional RRs: 0

Queries

www.ietf.org: type A, class IN

[Response In: 37]

No. Time Source Destination Protocol Length Info

34 2.182159 192.168.0.101 192.168.0.1 DNS 72 Standard query 0x00f6 A www.ietf.org

Frame 34: 72 bytes on wire (576 bits), 72 bytes captured (576 bits) on interface \Device\NPF\_{B00D5FF3-E366-47DF-A1CA-F139AE16F5AE}, id 0

Ethernet II, Src: 12:b3:18:08:af:dd (12:b3:18:08:af:dd), Dst: Tp-LinkT\_34:cf:c2 (c0:4a:00:34:cf:c2)

Internet Protocol Version 4, Src: 192.168.0.101, Dst: 192.168.0.1

User Datagram Protocol, Src Port: 6858, Dst Port: 53

Domain Name System (query)

Transaction ID: 0x00f6

[Expert Info (Warning/Protocol): DNS query retransmission. Original request in frame 33]

Flags: 0x0100 Standard query

0... .... .... .... = Response: Message is a query

.000 0... .... .... = Opcode: Standard query (0)

.... ..0. .... .... = Truncated: Message is not truncated

.... ...1 .... .... = Recursion desired: Do query recursively

.... .... .0.. .... = Z: reserved (0)

.... .... ...0 .... = Non-authenticated data: Unacceptable

Questions: 1

Answer RRs: 0

Authority RRs: 0

Additional RRs: 0

Queries

www.ietf.org: type A, class IN

[Retransmitted request. Original request in: 33]

[Retransmission: True]

No. Time Source Destination Protocol Length Info

37 2.389594 192.168.0.1 192.168.0.101 DNS 149 Standard query response 0x00f6 A www.ietf.org CNAME www.ietf.org.cdn.cloudflare.net A 104.20.1.85 A 104.20.0.85

Frame 37: 149 bytes on wire (1192 bits), 149 bytes captured (1192 bits) on interface \Device\NPF\_{B00D5FF3-E366-47DF-A1CA-F139AE16F5AE}, id 0

Ethernet II, Src: Tp-LinkT\_34:cf:c2 (c0:4a:00:34:cf:c2), Dst: 12:b3:18:08:af:dd (12:b3:18:08:af:dd)

Internet Protocol Version 4, Src: 192.168.0.1, Dst: 192.168.0.101

User Datagram Protocol, Src Port: 53, Dst Port: 6858

Domain Name System (response)

Transaction ID: 0x00f6

Flags: 0x8180 Standard query response, No error

1... .... .... .... = Response: Message is a response

.000 0... .... .... = Opcode: Standard query (0)

.... .0.. .... .... = Authoritative: Server is not an authority for domain

.... ..0. .... .... = Truncated: Message is not truncated

.... ...1 .... .... = Recursion desired: Do query recursively

.... .... 1... .... = Recursion available: Server can do recursive queries

.... .... .0.. .... = Z: reserved (0)

.... .... ..0. .... = Answer authenticated: Answer/authority portion was not authenticated by the server

.... .... ...0 .... = Non-authenticated data: Unacceptable

.... .... .... 0000 = Reply code: No error (0)

Questions: 1

Answer RRs: 3

Authority RRs: 0

Additional RRs: 0

Queries

www.ietf.org: type A, class IN

Answers

www.ietf.org: type CNAME, class IN, cname www.ietf.org.cdn.cloudflare.net

www.ietf.org.cdn.cloudflare.net: type A, class IN, addr 104.20.1.85

www.ietf.org.cdn.cloudflare.net: type A, class IN, addr 104.20.0.85

[Request In: 33]

[Time: 0.233068000 seconds]

No. Time Source Destination Protocol Length Info

38 2.389595 192.168.0.1 192.168.0.101 DNS 149 Standard query response 0x00f6 A www.ietf.org CNAME www.ietf.org.cdn.cloudflare.net A 104.20.1.85 A 104.20.0.85

Frame 38: 149 bytes on wire (1192 bits), 149 bytes captured (1192 bits) on interface \Device\NPF\_{B00D5FF3-E366-47DF-A1CA-F139AE16F5AE}, id 0

Ethernet II, Src: Tp-LinkT\_34:cf:c2 (c0:4a:00:34:cf:c2), Dst: 12:b3:18:08:af:dd (12:b3:18:08:af:dd)

Internet Protocol Version 4, Src: 192.168.0.1, Dst: 192.168.0.101

User Datagram Protocol, Src Port: 53, Dst Port: 6858

Domain Name System (response)

Transaction ID: 0x00f6

[Expert Info (Warning/Protocol): DNS response retransmission. Original response in frame 37]

Flags: 0x8180 Standard query response, No error

1... .... .... .... = Response: Message is a response

.000 0... .... .... = Opcode: Standard query (0)

.... .0.. .... .... = Authoritative: Server is not an authority for domain

.... ..0. .... .... = Truncated: Message is not truncated

.... ...1 .... .... = Recursion desired: Do query recursively

.... .... 1... .... = Recursion available: Server can do recursive queries

.... .... .0.. .... = Z: reserved (0)

.... .... ..0. .... = Answer authenticated: Answer/authority portion was not authenticated by the server

.... .... ...0 .... = Non-authenticated data: Unacceptable

.... .... .... 0000 = Reply code: No error (0)

Questions: 1

Answer RRs: 3

Authority RRs: 0

Additional RRs: 0

Queries

www.ietf.org: type A, class IN

Answers

www.ietf.org: type CNAME, class IN, cname www.ietf.org.cdn.cloudflare.net

www.ietf.org.cdn.cloudflare.net: type A, class IN, addr 104.20.1.85

www.ietf.org.cdn.cloudflare.net: type A, class IN, addr 104.20.0.85

[Retransmitted response. Original response in: 37]

[Retransmission: True]

**Пакети для відповідей 7-10**

No. Time Source Destination Protocol Length Info

36 7.576368 192.168.0.103 192.168.0.1 DNS 84 Standard query 0x0001 PTR 1.0.168.192.in-addr.arpa

Frame 36: 84 bytes on wire (672 bits), 84 bytes captured (672 bits) on interface \Device\NPF\_{B00D5FF3-E366-47DF-A1CA-F139AE16F5AE}, id 0

Ethernet II, Src: 92:a8:43:5f:64:b6 (92:a8:43:5f:64:b6), Dst: Tp-LinkT\_34:cf:c2 (c0:4a:00:34:cf:c2)

Internet Protocol Version 4, Src: 192.168.0.103, Dst: 192.168.0.1

User Datagram Protocol, Src Port: 1033, Dst Port: 53

Domain Name System (query)

Transaction ID: 0x0001

Flags: 0x0100 Standard query

Questions: 1

Answer RRs: 0

Authority RRs: 0

Additional RRs: 0

Queries

1.0.168.192.in-addr.arpa: type PTR, class IN

Name: 1.0.168.192.in-addr.arpa

[Name Length: 24]

[Label Count: 6]

Type: PTR (domain name PoinTeR) (12)

Class: IN (0x0001)

[Response In: 37]

No. Time Source Destination Protocol Length Info

37 7.578342 192.168.0.1 192.168.0.103 DNS 133 Standard query response 0x0001 No such name PTR 1.0.168.192.in-addr.arpa SOA localhost

Frame 37: 133 bytes on wire (1064 bits), 133 bytes captured (1064 bits) on interface \Device\NPF\_{B00D5FF3-E366-47DF-A1CA-F139AE16F5AE}, id 0

Ethernet II, Src: Tp-LinkT\_34:cf:c2 (c0:4a:00:34:cf:c2), Dst: 92:a8:43:5f:64:b6 (92:a8:43:5f:64:b6)

Internet Protocol Version 4, Src: 192.168.0.1, Dst: 192.168.0.103

User Datagram Protocol, Src Port: 53, Dst Port: 1033

Domain Name System (response)

Transaction ID: 0x0001

Flags: 0x8183 Standard query response, No such name

Questions: 1

Answer RRs: 0

Authority RRs: 1

Additional RRs: 0

Queries

1.0.168.192.in-addr.arpa: type PTR, class IN

Name: 1.0.168.192.in-addr.arpa

[Name Length: 24]

[Label Count: 6]

Type: PTR (domain name PoinTeR) (12)

Class: IN (0x0001)

Authoritative nameservers

168.192.in-addr.arpa: type SOA, class IN, mname localhost

Name: 168.192.in-addr.arpa

Type: SOA (Start Of a zone of Authority) (6)

Class: IN (0x0001)

Time to live: 5 (5 seconds)

Data length: 37

Primary name server: localhost

Responsible authority's mailbox: root

Serial Number: 1

Refresh Interval: 604800 (7 days)

Retry Interval: 86400 (1 day)

Expire limit: 2419200 (28 days)

Minimum TTL: 604800 (7 days)

[Request In: 36]

[Time: 0.001974000 seconds]

No. Time Source Destination Protocol Length Info

38 7.579268 192.168.0.103 192.168.0.1 DNS 71 Standard query 0x0002 A www.mit.edu

Frame 38: 71 bytes on wire (568 bits), 71 bytes captured (568 bits) on interface \Device\NPF\_{B00D5FF3-E366-47DF-A1CA-F139AE16F5AE}, id 0

Ethernet II, Src: 92:a8:43:5f:64:b6 (92:a8:43:5f:64:b6), Dst: Tp-LinkT\_34:cf:c2 (c0:4a:00:34:cf:c2)

Internet Protocol Version 4, Src: 192.168.0.103, Dst: 192.168.0.1

User Datagram Protocol, Src Port: 1044, Dst Port: 53

Domain Name System (query)

Transaction ID: 0x0002

Flags: 0x0100 Standard query

Questions: 1

Answer RRs: 0

Authority RRs: 0

Additional RRs: 0

Queries

www.mit.edu: type A, class IN

Name: www.mit.edu

[Name Length: 11]

[Label Count: 3]

Type: A (Host Address) (1)

Class: IN (0x0001)

[Response In: 39]

No. Time Source Destination Protocol Length Info

39 7.626000 192.168.0.1 192.168.0.103 DNS 160 Standard query response 0x0002 A www.mit.edu CNAME www.mit.edu.edgekey.net CNAME e9566.dscb.akamaiedge.net A 23.9.14.138

Frame 39: 160 bytes on wire (1280 bits), 160 bytes captured (1280 bits) on interface \Device\NPF\_{B00D5FF3-E366-47DF-A1CA-F139AE16F5AE}, id 0

Ethernet II, Src: Tp-LinkT\_34:cf:c2 (c0:4a:00:34:cf:c2), Dst: 92:a8:43:5f:64:b6 (92:a8:43:5f:64:b6)

Internet Protocol Version 4, Src: 192.168.0.1, Dst: 192.168.0.103

User Datagram Protocol, Src Port: 53, Dst Port: 1044

Domain Name System (response)

Transaction ID: 0x0002

Flags: 0x8180 Standard query response, No error

Questions: 1

Answer RRs: 3

Authority RRs: 0

Additional RRs: 0

Queries

www.mit.edu: type A, class IN

Name: www.mit.edu

[Name Length: 11]

[Label Count: 3]

Type: A (Host Address) (1)

Class: IN (0x0001)

Answers

www.mit.edu: type CNAME, class IN, cname www.mit.edu.edgekey.net

Name: www.mit.edu

Type: CNAME (Canonical NAME for an alias) (5)

Class: IN (0x0001)

Time to live: 1800 (30 minutes)

Data length: 25

CNAME: www.mit.edu.edgekey.net

www.mit.edu.edgekey.net: type CNAME, class IN, cname e9566.dscb.akamaiedge.net

Name: www.mit.edu.edgekey.net

Type: CNAME (Canonical NAME for an alias) (5)

Class: IN (0x0001)

Time to live: 35 (35 seconds)

Data length: 24

CNAME: e9566.dscb.akamaiedge.net

e9566.dscb.akamaiedge.net: type A, class IN, addr 23.9.14.138

Name: e9566.dscb.akamaiedge.net

Type: A (Host Address) (1)

Class: IN (0x0001)

Time to live: 20 (20 seconds)

Data length: 4

Address: 23.9.14.138

[Request In: 38]

[Time: 0.046732000 seconds]

No. Time Source Destination Protocol Length Info

40 7.629161 192.168.0.103 192.168.0.1 DNS 71 Standard query 0x0003 AAAA www.mit.edu

Frame 40: 71 bytes on wire (568 bits), 71 bytes captured (568 bits) on interface \Device\NPF\_{B00D5FF3-E366-47DF-A1CA-F139AE16F5AE}, id 0

Ethernet II, Src: 92:a8:43:5f:64:b6 (92:a8:43:5f:64:b6), Dst: Tp-LinkT\_34:cf:c2 (c0:4a:00:34:cf:c2)

Internet Protocol Version 4, Src: 192.168.0.103, Dst: 192.168.0.1

User Datagram Protocol, Src Port: 1045, Dst Port: 53

Domain Name System (query)

Transaction ID: 0x0003

Flags: 0x0100 Standard query

Questions: 1

Answer RRs: 0

Authority RRs: 0

Additional RRs: 0

Queries

www.mit.edu: type AAAA, class IN

Name: www.mit.edu

[Name Length: 11]

[Label Count: 3]

Type: AAAA (IPv6 Address) (28)

Class: IN (0x0001)

[Response In: 41]

No. Time Source Destination Protocol Length Info

41 7.645581 192.168.0.1 192.168.0.103 DNS 200 Standard query response 0x0003 AAAA www.mit.edu CNAME www.mit.edu.edgekey.net CNAME e9566.dscb.akamaiedge.net AAAA 2a02:26f0:d200:191::255e AAAA 2a02:26f0:d200:19e::255e

Frame 41: 200 bytes on wire (1600 bits), 200 bytes captured (1600 bits) on interface \Device\NPF\_{B00D5FF3-E366-47DF-A1CA-F139AE16F5AE}, id 0

Ethernet II, Src: Tp-LinkT\_34:cf:c2 (c0:4a:00:34:cf:c2), Dst: 92:a8:43:5f:64:b6 (92:a8:43:5f:64:b6)

Internet Protocol Version 4, Src: 192.168.0.1, Dst: 192.168.0.103

User Datagram Protocol, Src Port: 53, Dst Port: 1045

Domain Name System (response)

Transaction ID: 0x0003

Flags: 0x8180 Standard query response, No error

Questions: 1

Answer RRs: 4

Authority RRs: 0

Additional RRs: 0

Queries

www.mit.edu: type AAAA, class IN

Name: www.mit.edu

[Name Length: 11]

[Label Count: 3]

Type: AAAA (IPv6 Address) (28)

Class: IN (0x0001)

Answers

www.mit.edu: type CNAME, class IN, cname www.mit.edu.edgekey.net

Name: www.mit.edu

Type: CNAME (Canonical NAME for an alias) (5)

Class: IN (0x0001)

Time to live: 1800 (30 minutes)

Data length: 25

CNAME: www.mit.edu.edgekey.net

www.mit.edu.edgekey.net: type CNAME, class IN, cname e9566.dscb.akamaiedge.net

Name: www.mit.edu.edgekey.net

Type: CNAME (Canonical NAME for an alias) (5)

Class: IN (0x0001)

Time to live: 35 (35 seconds)

Data length: 24

CNAME: e9566.dscb.akamaiedge.net

e9566.dscb.akamaiedge.net: type AAAA, class IN, addr 2a02:26f0:d200:191::255e

Name: e9566.dscb.akamaiedge.net

Type: AAAA (IPv6 Address) (28)

Class: IN (0x0001)

Time to live: 20 (20 seconds)

Data length: 16

AAAA Address: 2a02:26f0:d200:191::255e

e9566.dscb.akamaiedge.net: type AAAA, class IN, addr 2a02:26f0:d200:19e::255e

Name: e9566.dscb.akamaiedge.net

Type: AAAA (IPv6 Address) (28)

Class: IN (0x0001)

Time to live: 20 (20 seconds)

Data length: 16

AAAA Address: 2a02:26f0:d200:19e::255e

[Request In: 40]

[Time: 0.016420000 seconds]

**Пакети для відповідей 11-13**

No. Time Source Destination Protocol Length Info

11 3.053804 192.168.0.103 192.168.0.1 DNS 84 Standard query 0x0001 PTR 1.0.168.192.in-addr.arpa

Frame 11: 84 bytes on wire (672 bits), 84 bytes captured (672 bits) on interface \Device\NPF\_{B00D5FF3-E366-47DF-A1CA-F139AE16F5AE}, id 0

Ethernet II, Src: 92:a8:43:5f:64:b6 (92:a8:43:5f:64:b6), Dst: Tp-LinkT\_34:cf:c2 (c0:4a:00:34:cf:c2)

Internet Protocol Version 4, Src: 192.168.0.103, Dst: 192.168.0.1

User Datagram Protocol, Src Port: 1046, Dst Port: 53

Domain Name System (query)

Transaction ID: 0x0001

Flags: 0x0100 Standard query

Questions: 1

Answer RRs: 0

Authority RRs: 0

Additional RRs: 0

Queries

1.0.168.192.in-addr.arpa: type PTR, class IN

Name: 1.0.168.192.in-addr.arpa

[Name Length: 24]

[Label Count: 6]

Type: PTR (domain name PoinTeR) (12)

Class: IN (0x0001)

[Response In: 12]

No. Time Source Destination Protocol Length Info

12 3.058470 192.168.0.1 192.168.0.103 DNS 133 Standard query response 0x0001 No such name PTR 1.0.168.192.in-addr.arpa SOA localhost

Frame 12: 133 bytes on wire (1064 bits), 133 bytes captured (1064 bits) on interface \Device\NPF\_{B00D5FF3-E366-47DF-A1CA-F139AE16F5AE}, id 0

Ethernet II, Src: Tp-LinkT\_34:cf:c2 (c0:4a:00:34:cf:c2), Dst: 92:a8:43:5f:64:b6 (92:a8:43:5f:64:b6)

Internet Protocol Version 4, Src: 192.168.0.1, Dst: 192.168.0.103

User Datagram Protocol, Src Port: 53, Dst Port: 1046

Domain Name System (response)

Transaction ID: 0x0001

Flags: 0x8183 Standard query response, No such name

Questions: 1

Answer RRs: 0

Authority RRs: 1

Additional RRs: 0

Queries

1.0.168.192.in-addr.arpa: type PTR, class IN

Name: 1.0.168.192.in-addr.arpa

[Name Length: 24]

[Label Count: 6]

Type: PTR (domain name PoinTeR) (12)

Class: IN (0x0001)

Authoritative nameservers

168.192.in-addr.arpa: type SOA, class IN, mname localhost

Name: 168.192.in-addr.arpa

Type: SOA (Start Of a zone of Authority) (6)

Class: IN (0x0001)

Time to live: 30 (30 seconds)

Data length: 37

Primary name server: localhost

Responsible authority's mailbox: root

Serial Number: 1

Refresh Interval: 604800 (7 days)

Retry Interval: 86400 (1 day)

Expire limit: 2419200 (28 days)

Minimum TTL: 604800 (7 days)

[Request In: 11]

[Time: 0.004666000 seconds]

No. Time Source Destination Protocol Length Info

13 3.059366 192.168.0.103 192.168.0.1 DNS 67 Standard query 0x0002 NS mit.edu

Frame 13: 67 bytes on wire (536 bits), 67 bytes captured (536 bits) on interface \Device\NPF\_{B00D5FF3-E366-47DF-A1CA-F139AE16F5AE}, id 0

Ethernet II, Src: 92:a8:43:5f:64:b6 (92:a8:43:5f:64:b6), Dst: Tp-LinkT\_34:cf:c2 (c0:4a:00:34:cf:c2)

Internet Protocol Version 4, Src: 192.168.0.103, Dst: 192.168.0.1

User Datagram Protocol, Src Port: 1047, Dst Port: 53

Domain Name System (query)

Transaction ID: 0x0002

Flags: 0x0100 Standard query

Questions: 1

Answer RRs: 0

Authority RRs: 0

Additional RRs: 0

Queries

mit.edu: type NS, class IN

Name: mit.edu

[Name Length: 7]

[Label Count: 2]

Type: NS (authoritative Name Server) (2)

Class: IN (0x0001)

[Response In: 14]

No. Time Source Destination Protocol Length Info

14 3.061287 192.168.0.1 192.168.0.103 DNS 234 Standard query response 0x0002 NS mit.edu NS ns1-37.akam.net NS asia2.akam.net NS asia1.akam.net NS eur5.akam.net NS usw2.akam.net NS use2.akam.net NS ns1-173.akam.net NS use5.akam.net

Frame 14: 234 bytes on wire (1872 bits), 234 bytes captured (1872 bits) on interface \Device\NPF\_{B00D5FF3-E366-47DF-A1CA-F139AE16F5AE}, id 0

Ethernet II, Src: Tp-LinkT\_34:cf:c2 (c0:4a:00:34:cf:c2), Dst: 92:a8:43:5f:64:b6 (92:a8:43:5f:64:b6)

Internet Protocol Version 4, Src: 192.168.0.1, Dst: 192.168.0.103

User Datagram Protocol, Src Port: 53, Dst Port: 1047

Domain Name System (response)

Transaction ID: 0x0002

Flags: 0x8180 Standard query response, No error

Questions: 1

Answer RRs: 8

Authority RRs: 0

Additional RRs: 0

Queries

mit.edu: type NS, class IN

Name: mit.edu

[Name Length: 7]

[Label Count: 2]

Type: NS (authoritative Name Server) (2)

Class: IN (0x0001)

Answers

mit.edu: type NS, class IN, ns ns1-37.akam.net

Name: mit.edu

Type: NS (authoritative Name Server) (2)

Class: IN (0x0001)

Time to live: 902 (15 minutes, 2 seconds)

Data length: 17

Name Server: ns1-37.akam.net

mit.edu: type NS, class IN, ns asia2.akam.net

Name: mit.edu

Type: NS (authoritative Name Server) (2)

Class: IN (0x0001)

Time to live: 902 (15 minutes, 2 seconds)

Data length: 8

Name Server: asia2.akam.net

mit.edu: type NS, class IN, ns asia1.akam.net

Name: mit.edu

Type: NS (authoritative Name Server) (2)

Class: IN (0x0001)

Time to live: 902 (15 minutes, 2 seconds)

Data length: 8

Name Server: asia1.akam.net

mit.edu: type NS, class IN, ns eur5.akam.net

Name: mit.edu

Type: NS (authoritative Name Server) (2)

Class: IN (0x0001)

Time to live: 902 (15 minutes, 2 seconds)

Data length: 7

Name Server: eur5.akam.net

mit.edu: type NS, class IN, ns usw2.akam.net

Name: mit.edu

Type: NS (authoritative Name Server) (2)

Class: IN (0x0001)

Time to live: 902 (15 minutes, 2 seconds)

Data length: 7

Name Server: usw2.akam.net

mit.edu: type NS, class IN, ns use2.akam.net

Name: mit.edu

Type: NS (authoritative Name Server) (2)

Class: IN (0x0001)

Time to live: 902 (15 minutes, 2 seconds)

Data length: 7

Name Server: use2.akam.net

mit.edu: type NS, class IN, ns ns1-173.akam.net

Name: mit.edu

Type: NS (authoritative Name Server) (2)

Class: IN (0x0001)

Time to live: 902 (15 minutes, 2 seconds)

Data length: 10

Name Server: ns1-173.akam.net

mit.edu: type NS, class IN, ns use5.akam.net

Name: mit.edu

Type: NS (authoritative Name Server) (2)

Class: IN (0x0001)

Time to live: 902 (15 minutes, 2 seconds)

Data length: 7

Name Server: use5.akam.net

[Request In: 13]

[Time: 0.001921000 seconds]

No. Time Source Destination Protocol Length Info

15 3.317423 192.168.0.103 192.168.0.1 DNS 79 Standard query 0xa536 A clients6.google.com

Frame 15: 79 bytes on wire (632 bits), 79 bytes captured (632 bits) on interface \Device\NPF\_{B00D5FF3-E366-47DF-A1CA-F139AE16F5AE}, id 0

Ethernet II, Src: 92:a8:43:5f:64:b6 (92:a8:43:5f:64:b6), Dst: Tp-LinkT\_34:cf:c2 (c0:4a:00:34:cf:c2)

Internet Protocol Version 4, Src: 192.168.0.103, Dst: 192.168.0.1

User Datagram Protocol, Src Port: 31720, Dst Port: 53

Domain Name System (query)

Transaction ID: 0xa536

Flags: 0x0100 Standard query

Questions: 1

Answer RRs: 0

Authority RRs: 0

Additional RRs: 0

Queries

clients6.google.com: type A, class IN

Name: clients6.google.com

[Name Length: 19]

[Label Count: 3]

Type: A (Host Address) (1)

Class: IN (0x0001)

[Response In: 16]

No. Time Source Destination Protocol Length Info

16 3.319421 192.168.0.1 192.168.0.103 DNS 119 Standard query response 0xa536 A clients6.google.com CNAME clients.l.google.com A 216.58.215.78

Frame 16: 119 bytes on wire (952 bits), 119 bytes captured (952 bits) on interface \Device\NPF\_{B00D5FF3-E366-47DF-A1CA-F139AE16F5AE}, id 0

Ethernet II, Src: Tp-LinkT\_34:cf:c2 (c0:4a:00:34:cf:c2), Dst: 92:a8:43:5f:64:b6 (92:a8:43:5f:64:b6)

Internet Protocol Version 4, Src: 192.168.0.1, Dst: 192.168.0.103

User Datagram Protocol, Src Port: 53, Dst Port: 31720

Domain Name System (response)

Transaction ID: 0xa536

Flags: 0x8180 Standard query response, No error

Questions: 1

Answer RRs: 2

Authority RRs: 0

Additional RRs: 0

Queries

clients6.google.com: type A, class IN

Name: clients6.google.com

[Name Length: 19]

[Label Count: 3]

Type: A (Host Address) (1)

Class: IN (0x0001)

Answers

clients6.google.com: type CNAME, class IN, cname clients.l.google.com

Name: clients6.google.com

Type: CNAME (Canonical NAME for an alias) (5)

Class: IN (0x0001)

Time to live: 165 (2 minutes, 45 seconds)

Data length: 12

CNAME: clients.l.google.com

clients.l.google.com: type A, class IN, addr 216.58.215.78

Name: clients.l.google.com

Type: A (Host Address) (1)

Class: IN (0x0001)

Time to live: 165 (2 minutes, 45 seconds)

Data length: 4

Address: 216.58.215.78

[Request In: 15]

[Time: 0.001998000 seconds]

No. Time Source Destination Protocol Length Info

39 5.314430 192.168.0.103 192.168.0.1 DNS 106 Standard query 0xa9a9 A catalog-public-service-prod06.ol.epicgames.com

Frame 39: 106 bytes on wire (848 bits), 106 bytes captured (848 bits) on interface \Device\NPF\_{B00D5FF3-E366-47DF-A1CA-F139AE16F5AE}, id 0

Ethernet II, Src: 92:a8:43:5f:64:b6 (92:a8:43:5f:64:b6), Dst: Tp-LinkT\_34:cf:c2 (c0:4a:00:34:cf:c2)

Internet Protocol Version 4, Src: 192.168.0.103, Dst: 192.168.0.1

User Datagram Protocol, Src Port: 28191, Dst Port: 53

Domain Name System (query)

Transaction ID: 0xa9a9

Flags: 0x0100 Standard query

Questions: 1

Answer RRs: 0

Authority RRs: 0

Additional RRs: 0

Queries

catalog-public-service-prod06.ol.epicgames.com: type A, class IN

Name: catalog-public-service-prod06.ol.epicgames.com

[Name Length: 46]

[Label Count: 4]

Type: A (Host Address) (1)

Class: IN (0x0001)

[Response In: 40]

No. Time Source Destination Protocol Length Info

40 5.316622 192.168.0.1 192.168.0.103 DNS 307 Standard query response 0xa9a9 A catalog-public-service-prod06.ol.epicgames.com CNAME catalogv2-svc-prod06-pub-772318179.us-east-1.elb.amazonaws.com A 54.158.230.97 A 52.20.3.255 A 35.174.163.193 A 35.171.214.220 A 54.82.245.68 A 52.54.29.61 A 52.5.166.101 A 18.211.165.162

Frame 40: 307 bytes on wire (2456 bits), 307 bytes captured (2456 bits) on interface \Device\NPF\_{B00D5FF3-E366-47DF-A1CA-F139AE16F5AE}, id 0

Ethernet II, Src: Tp-LinkT\_34:cf:c2 (c0:4a:00:34:cf:c2), Dst: 92:a8:43:5f:64:b6 (92:a8:43:5f:64:b6)

Internet Protocol Version 4, Src: 192.168.0.1, Dst: 192.168.0.103

User Datagram Protocol, Src Port: 53, Dst Port: 28191

Domain Name System (response)

Transaction ID: 0xa9a9

Flags: 0x8180 Standard query response, No error

Questions: 1

Answer RRs: 9

Authority RRs: 0

Additional RRs: 0

Queries

catalog-public-service-prod06.ol.epicgames.com: type A, class IN

Name: catalog-public-service-prod06.ol.epicgames.com

[Name Length: 46]

[Label Count: 4]

Type: A (Host Address) (1)

Class: IN (0x0001)

Answers

catalog-public-service-prod06.ol.epicgames.com: type CNAME, class IN, cname catalogv2-svc-prod06-pub-772318179.us-east-1.elb.amazonaws.com

Name: catalog-public-service-prod06.ol.epicgames.com

Type: CNAME (Canonical NAME for an alias) (5)

Class: IN (0x0001)

Time to live: 121 (2 minutes, 1 second)

Data length: 61

CNAME: catalogv2-svc-prod06-pub-772318179.us-east-1.elb.amazonaws.com

catalogv2-svc-prod06-pub-772318179.us-east-1.elb.amazonaws.com: type A, class IN, addr 54.158.230.97

Name: catalogv2-svc-prod06-pub-772318179.us-east-1.elb.amazonaws.com

Type: A (Host Address) (1)

Class: IN (0x0001)

Time to live: 5 (5 seconds)

Data length: 4

Address: 54.158.230.97

catalogv2-svc-prod06-pub-772318179.us-east-1.elb.amazonaws.com: type A, class IN, addr 52.20.3.255

Name: catalogv2-svc-prod06-pub-772318179.us-east-1.elb.amazonaws.com

Type: A (Host Address) (1)

Class: IN (0x0001)

Time to live: 5 (5 seconds)

Data length: 4

Address: 52.20.3.255

catalogv2-svc-prod06-pub-772318179.us-east-1.elb.amazonaws.com: type A, class IN, addr 35.174.163.193

Name: catalogv2-svc-prod06-pub-772318179.us-east-1.elb.amazonaws.com

Type: A (Host Address) (1)

Class: IN (0x0001)

Time to live: 5 (5 seconds)

Data length: 4

Address: 35.174.163.193

catalogv2-svc-prod06-pub-772318179.us-east-1.elb.amazonaws.com: type A, class IN, addr 35.171.214.220

Name: catalogv2-svc-prod06-pub-772318179.us-east-1.elb.amazonaws.com

Type: A (Host Address) (1)

Class: IN (0x0001)

Time to live: 5 (5 seconds)

Data length: 4

Address: 35.171.214.220

catalogv2-svc-prod06-pub-772318179.us-east-1.elb.amazonaws.com: type A, class IN, addr 54.82.245.68

Name: catalogv2-svc-prod06-pub-772318179.us-east-1.elb.amazonaws.com

Type: A (Host Address) (1)

Class: IN (0x0001)

Time to live: 5 (5 seconds)

Data length: 4

Address: 54.82.245.68

catalogv2-svc-prod06-pub-772318179.us-east-1.elb.amazonaws.com: type A, class IN, addr 52.54.29.61

Name: catalogv2-svc-prod06-pub-772318179.us-east-1.elb.amazonaws.com

Type: A (Host Address) (1)

Class: IN (0x0001)

Time to live: 5 (5 seconds)

Data length: 4

Address: 52.54.29.61

catalogv2-svc-prod06-pub-772318179.us-east-1.elb.amazonaws.com: type A, class IN, addr 52.5.166.101

Name: catalogv2-svc-prod06-pub-772318179.us-east-1.elb.amazonaws.com

Type: A (Host Address) (1)

Class: IN (0x0001)

Time to live: 5 (5 seconds)

Data length: 4

Address: 52.5.166.101

catalogv2-svc-prod06-pub-772318179.us-east-1.elb.amazonaws.com: type A, class IN, addr 18.211.165.162

Name: catalogv2-svc-prod06-pub-772318179.us-east-1.elb.amazonaws.com

Type: A (Host Address) (1)

Class: IN (0x0001)

Time to live: 5 (5 seconds)

Data length: 4

Address: 18.211.165.162

[Request In: 39]

[Time: 0.002192000 seconds]]

**Пакети для відповідей 14-16**

No. Time Source Destination Protocol Length Info

11 1.988600 192.168.0.103 192.168.0.1 DNS 73 Standard query 0xc7b3 A bitsy.mit.edu

Frame 11: 73 bytes on wire (584 bits), 73 bytes captured (584 bits) on interface \Device\NPF\_{B00D5FF3-E366-47DF-A1CA-F139AE16F5AE}, id 0

Ethernet II, Src: 92:a8:43:5f:64:b6 (92:a8:43:5f:64:b6), Dst: Tp-LinkT\_34:cf:c2 (c0:4a:00:34:cf:c2)

Internet Protocol Version 4, Src: 192.168.0.103, Dst: 192.168.0.1

User Datagram Protocol, Src Port: 1025, Dst Port: 53

Domain Name System (query)

Transaction ID: 0xc7b3

Flags: 0x0100 Standard query

Questions: 1

Answer RRs: 0

Authority RRs: 0

Additional RRs: 0

Queries

bitsy.mit.edu: type A, class IN

Name: bitsy.mit.edu

[Name Length: 13]

[Label Count: 3]

Type: A (Host Address) (1)

Class: IN (0x0001)

[Response In: 13]

No. Time Source Destination Protocol Length Info

12 2.014317 192.168.0.103 192.168.0.1 DNS 73 Standard query 0xc7b3 A bitsy.mit.edu

Frame 12: 73 bytes on wire (584 bits), 73 bytes captured (584 bits) on interface \Device\NPF\_{B00D5FF3-E366-47DF-A1CA-F139AE16F5AE}, id 0

Ethernet II, Src: 92:a8:43:5f:64:b6 (92:a8:43:5f:64:b6), Dst: Tp-LinkT\_34:cf:c2 (c0:4a:00:34:cf:c2)

Internet Protocol Version 4, Src: 192.168.0.103, Dst: 192.168.0.1

User Datagram Protocol, Src Port: 1025, Dst Port: 53

Domain Name System (query)

Transaction ID: 0xc7b3

[Expert Info (Warning/Protocol): DNS query retransmission. Original request in frame 11]

Flags: 0x0100 Standard query

Questions: 1

Answer RRs: 0

Authority RRs: 0

Additional RRs: 0

Queries

bitsy.mit.edu: type A, class IN

Name: bitsy.mit.edu

[Name Length: 13]

[Label Count: 3]

Type: A (Host Address) (1)

Class: IN (0x0001)

[Retransmitted request. Original request in: 11]

[Retransmission: True]

No. Time Source Destination Protocol Length Info

13 2.022430 192.168.0.1 192.168.0.103 DNS 89 Standard query response 0xc7b3 A bitsy.mit.edu A 18.0.72.3

Frame 13: 89 bytes on wire (712 bits), 89 bytes captured (712 bits) on interface \Device\NPF\_{B00D5FF3-E366-47DF-A1CA-F139AE16F5AE}, id 0

Ethernet II, Src: Tp-LinkT\_34:cf:c2 (c0:4a:00:34:cf:c2), Dst: 92:a8:43:5f:64:b6 (92:a8:43:5f:64:b6)

Internet Protocol Version 4, Src: 192.168.0.1, Dst: 192.168.0.103

User Datagram Protocol, Src Port: 53, Dst Port: 1025

Domain Name System (response)

Transaction ID: 0xc7b3

Flags: 0x8180 Standard query response, No error

Questions: 1

Answer RRs: 1

Authority RRs: 0

Additional RRs: 0

Queries

bitsy.mit.edu: type A, class IN

Name: bitsy.mit.edu

[Name Length: 13]

[Label Count: 3]

Type: A (Host Address) (1)

Class: IN (0x0001)

Answers

bitsy.mit.edu: type A, class IN, addr 18.0.72.3

Name: bitsy.mit.edu

Type: A (Host Address) (1)

Class: IN (0x0001)

Time to live: 1800 (30 minutes)

Data length: 4

Address: 18.0.72.3

[Request In: 11]

[Time: 0.033830000 seconds]

No. Time Source Destination Protocol Length Info

14 2.024212 192.168.0.103 18.0.72.3 DNS 82 Standard query 0x0001 PTR 3.72.0.18.in-addr.arpa

Frame 14: 82 bytes on wire (656 bits), 82 bytes captured (656 bits) on interface \Device\NPF\_{B00D5FF3-E366-47DF-A1CA-F139AE16F5AE}, id 0

Ethernet II, Src: 92:a8:43:5f:64:b6 (92:a8:43:5f:64:b6), Dst: Tp-LinkT\_34:cf:c2 (c0:4a:00:34:cf:c2)

Internet Protocol Version 4, Src: 192.168.0.103, Dst: 18.0.72.3

User Datagram Protocol, Src Port: 1033, Dst Port: 53

Domain Name System (query)

Transaction ID: 0x0001

Flags: 0x0100 Standard query

Questions: 1

Answer RRs: 0

Authority RRs: 0

Additional RRs: 0

Queries

3.72.0.18.in-addr.arpa: type PTR, class IN

Name: 3.72.0.18.in-addr.arpa

[Name Length: 22]

[Label Count: 6]

Type: PTR (domain name PoinTeR) (12)

Class: IN (0x0001)

No. Time Source Destination Protocol Length Info

16 2.048388 192.168.0.1 192.168.0.103 DNS 89 Standard query response 0xc7b3 A bitsy.mit.edu A 18.0.72.3

Frame 16: 89 bytes on wire (712 bits), 89 bytes captured (712 bits) on interface \Device\NPF\_{B00D5FF3-E366-47DF-A1CA-F139AE16F5AE}, id 0

Ethernet II, Src: Tp-LinkT\_34:cf:c2 (c0:4a:00:34:cf:c2), Dst: 92:a8:43:5f:64:b6 (92:a8:43:5f:64:b6)

Internet Protocol Version 4, Src: 192.168.0.1, Dst: 192.168.0.103

User Datagram Protocol, Src Port: 53, Dst Port: 1025

Domain Name System (response)

Transaction ID: 0xc7b3

[Expert Info (Warning/Protocol): DNS response retransmission. Original response in frame 13]

Flags: 0x8180 Standard query response, No error

Questions: 1

Answer RRs: 1

Authority RRs: 0

Additional RRs: 0

Queries

bitsy.mit.edu: type A, class IN

Name: bitsy.mit.edu

[Name Length: 13]

[Label Count: 3]

Type: A (Host Address) (1)

Class: IN (0x0001)

Answers

bitsy.mit.edu: type A, class IN, addr 18.0.72.3

Name: bitsy.mit.edu

Type: A (Host Address) (1)

Class: IN (0x0001)

Time to live: 1800 (30 minutes)

Data length: 4

Address: 18.0.72.3

[Retransmitted response. Original response in: 13]

[Retransmission: True]

No. Time Source Destination Protocol Length Info

36 4.029887 192.168.0.103 18.0.72.3 DNS 74 Standard query 0x0002 A www.aiit.or.kr

Frame 36: 74 bytes on wire (592 bits), 74 bytes captured (592 bits) on interface \Device\NPF\_{B00D5FF3-E366-47DF-A1CA-F139AE16F5AE}, id 0

Ethernet II, Src: 92:a8:43:5f:64:b6 (92:a8:43:5f:64:b6), Dst: Tp-LinkT\_34:cf:c2 (c0:4a:00:34:cf:c2)

Internet Protocol Version 4, Src: 192.168.0.103, Dst: 18.0.72.3

User Datagram Protocol, Src Port: 1044, Dst Port: 53

Domain Name System (query)

Transaction ID: 0x0002

Flags: 0x0100 Standard query

Questions: 1

Answer RRs: 0

Authority RRs: 0

Additional RRs: 0

Queries

www.aiit.or.kr: type A, class IN

Name: www.aiit.or.kr

[Name Length: 14]

[Label Count: 4]

Type: A (Host Address) (1)

Class: IN (0x0001)

No. Time Source Destination Protocol Length Info

43 5.858289 192.168.0.103 192.168.0.1 DNS 79 Standard query 0xe086 A clients6.google.com

Frame 43: 79 bytes on wire (632 bits), 79 bytes captured (632 bits) on interface \Device\NPF\_{B00D5FF3-E366-47DF-A1CA-F139AE16F5AE}, id 0

Ethernet II, Src: 92:a8:43:5f:64:b6 (92:a8:43:5f:64:b6), Dst: Tp-LinkT\_34:cf:c2 (c0:4a:00:34:cf:c2)

Internet Protocol Version 4, Src: 192.168.0.103, Dst: 192.168.0.1

User Datagram Protocol, Src Port: 32930, Dst Port: 53

Domain Name System (query)

Transaction ID: 0xe086

Flags: 0x0100 Standard query

Questions: 1

Answer RRs: 0

Authority RRs: 0

Additional RRs: 0

Queries

clients6.google.com: type A, class IN

Name: clients6.google.com

[Name Length: 19]

[Label Count: 3]

Type: A (Host Address) (1)

Class: IN (0x0001)

[Response In: 44]

No. Time Source Destination Protocol Length Info

44 5.861086 192.168.0.1 192.168.0.103 DNS 119 Standard query response 0xe086 A clients6.google.com CNAME clients.l.google.com A 216.58.215.78

Frame 44: 119 bytes on wire (952 bits), 119 bytes captured (952 bits) on interface \Device\NPF\_{B00D5FF3-E366-47DF-A1CA-F139AE16F5AE}, id 0

Ethernet II, Src: Tp-LinkT\_34:cf:c2 (c0:4a:00:34:cf:c2), Dst: 92:a8:43:5f:64:b6 (92:a8:43:5f:64:b6)

Internet Protocol Version 4, Src: 192.168.0.1, Dst: 192.168.0.103

User Datagram Protocol, Src Port: 53, Dst Port: 32930

Domain Name System (response)

Transaction ID: 0xe086

Flags: 0x8180 Standard query response, No error

Questions: 1

Answer RRs: 2

Authority RRs: 0

Additional RRs: 0

Queries

clients6.google.com: type A, class IN

Name: clients6.google.com

[Name Length: 19]

[Label Count: 3]

Type: A (Host Address) (1)

Class: IN (0x0001)

Answers

clients6.google.com: type CNAME, class IN, cname clients.l.google.com

Name: clients6.google.com

Type: CNAME (Canonical NAME for an alias) (5)

Class: IN (0x0001)

Time to live: 129 (2 minutes, 9 seconds)

Data length: 12

CNAME: clients.l.google.com

clients.l.google.com: type A, class IN, addr 216.58.215.78

Name: clients.l.google.com

Type: A (Host Address) (1)

Class: IN (0x0001)

Time to live: 129 (2 minutes, 9 seconds)

Data length: 4

Address: 216.58.215.78

[Request In: 43]

[Time: 0.002797000 seconds]

No. Time Source Destination Protocol Length Info

56 6.031348 192.168.0.103 18.0.72.3 DNS 74 Standard query 0x0003 AAAA www.aiit.or.kr

Frame 56: 74 bytes on wire (592 bits), 74 bytes captured (592 bits) on interface \Device\NPF\_{B00D5FF3-E366-47DF-A1CA-F139AE16F5AE}, id 0

Ethernet II, Src: 92:a8:43:5f:64:b6 (92:a8:43:5f:64:b6), Dst: Tp-LinkT\_34:cf:c2 (c0:4a:00:34:cf:c2)

Internet Protocol Version 4, Src: 192.168.0.103, Dst: 18.0.72.3

User Datagram Protocol, Src Port: 32932, Dst Port: 53

Domain Name System (query)

Transaction ID: 0x0003

Flags: 0x0100 Standard query

Questions: 1

Answer RRs: 0

Authority RRs: 0

Additional RRs: 0

Queries

www.aiit.or.kr: type AAAA, class IN

Name: www.aiit.or.kr

[Name Length: 14]

[Label Count: 4]

Type: AAAA (IPv6 Address) (28)

Class: IN (0x0001)

No. Time Source Destination Protocol Length Info

61 8.033270 192.168.0.103 18.0.72.3 DNS 74 Standard query 0x0004 A www.aiit.or.kr

Frame 61: 74 bytes on wire (592 bits), 74 bytes captured (592 bits) on interface \Device\NPF\_{B00D5FF3-E366-47DF-A1CA-F139AE16F5AE}, id 0

Ethernet II, Src: 92:a8:43:5f:64:b6 (92:a8:43:5f:64:b6), Dst: Tp-LinkT\_34:cf:c2 (c0:4a:00:34:cf:c2)

Internet Protocol Version 4, Src: 192.168.0.103, Dst: 18.0.72.3

User Datagram Protocol, Src Port: 32933, Dst Port: 53

Domain Name System (query)

Transaction ID: 0x0004

Flags: 0x0100 Standard query

Questions: 1

Answer RRs: 0

Authority RRs: 0

Additional RRs: 0

Queries

www.aiit.or.kr: type A, class IN

Name: www.aiit.or.kr

[Name Length: 14]

[Label Count: 4]

Type: A (Host Address) (1)

Class: IN (0x0001)

No. Time Source Destination Protocol Length Info

65 10.034574 192.168.0.103 18.0.72.3 DNS 74 Standard query 0x0005 AAAA www.aiit.or.kr

Frame 65: 74 bytes on wire (592 bits), 74 bytes captured (592 bits) on interface \Device\NPF\_{B00D5FF3-E366-47DF-A1CA-F139AE16F5AE}, id 0

Ethernet II, Src: 92:a8:43:5f:64:b6 (92:a8:43:5f:64:b6), Dst: Tp-LinkT\_34:cf:c2 (c0:4a:00:34:cf:c2)

Internet Protocol Version 4, Src: 192.168.0.103, Dst: 18.0.72.3

User Datagram Protocol, Src Port: 32934, Dst Port: 53

Domain Name System (query)

Transaction ID: 0x0005

Flags: 0x0100 Standard query

Questions: 1

Answer RRs: 0

Authority RRs: 0

Additional RRs: 0

Queries

www.aiit.or.kr: type AAAA, class IN

Name: www.aiit.or.kr

[Name Length: 14]

[Label Count: 4]

Type: AAAA (IPv6 Address) (28)

Class: IN (0x0001)

**Контрольні питання**

**1.** Знайдіть запит та відповідь DNS, який протокол вони використовують, UDP або TCP? Який номер цільового порта запиту DNS? Який номер вихідного порта відповіді DNS?

UPD (17), номер цільового порту запиту DNS – domain (53), номер вихідного порту відповіді DNS – 6858.

**2.** На який адрес IP був відправлений запит DNS? Чи є цей адрес адресом локального сервера DNS?

На 192.168.0.1. Так, є.

**3.** Проаналізуйте IP- повідомлення із запитом DNS. Якого «Типу» цей запит? Чи вміщує цей запит деякі можливі компоненти «відповіді»?

Типу «А» (Host Address), ні.

**4.** Дослідіть повідомлення із відповіддю DNS. Яка кількість відповідей запропонована сервером? Що вміщує кожна з цих відповідей?

3 відповіді. Name, Type, Class, Time to live, Data length, Adress.

**5.** Проаналізуйте повідомлення TCP SYN, яке відправила ваша робоча станція після отримання відповіді сервера DNS. Чи співпадає цільова IP адреса цього повідомлення з одною із відповідей сервера DNS?

Так.

**6.** Чи виконує ваша робоча станція нові запити DNS для отримання ресурсів, які використовує документ, що отримав браузер?

Так.

**7.** Яким був цільовий порт повідомлення із запитом DNS? Яким був вихідний порт повідомлення із відповіддю DNS?

Номер цільового порту запиту DNS – domain (53), номер вихідного порту відповіді DNS – 1045).

**8.** На яку IP-адресу був направлений запит DNS? Чи є ця адреса адресою вашого локального сервера DNS за замовчанням?

192.168.0.1, так, є.

**9.** Дослідіть повідомлення із запитом DNS. Якого «типу» був цей запит? Чи вміщує цей запит деякі можливі компоненти «відповіді»?

Типу «А» (Host address), ні.

**10.** Дослідіть повідомлення із відповіддю DNS. Скільки записів із відповідями було запропоновано сервером? З чого складається кожна із цих відповідей?

3 записи із відповідями. Кожна відповідь складається з: Name, Type, Class, Time to live, Data length, CNAME/Adress.

**11.** На яку IP-адресу був направлений запит DNS? Чи є ця адреса адресою вашого локального сервера DNS за замовчанням?

192.168.0.1, так.

**12.** Дослідіть повідомлення із запитом DNS. Якого «типу» був цей запит? Чи вміщує цей запит деякі можливі компоненти «відповіді»?

Типу «А» (Host Address), ні.

**13.** Дослідіть повідомлення із відповіддю DNS. Скільки записів із відповідями було запропоновано сервером? Які сервери DNS були запропоновані у відповіді? Сервери були запропоновані за допомогою доменного імені, адреси IP або й того й іншого?

18 записів із відповідями: eur5.akam.net, use2.akam.net, use5.akam.net, usw2.akam.net, asia1.akam.net, asia2.akam.net, ns1-37.akam.net, ns1-173.akam.net, clients.l.google.com , clients6.google.com, catalog-public-service-prod06.ol.epicgames.com, catalogv2-svc-prod06-pub-772318179.us-east-1.elb.amazonaws.com, catalogv2-svc-prod06-pub-772318179.us-east-1.elb.amazonaws.com, catalogv2-svc-prod06-pub-772318179.us-east-1.elb.amazonaws.com, catalogv2-svc-prod06-pub-772318179.us-east-1.elb.amazonaws.com, catalogv2-svc-prod06-pub-772318179.us-east-1.elb.amazonaws.com, catalogv2-svc-prod06-pub-772318179.us-east-1.elb.amazonaws.com, catalogv2-svc-prod06-pub-772318179.us-east-1.elb.amazonaws.com,, catalogv2-svc-prod06-pub-772318179.us-east-1.elb.amazonaws.com. Сервери були запропоновані за домогою адреси IP.

**14.** На яку IP-адресу був направлений запит DNS? Чи є ця адреса адресою вашого локального сервера DNS за замовчанням? Якщо ні, то якому доменному імені відповідає ця IP-адреса?

192.168.0.1 – локальний сервер, 18.0.72.3- bitsy.mit.edu.

**15.** Дослідіть повідомлення із запитом DNS. Якого «типу» був цей запит? Чи вміщує цей запит деякі можливі компоненти «відповіді»?

Типу PTR, ні.

**16.** Дослідіть повідомлення із відповіддю DNS. Скільки записів із відповідями було запропоновано сервером? З чого складається кожна з цих відповідей?

Одна відповідь від першого сервера, жодної від другого. Відповідь складається з Name, Type, Class, Time to live, Data length, CNAME/Adress.

**Висновки**

Проаналізували деталі роботи протоколу DNS.