

No.	Time	Source	Destination	Protocol	Length	Info
1128	2023-02-13 20:21:00.174940	10.162.31.137	128.119.245.12	HTTP	526	GET /wireshark-labs/HTTP-wireshark-file4.html

HTTP/1.1

Frame 1128: 526 bytes on wire (4208 bits), 526 bytes captured (4208 bits) on interface \Device\NPF_{1DD7923C-13AB-467D-9439-E2A4D71AF3BC}, id 0

Section number: 1

Interface id: 0 (\Device\NPF_{1DD7923C-13AB-467D-9439-E2A4D71AF3BC})

Interface name: \Device\NPF_{1DD7923C-13AB-467D-9439-E2A4D71AF3BC}

Interface description: Ethernet

Encapsulation type: Ethernet (1)

Arrival Time: Feb 13, 2023 20:21:00.174940000 Eastern Standard Time

[Time shift for this packet: 0.000000000 seconds]

Epoch Time: 1676337660.174940000 seconds

[Time delta from previous captured frame: 0.000110000 seconds]

[Time delta from previous displayed frame: 0.000000000 seconds]

[Time since reference or first frame: 14.354352000 seconds]

Frame Number: 1128

Frame Length: 526 bytes (4208 bits)

Capture Length: 526 bytes (4208 bits)

[Frame is marked: False]

[Frame is ignored: False]

[Protocols in frame: eth:ethertype:ip:tcp:http]

[Coloring Rule Name: HTTP]

[Coloring Rule String: http || tcp.port == 80 || http2]

Ethernet II, Src: Micro-St_06:51:9e (00:d8:61:06:51:9e), Dst: Routerbo_eb:56:c3 (08:55:31:eb:56:c3)

Destination: Routerbo_eb:56:c3 (08:55:31:eb:56:c3)

Address: Routerbo_eb:56:c3 (08:55:31:eb:56:c3)

.... 0. = LG bit: Globally unique address (factory default)

.... 0. = IG bit: Individual address (unicast)

Source: Micro-St_06:51:9e (00:d8:61:06:51:9e)

Address: Micro-St_06:51:9e (00:d8:61:06:51:9e)

.... 0. = LG bit: Globally unique address (factory default)

.... 0. = IG bit: Individual address (unicast)

Type: IPv4 (0x0800)

Internet Protocol Version 4, Src: 10.162.31.137, Dst: 128.119.245.12

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: 512

Identification: 0x6718 (26392)

010. = Flags: 0x2, Don't fragment

0... = Reserved bit: Not set

.1.. = Don't fragment: Set

..0. = More fragments: Not set

...0 0000 0000 0000 = Fragment Offset: 0

Time to Live: 128

Protocol: TCP (6)

Header Checksum: 0x0000 [validation disabled]

[Header checksum status: Unverified]

Source Address: 10.162.31.137

Destination Address: 128.119.245.12

Transmission Control Protocol, Src Port: 60793, Dst Port: 80, Seq: 1, Ack: 1, Len: 472

Source Port: 60793

Destination Port: 80

[Stream index: 40]

[Conversation completeness: Complete, WITH_DATA (31)]

[TCP Segment Len: 472]

Sequence Number: 1 (relative sequence number)

Sequence Number (raw): 2736735030

[Next Sequence Number: 473 (relative sequence number)]

Acknowledgment Number: 1 (relative ack number)

Acknowledgment number (raw): 2756435761

0101 = Header Length: 20 bytes (5)

Flags: 0x018 (PSH, ACK)

000. = Reserved: Not set

...0 = Accurate ECN: Not set

.... 0... = Congestion Window Reduced: Not set

.... 0.. = ECN-Echo: Not set

.... 0. = Urgent: Not set

.... 1. = Acknowledgment: Set

.... 1... = Push: Set

.... 0.. = Reset: Not set

.... 0. = Syn: Not set

.... 0. = Fin: Not set

[TCP Flags:AP...]

Window: 1026

[Calculated window size: 262656]

[Window size scaling factor: 256]

Checksum: 0xa1a1 [unverified]

[Checksum Status: Unverified]

Urgent Pointer: 0

[Timestamps]

[Time since first frame in this TCP stream: 0.024607000 seconds]

[Time since previous frame in this TCP stream: 0.000339000 seconds]

[SEQ/ACK analysis]

[iRTT: 0.024268000 seconds]

```
[Bytes in flight: 472]
[Bytes sent since last PSH flag: 472]
TCP payload (472 bytes)
Hypertext Transfer Protocol
GET /wireshark-labs/HTTP-wireshark-file4.html HTTP/1.1\r\n
[Expert Info (Chat/Sequence): GET /wireshark-labs/HTTP-wireshark-file4.html HTTP/1.1\r\n]
[GET /wireshark-labs/HTTP-wireshark-file4.html HTTP/1.1\r\n]
[Severity level: Chat]
[Group: Sequence]
Request Method: GET
Request URI: /wireshark-labs/HTTP-wireshark-file4.html
Request Version: HTTP/1.1
Host: gaia.cs.umass.edu\r\n
Connection: keep-alive\r\n
Upgrade-Insecure-Requests: 1\r\n
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/109.0.0.0 Safari/537.36\r\n
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3;q=0.9\r\n
Accept-Encoding: gzip, deflate\r\n
Accept-Language: en-US,en;q=0.9\r\n
\r\n
[Full request URI: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file4.html]
[HTTP request 1/2]
[Response in frame: 1130]
[Next request in frame: 1134]
No.      Time                Source                Destination           Protocol Length Info
1130 2023-02-13 20:21:00.199466 128.119.245.12        10.162.31.137         HTTP 1355 HTTP/1.1 200 OK (text/html)
Frame 1130: 1355 bytes on wire (10840 bits), 1355 bytes captured (10840 bits) on interface \Device\NPF_{1DD7923C-13AB-467D-9439-E2A4D71AF3BC}, id 0
Section number: 1
Interface id: 0 (\Device\NPF_{1DD7923C-13AB-467D-9439-E2A4D71AF3BC})
Interface name: \Device\NPF_{1DD7923C-13AB-467D-9439-E2A4D71AF3BC}
Interface description: Ethernet
Encapsulation type: Ethernet (1)
Arrival Time: Feb 13, 2023 20:21:00.199466000 Eastern Standard Time
[Time shift for this packet: 0.000000000 seconds]
Epoch Time: 1676337660.199466000 seconds
[Time delta from previous captured frame: 0.000351000 seconds]
[Time delta from previous displayed frame: 0.024526000 seconds]
[Time since reference or first frame: 14.378878000 seconds]
Frame Number: 1130
Frame Length: 1355 bytes (10840 bits)
Capture Length: 1355 bytes (10840 bits)
[Frame is marked: False]
[Frame is ignored: False]
[Protocols in frame: eth:ethertype:ip:tcp:http:data-text-lines]
[Coloring Rule Name: HTTP]
[Coloring Rule String: http || tcp.port == 80 || http2]
Ethernet II, Src: Routerbo_08:55:31:eb:56:c3 (08:55:31:eb:56:c3), Dst: Micro-St_06:51:9e (00:d8:61:06:51:9e)
Destination: Micro-St_06:51:9e (00:d8:61:06:51:9e)
Address: Micro-St_06:51:9e (00:d8:61:06:51:9e)
.... 0. .... = LG bit: Globally unique address (factory default)
.... 0. .... = IG bit: Individual address (unicast)
Source: Routerbo_08:55:31:eb:56:c3 (08:55:31:eb:56:c3)
Address: Routerbo_08:55:31:eb:56:c3 (08:55:31:eb:56:c3)
.... 0. .... = LG bit: Globally unique address (factory default)
.... 0. .... = IG bit: Individual address (unicast)
Type: IPv4 (0x0800)
Internet Protocol Version 4, Src: 128.119.245.12, Dst: 10.162.31.137
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: 1341
Identification: 0x2b65 (11109)
010. .... = Flags: 0x2, Don't fragment
0... .... = Reserved bit: Not set
.1.. .... = Don't fragment: Set
..0. .... = More fragments: Not set
...0 0000 0000 0000 = Fragment Offset: 0
Time to Live: 49
Protocol: TCP (6)
Header Checksum: 0x79a7 [validation disabled]
[Header checksum status: Unverified]
Source Address: 128.119.245.12
Destination Address: 10.162.31.137
Transmission Control Protocol, Src Port: 80, Dst Port: 60793, Seq: 1, Ack: 473, Len: 1301
Source Port: 80
Destination Port: 60793
[Stream index: 40]
[Conversation completeness: Complete, WITH_DATA (31)]
[TCP Segment Len: 1301]
Sequence Number: 1 (relative sequence number)
Sequence Number (raw): 2756435761
[Next Sequence Number: 1302 (relative sequence number)]
Acknowledgment Number: 473 (relative ack number)
```

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Acknowledgment number (raw): 2736735502
0101 .... = Header Length: 20 bytes (5)
Flags: 0x018 (PSH, ACK)
 000. .... = Reserved: Not set
...0 .... = Accurate ECN: Not set
.... 0... = Congestion Window Reduced: Not set
.... .0.. = ECN-Echo: Not set
.... ..0. = Urgent: Not set
.... ...1 = Acknowledgment: Set
.... .... 1... = Push: Set
.... .... .0.. = Reset: Not set
.... .... ..0. = Syn: Not set
.... .... ...0 = Fin: Not set
[TCP Flags: .....AP...]
Window: 237
[Calculated window size: 30336]
[Window size scaling factor: 128]
Checksum: 0xfe4d [unverified]
[Checksum Status: Unverified]
Urgent Pointer: 0
[Timestamps]
  [Time since first frame in this TCP stream: 0.049133000 seconds]
  [Time since previous frame in this TCP stream: 0.000351000 seconds]
[SEQ/ACK analysis]
  [iRTT: 0.024268000 seconds]
  [Bytes in flight: 1301]
  [Bytes sent since last PSH flag: 1301]
TCP payload (1301 bytes)
Hypertext Transfer Protocol
HTTP/1.1 200 OK\r\n
  [Expert Info (Chat/Sequence): HTTP/1.1 200 OK\r\n]
  [HTTP/1.1 200 OK\r\n]
  [Severity level: Chat]
  [Group: Sequence]
Response Version: HTTP/1.1
Status Code: 200
[Status Code Description: OK]
Response Phrase: OK
Date: Tue, 14 Feb 2023 01:21:00 GMT\r\n
Server: Apache/2.4.6 (CentOS) OpenSSL/1.0.2k-fips PHP/7.4.33 mod_perl/2.0.11 Perl/v5.16.3\r\n
Last-Modified: Mon, 13 Feb 2023 06:59:02 GMT\r\n
ETag: "3ae-5f48f61cf29c1"\r\n
Accept-Ranges: bytes\r\n
Content-Length: 942\r\n
Keep-Alive: timeout=5, max=100\r\n
Connection: Keep-Alive\r\n
Content-Type: text/html; charset=UTF-8\r\n
\r\n
[HTTP response 1/2]
[Time since request: 0.024526000 seconds]
[Request in frame: 1128]
[Next request in frame: 1134]
[Next response in frame: 1142]
[Request URI: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file4.html]
File Data: 942 bytes
Line-based text data: text/html (23 lines)
No.      Time                               Source                               Destination                         Protocol Length Info
1134 2023-02-13 20:21:00.250770      10.162.31.137                       128.119.245.12                      HTTP      472      GET /pearson.png HTTP/1.1
Frame 1134: 472 bytes on wire (3776 bits), 472 bytes captured (3776 bits) on interface \Device\NPF_{1DD7923C-13AB-467D-9439-E2A4D71AF3BC}, id 0
Section number: 1
Interface id: 0 (\Device\NPF_{1DD7923C-13AB-467D-9439-E2A4D71AF3BC})
Interface name: \Device\NPF_{1DD7923C-13AB-467D-9439-E2A4D71AF3BC}
Interface description: Ethernet
Encapsulation type: Ethernet (1)
Arrival Time: Feb 13, 2023 20:21:00.250770000 Eastern Standard Time
[Time shift for this packet: 0.000000000 seconds]
Epoch Time: 1676337660.250770000 seconds
[Time delta from previous captured frame: 0.013491000 seconds]
[Time delta from previous displayed frame: 0.051304000 seconds]
[Time since reference or first frame: 14.430182000 seconds]
Frame Number: 1134
Frame Length: 472 bytes (3776 bits)
Capture Length: 472 bytes (3776 bits)
[Frame is marked: False]
[Frame is ignored: False]
[Protocols in frame: eth:ethertype:ip:tcp:http]
[Coloring Rule Name: HTTP]
[Coloring Rule String: http || tcp.port == 80 || http2]
Ethernet II, Src: Micro-St_06:51:9e (00:d8:61:06:51:9e), Dst: Routerbo_0b:56:c3 (08:55:31:eb:56:c3)
Destination: Routerbo_0b:56:c3 (08:55:31:eb:56:c3)
Address: Routerbo_0b:56:c3 (08:55:31:eb:56:c3)
.... ..0. .... = LG bit: Globally unique address (factory default)
.... ..0. .... = IG bit: Individual address (unicast)
Source: Micro-St_06:51:9e (00:d8:61:06:51:9e)
Address: Micro-St_06:51:9e (00:d8:61:06:51:9e)
.... ..0. .... = LG bit: Globally unique address (factory default)
.... ..0. .... = IG bit: Individual address (unicast)
```

```
Type: IPv4 (0x0800)
Internet Protocol Version 4, Src: 10.162.31.137, Dst: 128.119.245.12
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: 458
Identification: 0x6719 (26393)
010. .... = Flags: 0x2, Don't fragment
  0... .... = Reserved bit: Not set
  .1.. .... = Don't fragment: Set
  ..0. .... = More fragments: Not set
...0 0000 0000 0000 = Fragment Offset: 0
Time to Live: 128
Protocol: TCP (6)
Header Checksum: 0x0000 [validation disabled]
[Header checksum status: Unverified]
Source Address: 10.162.31.137
Destination Address: 128.119.245.12
Transmission Control Protocol, Src Port: 60793, Dst Port: 80, Seq: 473, Ack: 1302, Len: 418
Source Port: 60793
Destination Port: 80
[Stream index: 40]
[Conversation completeness: Complete, WITH_DATA (31)]
[TCP Segment Len: 418]
Sequence Number: 473 (relative sequence number)
Sequence Number (raw): 2736735502
[Next Sequence Number: 891 (relative sequence number)]
Acknowledgment Number: 1302 (relative ack number)
Acknowledgment number (raw): 2756437062
0101 .... = Header Length: 20 bytes (5)
Flags: 0x018 (PSH, ACK)
  000. .... = Reserved: Not set
  ...0 .... = Accurate ECN: Not set
  .... 0... = Congestion Window Reduced: Not set
  .... .0.. = ECN-Echo: Not set
  .... ..0. = Urgent: Not set
  .... ...1 = Acknowledgment: Set
  .... .... 1... = Push: Set
  .... .... .0.. = Reset: Not set
  .... .... ..0. = Syn: Not set
  .... .... ...0 = Fin: Not set
[TCP Flags: .....AP...]
Window: 1021
[Calculated window size: 261376]
[Window size scaling factor: 256]
Checksum: 0xa16b [unverified]
[Checksum Status: Unverified]
Urgent Pointer: 0
[Timestamps]
  [Time since first frame in this TCP stream: 0.100437000 seconds]
  [Time since previous frame in this TCP stream: 0.051304000 seconds]
[SEQ/ACK analysis]
  [This is an ACK to the segment in frame: 1130]
  [The RTT to ACK the segment was: 0.051304000 seconds]
  [iRTT: 0.024268000 seconds]
  [Bytes in flight: 418]
  [Bytes sent since last PSH flag: 418]
TCP payload (418 bytes)
Hypertext Transfer Protocol
GET /pearson.png HTTP/1.1\r\n
[Expert Info (Chat/Sequence): GET /pearson.png HTTP/1.1\r\n]
  [GET /pearson.png HTTP/1.1\r\n]
  [Severity level: Chat]
  [Group: Sequence]
Request Method: GET
Request URI: /pearson.png
Request Version: HTTP/1.1
Host: gaia.cs.umass.edu\r\n
Connection: keep-alive\r\n
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/109.0.0.0 Safari/537.36\r\n
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8\r\n
Referer: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file4.html\r\n
Accept-Encoding: gzip, deflate\r\n
Accept-Language: en-US,en;q=0.9\r\n
\r\n
[Full request URI: http://gaia.cs.umass.edu/pearson.png]
[HTTP request 2/2]
[Prev request in frame: 1128]
[Response in frame: 1142]
No.      Time                               Source                Destination           Protocol Length Info
1142 2023-02-13 20:21:00.275051      128.119.245.12        10.162.31.137         HTTP                745      HTTP/1.1 200 OK (PNG)
Frame 1142: 745 bytes on wire (5960 bits), 745 bytes captured (5960 bits) on interface \Device\NPF_{1DD7923C-13AB-467D-9439-E2A4D71AF3BC}, id 0
Section number: 1
Interface id: 0 (\Device\NPF_{1DD7923C-13AB-467D-9439-E2A4D71AF3BC})
Interface name: \Device\NPF_{1DD7923C-13AB-467D-9439-E2A4D71AF3BC}
```

```
Interface description: Ethernet
Encapsulation type: Ethernet (1)
Arrival Time: Feb 13, 2023 20:21:00.275051000 Eastern Standard Time
[Time shift for this packet: 0.000000000 seconds]
Epoch Time: 1676337660.275051000 seconds
[Time delta from previous captured frame: 0.000000000 seconds]
[Time delta from previous displayed frame: 0.024281000 seconds]
[Time since reference or first frame: 14.454463000 seconds]
Frame Number: 1142
Frame Length: 745 bytes (5960 bits)
Capture Length: 745 bytes (5960 bits)
[Frame is marked: False]
[Frame is ignored: False]
[Protocols in frame: eth:ethertype:ip:tcp:http:png]
[Coloring Rule Name: HTTP]
[Coloring Rule String: http || tcp.port == 80 || http2]
Ethernet II, Src: Routerbo_eb:56:c3 (08:55:31:eb:56:c3), Dst: Micro-St_06:51:9e (00:d8:61:06:51:9e)
Destination: Micro-St_06:51:9e (00:d8:61:06:51:9e)
Address: Micro-St_06:51:9e (00:d8:61:06:51:9e)
.... 0. .... = LG bit: Globally unique address (factory default)
.... 0 .... = IG bit: Individual address (unicast)
Source: Routerbo_eb:56:c3 (08:55:31:eb:56:c3)
Address: Routerbo_eb:56:c3 (08:55:31:eb:56:c3)
.... 0. .... = LG bit: Globally unique address (factory default)
.... 0 .... = IG bit: Individual address (unicast)
Type: IPv4 (0x0800)
Internet Protocol Version 4, Src: 128.119.245.12, Dst: 10.162.31.137
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: 731
Identification: 0x2b68 (11112)
010. .... = Flags: 0x2, Don't fragment
0... .... = Reserved bit: Not set
.1.. .... = Don't fragment: Set
..0. .... = More fragments: Not set
...0 0000 0000 0000 = Fragment Offset: 0
Time to Live: 49
Protocol: TCP (6)
Header Checksum: 0x7c06 [validation disabled]
[Header checksum status: Unverified]
Source Address: 128.119.245.12
Destination Address: 10.162.31.137
Transmission Control Protocol, Src Port: 80, Dst Port: 60793, Seq: 4222, Ack: 891, Len: 691
Source Port: 80
Destination Port: 60793
[Stream index: 40]
[Conversation completeness: Complete, WITH_DATA (31)]
[TCP Segment Len: 691]
Sequence Number: 4222 (relative sequence number)
Sequence Number (raw): 2756439982
[Next Sequence Number: 4913 (relative sequence number)]
Acknowledgment Number: 891 (relative ack number)
Acknowledgment number (raw): 2736735920
0101 .... = Header Length: 20 bytes (5)
Flags: 0x018 (PSH, ACK)
000. .... = Reserved: Not set
...0 .... = Accurate ECN: Not set
.... 0... = Congestion Window Reduced: Not set
.... 0... = ECN-Echo: Not set
.... ..0. = Urgent: Not set
.... ...1 = Acknowledgment: Set
.... ....1... = Push: Set
.... .... 0... = Reset: Not set
.... .... ..0. = Syn: Not set
.... .... ...0 = Fin: Not set
[TCP Flags: .....AP...]
Window: 245
[Calculated window size: 31360]
[Window size scaling factor: 128]
Checksum: 0x8c7e [unverified]
[Checksum Status: Unverified]
Urgent Pointer: 0
[Timestamps]
[Time since first frame in this TCP stream: 0.124718000 seconds]
[Time since previous frame in this TCP stream: 0.000000000 seconds]
[SEQ/ACK analysis]
[iRTT: 0.024268000 seconds]
[Bytes in flight: 3611]
[Bytes sent since last PSH flag: 3611]
TCP payload (691 bytes)
TCP segment data (691 bytes)
[3 Reassembled TCP Segments (3611 bytes): #1140(1460), #1141(1460), #1142(691)]
Hypertext Transfer Protocol
HTTP/1.1 200 OK\r\n
```

```
[Expert Info (Chat/Sequence): HTTP/1.1 200 OK\r\n]
[HTTP/1.1 200 OK\r\n]
[Severity level: Chat]
[Group: Sequence]
Response Version: HTTP/1.1
Status Code: 200
[Status Code Description: OK]
Response Phrase: OK
Date: Tue, 14 Feb 2023 01:21:00 GMT\r\n
Server: Apache/2.4.6 (CentOS) OpenSSL/1.0.2k-fips PHP/7.4.33 mod_perl/2.0.11 Perl/v5.16.3\r\n
Last-Modified: Sat, 06 Aug 2016 10:08:14 GMT\r\n
ETag: "cc3-539645c7f1ee7"\r\n
Accept-Ranges: bytes\r\n
Content-Length: 3267\r\n
Keep-Alive: timeout=5, max=99\r\n
Connection: Keep-Alive\r\n
Content-Type: image/png\r\n
\r\n
[HTTP response 2/2]
[Time since request: 0.024281000 seconds]
[Prev request in frame: 1128]
[Prev response in frame: 1130]
[Request in frame: 1134]
[Request URI: http://gaia.cs.umass.edu/pearson.png]
File Data: 3267 bytes
Portable Network Graphics
No.      Time                Source                Destination          Protocol Length Info
1222 2023-02-13 20:21:00.789583 10.162.31.137        178.79.137.164      HTTP      439      GET /8E_cover_small.jpg HTTP/1.1
Frame 1222: 439 bytes on wire (3512 bits), 439 bytes captured (3512 bits) on interface \Device\NPF_{1DD7923C-13AB-467D-9439-E2A4D71AF3BC}, id 0
  Section number: 1
  Interface id: 0 (\Device\NPF_{1DD7923C-13AB-467D-9439-E2A4D71AF3BC})
    Interface name: \Device\NPF_{1DD7923C-13AB-467D-9439-E2A4D71AF3BC}
    Interface description: Ethernet
  Encapsulation type: Ethernet (1)
  Arrival Time: Feb 13, 2023 20:21:00.789583000 Eastern Standard Time
  [Time shift for this packet: 0.000000000 seconds]
  Epoch Time: 1676337660.789583000 seconds
  [Time delta from previous captured frame: 0.001107000 seconds]
  [Time delta from previous displayed frame: 0.514532000 seconds]
  [Time since reference or first frame: 14.968995000 seconds]
  Frame Number: 1222
  Frame Length: 439 bytes (3512 bits)
  Capture Length: 439 bytes (3512 bits)
  [Frame is marked: False]
  [Frame is ignored: False]
  [Protocols in frame: eth:ethertype:ip:tcp:http]
  [Coloring Rule Name: HTTP]
  [Coloring Rule String: http || tcp.port == 80 || http2]
Ethernet II, Src: Micro-St_06:51:9e (00:d8:61:06:51:9e), Dst: Routerbo_eb:56:c3 (08:55:31:eb:56:c3)
  Destination: Routerbo_eb:56:c3 (08:55:31:eb:56:c3)
    Address: Routerbo_eb:56:c3 (08:55:31:eb:56:c3)
      ....0. .... = LG bit: Globally unique address (factory default)
      ....0. .... = IG bit: Individual address (unicast)
  Source: Micro-St_06:51:9e (00:d8:61:06:51:9e)
    Address: Micro-St_06:51:9e (00:d8:61:06:51:9e)
      ....0. .... = LG bit: Globally unique address (factory default)
      ....0. .... = IG bit: Individual address (unicast)
  Type: IPv4 (0x0800)
Internet Protocol Version 4, Src: 10.162.31.137, Dst: 178.79.137.164
  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: 425
  Identification: 0xa888 (43144)
  010. .... = Flags: 0x2, Don't fragment
    0... .... = Reserved bit: Not set
    .1.. .... = Don't fragment: Set
    ..0. .... = More fragments: Not set
  ...0 0000 0000 0000 = Fragment Offset: 0
  Time to Live: 128
  Protocol: TCP (6)
  Header Checksum: 0x0000 [validation disabled]
  [Header checksum status: Unverified]
  Source Address: 10.162.31.137
  Destination Address: 178.79.137.164
Transmission Control Protocol, Src Port: 60798, Dst Port: 80, Seq: 1, Ack: 1, Len: 385
  Source Port: 60798
  Destination Port: 80
  [Stream index: 45]
  [Conversation completeness: Incomplete, DATA (15)]
  [TCP Segment Len: 385]
  Sequence Number: 1 (relative sequence number)
  Sequence Number (raw): 4204103898
  [Next Sequence Number: 386 (relative sequence number)]
  Acknowledgment Number: 1 (relative ack number)
```

```
Acknowledgment number (raw): 776860755
0101 .... = Header Length: 20 bytes (5)
Flags: 0x018 (PSH, ACK)
  000. .... = Reserved: Not set
  ...0 .... = Accurate ECN: Not set
  .... 0... = Congestion Window Reduced: Not set
  .... .0.. = ECN-Echo: Not set
  .... ..0. = Urgent: Not set
  .... ...1 = Acknowledgment: Set
  .... .... 1... = Push: Set
  .... .... .0.. = Reset: Not set
  .... .... ..0. = Syn: Not set
  .... .... ...0 = Fin: Not set
  [TCP Flags: .....AP...]
Window: 1026
[Calculated window size: 262656]
[Window size scaling factor: 256]
Checksum: 0x67ba [unverified]
[Checksum Status: Unverified]
Urgent Pointer: 0
[Timestamps]
  [Time since first frame in this TCP stream: 0.086841000 seconds]
  [Time since previous frame in this TCP stream: 0.001107000 seconds]
[SEQ/ACK analysis]
  [iRTT: 0.085734000 seconds]
  [Bytes in flight: 385]
  [Bytes sent since last PSH flag: 385]
TCP payload (385 bytes)
Hypertext Transfer Protocol
GET /8E_cover_small.jpg HTTP/1.1\r\n
  [Expert Info (Chat/Sequence): GET /8E_cover_small.jpg HTTP/1.1\r\n
    [GET /8E_cover_small.jpg HTTP/1.1\r\n
    [Severity level: Chat]
    [Group: Sequence]
  Request Method: GET
  Request URI: /8E_cover_small.jpg
  Request Version: HTTP/1.1
Host: kurose.cslash.net\r\n
Connection: keep-alive\r\n
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/109.0.0.0 Safari/537.36\r\n
Accept: image/avif,image/webp,image/apng,image/svg+xml,image/*,*/*;q=0.8\r\n
Referer: http://gaia.cs.umass.edu/\r\n
Accept-Encoding: gzip, deflate\r\n
Accept-Language: en-US,en;q=0.9\r\n
\r\n
[Full request URI: http://kurose.cslash.net/8E_cover_small.jpg]
[HTTP request 1/1]
[Response in frame: 1227]
No.      Time                               Source                               Destination                         Protocol Length Info
1227 2023-02-13 20:21:00.875371      178.79.137.164                      10.162.31.137                      HTTP      225      HTTP/1.1 301 Moved Permanently
Frame 1227: 225 bytes on wire (1800 bits), 225 bytes captured (1800 bits) on interface \Device\NPF_{1DD7923C-13AB-467D-9439-E2A4D71AF3BC}, id 0
Section number: 1
Interface id: 0 (\Device\NPF_{1DD7923C-13AB-467D-9439-E2A4D71AF3BC})
Interface name: \Device\NPF_{1DD7923C-13AB-467D-9439-E2A4D71AF3BC}
Interface description: Ethernet
Encapsulation type: Ethernet (1)
Arrival Time: Feb 13, 2023 20:21:00.875371000 Eastern Standard Time
[Time shift for this packet: 0.000000000 seconds]
Epoch Time: 1676337660.875371000 seconds
[Time delta from previous captured frame: 0.000848000 seconds]
[Time delta from previous displayed frame: 0.085788000 seconds]
[Time since reference or first frame: 15.054783000 seconds]
Frame Number: 1227
Frame Length: 225 bytes (1800 bits)
Capture Length: 225 bytes (1800 bits)
[Frame is marked: False]
[Frame is ignored: False]
[Protocols in frame: eth:ethertype:ip:tcp:http]
[Coloring Rule Name: HTTP]
[Coloring Rule String: http || tcp.port == 80 || http2]
Ethernet II, Src: Routerbo_eb:56:c3 (08:55:31:eb:56:c3), Dst: Micro-St_06:51:9e (00:d8:61:06:51:9e)
Destination: Micro-St_06:51:9e (00:d8:61:06:51:9e)
Address: Micro-St_06:51:9e (00:d8:61:06:51:9e)
  .... 00. .... = LG bit: Globally unique address (factory default)
  .... ..0 .... = IG bit: Individual address (unicast)
Source: Routerbo_eb:56:c3 (08:55:31:eb:56:c3)
Address: Routerbo_eb:56:c3 (08:55:31:eb:56:c3)
  .... 00. .... = LG bit: Globally unique address (factory default)
  .... ..0 .... = IG bit: Individual address (unicast)
Type: IPv4 (0x0800)
Internet Protocol Version 4, Src: 178.79.137.164, Dst: 10.162.31.137
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: 211
```

```
Identification: 0x8927 (35111)
010. .... = Flags: 0x2, Don't fragment
    0... .... = Reserved bit: Not set
    .1... .... = Don't fragment: Set
    ..0. .... = More fragments: Not set
...0 0000 0000 0000 = Fragment Offset: 0
Time to Live: 49
Protocol: TCP (6)
Header Checksum: 0x59df [validation disabled]
[Header checksum status: Unverified]
Source Address: 178.79.137.164
Destination Address: 10.162.31.137
Transmission Control Protocol, Src Port: 80, Dst Port: 60798, Seq: 1, Ack: 386, Len: 171
Source Port: 80
Destination Port: 60798
[Stream index: 45]
[Conversation completeness: Incomplete, DATA (15)]
[TCP Segment Len: 171]
Sequence Number: 1 (relative sequence number)
Sequence Number (raw): 776860755
[Next Sequence Number: 172 (relative sequence number)]
Acknowledgment Number: 386 (relative ack number)
Acknowledgment number (raw): 4204104283
0101 .... = Header Length: 20 bytes (5)
Flags: 0x018 (PSH, ACK)
    000. .... .... = Reserved: Not set
    ...0 .... .... = Accurate ECN: Not set
    .... 0... .... = Congestion Window Reduced: Not set
    .... .0.. .... = ECN-Echo: Not set
    .... ..0. .... = Urgent: Not set
    .... ...1 .... = Acknowledgment: Set
    .... .... 1... = Push: Set
    .... .... .0.. = Reset: Not set
    .... .... ..0. = Syn: Not set
    .... .... ...0 = Fin: Not set
[TCP Flags: .....AP...]
Window: 501
[Calculated window size: 64128]
[Window size scaling factor: 128]
Checksum: 0xbd31 [unverified]
[Checksum Status: Unverified]
Urgent Pointer: 0
[Timestamps]
    [Time since first frame in this TCP stream: 0.172629000 seconds]
    [Time since previous frame in this TCP stream: 0.000848000 seconds]
[SEQ/ACK analysis]
    [iRTT: 0.085734000 seconds]
    [Bytes in flight: 171]
    [Bytes sent since last PSH flag: 171]
TCP payload (171 bytes)
Hypertext Transfer Protocol
HTTP/1.1 301 Moved Permanently\r\n
    [Expert Info (Chat/Sequence): HTTP/1.1 301 Moved Permanently\r\n]
    [HTTP/1.1 301 Moved Permanently\r\n]
    [Severity level: Chat]
    [Group: Sequence]
    Response Version: HTTP/1.1
    Status Code: 301
    [Status Code Description: Moved Permanently]
    Response Phrase: Moved Permanently
    Location: https://kurose.cslash.net/8E_cover_small.jpg\r\n
    Content-Length: 0\r\n
    Date: Tue, 14 Feb 2023 01:21:00 GMT\r\n
    Server: lighttpd/1.4.47\r\n
\r\n
[HTTP response 1/1]
[Time since request: 0.085788000 seconds]
[Request in frame: 1222]
[Request URI: http://kurose.cslash.net/8E_cover_small.jpg]
No.      Time      Source      Destination      Protocol Length Info
1331 2023-02-13 20:21:01.815252 10.162.31.137 23.43.85.156 HTTP 419 GET /roots/dstrootcax3.p7c HTTP/1.1
Frame 1331: 419 bytes on wire (3352 bits), 419 bytes captured (3352 bits) on interface \Device\NPF_{1DD7923C-13AB-467D-9439-E2A4D71AF3BC}, id 0
Section number: 1
Interface id: 0 (\Device\NPF_{1DD7923C-13AB-467D-9439-E2A4D71AF3BC})
Interface name: \Device\NPF_{1DD7923C-13AB-467D-9439-E2A4D71AF3BC}
Interface description: Ethernet
Encapsulation type: Ethernet (1)
Arrival Time: Feb 13, 2023 20:21:01.815252000 Eastern Standard Time
[Time shift for this packet: 0.000000000 seconds]
Epoch Time: 1676337661.815252000 seconds
[Time delta from previous captured frame: 0.000267000 seconds]
[Time delta from previous displayed frame: 0.939881000 seconds]
[Time since reference or first frame: 15.994664000 seconds]
Frame Number: 1331
Frame Length: 419 bytes (3352 bits)
Capture Length: 419 bytes (3352 bits)
[Frame is marked: False]
```



```
[Frame is ignored: False]
[Protocols in frame: eth:ethertype:ip:tcp:http]
[Coloring Rule Name: HTTP]
[Coloring Rule String: http || tcp.port == 80 || http2]
Ethernet II, Src: Micro-St_06:51:9e (00:d8:61:06:51:9e), Dst: Routerbo_eb:56:c3 (08:55:31:eb:56:c3)
  Destination: Routerbo_eb:56:c3 (08:55:31:eb:56:c3)
    Address: Routerbo_eb:56:c3 (08:55:31:eb:56:c3)
      ....0. .... = LG bit: Globally unique address (factory default)
      ....0. .... = IG bit: Individual address (unicast)
  Source: Micro-St_06:51:9e (00:d8:61:06:51:9e)
    Address: Micro-St_06:51:9e (00:d8:61:06:51:9e)
      ....0. .... = LG bit: Globally unique address (factory default)
      ....0. .... = IG bit: Individual address (unicast)
  Type: IPv4 (0x0800)
Internet Protocol Version 4, Src: 10.162.31.137, Dst: 23.43.85.156
  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: 405
  Identification: 0xe20b (57867)
  010. .... = Flags: 0x2, Don't fragment
    0... .... = Reserved bit: Not set
    .1.. .... = Don't fragment: Set
    ..0. .... = More fragments: Not set
  ...0 0000 0000 0000 = Fragment Offset: 0
  Time to Live: 128
  Protocol: TCP (6)
  Header Checksum: 0x0000 [validation disabled]
  [Header checksum status: Unverified]
  Source Address: 10.162.31.137
  Destination Address: 23.43.85.156
Transmission Control Protocol, Src Port: 60809, Dst Port: 80, Seq: 1, Ack: 1, Len: 365
  Source Port: 60809
  Destination Port: 80
  [Stream index: 57]
  [Conversation completeness: Incomplete, DATA (15)]
  [TCP Segment Len: 365]
  Sequence Number: 1 (relative sequence number)
  Sequence Number (raw): 398687372
  [Next Sequence Number: 366 (relative sequence number)]
  Acknowledgment Number: 1 (relative ack number)
  Acknowledgment number (raw): 2148892482
  0101 .... = Header Length: 20 bytes (5)
  Flags: 0x018 (PSH, ACK)
    000. .... = Reserved: Not set
    ...0 .... = Accurate ECN: Not set
    ....0... = Congestion Window Reduced: Not set
    ....0... = ECN-Echo: Not set
    ....0. .... = Urgent: Not set
    ....1... = Acknowledgment: Set
    ....1... = Push: Set
    ....0... = Reset: Not set
    ....0... = Syn: Not set
    ....0... = Fin: Not set
  [TCP Flags: .....AP...]
  Window: 1026
  [Calculated window size: 262656]
  [Window size scaling factor: 256]
  Checksum: 0x9879 [unverified]
  [Checksum Status: Unverified]
  Urgent Pointer: 0
  [Timestamps]
    [Time since first frame in this TCP stream: 0.014363000 seconds]
    [Time since previous frame in this TCP stream: 0.000267000 seconds]
  [SEQ/ACK analysis]
    [iRTT: 0.014096000 seconds]
    [Bytes in flight: 365]
    [Bytes sent since last PSH flag: 365]
  TCP payload (365 bytes)
Hypertext Transfer Protocol
GET /roots/dstrootcax3.p7c HTTP/1.1\r\n
  [Expert Info (Chat/Sequence): GET /roots/dstrootcax3.p7c HTTP/1.1\r\n]
    [GET /roots/dstrootcax3.p7c HTTP/1.1\r\n]
    [Severity level: Chat]
    [Group: Sequence]
  Request Method: GET
  Request URI: /roots/dstrootcax3.p7c
  Request Version: HTTP/1.1
Host: apps.identrust.com\r\n
Connection: keep-alive\r\n
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/109.0.0.0 Safari/537.36\r\n
Accept-Encoding: gzip, deflate\r\n
Accept-Language: en-US,en;q=0.9\r\n
If-None-Match: "37d-5f433188daa00"\r\n
If-Modified-Since: Wed, 08 Feb 2023 16:52:56 GMT\r\n
```

```

\r\n
[Full request URI: http://apps.identrust.com/roots/dstrootcax3.p7c]
[HTTP request 1/1]
[Response in frame: 1334]
No.      Time                Source                Destination          Protocol Length Info
1334 2023-02-13 20:21:01.829956 23.43.85.156        10.162.31.137       HTTP      324      HTTP/1.1 304 Not Modified
Frame 1334: 324 bytes on wire (2592 bits), 324 bytes captured (2592 bits) on interface \Device\NPF_{1DD7923C-13AB-467D-9439-E2A4D71AF3BC}, id 0
Section number: 1
Interface id: 0 (\Device\NPF_{1DD7923C-13AB-467D-9439-E2A4D71AF3BC})
Interface name: \Device\NPF_{1DD7923C-13AB-467D-9439-E2A4D71AF3BC}
Interface description: Ethernet
Encapsulation type: Ethernet (1)
Arrival Time: Feb 13, 2023 20:21:01.829956000 Eastern Standard Time
[Time shift for this packet: 0.000000000 seconds]
Epoch Time: 1676337661.829956000 seconds
[Time delta from previous captured frame: 0.000655000 seconds]
[Time delta from previous displayed frame: 0.014704000 seconds]
[Time since reference or first frame: 16.009368000 seconds]
Frame Number: 1334
Frame Length: 324 bytes (2592 bits)
Capture Length: 324 bytes (2592 bits)
[Frame is marked: False]
[Frame is ignored: False]
[Protocols in frame: eth:ethertype:ip:tcp:http]
[Coloring Rule Name: HTTP]
[Coloring Rule String: http || tcp.port == 80 || http2]
Ethernet II, Src: Routerbo_eb:56:c3 (08:55:31:eb:56:c3), Dst: Micro-St_06:51:9e (00:d8:61:06:51:9e)
Destination: Micro-St_06:51:9e (00:d8:61:06:51:9e)
Address: Micro-St_06:51:9e (00:d8:61:06:51:9e)
....0. .... = LG bit: Globally unique address (factory default)
....0. .... = IG bit: Individual address (unicast)
Source: Routerbo_eb:56:c3 (08:55:31:eb:56:c3)
Address: Routerbo_eb:56:c3 (08:55:31:eb:56:c3)
....0. .... = LG bit: Globally unique address (factory default)
....0. .... = IG bit: Individual address (unicast)
Type: IPv4 (0x0800)
Internet Protocol Version 4, Src: 23.43.85.156, Dst: 10.162.31.137
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: 310
Identification: 0x0ab1 (2737)
010. .... = Flags: 0x2, Don't fragment
0... .... = Reserved bit: Not set
.1.. .... = Don't fragment: Set
..0. .... = More fragments: Not set
...0 0000 0000 0000 = Fragment Offset: 0
Time to Live: 55
Protocol: TCP (6)
Header Checksum: 0xa11f [validation disabled]
[Header checksum status: Unverified]
Source Address: 23.43.85.156
Destination Address: 10.162.31.137
Transmission Control Protocol, Src Port: 80, Dst Port: 60809, Seq: 1, Ack: 366, Len: 270
Source Port: 80
Destination Port: 60809
[Stream index: 57]
[Conversation completeness: Incomplete, DATA (15)]
[TCP Segment Len: 270]
Sequence Number: 1 (relative sequence number)
Sequence Number (raw): 2148892482
[Next Sequence Number: 271 (relative sequence number)]
Acknowledgment Number: 366 (relative ack number)
Acknowledgment number (raw): 398687737
0101 .... = Header Length: 20 bytes (5)
Flags: 0x018 (PSH, ACK)
000. .... = Reserved: Not set
...0 .... = Accurate ECN: Not set
....0... = Congestion Window Reduced: Not set
....0... = ECN-Echo: Not set
....0. .... = Urgent: Not set
....1... = Acknowledgment: Set
....1... = Push: Set
....0... = Reset: Not set
....0... = Syn: Not set
....0... = Fin: Not set
[TCP Flags: .....AP...]
Window: 501
[Calculated window size: 64128]
[Window size scaling factor: 128]
Checksum: 0xc9d2 [unverified]
[Checksum Status: Unverified]
Urgent Pointer: 0
[Timestamps]
[Time since first frame in this TCP stream: 0.029067000 seconds]

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[Time since previous frame in this TCP stream: 0.000655000 seconds]
[SEQ/ACK analysis]
[iRTT: 0.014096000 seconds]
[Bytes in flight: 270]
[Bytes sent since last PSH flag: 270]
TCP payload (270 bytes)
Hypertext Transfer Protocol
HTTP/1.1 304 Not Modified\r\n
[Expert Info (Chat/Sequence): HTTP/1.1 304 Not Modified\r\n]
[HTTP/1.1 304 Not Modified\r\n]
[Severity level: Chat]
[Group: Sequence]
Response Version: HTTP/1.1
Status Code: 304
[Status Code Description: Not Modified]
Response Phrase: Not Modified
Content-Type: application/pkcs7-mime\r\n
Last-Modified: Wed, 08 Feb 2023 16:52:56 GMT\r\n
ETag: "37d-5f433188daa00"\r\n
Cache-Control: max-age=3600\r\n
Expires: Tue, 14 Feb 2023 02:21:01 GMT\r\n
Date: Tue, 14 Feb 2023 01:21:01 GMT\r\n
Connection: keep-alive\r\n
\r\n
[HTTP response 1/1]
[Time since request: 0.014704000 seconds]
[Request in frame: 1331]
[Request URI: http://apps.identrust.com/roots/dstrootcax3.p7c]