

**МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
НАВЧАЛЬНО-НАУКОВИЙ КОМПЛЕКС
«ІНСТИТУТ ПРИКЛАДНОГО СИСТЕМНОГО АНАЛІЗУ»
НАЦІОНАЛЬНОГО ТЕХНІЧНОГО УНІВЕРСИТЕТУ УКРАЇНИ
«КИЇВСЬКИЙ ПОЛІТЕХНІЧНИЙ ІНСТИТУТ»
КАФЕДРА МАТЕМАТИЧНИХ МЕТОДІВ СИСТЕМНОГО АНАЛІЗУ**

**Практична робота №1
з курсу «Комп'ютерні мережі»**

**Виконала: студентка 3 курсу
групи КА-74**

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Прийняв: Кухарєв С.О.

Київ – 2020р.

Запит:

Wi-Fi: en0

No.	Time	Source	Destination	Protocol	Length	Info
104	12.939451	192.168.1.107	128.119.245.12	HTTP	435	GET /wireshark-labs/INTRO-wireshark-file1.html HTTP/1.1
106	13.072833	128.119.245.12	192.168.1.107	HTTP	504	HTTP/1.1 200 OK (text/html)
114	13.269267	192.168.1.107	128.119.245.12	HTTP	418	GET /favicon.ico HTTP/1.1
137	14.071932	128.119.245.12	192.168.1.107	HTTP	551	HTTP/1.1 404 Not Found

Frame 104: 435 bytes on wire (3480 bits), 435 bytes captured (3480 bits) on interface en0, id 0
Ethernet II, Src: Apple_1a:7f:60 (a8:66:7f:1a:7f:60), Dst: Tp-LinkT_ad:c0:5c (f8:d1:11:ad:c0:5c)
Internet Protocol Version 4, Src: 192.168.1.107, Dst: 128.119.245.12
Transmission Control Protocol, Src Port: 56898, Dst Port: 80, Seq: 1, Ack: 1, Len: 369
Hypertext Transfer Protocol
GET /wireshark-labs/INTRO-wireshark-file1.html HTTP/1.1\r\n
[Expert Info (Chat/Sequence): GET /wireshark-labs/INTRO-wireshark-file1.html HTTP/1.1\r\n]
Request Method: GET
Request URI: /wireshark-labs/INTRO-wireshark-file1.html
Request Version: HTTP/1.1
Host: gaia.cs.umass.edu\r\n
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8\r\n
Accept-Language: ru\r\n
Connection: keep-alive\r\n
Accept-Encoding: br, gzip, deflate\r\n
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_13_6) AppleWebKit/605.1.15 (KHTML, like Gecko) Chrome/80.0.4012.116 Safari/604.1\r\n
[Full request URI: http://gaia.cs.umass.edu/wireshark-labs/INTRO-wireshark-file1.html]
[HTTP request 1/1]
[Response in frame: 106]

0040 00 58 47 45 54 20 2f 77 69 72 65 73 68 61 72 6b ·XGET /w ireshark

Hypertext Transfer Protocol (http), 369 байты · Пакеты: 723 · Показаны: 4 (0.6%) · Потеряно: 0 (0.0%) · Профиль: Default

Відповідь:

Wi-Fi: en0

No.	Time	Source	Destination	Protocol	Length	Info
104	12.939451	192.168.1.107	128.119.245.12	HTTP	435	GET /wireshark-labs/INTRO-wireshark-file1.html HTTP/1.1
106	13.072833	128.119.245.12	192.168.1.107	HTTP	504	HTTP/1.1 200 OK (text/html)
114	13.269267	192.168.1.107	128.119.245.12	HTTP	418	GET /favicon.ico HTTP/1.1
137	14.071932	128.119.245.12	192.168.1.107	HTTP	551	HTTP/1.1 404 Not Found

Frame 106: 504 bytes on wire (4032 bits), 504 bytes captured (4032 bits) on interface en0, id 1
Ethernet II, Src: Tp-LinkT_ad:c0:5c (f8:d1:11:ad:c0:5c), Dst: Apple_1a:7f:60 (a8:66:7f:1a:7f:60)
Internet Protocol Version 4, Src: 128.119.245.12, Dst: 192.168.1.107
Transmission Control Protocol, Src Port: 80, Dst Port: 56898, Seq: 1, Ack: 370, Len: 438
Hypertext Transfer Protocol
HTTP/1.1 200 OK\r\n
Date: Tue, 28 Apr 2020 15:12:40 GMT\r\n
Server: Apache/2.4.6 (CentOS) OpenSSL/1.0.2k-fips PHP/5.4.16 mod_perl/2.0.11 Perl/v5.16.3\r\n
Last-Modified: Tue, 28 Apr 2020 05:59:03 GMT\r\n
ETag: "51-5a45387579c42"\r\n
Accept-Ranges: bytes\r\n
Content-Length: 81\r\n
Keep-Alive: timeout=5, max=100\r\n
Connection: Keep-Alive\r\n
Content-Type: text/html; charset=UTF-8\r\n
[HTTP response 1/1]
[Time since request: 0.133382000 seconds]
[Request in frame: 104]
[Request URI: http://gaia.cs.umass.edu/wireshark-labs/INTRO-wireshark-file1.html]
File Data: 81 bytes
Line-based text data: text/html (3 lines)

0040 31 61 48 54 54 50 2f 31 2e 31 20 32 30 30 20 4f 1aHTTP/1.1 200 0

Hypertext Transfer Protocol (http), 357 байты · Пакеты: 723 · Показаны: 4 (0.6%) · Потеряно: 0 (0.0%) · Профиль: Default

Повторний запит:

The screenshot shows a Wireshark packet capture on interface en0. The packet list table is as follows:

No.	Time	Source	Destination	Protocol	Length	Info
104	12.939451	192.168.1.107	128.119.245.12	HTTP	435	GET /wireshark-labs/INTRO-wireshark-file1.html HTTP/1.1
106	13.072833	128.119.245.12	192.168.1.107	HTTP	504	HTTP/1.1 200 OK (text/html)
114	13.269267	192.168.1.107	128.119.245.12	HTTP	418	GET /favicon.ico HTTP/1.1
137	14.071932	128.119.245.12	192.168.1.107	HTTP	551	HTTP/1.1 404 Not Found

The packet details pane for frame 114 shows the following HTTP request structure:

- GET /favicon.ico HTTP/1.1\r\n
- Host: gaia.cs.umass.edu\r\n
- Connection: keep-alive\r\n
- Accept: */*\r\n
- User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10_13_6) AppleWebKit/605.1.15 (KHTML, like Gecko) Chrome/68.0.3440.106 Safari/605.1.15\r\n
- Referer: http://gaia.cs.umass.edu/wireshark-labs/INTRO-wireshark-file1.html\r\n
- Accept-Encoding: gzip, deflate\r\n
- \r\n

The packet bytes pane shows the raw data: 0040 01 a9 47 45 54 20 2f 66 61 76 69 63 6f 2e 69 GET /f avicon.i

Відповідь:

The screenshot shows a Wireshark packet capture on interface en0. The packet list table is as follows:

No.	Time	Source	Destination	Protocol	Length	Info
104	12.939451	192.168.1.107	128.119.245.12	HTTP	435	GET /wireshark-labs/INTRO-wireshark-file1.html HTTP/1.1
106	13.072833	128.119.245.12	192.168.1.107	HTTP	504	HTTP/1.1 200 OK (text/html)
114	13.269267	192.168.1.107	128.119.245.12	HTTP	418	GET /favicon.ico HTTP/1.1
137	14.071932	128.119.245.12	192.168.1.107	HTTP	551	HTTP/1.1 404 Not Found

The packet details pane for frame 137 shows the following HTTP response structure:

- HTTP/1.1 404 Not Found\r\n
- Date: Tue, 28 Apr 2020 15:12:41 GMT\r\n
- Server: Apache/2.4.6 (CentOS) OpenSSL/1.0.2k-fips PHP/5.4.16 mod_perl/2.0.11 Perl/v5.16.3\r\n
- Content-Length: 209\r\n
- Keep-Alive: timeout=5, max=100\r\n
- Connection: Keep-Alive\r\n
- Content-Type: text/html; charset=iso-8859-1\r\n
- \r\n

The packet bytes pane shows the raw data: 0040 35 3e 48 54 54 50 2f 31 2e 31 20 34 30 34 20 4e 5>HTTP/1 .1 404 N

Контрольні запитання:

1. Які протоколи відображалися в вікні лістингу протоколів до включення фільтрації?
MDNS, SSDP, ICMPv6, DNS, ICMP, TCP, IGMPv2

In computer networking, the multicast Domain Name System (mDNS) resolves host names to IP addresses within small networks that do not include a local name server. It is a zero-configuration service, using essentially the same programming interfaces, packet formats and operating semantics as the unicast Domain Name System (DNS).

The Simple Service Discovery Protocol (SSDP) is a network protocol based on the Internet Protocol Suite for advertisement and discovery of network services and presence information. It accomplishes this without assistance of server-based configuration mechanisms, such as the Dynamic Host Configuration Protocol (DHCP) or the Domain Name System (DNS), and without special static configuration of a network host. SSDP is the basis of the discovery protocol of Universal Plug and Play (UPnP) and is intended for use in residential or small office environments.

Internet Control Message Protocol version 6 (ICMPv6) is the implementation of the Internet Control Message Protocol (ICMP) for Internet Protocol version 6 (IPv6) defined in RFC 4443.[1] ICMPv6 is an integral part of IPv6 and performs error reporting and diagnostic functions (e.g., ping), and has a framework for extensions to implement future changes.

The Domain Name System delegates the responsibility of assigning domain names and mapping those names to Internet resources by designating authoritative name servers for each domain.

The Internet Control Message Protocol (ICMP) is one of the main protocols of the internet protocol suite. It is used by network devices, like routers, to send error messages indicating, for example, that a requested service is not available or that a host or router could not be reached. ICMP can also be used to relay query messages. It is assigned protocol number 1. ICMP differs from transport protocols such as TCP and UDP in that it is not typically used to exchange data between systems, nor is it regularly employed by end-user network applications (with the exception of some diagnostic tools like ping and traceroute).

The Transmission Control Protocol provides a communication service at an intermediate level between an application program and the Internet Protocol. It provides host-to-host connectivity at the Transport Layer of the Internet model.

The Internet Group Management Protocol (IGMP) is a communications protocol used by hosts and adjacent routers on IPv4 networks to establish multicast group memberships. IGMP is an integral part of IP multicast. IGMP can be used for one-to-many networking applications such as online streaming video and gaming, and allows more efficient use of resources when supporting these types of applications. IGMP is used on IPv4 networks. Multicast management on IPv6 networks is handled by Multicast Listener Discovery (MLD) which uses ICMPv6 messaging in contrast to IGMP's bare IP encapsulation.

2. Які протоколи використовувалися в збережених пакетах запиту та відповіді?
Ethernet II, Internet Protocol Version 4, Transmission Control Protocol

3. Який період часу пройшов з часу відсилки першого пакету із запитом сторінки до отримання першого пакету з відповіддю сервера?

0.133382000 seconds

4. Якими були вихідна та цільова адреси пакетів із запитом та із відповіддю?

Source	^	Destination
128.119.245.12		192.168.1.107
128.119.245.12		192.168.1.107
192.168.1.107		128.119.245.12
192.168.1.107		128.119.245.12

5. Яким був перший рядок запиту на рівні протоколу HTTP?

GET /wireshark-labs/INTRO-wireshark-file1.html HTTP/1.1\r\n

6. Яким був перший рядок відповіді на рівні протоколу HTTP?

HTTP/1.1 200 OK\r\n