

```
13 1.304142      100.65.91.96      128.119.245.12      HTTP      405      GET /wireshark-labs/HTTP-wireshark-file4.html HTTP/
1.1
Frame 13: 405 bytes on wire (3240 bits), 405 bytes captured (3240 bits) on interface 0
  Interface id: 0 (\Device\NPF_{0C90F0D5-9FC6-44A5-BB98-7375F9677D1C})
  Encapsulation type: Ethernet (1)
  Arrival Time: Jan 19, 2016 18:50:28.714537000 Eastern Standard Time
  [Time shift for this packet: 0.000000000 seconds]
  Epoch Time: 1453247428.714537000 seconds
  [Time delta from previous captured frame: 0.000383000 seconds]
  [Time delta from previous displayed frame: 0.000000000 seconds]
  [Time since reference or first frame: 1.304142000 seconds]
  Frame Number: 13
  Frame Length: 405 bytes (3240 bits)
  Capture Length: 405 bytes (3240 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: Microsof_16:a0:9a (30:59:b7:16:a0:9a), Dst: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
  Destination: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
    Address: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
      .... ..0. .... = LG bit: Globally unique address (factory default)
      .... ...0 .... = IG bit: Individual address (unicast)
  Source: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
    Address: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
      .... ..0. .... = LG bit: Globally unique address (factory default)
      .... ...0 .... = IG bit: Individual address (unicast)
  Type: IPv4 (0x0800)
Internet Protocol Version 4, Src: 100.65.91.96, Dst: 128.119.245.12
  0100 .... = Version: 4
  .... 0101 = Header Length: 20 bytes
  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: 391
  Identification: 0x1a67 (6759)
  Flags: 0x02 (Don't Fragment)
    0... .... = Reserved bit: Not set
    .1.. .... = Don't fragment: Set
    ..0. .... = More fragments: Not set
  Fragment offset: 0
  Time to live: 128
  Protocol: TCP (6)
  Header checksum: 0xa9e4 [validation disabled]
    [Good: False]
    [Bad: False]
  Source: 100.65.91.96
  Destination: 128.119.245.12
    [Source GeoIP: Unknown]
    [Destination GeoIP: Unknown]
Transmission Control Protocol, Src Port: 53547 (53547), Dst Port: 80 (80), Seq: 1, Ack: 1, Len: 351
  Source Port: 53547
  Destination Port: 80
  [Stream index: 4]
  [TCP Segment Len: 351]
  Sequence number: 1 (relative sequence number)
  [Next sequence number: 352 (relative sequence number)]
  Acknowledgment number: 1 (relative ack number)
  Header Length: 20 bytes
  Flags: 0x018 (PSH, ACK)
    000. .... = Reserved: Not set
    ...0 .... = Nonce: Not set
    .... 0... = Congestion Window Reduced (CWR): 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 size value: 1024
  [Calculated window size: 262144]
  [Window size scaling factor: 256]
  Checksum: 0x0ec3 [validation disabled]
    [Good Checksum: False]
    [Bad Checksum: False]
  Urgent pointer: 0
  [SEQ/ACK analysis]
    [iRTT: 0.029273000 seconds]
    [Bytes in flight: 351]
```

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

Accept: text/html, application/xhtml+xml, image/jxr, */*\r\n

Accept-Language: en-CA,en;q=0.8,zh-Hans-CN;q=0.5,zh-Hans;q=0.3\r\n

User-Agent: Mozilla/5.0 (Windows NT 10.0; WOW64; Trident/7.0; Touch; rv:11.0) like Gecko\r\n

Accept-Encoding: gzip, deflate\r\n

Host: gaia.cs.umass.edu\r\n

Connection: Keep-Alive\r\n

\r\n

[Full request URI: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file4.html]

[HTTP request 1/1]

[Response in frame: 18]

```
18 1.342569      128.119.245.12      100.65.91.96      HTTP      1156      HTTP/1.1 200 OK      (text/html)
Frame 18: 1156 bytes on wire (9248 bits), 1156 bytes captured (9248 bits) on interface 0
Interface id: 0 (\Device\NPF_{0C90F0D5-9FC6-44A5-BB98-7375F9677D1C})
Encapsulation type: Ethernet (1)
Arrival Time: Jan 19, 2016 18:50:28.752964000 Eastern Standard Time
[Time shift for this packet: 0.000000000 seconds]
Epoch Time: 1453247428.752964000 seconds
[Time delta from previous captured frame: 0.000242000 seconds]
[Time delta from previous displayed frame: 0.038427000 seconds]
[Time since reference or first frame: 1.342569000 seconds]
Frame Number: 18
Frame Length: 1156 bytes (9248 bits)
Capture Length: 1156 bytes (9248 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: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5), Dst: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
Destination: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
Address: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
.... 0. .... = LG bit: Globally unique address (factory default)
.... 0. .... = IG bit: Individual address (unicast)
Source: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
Address: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
.... 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: 100.65.91.96
0100 .... = Version: 4
.... 0101 = Header Length: 20 bytes
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: 1142
Identification: 0x7ed5 (32469)
Flags: 0x02 (Don't Fragment)
0... .... = Reserved bit: Not set
.1.. .... = Don't fragment: Set
..0. .... = More fragments: Not set
Fragment offset: 0
Time to live: 48
Protocol: TCP (6)
Header checksum: 0x9287 [validation disabled]
[Good: False]
[Bad: False]
Source: 128.119.245.12
Destination: 100.65.91.96
[Source GeoIP: Unknown]
[Destination GeoIP: Unknown]
Transmission Control Protocol, Src Port: 80 (80), Dst Port: 53547 (53547), Seq: 1, Ack: 352, Len: 1102
Source Port: 80
Destination Port: 53547
[Stream index: 4]
[TCP Segment Len: 1102]
Sequence number: 1 (relative sequence number)
[Next sequence number: 1103 (relative sequence number)]
Acknowledgment number: 352 (relative ack number)
Header Length: 20 bytes
Flags: 0x018 (PSH, ACK)
000. .... = Reserved: Not set
...0 .... = Nonce: Not set
.... 0... = Congestion Window Reduced (CWR): 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 size value: 237
[Calculated window size: 30336]
[Window size scaling factor: 128]
Checksum: 0x8948 [validation disabled]
[Good Checksum: False]
[Bad Checksum: False]
Urgent pointer: 0
[SEQ/ACK analysis]
[iRTT: 0.029273000 seconds]
[Bytes in flight: 1102]
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]
Request Version: HTTP/1.1
Status Code: 200
Response Phrase: OK
Date: Tue, 19 Jan 2016 23:50:23 GMT\r\n
Server: Apache/2.4.6 (CentOS) OpenSSL/1.0.1e-fips PHP/5.4.16 mod_perl/2.0.9dev Perl/v5.16.3\r\n
Last-Modified: Tue, 19 Jan 2016 06:59:01 GMT\r\n
ETag: "2e5-529aa67817703"\r\n
Accept-Ranges: bytes\r\n
Content-Length: 741\r\n
[Content length: 741]
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 1/1]
[Time since request: 0.038427000 seconds]
[Request in frame: 13]
Line-based text data: text/html
<html>\n
<head>\n
<title>Lab2-4 file: Embedded URLs</title>\n
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1">\n
</head>\n
\n
<body bgcolor="#FFFFFF" text="#000000">\n
\n
<p>\n
 </p>\n
\n
<p>This little HTML file is being served by gaia.cs.umass.edu. <br>\n
It contains two embedded images. The image above, from the web site of <br>\n
our publisher, is served by the server www.pearsoned.com. The image of our <br>\n
book(5th edition) below is stored at the www server manic.cs.umass.edu:</p>\n
<p align="left"></p>\n
</body>\n
</html>\n
```

```
34 1.428012      100.65.91.96      165.193.140.14      HTTP      520      GET /assets/hip/us/hip_us_pearsonhighered/images/pearson_logo.gif HTTP/1.1
Frame 34: 520 bytes on wire (4160 bits), 520 bytes captured (4160 bits) on interface 0
  Interface id: 0 (\Device\NPF_{0C90F0D5-9FC6-44A5-BB98-7375F9677D1C})
  Encapsulation type: Ethernet (1)
  Arrival Time: Jan 19, 2016 18:50:28.838407000 Eastern Standard Time
  [Time shift for this packet: 0.000000000 seconds]
  Epoch Time: 1453247428.838407000 seconds
  [Time delta from previous captured frame: 0.000006000 seconds]
  [Time delta from previous displayed frame: 0.085443000 seconds]
  [Time since reference or first frame: 1.428012000 seconds]
  Frame Number: 34
  Frame Length: 520 bytes (4160 bits)
  Capture Length: 520 bytes (4160 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: Microsof_16:a0:9a (30:59:b7:16:a0:9a), Dst: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
  Destination: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
    Address: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
      .... ..0. .... = LG bit: Globally unique address (factory default)
      .... ...0 .... = IG bit: Individual address (unicast)
  Source: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
    Address: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
      .... ..0. .... = LG bit: Globally unique address (factory default)
      .... ...0 .... = IG bit: Individual address (unicast)
  Type: IPv4 (0x0800)
Internet Protocol Version 4, Src: 100.65.91.96, Dst: 165.193.140.14
  0100 .... = Version: 4
  .... 0101 = Header Length: 20 bytes
  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: 506
  Identification: 0x1c92 (7314)
  Flags: 0x02 (Don't Fragment)
    0... .... = Reserved bit: Not set
    .1.. .... = Don't fragment: Set
    ..0. .... = More fragments: Not set
  Fragment offset: 0
  Time to live: 128
  Protocol: TCP (6)
  Header checksum: 0xeafa [validation disabled]
    [Good: False]
    [Bad: False]
  Source: 100.65.91.96
  Destination: 165.193.140.14
    [Source GeoIP: Unknown]
    [Destination GeoIP: Unknown]
Transmission Control Protocol, Src Port: 53550 (53550), Dst Port: 80 (80), Seq: 1, Ack: 1, Len: 466
  Source Port: 53550
  Destination Port: 80
  [Stream index: 5]
  [TCP Segment Len: 466]
  Sequence number: 1 (relative sequence number)
  [Next sequence number: 467 (relative sequence number)]
  Acknowledgment number: 1 (relative ack number)
  Header Length: 20 bytes
  Flags: 0x018 (PSH, ACK)
    000. .... = Reserved: Not set
    ...0 .... = Nonce: Not set
    .... 0... = Congestion Window Reduced (CWR): 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 size value: 1024
  [Calculated window size: 262144]
  [Window size scaling factor: 256]
  Checksum: 0xdcae [validation disabled]
    [Good Checksum: False]
    [Bad Checksum: False]
  Urgent pointer: 0
  [SEQ/ACK analysis]
    [iRTT: 0.058249000 seconds]
    [Bytes in flight: 466]
```

Hypertext Transfer Protocol

GET /assets/hip/us/hip_us_pearsonhighered/images/pearson_logo.gif HTTP/1.1\r\n

[Expert Info (Chat/Sequence): GET /assets/hip/us/hip_us_pearsonhighered/images/pearson_logo.gif HTTP/1.1\r\n]

[GET /assets/hip/us/hip_us_pearsonhighered/images/pearson_logo.gif HTTP/1.1\r\n]

[Severity level: Chat]

[Group: Sequence]

Request Method: GET

Request URI: /assets/hip/us/hip_us_pearsonhighered/images/pearson_logo.gif

Request Version: HTTP/1.1

Accept: image/png, image/svg+xml, image/jxr, image/*;q=0.8, */*;q=0.5\r\n

Referer: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file4.html\r\n

Accept-Language: en-CA,en;q=0.8,zh-Hans-CN;q=0.5,zh-Hans;q=0.3\r\n

User-Agent: Mozilla/5.0 (Windows NT 10.0; WOW64; Trident/7.0; Touch; rv:11.0) like Gecko\r\n

Accept-Encoding: gzip, deflate\r\n

Host: www.pearsonhighered.com\r\n

Connection: Keep-Alive\r\n

\r\n

[Full request URI: http://www.pearsonhighered.com/assets/hip/us/hip_us_pearsonhighered/images/pearson_logo.gif]

[HTTP request 1/1]

[Response in frame: 58]

```
37 1.433198      100.65.91.96      128.119.240.90      HTTP      479      GET /~kurose/cover_5th_ed.jpg HTTP/1.1
Frame 37: 479 bytes on wire (3832 bits), 479 bytes captured (3832 bits) on interface 0
Interface id: 0 (\Device\NPF_{0C90F0D5-9FC6-44A5-BB98-7375F9677D1C})
Encapsulation type: Ethernet (1)
Arrival Time: Jan 19, 2016 18:50:28.843593000 Eastern Standard Time
[Time shift for this packet: 0.000000000 seconds]
Epoch Time: 1453247428.843593000 seconds
[Time delta from previous captured frame: 0.000229000 seconds]
[Time delta from previous displayed frame: 0.005186000 seconds]
[Time since reference or first frame: 1.433198000 seconds]
Frame Number: 37
Frame Length: 479 bytes (3832 bits)
Capture Length: 479 bytes (3832 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: Microsof_16:a0:9a (30:59:b7:16:a0:9a), Dst: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
Destination: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
Address: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
.... ..0. .... = LG bit: Globally unique address (factory default)
.... ..0 .... = IG bit: Individual address (unicast)
Source: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
Address: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
.... ..0. .... = LG bit: Globally unique address (factory default)
.... ..0 .... = IG bit: Individual address (unicast)
Type: IPv4 (0x0800)
Internet Protocol Version 4, Src: 100.65.91.96, Dst: 128.119.240.90
0100 .... = Version: 4
.... 0101 = Header Length: 20 bytes
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: 465
Identification: 0x40bf (16575)
Flags: 0x02 (Don't Fragment)
0... .... = Reserved bit: Not set
.1.. .... = Don't fragment: Set
..0. .... = More fragments: Not set
Fragment offset: 0
Time to live: 128
Protocol: TCP (6)
Header checksum: 0x87f4 [validation disabled]
[Good: False]
[Bad: False]
Source: 100.65.91.96
Destination: 128.119.240.90
[Source GeoIP: Unknown]
[Destination GeoIP: Unknown]
Transmission Control Protocol, Src Port: 53551 (53551), Dst Port: 80 (80), Seq: 1, Ack: 1, Len: 425
Source Port: 53551
Destination Port: 80
[Stream index: 7]
[TCP Segment Len: 425]
Sequence number: 1 (relative sequence number)
[Next sequence number: 426 (relative sequence number)]
Acknowledgment number: 1 (relative ack number)
Header Length: 20 bytes
Flags: 0x018 (PSH, ACK)
000. .... = Reserved: Not set
...0 .... = Nonce: Not set
.... 0... = Congestion Window Reduced (CWR): 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 size value: 1024
[Calculated window size: 262144]
[Window size scaling factor: 256]
Checksum: 0x3b52 [validation disabled]
[Good Checksum: False]
[Bad Checksum: False]
Urgent pointer: 0
[SEQ/ACK analysis]
[iRTT: 0.030057000 seconds]
[Bytes in flight: 425]
Hypertext Transfer Protocol
```

```
GET /~kurose/cover_5th_ed.jpg HTTP/1.1\r\n
[Expert Info (Chat/Sequence): GET /~kurose/cover_5th_ed.jpg HTTP/1.1\r\n]
[GET /~kurose/cover_5th_ed.jpg HTTP/1.1\r\n]
[Severity level: Chat]
[Group: Sequence]
Request Method: GET
Request URI: /~kurose/cover_5th_ed.jpg
Request Version: HTTP/1.1
Accept: image/png, image/svg+xml, image/jxr, image/*;q=0.8, */*;q=0.5\r\n
Referer: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file4.html\r\n
Accept-Language: en-CA,en;q=0.8,zh-Hans-CN;q=0.5,zh-Hans;q=0.3\r\n
User-Agent: Mozilla/5.0 (Windows NT 10.0; WOW64; Trident/7.0; Touch; rv:11.0) like Gecko\r\n
Accept-Encoding: gzip, deflate\r\n
Host: manic.cs.umass.edu\r\n
Connection: Keep-Alive\r\n
\r\n
[Full request URI: http://manic.cs.umass.edu/~kurose/cover_5th_ed.jpg]
[HTTP request 1/1]
[Response in frame: 42]
```


42 1.468970 128.119.240.90 100.65.91.96 HTTP 510 HTTP/1.1 302 Found (text/html)

Frame 42: 510 bytes on wire (4080 bits), 510 bytes captured (4080 bits) on interface 0
Interface id: 0 (\Device\NPF_{0C90F0D5-9FC6-44A5-BB98-7375F9677D1C})
Encapsulation type: Ethernet (1)
Arrival Time: Jan 19, 2016 18:50:28.879365000 Eastern Standard Time
[Time shift for this packet: 0.000000000 seconds]
Epoch Time: 1453247428.879365000 seconds
[Time delta from previous captured frame: 0.006109000 seconds]
[Time delta from previous displayed frame: 0.035772000 seconds]
[Time since reference or first frame: 1.468970000 seconds]
Frame Number: 42
Frame Length: 510 bytes (4080 bits)
Capture Length: 510 bytes (4080 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: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5), Dst: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
Destination: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
Address: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
.... 0. = LG bit: Globally unique address (factory default)
.... 0. = IG bit: Individual address (unicast)
Source: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
Address: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
.... 0. = LG bit: Globally unique address (factory default)
.... 0. = IG bit: Individual address (unicast)
Type: IPv4 (0x0800)
Internet Protocol Version 4, Src: 128.119.240.90, Dst: 100.65.91.96
0100 = Version: 4
.... 0101 = Header Length: 20 bytes
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: 496
Identification: 0x788f (30863)
Flags: 0x02 (Don't Fragment)
0... = Reserved bit: Not set
.1.. = Don't fragment: Set
..0. = More fragments: Not set
Fragment offset: 0
Time to live: 50
Protocol: TCP (6)
Header checksum: 0x9e05 [validation disabled]
[Good: False]
[Bad: False]
Source: 128.119.240.90
Destination: 100.65.91.96
[Source GeoIP: Unknown]
[Destination GeoIP: Unknown]
Transmission Control Protocol, Src Port: 80 (80), Dst Port: 53551 (53551), Seq: 1, Ack: 426, Len: 456
Source Port: 80
Destination Port: 53551
[Stream index: 7]
[TCP Segment Len: 456]
Sequence number: 1 (relative sequence number)
[Next sequence number: 457 (relative sequence number)]
Acknowledgment number: 426 (relative ack number)
Header Length: 20 bytes
Flags: 0x018 (PSH, ACK)
000. = Reserved: Not set
...0 = Nonce: Not set
.... 0... = Congestion Window Reduced (CWR): 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 size value: 245
[Calculated window size: 15680]
[Window size scaling factor: 64]
Checksum: 0x779a [validation disabled]
[Good Checksum: False]
[Bad Checksum: False]
Urgent pointer: 0
[SEQ/ACK analysis]
[iRTT: 0.030057000 seconds]
[Bytes in flight: 456]
Hypertext Transfer Protocol

```
HTTP/1.1 302 Found\r\n
[Expert Info (Chat/Sequence): HTTP/1.1 302 Found\r\n]
[HTTP/1.1 302 Found\r\n]
[Severity level: Chat]
[Group: Sequence]
Request Version: HTTP/1.1
Status Code: 302
Response Phrase: Found
Date: Tue, 19 Jan 2016 23:50:22 GMT\r\n
Server: Apache\r\n
Location: http://caite.cs.umass.edu/~kurose/cover_5th_ed.jpg\r\n
Content-Length: 234\r\n
[Content length: 234]
Connection: close\r\n
Content-Type: text/html; charset=iso-8859-1\r\n
\r\n
[HTTP response 1/1]
[Time since request: 0.035772000 seconds]
[Request in frame: 37]
```

Line-based text data: text/html

```
<!DOCTYPE HTML PUBLIC "-//IETF//DTD HTML 2.0//EN">\n
<html><head>\n
<title>302 Found</title>\n
</head><body>\n
<h1>Found</h1>\n
<p>The document has moved <a href="http://caite.cs.umass.edu/~kurose/cover_5th_ed.jpg">here</a>.</p>\n
</body></html>\n
```

```
57 1.509955      100.65.91.96      128.119.240.90      HTTP      479      GET /~kurose/cover_5th_ed.jpg HTTP/1.1
Frame 57: 479 bytes on wire (3832 bits), 479 bytes captured (3832 bits) on interface 0
Interface id: 0 (\Device\NPF_{0C90F0D5-9FC6-44A5-BB98-7375F9677D1C})
Encapsulation type: Ethernet (1)
Arrival Time: Jan 19, 2016 18:50:28.920350000 Eastern Standard Time
[Time shift for this packet: 0.000000000 seconds]
Epoch Time: 1453247428.920350000 seconds
[Time delta from previous captured frame: 0.000290000 seconds]
[Time delta from previous displayed frame: 0.040985000 seconds]
[Time since reference or first frame: 1.509955000 seconds]
Frame Number: 57
Frame Length: 479 bytes (3832 bits)
Capture Length: 479 bytes (3832 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: Microsof_16:a0:9a (30:59:b7:16:a0:9a), Dst: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
Destination: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
Address: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
.... ..0. .... = LG bit: Globally unique address (factory default)
.... ..0 .... = IG bit: Individual address (unicast)
Source: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
Address: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
.... ..0. .... = LG bit: Globally unique address (factory default)
.... ..0 .... = IG bit: Individual address (unicast)
Type: IPv4 (0x0800)
Internet Protocol Version 4, Src: 100.65.91.96, Dst: 128.119.240.90
0100 .... = Version: 4
.... 0101 = Header Length: 20 bytes
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: 465
Identification: 0x40c6 (16582)
Flags: 0x02 (Don't Fragment)
0... .... = Reserved bit: Not set
.1.. .... = Don't fragment: Set
..0. .... = More fragments: Not set
Fragment offset: 0
Time to live: 128
Protocol: TCP (6)
Header checksum: 0x87ed [validation disabled]
[Good: False]
[Bad: False]
Source: 100.65.91.96
Destination: 128.119.240.90
[Source GeoIP: Unknown]
[Destination GeoIP: Unknown]
Transmission Control Protocol, Src Port: 53553 (53553), Dst Port: 80 (80), Seq: 1, Ack: 1, Len: 425
Source Port: 53553
Destination Port: 80
[Stream index: 9]
[TCP Segment Len: 425]
Sequence number: 1 (relative sequence number)
[Next sequence number: 426 (relative sequence number)]
Acknowledgment number: 1 (relative ack number)
Header Length: 20 bytes
Flags: 0x018 (PSH, ACK)
000. .... = Reserved: Not set
...0 .... = Nonce: Not set
.... 0... = Congestion Window Reduced (CWR): 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 size value: 1024
[Calculated window size: 262144]
[Window size scaling factor: 256]
Checksum: 0x27b7 [validation disabled]
[Good Checksum: False]
[Bad Checksum: False]
Urgent pointer: 0
[SEQ/ACK analysis]
[iRTT: 0.025683000 seconds]
[Bytes in flight: 425]
Hypertext Transfer Protocol
```

```
GET /~kurose/cover_5th_ed.jpg HTTP/1.1\r\n
[Expert Info (Chat/Sequence): GET /~kurose/cover_5th_ed.jpg HTTP/1.1\r\n]
[GET /~kurose/cover_5th_ed.jpg HTTP/1.1\r\n]
[Severity level: Chat]
[Group: Sequence]
Request Method: GET
Request URI: /~kurose/cover_5th_ed.jpg
Request Version: HTTP/1.1
Accept: image/png, image/svg+xml, image/jxr, image/*;q=0.8, */*;q=0.5\r\n
Referer: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file4.html\r\n
Accept-Language: en-CA,en;q=0.8,zh-Hans-CN;q=0.5,zh-Hans;q=0.3\r\n
User-Agent: Mozilla/5.0 (Windows NT 10.0; WOW64; Trident/7.0; Touch; rv:11.0) like Gecko\r\n
Accept-Encoding: gzip, deflate\r\n
Connection: Keep-Alive\r\n
Host: caite.cs.umass.edu\r\n
\r\n
[Full request URI: http://caite.cs.umass.edu/~kurose/cover_5th_ed.jpg]
[HTTP request 1/1]
[Response in frame: 196]
```

58 1.510155 165.193.140.14 100.65.91.96 HTTP 998 HTTP/1.1 200 OK (GIF89a)
Frame 58: 998 bytes on wire (7984 bits), 998 bytes captured (7984 bits) on interface 0
Interface id: 0 (\Device\NPF_{0C90F0D5-9FC6-44A5-BB98-7375F9677D1C})
Encapsulation type: Ethernet (1)
Arrival Time: Jan 19, 2016 18:50:28.920550000 Eastern Standard Time
[Time shift for this packet: 0.000000000 seconds]
Epoch Time: 1453247428.920550000 seconds
[Time delta from previous captured frame: 0.000200000 seconds]
[Time delta from previous displayed frame: 0.000200000 seconds]
[Time since reference or first frame: 1.510155000 seconds]
Frame Number: 58
Frame Length: 998 bytes (7984 bits)
Capture Length: 998 bytes (7984 bits)
[Frame is marked: False]
[Frame is ignored: False]
[Protocols in frame: eth:ethertype:ip:tcp:http:image-gif]
[Coloring Rule Name: HTTP]
[Coloring Rule String: http || tcp.port == 80 || http2]
Ethernet II, Src: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5), Dst: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
Destination: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
Address: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
.... ..0. = LG bit: Globally unique address (factory default)
.... ..0. = IG bit: Individual address (unicast)
Source: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
Address: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
.... ..0. = LG bit: Globally unique address (factory default)
.... ..0. = IG bit: Individual address (unicast)
Type: IPv4 (0x0800)
Internet Protocol Version 4, Src: 165.193.140.14, Dst: 100.65.91.96
0100 = Version: 4
.... 0101 = Header Length: 20 bytes
Differentiated Services Field: 0x48 (DSCP: AF21, ECN: Not-ECT)
0100 10.. = Differentiated Services Codepoint: Assured Forwarding 21 (18)
.... ..00 = Explicit Congestion Notification: Not ECN-Capable Transport (0)
Total Length: 984
Identification: 0x3cbc (15548)
Flags: 0x02 (Don't Fragment)
0... = Reserved bit: Not set
.1.. = Don't fragment: Set
..0. = More fragments: Not set
Fragment offset: 0
Time to live: 51
Protocol: TCP (6)
Header checksum: 0x15ab [validation disabled]
[Good: False]
[Bad: False]
Source: 165.193.140.14
Destination: 100.65.91.96
[Source GeoIP: Unknown]
[Destination GeoIP: Unknown]
Transmission Control Protocol, Src Port: 80 (80), Dst Port: 53550 (53550), Seq: 1647, Ack: 467, Len: 944
Source Port: 80
Destination Port: 53550
[Stream index: 5]
[TCP Segment Len: 944]
Sequence number: 1647 (relative sequence number)
[Next sequence number: 2591 (relative sequence number)]
Acknowledgment number: 467 (relative ack number)
Header Length: 20 bytes
Flags: 0x018 (PSH, ACK)
000. = Reserved: Not set
...0 = Nonce: Not set
.... 0... = Congestion Window Reduced (CWR): 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 size value: 54
[Calculated window size: 6912]
[Window size scaling factor: 128]
Checksum: 0x481e [validation disabled]
[Good Checksum: False]
[Bad Checksum: False]
Urgent pointer: 0
[SEQ/ACK analysis]
[iRTT: 0.058249000 seconds]
[Bytes in flight: 944]
TCP segment data (944 bytes)

```
[3 Reassembled TCP Segments (2590 bytes): #48(266), #52(1380), #58(944)]
[Frame: 48, payload: 0-265 (266 bytes)]
[Frame: 52, payload: 266-1645 (1380 bytes)]
[Frame: 58, payload: 1646-2589 (944 bytes)]
[Segment count: 3]
[Reassembled TCP length: 2590]
[Reassembled TCP Data: 485454502f312e3120323030204f4b0d0a4461746553a2054...]
```

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]
Request Version: HTTP/1.1
Status Code: 200
Response Phrase: OK
```

```
Date: Tue, 19 Jan 2016 23:50:23 GMT\r\n
Server: Apache\r\n
Vary: Host,User-Agent\r\n
Last-Modified: Sat, 09 Jul 2011 13:17:52 GMT\r\n
Accept-Ranges: bytes\r\n
Content-Length: 2324\r\n
[Content length: 2324]
Keep-Alive: timeout=5, max=100\r\n
Connection: Keep-Alive\r\n
Content-Type: image/gif\r\n
\r\n
[HTTP response 1/1]
[Time since request: 0.082143000 seconds]
[Request in frame: 34]
```

Compuserve GIF, Version: GIF89a

```
Version: GIF89a
Screen width: 121
Screen height: 40
Global settings: (Global color table present) (5 bits per color) (5 bits per pixel)
1... .... = Global color map is present: True (1)
.100 .... = Bits per color minus 1: 4
.... 0... = Global color map is ordered: False (0)
.... .100 = Image bits per pixel minus 1: 4
Background color index: 0
Global color map: 6971abd8d6dbc8c7d4ffffbed49549da8aac6e8e4e2ffffff1...
```

```
Extension: Application
Extension label: Application (0xff)
Data block (length = 11)
Data block (length = 60)
Data block (length = 101)
Data block (length = 32)
Data block (length = 51)
Data block (length = 100)
Data block (length = 108)
Data block (length = 77)
Data block (length = 100)
Data block (length = 51)
Data block (length = 65)
Data block (length = 116)
Data block (length = 162)
Data block (length = 0)
Extension: Graphics Control
Extension label: Graphics Control (0xf9)
Data block (length = 4)
Data block (length = 0)
```

```
Image
Image left position: 0
Image top position: 0
Image width: 121
Image height: 40
Local settings: (1 bit per color) (1 bit per pixel)
0... .... = Local color map is present: False (0)
.000 .... = Bits per color minus 1: 0
.... 0... = Local color map is ordered: False (0)
.... .000 = Image bits per pixel minus 1: 0
LZW minimum code size: 5
Data block (length = 255)
Data block (length = 255)
Data block (length = 255)
Data block (length = 255)
Data block (length = 119)
Data block (length = 0)
Trailer (End of the GIF stream)
```

```
196 1.645911      128.119.240.90      100.65.91.96      HTTP      730      HTTP/1.1 200 OK      (JPEG JFIF image)
Frame 196: 730 bytes on wire (5840 bits), 730 bytes captured (5840 bits) on interface 0
Interface id: 0 (\Device\NPF_{0C90F0D5-9FC6-44A5-BB98-7375F9677D1C})
Encapsulation type: Ethernet (1)
Arrival Time: Jan 19, 2016 18:50:29.056306000 Eastern Standard Time
[Time shift for this packet: 0.000000000 seconds]
Epoch Time: 1453247429.056306000 seconds
[Time delta from previous captured frame: 0.000428000 seconds]
[Time delta from previous displayed frame: 0.135756000 seconds]
[Time since reference or first frame: 1.645911000 seconds]
Frame Number: 196
Frame Length: 730 bytes (5840 bits)
Capture Length: 730 bytes (5840 bits)
[Frame is marked: False]
[Frame is ignored: False]
[Protocols in frame: eth:ethertype:ip:tcp:http:image-jfif]
[Coloring Rule Name: HTTP]
[Coloring Rule String: http || tcp.port == 80 || http2]
Ethernet II, Src: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5), Dst: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
Destination: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
Address: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
.... ..0. .... = LG bit: Globally unique address (factory default)
.... ..0. .... = IG bit: Individual address (unicast)
Source: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
Address: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
.... ..0. .... = LG bit: Globally unique address (factory default)
.... ..0. .... = IG bit: Individual address (unicast)
Type: IPv4 (0x0800)
Internet Protocol Version 4, Src: 128.119.240.90, Dst: 100.65.91.96
0100 .... = Version: 4
.... 0101 = Header Length: 20 bytes
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: 716
Identification: 0xb490 (46224)
Flags: 0x02 (Don't Fragment)
0... .... = Reserved bit: Not set
.1.. .... = Don't fragment: Set
..0. .... = More fragments: Not set
Fragment offset: 0
Time to live: 50
Protocol: TCP (6)
Header checksum: 0x6128 [validation disabled]
[Good: False]
[Bad: False]
Source: 128.119.240.90
Destination: 100.65.91.96
[Source GeoIP: Unknown]
[Destination GeoIP: Unknown]
Transmission Control Protocol, Src Port: 80 (80), Dst Port: 53553 (53553), Seq: 100537, Ack: 426, Len: 676
Source Port: 80
Destination Port: 53553
[Stream index: 9]
[TCP Segment Len: 676]
Sequence number: 100537 (relative sequence number)
[Next sequence number: 101213 (relative sequence number)]
Acknowledgment number: 426 (relative ack number)
Header Length: 20 bytes
Flags: 0x019 (FIN, PSH, ACK)
000. .... = Reserved: Not set
...0 .... = Nonce: Not set
.... 0... = Congestion Window Reduced (CWR): 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
.... .... ...1 = Fin: Set
[Expert Info (Chat/Sequence): Connection finish (FIN)]
[Connection finish (FIN)]
[Severity level: Chat]
[Group: Sequence]
[TCP Flags: *****AP**F]
Window size value: 245
[Calculated window size: 15680]
[Window size scaling factor: 64]
Checksum: 0x4125 [validation disabled]
[Good Checksum: False]
[Bad Checksum: False]
Urgent pointer: 0
```

```
[SEQ/ACK analysis]
  [iRTT: 0.025683000 seconds]
  [Bytes in flight: 677]
TCP segment data (676 bytes)
[72 Reassembled TCP Segments (101212 bytes): #63(1416), #64(1416), #66(1416), #68(1416), #69(1416), #70(1416), #71(1416), #72(1416),
#74(1416), #76(1416), #78(1416), #80(1416), #82(1416), #84(1416), #86(1416), #88(1416), #90(1416), #92(1416)]
  [Frame: 63, payload: 0-1415 (1416 bytes)]
  [Frame: 64, payload: 1416-2831 (1416 bytes)]
  [Frame: 66, payload: 2832-4247 (1416 bytes)]
  [Frame: 68, payload: 4248-5663 (1416 bytes)]
  [Frame: 69, payload: 5664-7079 (1416 bytes)]
  [Frame: 70, payload: 7080-8495 (1416 bytes)]
  [Frame: 71, payload: 8496-9911 (1416 bytes)]
  [Frame: 72, payload: 9912-11327 (1416 bytes)]
  [Frame: 74, payload: 11328-12743 (1416 bytes)]
  [Frame: 76, payload: 12744-14159 (1416 bytes)]
  [Frame: 78, payload: 14160-15575 (1416 bytes)]
  [Frame: 80, payload: 15576-16991 (1416 bytes)]
  [Frame: 82, payload: 16992-18407 (1416 bytes)]
  [Frame: 84, payload: 18408-19823 (1416 bytes)]
  [Frame: 86, payload: 19824-21239 (1416 bytes)]
  [Frame: 88, payload: 21240-22655 (1416 bytes)]
  [Frame: 90, payload: 22656-24071 (1416 bytes)]
  [Frame: 92, payload: 24072-25487 (1416 bytes)]
  [Frame: 94, payload: 25488-26903 (1416 bytes)]
  [Frame: 96, payload: 26904-28319 (1416 bytes)]
  [Frame: 98, payload: 28320-29735 (1416 bytes)]
  [Frame: 100, payload: 29736-31151 (1416 bytes)]
  [Frame: 102, payload: 31152-32567 (1416 bytes)]
  [Frame: 104, payload: 32568-33983 (1416 bytes)]
  [Frame: 106, payload: 33984-35399 (1416 bytes)]
  [Frame: 108, payload: 35400-36815 (1416 bytes)]
  [Frame: 110, payload: 36816-38231 (1416 bytes)]
  [Frame: 112, payload: 38232-39647 (1416 bytes)]
  [Frame: 113, payload: 39648-41063 (1416 bytes)]
  [Frame: 115, payload: 41064-42479 (1416 bytes)]
  [Frame: 117, payload: 42480-43895 (1416 bytes)]
  [Frame: 119, payload: 43896-45311 (1416 bytes)]
  [Frame: 121, payload: 45312-46727 (1416 bytes)]
  [Frame: 123, payload: 46728-48143 (1416 bytes)]
  [Frame: 125, payload: 48144-49559 (1416 bytes)]
  [Frame: 127, payload: 49560-50975 (1416 bytes)]
  [Frame: 129, payload: 50976-52391 (1416 bytes)]
  [Frame: 131, payload: 52392-53807 (1416 bytes)]
  [Frame: 133, payload: 53808-55223 (1416 bytes)]
  [Frame: 135, payload: 55224-56639 (1416 bytes)]
  [Frame: 136, payload: 56640-58055 (1416 bytes)]
  [Frame: 138, payload: 58056-59471 (1416 bytes)]
  [Frame: 140, payload: 59472-60887 (1416 bytes)]
  [Frame: 142, payload: 60888-62303 (1416 bytes)]
  [Frame: 144, payload: 62304-63719 (1416 bytes)]
  [Frame: 145, payload: 63720-65135 (1416 bytes)]
  [Frame: 147, payload: 65136-66551 (1416 bytes)]
  [Frame: 149, payload: 66552-67967 (1416 bytes)]
  [Frame: 151, payload: 67968-69383 (1416 bytes)]
  [Frame: 153, payload: 69384-70799 (1416 bytes)]
  [Frame: 155, payload: 70800-72215 (1416 bytes)]
  [Frame: 157, payload: 72216-73631 (1416 bytes)]
  [Frame: 159, payload: 73632-75047 (1416 bytes)]
  [Frame: 161, payload: 75048-76463 (1416 bytes)]
  [Frame: 163, payload: 76464-77879 (1416 bytes)]
  [Frame: 165, payload: 77880-79295 (1416 bytes)]
  [Frame: 167, payload: 79296-80711 (1416 bytes)]
  [Frame: 169, payload: 80712-82127 (1416 bytes)]
  [Frame: 170, payload: 82128-83543 (1416 bytes)]
  [Frame: 172, payload: 83544-84959 (1416 bytes)]
  [Frame: 174, payload: 84960-86375 (1416 bytes)]
  [Frame: 176, payload: 86376-87791 (1416 bytes)]
  [Frame: 178, payload: 87792-89207 (1416 bytes)]
  [Frame: 180, payload: 89208-90623 (1416 bytes)]
  [Frame: 182, payload: 90624-92039 (1416 bytes)]
  [Frame: 184, payload: 92040-93455 (1416 bytes)]
  [Frame: 186, payload: 93456-94871 (1416 bytes)]
  [Frame: 188, payload: 94872-96287 (1416 bytes)]
  [Frame: 190, payload: 96288-97703 (1416 bytes)]
  [Frame: 192, payload: 97704-99119 (1416 bytes)]
  [Frame: 194, payload: 99120-100535 (1416 bytes)]
  [Frame: 196, payload: 100536-101211 (676 bytes)]
[Segment count: 72]
[Reassembled TCP length: 101212]
[Reassembled TCP Data: 485454502f312e3120323030204f4b0d0a446174653a2054...]
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]
Request Version: HTTP/1.1
Status Code: 200
Response Phrase: OK

Date: Tue, 19 Jan 2016 23:50:22 GMT\r\n
Server: Apache\r\n
Last-Modified: Tue, 15 Sep 2009 18:23:27 GMT\r\n
ETag: "78004-18a68-473a1e0e6e5c0"\r\n
Accept-Ranges: bytes\r\n
Content-Length: 100968\r\n
[Content length: 100968]
Connection: close\r\n
Content-Type: image/jpeg\r\n
\r\n
[HTTP response 1/1]
[Time since request: 0.135956000 seconds]
[Request in frame: 57]

JPEG File Interchange Format

Marker: Start of Image (0xffd8)

Marker segment: Reserved for application segments - 0 (0xFFE0)

Marker: Reserved for application segments - 0 (0xffe0)

Length: 16

Identifier: JFIF

Version: 1.2

Major Version: 1

Minor Version: 2

Units: Dots per inch (1)

Xdensity: 72

Ydensity: 72

Xthumbnail: 0

Ythumbnail: 0

Marker segment: Reserved for application segments - 1 (0xFFE1)

Marker: Reserved for application segments - 1 (0xffe1)

Length: 9469

Identifier: Exif

Endianness: big endian

Start offset of IFD starting from the TIFF header start: 8 bytes

Number of fields in this IFD: 7

Exif Tag: Orientation (274)

Type: SHORT (3)

Count: 1

Value offset from start of TIFF header: 65536

Exif Tag: XResolution (282)

Type: RATIONAL (5)

Count: 1

Value offset from start of TIFF header: 98

Exif Tag: YResolution (283)

Type: RATIONAL (5)

Count: 1

Value offset from start of TIFF header: 106

Exif Tag: ResolutionUnit (296)

Type: SHORT (3)

Count: 1

Value offset from start of TIFF header: 131072

Exif Tag: Software (305)

Type: ASCII (2)

Count: 28

Value offset from start of TIFF header: 114

Exif Tag: DateTime (306)

Type: ASCII (2)

Count: 20

Value offset from start of TIFF header: 142

Exif Tag: Exif IFD Pointer (34665)

Type: LONG (4)

Count: 1

Value offset from start of TIFF header: 164

Offset to next IFD from start of TIFF header: 208 bytes

Number of fields in this IFD: 6

Exif Tag: Compression (259)

Type: SHORT (3)

Count: 1

Value offset from start of TIFF header: 393216

Exif Tag: XResolution (282)

Type: RATIONAL (5)

Count: 1

Value offset from start of TIFF header: 286

Exif Tag: YResolution (283)

Type: RATIONAL (5)

Count: 1
Value offset from start of TIFF header: 294
Exif Tag: ResolutionUnit (296)
Type: SHORT (3)
Count: 1
Value offset from start of TIFF header: 131072
Exif Tag: JPEGInterchangeFormat (513)
Type: LONG (4)
Count: 1
Value offset from start of TIFF header: 302
Exif Tag: JPEGInterchangeFormatLength (514)
Type: LONG (4)
Count: 1
Value offset from start of TIFF header: 9159
Offset to next IFD from start of TIFF header: 0 bytes
Marker segment: Reserved for application segments - 13 (0xFFED)
Marker: Reserved for application segments - 13 (0xffed)
Length: 10800
Remaining segment data: 10798 bytes
Marker segment: Reserved for application segments - 1 (0xFFE1)
Marker: Reserved for application segments - 1 (0xffe1)
Length: 4046
Identifier: http://ns.adobe.com/xap/1.0/ (Unknown identifier)
Remaining segment data: 4015 bytes
Marker segment: Reserved for application segments - 2 (0xFFE2)
Marker: Reserved for application segments - 2 (0xffe2)
Length: 3160
Identifier: ICC_PROFILE (Unknown identifier)
Remaining segment data: 3146 bytes
Marker segment: Reserved for application segments - 14 (0xFFEE)
Marker: Reserved for application segments - 14 (0xffee)
Length: 14
Remaining segment data: 12 bytes
Marker segment: Define quantization table(s) (0xFFDB)
Marker: Define quantization table(s) (0xffdb)
Length: 132
Remaining segment data: 130 bytes
Start of Frame header: Start of Frame (non-differential, Huffman coding) - Baseline DCT (0xFFC0)
Marker: Start of Frame (non-differential, Huffman coding) - Baseline DCT (0xffc0)
Length: 17
Sample Precision (bits): 8
Lines: 301
Samples per line: 244
Number of image components in frame: 3
Component identifier: 1
0001 = Horizontal sampling factor: 1
.... 0001 = Vertical sampling factor: 1
Quantization table destination selector: 0
Component identifier: 2
0001 = Horizontal sampling factor: 1
.... 0001 = Vertical sampling factor: 1
Quantization table destination selector: 1
Component identifier: 3
0001 = Horizontal sampling factor: 1
.... 0001 = Vertical sampling factor: 1
Quantization table destination selector: 1
Marker segment: Define restart interval (0xFFDD)
Marker: Define restart interval (0xffdd)
Length: 4
Remaining segment data: 2 bytes
Marker segment: Define Huffman table(s) (0xFFC4)
Marker: Define Huffman table(s) (0xffc4)
Length: 418
Remaining segment data: 416 bytes
Start of Segment header: Start of Scan (0xFFDA)
Marker: Start of Scan (0xffda)
Length: 12
Number of image components in scan: 3
Scan component selector: 1
0000 = DC entropy coding table destination selector: 0
.... 0000 = AC entropy coding table destination selector: 0
Scan component selector: 2
0001 = DC entropy coding table destination selector: 1
.... 0001 = AC entropy coding table destination selector: 1
Scan component selector: 3
0001 = DC entropy coding table destination selector: 1
.... 0001 = AC entropy coding table destination selector: 1
Start of spectral or predictor selection: 0
End of spectral selection: 63
0000 = Successive approximation bit position high: 0
.... 0000 = Successive approximation bit position low or point transform: 0
Entropy-coded segment (dissection is not yet implemented): 9f7fce057fce057fce277e74ff00ce277e54fe65fe65fe54...

Marker: Restart interval termination - Restart with modulo 8 count 0 (0xffd0)
Entropy-coded segment (dissection is not yet implemented): f7effcf3ff00584ff233ff00066ffc49f56c55f7fe2aec...
Marker: Restart interval termination - Restart with modulo 8 count 1 (0xffd1)
Entropy-coded segment (dissection is not yet implemented): f7effcf3ff00584ff233ff00066ffc49f56c55f7fe2aec...
Marker: Restart interval termination - Restart with modulo 8 count 2 (0xffd2)
Entropy-coded segment (dissection is not yet implemented): f7effcf3ff00584ff233ff00066ffc49f56c55f7fe2aec...
Marker: Restart interval termination - Restart with modulo 8 count 3 (0xffd3)
Entropy-coded segment (dissection is not yet implemented): f7effcf3ff00584ff233ff00066ffc49f56c55f7c5d5d5...
Marker: Restart interval termination - Restart with modulo 8 count 4 (0xffd4)
Entropy-coded segment (dissection is not yet implemented): f7effcf3ff00584ff233ff00066ffc49f56c55f47ffce4...
Marker: Restart interval termination - Restart with modulo 8 count 5 (0xffd5)
Entropy-coded segment (dissection is not yet implemented): f7effcf3ff00584ff233ff00066ffc49f56c55f7fe2afc...
Marker: Restart interval termination - Restart with modulo 8 count 6 (0xffd6)
Entropy-coded segment (dissection is not yet implemented): f7effcf3ff00584ff233ff00066ffc49f56c55f7fe2aec...
Marker: Restart interval termination - Restart with modulo 8 count 7 (0xffd7)
Entropy-coded segment (dissection is not yet implemented): f7effcf3ff00584ff233ff00066ffc49f56c55f7fe2aec...
Marker: Restart interval termination - Restart with modulo 8 count 0 (0xffd0)
Entropy-coded segment (dissection is not yet implemented): f7effcf3ff00584ff233ff00066ffc49f56c55f7fe2aec...
Marker: Restart interval termination - Restart with modulo 8 count 1 (0xffd1)
Entropy-coded segment (dissection is not yet implemented): f875a359da4ba6db492dac323b73e4ec8a49a3b0dc919958...
Marker: Restart interval termination - Restart with modulo 8 count 2 (0xffd2)
Entropy-coded segment (dissection is not yet implemented): f885a17fc72ad7fe7a7fc9c6ccbc447080f3faefefa5f0fb...
Marker: Restart interval termination - Restart with modulo 8 count 3 (0xffd3)
Entropy-coded segment (dissection is not yet implemented): f983f9397da5ea3e50d2f48b5fc96d0fce7ab5835cfd775a...
Marker: Restart interval termination - Restart with modulo 8 count 4 (0xffd4)
Entropy-coded segment (dissection is not yet implemented): f965f927e7bf31f96a1f295a5ee8535f7956e6592dff0048...
Marker: Restart interval termination - Restart with modulo 8 count 5 (0xffd5)
Entropy-coded segment (dissection is not yet implemented): f98df97f6934bf95be527d2ece0bad4e3b9bc68ae6e8cec2...
Marker: Restart interval termination - Restart with modulo 8 count 6 (0xffd6)
Entropy-coded segment (dissection is not yet implemented): f915e51d6cfff0cabdb5d327d42e66b6862bf59343d1621f...
Marker: Restart interval termination - Restart with modulo 8 count 7 (0xffd7)
Entropy-coded segment (dissection is not yet implemented): f8d7e53b336be5ed2a51afb452eb72c71bf952ce0bff00ac...
Marker: Restart interval termination - Restart with modulo 8 count 0 (0xffd0)
Entropy-coded segment (dissection is not yet implemented): f267f3ce3785ff9531e4f8dc456769707515bcb8215a7b976...
Marker: Restart interval termination - Restart with modulo 8 count 1 (0xffd1)
Entropy-coded segment (dissection is not yet implemented): f9d3f933f9dde58f2c7907ca9e53b8d0b58d4bcc5a5c5792...
Marker: Restart interval termination - Restart with modulo 8 count 2 (0xffd2)
Entropy-coded segment (dissection is not yet implemented): f8a3e50b49ae74eb6d334cba820bbd5a669757bd07f796d6...
Marker: Restart interval termination - Restart with modulo 8 count 3 (0xffd3)
Entropy-coded segment (dissection is not yet implemented): e1ff00f388ff00f3803e57fcefcc8df24fe636a9f9953686...
Marker: Restart interval termination - Restart with modulo 8 count 4 (0xffd4)
Entropy-coded segment (dissection is not yet implemented): 9aff00ce05ca21ff009c51fcb07b790c174575c8de60d221...
Marker: Restart interval termination - Restart with modulo 8 count 5 (0xffd5)
Entropy-coded segment (dissection is not yet implemented): 94ff00ce07db349ff38aff00960ed5094d68200dc6bfee7a...
Marker: Restart interval termination - Restart with modulo 8 count 6 (0xffd6)
Entropy-coded segment (dissection is not yet implemented): 2fff009c29f3f0d13fe71a3f2df4cbad3643650aeb08b7c8...
Marker: Restart interval termination - Restart with modulo 8 count 7 (0xffd7)
Entropy-coded segment (dissection is not yet implemented): f26ffce3079d1fcbbf969e453fa5d67834dfad34ba44f772...
Marker: Restart interval termination - Restart with modulo 8 count 0 (0xffd0)
Entropy-coded segment (dissection is not yet implemented): f80f25b491c30cacd1149e3f5502cb1b381cda3a3aab1653...
Marker: Restart interval termination - Restart with modulo 8 count 1 (0xffd1)
Entropy-coded segment (dissection is not yet implemented): f8c9e52fcbdd035fd06c751bcbcb8af6e7d6f52189e354a...
Marker: Restart interval termination - Restart with modulo 8 count 2 (0xffd2)
Entropy-coded segment (dissection is not yet implemented): f943f97089fe0fd25aaa246f5e8c53995ff48940a0041153...
Marker: Restart interval termination - Restart with modulo 8 count 3 (0xffd3)
Entropy-coded segment (dissection is not yet implemented): f8c5e56f3dc1a5689a4e8e91c9ea41eaaceca10b132cce5...
Marker: Restart interval termination - Restart with modulo 8 count 4 (0xffd4)
Entropy-coded segment (dissection is not yet implemented): f85be5c82e62bdd1ee6c385e5fc93f2874fe2fcc709000d5...
Marker: Restart interval termination - Restart with modulo 8 count 5 (0xffd5)
Entropy-coded segment (dissection is not yet implemented): f8cbf97d0da5b7e8fbc8bd9a3bfbab69934db4f4e88c826...
Marker: Restart interval termination - Restart with modulo 8 count 6 (0xffd6)
Entropy-coded segment (dissection is not yet implemented): e2dff388ff00f3ec3d53f3ebf233c8bf9dda6ffce40a7912...
Marker: Restart interval termination - Restart with modulo 8 count 7 (0xffd7)
Entropy-coded segment (dissection is not yet implemented): f7effcf3ff00584ff233ff00066ffc49f56c55f7fe2aec...
Marker: Restart interval termination - Restart with modulo 8 count 0 (0xffd0)
Entropy-coded segment (dissection is not yet implemented): f7effcf3ff00584ff233ff00066ffc49f56c55f7fe2aec...
Marker: Restart interval termination - Restart with modulo 8 count 1 (0xffd1)
Entropy-coded segment (dissection is not yet implemented): f7effcf3ff00584ff233ff00066ffc49f56c55f7fe2aec...
Marker: Restart interval termination - Restart with modulo 8 count 2 (0xffd2)
Entropy-coded segment (dissection is not yet implemented): f7effcf3ff00584ff233ff00066ffc49f56c55f7fe2aec...
Marker: Restart interval termination - Restart with modulo 8 count 3 (0xffd3)
Entropy-coded segment (dissection is not yet implemented): f7effcf3ff00584ff233ff00066ffc49f56c55f7fe2aec...
Marker: Restart interval termination - Restart with modulo 8 count 4 (0xffd4)
Entropy-coded segment (dissection is not yet implemented): f4effcfb875afcfdb4ff009c31fc9bb7f257e5a7e5ff0098...
Marker: End of Image (0xffd9)

```
208 1.726134      100.65.91.96      128.119.245.12      HTTP      287      GET /favicon.ico HTTP/1.1
Frame 208: 287 bytes on wire (2296 bits), 287 bytes captured (2296 bits) on interface 0
Interface id: 0 (\Device\NPF_{0C90F0D5-9FC6-44A5-BB98-7375F9677D1C})
Encapsulation type: Ethernet (1)
Arrival Time: Jan 19, 2016 18:50:29.136529000 Eastern Standard Time
[Time shift for this packet: 0.000000000 seconds]
Epoch Time: 1453247429.136529000 seconds
[Time delta from previous captured frame: 0.000233000 seconds]
[Time delta from previous displayed frame: 0.080223000 seconds]
[Time since reference or first frame: 1.726134000 seconds]
Frame Number: 208
Frame Length: 287 bytes (2296 bits)
Capture Length: 287 bytes (2296 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: Microsof_16:a0:9a (30:59:b7:16:a0:9a), Dst: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
Destination: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
Address: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
.... ..0. .... = LG bit: Globally unique address (factory default)
.... ..0 .... = IG bit: Individual address (unicast)
Source: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
Address: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
.... ..0. .... = LG bit: Globally unique address (factory default)
.... ..0 .... = IG bit: Individual address (unicast)
Type: IPv4 (0x0800)
Internet Protocol Version 4, Src: 100.65.91.96, Dst: 128.119.245.12
0100 .... = Version: 4
.... 0101 = Header Length: 20 bytes
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: 273
Identification: 0x1abb (6843)
Flags: 0x02 (Don't Fragment)
0... .... = Reserved bit: Not set
.1.. .... = Don't fragment: Set
..0. .... = More fragments: Not set
Fragment offset: 0
Time to live: 128
Protocol: TCP (6)
Header checksum: 0xaa06 [validation disabled]
[Good: False]
[Bad: False]
Source: 100.65.91.96
Destination: 128.119.245.12
[Source GeoIP: Unknown]
[Destination GeoIP: Unknown]
Transmission Control Protocol, Src Port: 53556 (53556), Dst Port: 80 (80), Seq: 1, Ack: 1, Len: 233
Source Port: 53556
Destination Port: 80
[Stream index: 12]
[TCP Segment Len: 233]
Sequence number: 1 (relative sequence number)
[Next sequence number: 234 (relative sequence number)]
Acknowledgment number: 1 (relative ack number)
Header Length: 20 bytes
Flags: 0x018 (PSH, ACK)
000. .... = Reserved: Not set
...0 .... = Nonce: Not set
.... 0... = Congestion Window Reduced (CWR): 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 size value: 1024
[Calculated window size: 262144]
[Window size scaling factor: 256]
Checksum: 0x93b2 [validation disabled]
[Good Checksum: False]
[Bad Checksum: False]
Urgent pointer: 0
[SEQ/ACK analysis]
[iRTT: 0.034395000 seconds]
[Bytes in flight: 233]
Hypertext Transfer Protocol
```

```
GET /favicon.ico HTTP/1.1\r\n
[Expert Info (Chat/Sequence): GET /favicon.ico HTTP/1.1\r\n]
[GET /favicon.ico HTTP/1.1\r\n]
[Severity level: Chat]
[Group: Sequence]
Request Method: GET
Request URI: /favicon.ico
Request Version: HTTP/1.1
Accept: */*\r\n
UA-CPU: AMD64\r\n
Accept-Encoding: gzip, deflate\r\n
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; Trident/7.0; Touch; rv:11.0) like Gecko\r\n
Host: gaia.cs.umass.edu\r\n
Connection: Keep-Alive\r\n
\r\n
[Full request URI: http://gaia.cs.umass.edu/favicon.ico]
[HTTP request 1/1]
[Response in frame: 210]
```

```
210 1.762472      128.119.245.12      100.65.91.96      HTTP      541      HTTP/1.1 404 Not Found      (text/html)
Frame 210: 541 bytes on wire (4328 bits), 541 bytes captured (4328 bits) on interface 0
Interface id: 0 (\Device\NPF_{0C90F0D5-9FC6-44A5-BB98-7375F9677D1C})
Encapsulation type: Ethernet (1)
Arrival Time: Jan 19, 2016 18:50:29.172867000 Eastern Standard Time
[Time shift for this packet: 0.000000000 seconds]
Epoch Time: 1453247429.172867000 seconds
[Time delta from previous captured frame: 0.000002000 seconds]
[Time delta from previous displayed frame: 0.036338000 seconds]
[Time since reference or first frame: 1.762472000 seconds]
Frame Number: 210
Frame Length: 541 bytes (4328 bits)
Capture Length: 541 bytes (4328 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: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5), Dst: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
Destination: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
Address: Microsof_16:a0:9a (30:59:b7:16:a0:9a)
.... ..0. .... = LG bit: Globally unique address (factory default)
.... ..0 .... = IG bit: Individual address (unicast)
Source: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
Address: LannerEl_27:0e:f5 (00:90:0b:27:0e:f5)
.... ..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: 100.65.91.96
0100 .... = Version: 4
.... 0101 = Header Length: 20 bytes
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: 527
Identification: 0xc60a (50698)
Flags: 0x02 (Don't Fragment)
0... .... = Reserved bit: Not set
.1.. .... = Don't fragment: Set
..0. .... = More fragments: Not set
Fragment offset: 0
Time to live: 48
Protocol: TCP (6)
Header checksum: 0x4db9 [validation disabled]
[Good: False]
[Bad: False]
Source: 128.119.245.12
Destination: 100.65.91.96
[Source GeoIP: Unknown]
[Destination GeoIP: Unknown]
Transmission Control Protocol, Src Port: 80 (80), Dst Port: 53556 (53556), Seq: 1, Ack: 234, Len: 487
Source Port: 80
Destination Port: 53556
[Stream index: 12]
[TCP Segment Len: 487]
Sequence number: 1 (relative sequence number)
[Next sequence number: 488 (relative sequence number)]
Acknowledgment number: 234 (relative ack number)
Header Length: 20 bytes
Flags: 0x018 (PSH, ACK)
000. .... = Reserved: Not set
...0 .... = Nonce: Not set
.... 0... = Congestion Window Reduced (CWR): 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 size value: 237
[Calculated window size: 30336]
[Window size scaling factor: 128]
Checksum: 0x4766 [validation disabled]
[Good Checksum: False]
[Bad Checksum: False]
Urgent pointer: 0
[SEQ/ACK analysis]
[iRTT: 0.034395000 seconds]
[Bytes in flight: 487]
Hypertext Transfer Protocol
```

```
HTTP/1.1 404 Not Found\r\n
[Expert Info (Chat/Sequence): HTTP/1.1 404 Not Found\r\n]
[HTTP/1.1 404 Not Found\r\n]
[Severity level: Chat]
[Group: Sequence]
Request Version: HTTP/1.1
Status Code: 404
Response Phrase: Not Found
Date: Tue, 19 Jan 2016 23:50:24 GMT\r\n
Server: Apache/2.4.6 (CentOS) OpenSSL/1.0.1e-fips PHP/5.4.16 mod_perl/2.0.9dev Perl/v5.16.3\r\n
Content-Length: 209\r\n
[Content length: 209]
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
[HTTP response 1/1]
[Time since request: 0.036338000 seconds]
[Request in frame: 208]
```

Line-based text data: text/html

```
<!DOCTYPE HTML PUBLIC "-//IETF//DTD HTML 2.0//EN">\n
<html><head>\n
<title>404 Not Found</title>\n
</head><body>\n
<h1>Not Found</h1>\n
<p>The requested URL /favicon.ico was not found on this server.</p>\n
</body></html>\n
```