

# UDP FILE TRANSFER WIRESHARK ANALYSIS

## 1. PACKET CAPTURE OVERVIEW:

Overall packets capture screenshot:

No.	Time	Source	Destination	Protocol	Length	Info
22	0.001248236	127.0.0.1	127.0.0.1	TCP	247	49152 → 59456 [PSH, ACK] Seq=533 Ack=243 Win=512 Len=181 TSva...
23	0.001270498	127.0.0.1	127.0.0.1	TCP	67	49152 → 59456 [PSH, ACK] Seq=714 Ack=243 Win=512 Len=1 TSval=...
24	0.001324787	127.0.0.1	127.0.0.1	TCP	66	59456 → 49152 [ACK] Seq=243 Ack=715 Win=9207 Len=0 TSval=2591...
25	0.304271186	127.0.0.1	127.0.0.1	UDP	61	55027 → 8080 Len=19
26	0.304460200	127.0.0.1	127.0.0.1	UDP	47	8080 → 55027 Len=5
27	0.304892814	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
28	0.305009214	127.0.0.1	127.0.0.1	UDP	49	8080 → 55027 Len=7
29	0.305757159	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
30	0.305881696	127.0.0.1	127.0.0.1	UDP	49	8080 → 55027 Len=7
31	0.305992331	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
32	0.306120582	127.0.0.1	127.0.0.1	UDP	49	8080 → 55027 Len=7
33	0.306232133	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
34	0.306376142	127.0.0.1	127.0.0.1	UDP	48	8080 → 55027 Len=6
35	1.999970384	127.0.0.1	127.0.0.1	TCP	128	59456 → 49152 [PSH, ACK] Seq=243 Ack=715 Win=9207 Len=62 TSva...

Frame 1: 128 bytes on wire (1024 bits), 128 bytes captured (1024 bits) on interface lo, id 0  
Ethernet II, Src: 00:00:00:00:00:00 (00:00:00:00:00:00), Dst: 00:00:00:00:00:00 (00:00:00:00:00:00)  
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1  
Transmission Control Protocol, Src Port: 59456, Dst Port: 49152, Seq: 1, Ack: 1, Len: 62  
Data (62 bytes)

0000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	.....
0008	00000000	00000000	00000000	00000000	00001000	00000000	01000101	00000000	00000000	.....E
0010	00000000	01110010	11001111	11011000	01000000	00000000	01000000	00000110	00000000	...r...@..
0018	01101100	10101011	01111111	00000000	00000000	00000001	01111111	00000000	00000000	l.....
0020	00000000	00000001	11101000	01000000	11000000	00000000	11011010	11010110	00000000	...@....
0028	11011111	11010011	00100111	10001110	01010001	10100010	10000000	00011000	00000000	...Q....
0030	00100011	11110111	11111110	01100110	00000000	00000000	00000001	00000001	00000000	#...f....
0038	00001000	00001010	10011010	01110111	01000010	01000100	10011010	01110111	00000000	...wBD w
0040	00111010	01110101	01111011	00100010	01110110	01100101	01110010	01110011	00000000	...u{"vers
0048	01101001	01101111	01101110	00100010	00111010	00110001	00101100	00100010	00000000	ion":1,"
0050	01101011	01101001	01101110	01100100	00100010	00111010	00100010	01001001	00000000	kind":"I
0058	01110011	01000101	01101110	01100001	01100010	01101100	01100101	01100100	00000000	sEnabled
0060	00100010	00101100	00100010	01100010	01101111	01100100	01111001	00100010	00000000	","body"

The contents of the file(name is 22CS10045\_File1.txt) transferred are:

HELLO  
CS31206  
CS39006  
CS31208  
FINISH

## Individual packets capture screenshots:

22	0.001248236	127.0.0.1	127.0.0.1	TCP	247 49152 → 59456 [PSH, ACK] Seq=533 Ack=243 Win=512 Len=181 TSva...
23	0.001270498	127.0.0.1	127.0.0.1	TCP	67 49152 → 59456 [PSH, ACK] Seq=714 Ack=243 Win=512 Len=1 TSval=...
24	0.001324787	127.0.0.1	127.0.0.1	TCP	66 59456 → 49152 [ACK] Seq=243 Ack=715 Win=9207 Len=0 TSval=2591...
25	0.304271186	127.0.0.1	127.0.0.1	UDP	61 55027 → 8080 Len=19
26	0.304460200	127.0.0.1	127.0.0.1	UDP	47 8080 → 55027 Len=5
27	0.304892814	127.0.0.1	127.0.0.1	UDP	48 55027 → 8080 Len=6
28	0.305009214	127.0.0.1	127.0.0.1	UDP	49 8080 → 55027 Len=7
29	0.305757159	127.0.0.1	127.0.0.1	UDP	48 55027 → 8080 Len=6
30	0.305881696	127.0.0.1	127.0.0.1	UDP	49 8080 → 55027 Len=7
31	0.305992331	127.0.0.1	127.0.0.1	UDP	48 55027 → 8080 Len=6
32	0.306120582	127.0.0.1	127.0.0.1	UDP	49 8080 → 55027 Len=7
33	0.306232133	127.0.0.1	127.0.0.1	UDP	48 55027 → 8080 Len=6
34	0.306376142	127.0.0.1	127.0.0.1	UDP	48 8080 → 55027 Len=6
35	1.999970384	127.0.0.1	127.0.0.1	TCP	128 59456 → 49152 [PSH, ACK] Seq=243 Ack=715 Win=9207 Len=62 TSva...

Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1

User Datagram Protocol, Src Port: 55027, Dst Port: 8080

Source Port: 55027

Destination Port: 8080

Length: 27

Checksum: 0xfe2e [unverified]

[Checksum Status: Unverified]

[Stream index: 0]

[Timestamps]

Data (19 bytes)

Data: 3232435331303034355f46696c65312e747874

```
0000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 .....
0008 00000000 00000000 00000000 00000000 00001000 00000000 01000101 00000000 .....E.
0010 00000000 00101111 10110100 00001001 01000000 00000000 01000000 00010001 ..!..@.@.
0018 10001000 10110010 01111111 00000000 00000000 00000001 01111111 00000000 .....
0020 00000000 00000001 11010110 11110011 00011111 10010000 00000000 00011011 .....
0028 11111110 00101110 00110010 00110010 01000011 01010011 00110001 00110000 ..22CS10
0030 00110000 00110100 00110101 01011111 01000110 01101001 01101100 01100101 045_File
0038 00110001 00101110 01110100 01111000 01110100 .....1.txt
```

No.	Time	Source	Destination	Protocol	Length	Info
22	0.001248236	127.0.0.1	127.0.0.1	TCP	247	49152 → 59456 [PSH, ACK] Seq=533 Ack=243 Win=512 Len=181 TSva...
23	0.001270498	127.0.0.1	127.0.0.1	TCP	67	49152 → 59456 [PSH, ACK] Seq=714 Ack=243 Win=512 Len=1 TSval=...
24	0.001324787	127.0.0.1	127.0.0.1	TCP	66	59456 → 49152 [ACK] Seq=243 Ack=715 Win=9207 Len=0 TSval=2591...
25	0.304271186	127.0.0.1	127.0.0.1	UDP	61	55027 → 8080 Len=19
26	0.304460200	127.0.0.1	127.0.0.1	UDP	47	8080 → 55027 Len=5
27	0.304892814	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
28	0.305009214	127.0.0.1	127.0.0.1	UDP	49	8080 → 55027 Len=7
29	0.305757159	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
30	0.305881696	127.0.0.1	127.0.0.1	UDP	49	8080 → 55027 Len=7
31	0.305992331	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
32	0.306120582	127.0.0.1	127.0.0.1	UDP	49	8080 → 55027 Len=7
33	0.306232133	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
34	0.306376142	127.0.0.1	127.0.0.1	UDP	48	8080 → 55027 Len=6
35	1.999970384	127.0.0.1	127.0.0.1	TCP	128	59456 → 49152 [PSH, ACK] Seq=243 Ack=715 Win=9207 Len=62 TSva...

Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1

User Datagram Protocol, Src Port: 8080, Dst Port: 55027

Source Port: 8080

Destination Port: 55027

Length: 13

Checksum: 0xfe20 [unverified]

[Checksum Status: Unverified]

[Stream index: 0]

[Timestamps]

Data (5 bytes)

Data: 48454c4c4f

```
0000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 .....
0008 00000000 00000000 00000000 00000000 00001000 00000000 01000101 00000000 .....E.
0010 00000000 00100001 10110100 00001010 01000000 00000000 01000000 00010001 ..!..@.@.
0018 10001000 10111111 01111111 00000000 00000000 00000001 01111111 00000000 .....
0020 00000000 00000001 00011111 10010000 11010110 11110011 00000000 00001101 .....
0028 11111110 00100000 01001000 01000101 01001100 01001100 01001111 .....HELLO
```

udp.port == 8080						
No.	Time	Source	Destination	Protocol	Length	Info
22	0.001248236	127.0.0.1	127.0.0.1	TCP	247	49152 → 59456 [PSH, ACK] Seq=533 Ack=243 Win=512 Len=181 TSva...
23	0.001270498	127.0.0.1	127.0.0.1	TCP	67	49152 → 59456 [PSH, ACK] Seq=714 Ack=243 Win=512 Len=1 TSval=...
24	0.001324787	127.0.0.1	127.0.0.1	TCP	66	59456 → 49152 [ACK] Seq=243 Ack=715 Win=9207 Len=0 TSval=2591...
25	0.304271186	127.0.0.1	127.0.0.1	UDP	61	55027 → 8080 Len=19
26	0.304460200	127.0.0.1	127.0.0.1	UDP	47	8080 → 55027 Len=5
27	0.304892814	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
28	0.305009214	127.0.0.1	127.0.0.1	UDP	49	8080 → 55027 Len=7
29	0.305757159	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
30	0.305881696	127.0.0.1	127.0.0.1	UDP	49	8080 → 55027 Len=7
31	0.305992331	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
32	0.306120582	127.0.0.1	127.0.0.1	UDP	49	8080 → 55027 Len=7
33	0.306232133	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
34	0.306376142	127.0.0.1	127.0.0.1	UDP	48	8080 → 55027 Len=6
35	1.999970384	127.0.0.1	127.0.0.1	TCP	128	59456 → 49152 [PSH, ACK] Seq=243 Ack=715 Win=9207 Len=62 TSva...
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1						
User Datagram Protocol, Src Port: 55027, Dst Port: 8080						
Source Port: 55027						
Destination Port: 8080						
Length: 14						
Checksum: 0xfe21 [unverified]						
[Checksum Status: Unverified]						
[Stream index: 0]						
[Timestamps]						
Data (6 bytes)						
Data: 574f52442031						
0000	00000000	00000000	00000000	00000000	00000000	00000000
0008	00000000	00000000	00000000	00000000	00000000	00000000
0010	00000000	00100010	10110100	00001011	01000000	01000000
0018	10001000	10111101	01111111	00000000	00000001	01111111
0020	00000000	00000001	11010110	11110011	10010000	00000110
0028	11111110	00100001	01010111	01001111	01010010	01000100

udp.port == 8080						
No.	Time	Source	Destination	Protocol	Length	Info
22	0.001248236	127.0.0.1	127.0.0.1	TCP	247	49152 → 59456 [PSH, ACK] Seq=533 Ack=243 Win=512 Len=181 TSva...
23	0.001270498	127.0.0.1	127.0.0.1	TCP	67	49152 → 59456 [PSH, ACK] Seq=714 Ack=243 Win=512 Len=1 TSval=...
24	0.001324787	127.0.0.1	127.0.0.1	TCP	66	59456 → 49152 [ACK] Seq=243 Ack=715 Win=9207 Len=0 TSval=2591...
25	0.304271186	127.0.0.1	127.0.0.1	UDP	61	55027 → 8080 Len=19
26	0.304460200	127.0.0.1	127.0.0.1	UDP	47	8080 → 55027 Len=5
27	0.304892814	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
28	0.305009214	127.0.0.1	127.0.0.1	UDP	49	8080 → 55027 Len=7
29	0.305757159	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
30	0.305881696	127.0.0.1	127.0.0.1	UDP	49	8080 → 55027 Len=7
31	0.305992331	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
32	0.306120582	127.0.0.1	127.0.0.1	UDP	49	8080 → 55027 Len=7
33	0.306232133	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
34	0.306376142	127.0.0.1	127.0.0.1	UDP	48	8080 → 55027 Len=6
35	1.999970384	127.0.0.1	127.0.0.1	TCP	128	59456 → 49152 [PSH, ACK] Seq=243 Ack=715 Win=9207 Len=62 TSva...
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1						
User Datagram Protocol, Src Port: 8080, Dst Port: 55027						
Source Port: 8080						
Destination Port: 55027						
Length: 15						
Checksum: 0xfe22 [unverified]						
[Checksum Status: Unverified]						
[Stream index: 0]						
[Timestamps]						
Data (7 bytes)						
Data: 43533331323036						
0000	00000000	00000000	00000000	00000000	00000000	00000000
0008	00000000	00000000	00000000	00000000	00000000	00000000
0010	00000000	00100011	10110100	00001100	01000000	00000000
0018	10001000	10111011	00000000	00000000	00000001	01111111
0020	00000000	00000001	00011111	10010000	11010110	11110011
0028	11111110	00100010	01000011	01010011	00110011	00110010
0030	00110110					



udp.port == 8080						
No.	Time	Source	Destination	Protocol	Length	Info
22	0.001248236	127.0.0.1	127.0.0.1	TCP	247	49152 → 59456 [PSH, ACK] Seq=533 Ack=243 Win=512 Len=181 TSva...
23	0.001270498	127.0.0.1	127.0.0.1	TCP	67	49152 → 59456 [PSH, ACK] Seq=714 Ack=243 Win=512 Len=1 TSval=...
24	0.001324787	127.0.0.1	127.0.0.1	TCP	66	59456 → 49152 [ACK] Seq=243 Ack=715 Win=9207 Len=0 TSval=2591...
25	0.304271186	127.0.0.1	127.0.0.1	UDP	61	55027 → 8080 Len=19
26	0.304460200	127.0.0.1	127.0.0.1	UDP	47	8080 → 55027 Len=5
27	0.304892814	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
28	0.305009214	127.0.0.1	127.0.0.1	UDP	49	8080 → 55027 Len=7
29	0.305757159	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
30	0.305881696	127.0.0.1	127.0.0.1	UDP	49	8080 → 55027 Len=7
31	0.305992331	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
32	0.306120582	127.0.0.1	127.0.0.1	UDP	49	8080 → 55027 Len=7
33	0.306232133	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
34	0.306376142	127.0.0.1	127.0.0.1	UDP	48	8080 → 55027 Len=6
35	1.999970384	127.0.0.1	127.0.0.1	TCP	128	59456 → 49152 [PSH, ACK] Seq=243 Ack=715 Win=9207 Len=62 TSva...
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1						
User Datagram Protocol, Src Port: 55027, Dst Port: 8080						
Source Port: 55027						
Destination Port: 8080						
Length: 14						
Checksum: 0xfe21 [unverified]						
[Checksum Status: Unverified]						
[Stream index: 0]						
[Timestamps]						
Data (6 bytes)						
Data: 574f52442032						
0000	00000000	00000000	00000000	00000000	00000000	00000000
0008	00000000	00000000	00000000	00001000	00000000	01000101
0010	00000000	00100010	10110100	00001101	01000000	00000000
0018	10001000	10111011	01111111	00000000	00000001	01111111
0020	00000000	00000001	11010110	11110011	00011111	10010000
0028	11111110	00100001	01010111	01001111	01010010	00100000

udp.port == 8080						
No.	Time	Source	Destination	Protocol	Length	Info
22	0.001248236	127.0.0.1	127.0.0.1	TCP	247	49152 → 59456 [PSH, ACK] Seq=533 Ack=243 Win=512 Len=181 TSva...
23	0.001270498	127.0.0.1	127.0.0.1	TCP	67	49152 → 59456 [PSH, ACK] Seq=714 Ack=243 Win=512 Len=1 TSval=...
24	0.001324787	127.0.0.1	127.0.0.1	TCP	66	59456 → 49152 [ACK] Seq=243 Ack=715 Win=9207 Len=0 TSval=2591...
25	0.304271186	127.0.0.1	127.0.0.1	UDP	61	55027 → 8080 Len=19
26	0.304460200	127.0.0.1	127.0.0.1	UDP	47	8080 → 55027 Len=5
27	0.304892814	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
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35	1.999970384	127.0.0.1	127.0.0.1	TCP	128	59456 → 49152 [PSH, ACK] Seq=243 Ack=715 Win=9207 Len=62 TSva...
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1						
User Datagram Protocol, Src Port: 8080, Dst Port: 55027						
Source Port: 8080						
Destination Port: 55027						
Length: 15						
Checksum: 0xfe22 [unverified]						
[Checksum Status: Unverified]						
[Stream index: 0]						
[Timestamps]						
Data (7 bytes)						
Data: 43533339303036						
0000	00000000	00000000	00000000	00000000	00000000	00000000
0008	00000000	00000000	00000000	00001000	00000000	01000101
0010	00000000	00100011	10110100	00001110	01000000	00000000
0018	10001000	10111001	01111111	00000000	00000001	01111111
0020	00000000	00000001	00011111	10010000	11010110	11110011
0028	11111110	00100010	01000011	01010011	00110011	00110000
0030	00110110					

udp.port == 8080

No.	Time	Source	Destination	Protocol	Length	Info
22	0.001248236	127.0.0.1	127.0.0.1	TCP	247	49152 → 59456 [PSH, ACK] Seq=533 Ack=243 Win=512 Len=181 TSva...
23	0.001270498	127.0.0.1	127.0.0.1	TCP	67	49152 → 59456 [PSH, ACK] Seq=714 Ack=243 Win=512 Len=1 TSval=...
24	0.001324787	127.0.0.1	127.0.0.1	TCP	66	59456 → 49152 [ACK] Seq=243 Ack=715 Win=9207 Len=0 TSval=2591...
25	0.304271186	127.0.0.1	127.0.0.1	UDP	61	55027 → 8080 Len=19
26	0.304460200	127.0.0.1	127.0.0.1	UDP	47	8080 → 55027 Len=5
27	0.304892814	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
28	0.305009214	127.0.0.1	127.0.0.1	UDP	49	8080 → 55027 Len=7
29	0.305757159	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
30	0.305881696	127.0.0.1	127.0.0.1	UDP	49	8080 → 55027 Len=7
31	0.305992331	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
32	0.306120582	127.0.0.1	127.0.0.1	UDP	49	8080 → 55027 Len=7
33	0.306232133	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
34	0.306376142	127.0.0.1	127.0.0.1	UDP	48	8080 → 55027 Len=6
35	1.999970384	127.0.0.1	127.0.0.1	TCP	128	59456 → 49152 [PSH, ACK] Seq=243 Ack=715 Win=9207 Len=62 TSva...

Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1

User Datagram Protocol, Src Port: 55027, Dst Port: 8080

Source Port: 55027  
Destination Port: 8080  
Length: 14  
Checksum: 0xfe21 [unverified]  
[Checksum Status: Unverified]  
[Stream index: 0]  
[Timestamps]

Data (6 bytes)

Data: 574f52442033

0000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 .....  
0008 00000000 00000000 00000000 00001000 00000000 01000101 00000000 .....E  
0010 00000000 00100010 10101000 00001111 01000000 00000000 01000000 00010001 ..@-@  
0018 10001000 10111001 01111111 00000000 00000000 00000001 01111111 00000000 .....  
0020 00000000 00000001 11010110 11110011 00011111 10010000 00000000 00001110 .....  
0028 11111110 00100001 01010111 01001111 01010010 01000100 00100000 00110011 ..WORD 3

Data (data.data), 6 bytes      Packets: 58 · Displayed: 58 (100.0%) · Dropped: 0 (0.0%)      Profile: C

udp.port == 8080

No.	Time	Source	Destination	Protocol	Length	Info
22	0.001248236	127.0.0.1	127.0.0.1	TCP	247	49152 → 59456 [PSH, ACK] Seq=533 Ack=243 Win=512 Len=181 TSva...
23	0.001270498	127.0.0.1	127.0.0.1	TCP	67	49152 → 59456 [PSH, ACK] Seq=714 Ack=243 Win=512 Len=1 TSval=...
24	0.001324787	127.0.0.1	127.0.0.1	TCP	66	59456 → 49152 [ACK] Seq=243 Ack=715 Win=9207 Len=0 TSval=2591...
25	0.304271186	127.0.0.1	127.0.0.1	UDP	61	55027 → 8080 Len=19
26	0.304460200	127.0.0.1	127.0.0.1	UDP	47	8080 → 55027 Len=5
27	0.304892814	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
28	0.305009214	127.0.0.1	127.0.0.1	UDP	49	8080 → 55027 Len=7
29	0.305757159	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
30	0.305881696	127.0.0.1	127.0.0.1	UDP	49	8080 → 55027 Len=7
31	0.305992331	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
32	0.306120582	127.0.0.1	127.0.0.1	UDP	49	8080 → 55027 Len=7
33	0.306232133	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
34	0.306376142	127.0.0.1	127.0.0.1	UDP	48	8080 → 55027 Len=6
35	1.999970384	127.0.0.1	127.0.0.1	TCP	128	59456 → 49152 [PSH, ACK] Seq=243 Ack=715 Win=9207 Len=62 TSva...

Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1

User Datagram Protocol, Src Port: 8080, Dst Port: 55027

Source Port: 8080  
Destination Port: 55027  
Length: 15  
Checksum: 0xfe22 [unverified]  
[Checksum Status: Unverified]  
[Stream index: 0]  
[Timestamps]

Data (7 bytes)

Data: 43533331323038

0000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 .....  
0008 00000000 00000000 00000000 00001000 00000000 01000101 00000000 .....E  
0010 00000000 00100011 10110100 00010000 01000000 00000000 01000000 00010001 ..#-@-@  
0018 10001000 10110111 01111111 00000000 00000000 00000001 01111111 00000000 .....  
0020 00000000 00000001 00011111 10010000 11010110 11110011 00000000 00001111 .....  
0028 11111110 00100010 01000011 01010011 00110011 00110010 00110000 ..CS126  
0030 00110000 ..

udp.port == 8080						
No.	Time	Source	Destination	Protocol	Length	Info
22	0.001248236	127.0.0.1	127.0.0.1	TCP	247	49152 → 59456 [PSH, ACK] Seq=533 Ack=243 Win=512 Len=181 TSva...
23	0.001270498	127.0.0.1	127.0.0.1	TCP	67	49152 → 59456 [PSH, ACK] Seq=714 Ack=243 Win=512 Len=1 TSval=...
24	0.001324787	127.0.0.1	127.0.0.1	TCP	66	59456 → 49152 [ACK] Seq=243 Ack=715 Win=9207 Len=0 TSval=2591...
25	0.304271186	127.0.0.1	127.0.0.1	UDP	61	55027 → 8080 Len=19
26	0.304460200	127.0.0.1	127.0.0.1	UDP	47	8080 → 55027 Len=5
27	0.304892814	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
28	0.305009214	127.0.0.1	127.0.0.1	UDP	49	8080 → 55027 Len=7
29	0.305757159	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
30	0.305881696	127.0.0.1	127.0.0.1	UDP	49	8080 → 55027 Len=7
31	0.305992331	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
32	0.306120582	127.0.0.1	127.0.0.1	UDP	49	8080 → 55027 Len=7
33	0.306232133	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
34	0.306376142	127.0.0.1	127.0.0.1	UDP	48	8080 → 55027 Len=6
35	1.999970384	127.0.0.1	127.0.0.1	TCP	128	59456 → 49152 [PSH, ACK] Seq=243 Ack=715 Win=9207 Len=62 TSva...
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1						
User Datagram Protocol, Src Port: 55027, Dst Port: 8080						
Source Port: 55027						
Destination Port: 8080						
Length: 14						
Checksum: 0xfe21 [unverified]						
[Checksum Status: Unverified]						
[Stream index: 0]						
[Timestamps]						
Data (6 bytes)						
Data: 574f52442034						
0000	00000000	00000000	00000000	00000000	00000000	00000000
0008	00000000	00000000	00000000	00001000	00000000	01000101
0010	00000000	00100010	10110100	00010001	01000000	01000000
0018	10001000	10110111	01111111	00000000	00000000	01111111
0020	00000000	00000001	11010110	11110011	00011111	10010000
0028	11111110	00100001	01010111	01001111	01000100	00100000

udp.port == 8080						
No.	Time	Source	Destination	Protocol	Length	Info
22	0.001248236	127.0.0.1	127.0.0.1	TCP	247	49152 → 59456 [PSH, ACK] Seq=533 Ack=243 Win=512 Len=181 TSva...
23	0.001270498	127.0.0.1	127.0.0.1	TCP	67	49152 → 59456 [PSH, ACK] Seq=714 Ack=243 Win=512 Len=1 TSval=...
24	0.001324787	127.0.0.1	127.0.0.1	TCP	66	59456 → 49152 [ACK] Seq=243 Ack=715 Win=9207 Len=0 TSval=2591...
25	0.304271186	127.0.0.1	127.0.0.1	UDP	61	55027 → 8080 Len=19
26	0.304460200	127.0.0.1	127.0.0.1	UDP	47	8080 → 55027 Len=5
27	0.304892814	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
28	0.305009214	127.0.0.1	127.0.0.1	UDP	49	8080 → 55027 Len=7
29	0.305757159	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
30	0.305881696	127.0.0.1	127.0.0.1	UDP	49	8080 → 55027 Len=7
31	0.305992331	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
32	0.306120582	127.0.0.1	127.0.0.1	UDP	49	8080 → 55027 Len=7
33	0.306232133	127.0.0.1	127.0.0.1	UDP	48	55027 → 8080 Len=6
34	0.306376142	127.0.0.1	127.0.0.1	UDP	48	8080 → 55027 Len=6
35	1.999970384	127.0.0.1	127.0.0.1	TCP	128	59456 → 49152 [PSH, ACK] Seq=243 Ack=715 Win=9207 Len=62 TSva...
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1						
User Datagram Protocol, Src Port: 8080, Dst Port: 55027						
Source Port: 8080						
Destination Port: 55027						
Length: 14						
Checksum: 0xfe21 [unverified]						
[Checksum Status: Unverified]						
[Stream index: 0]						
[Timestamps]						
Data (6 bytes)						
Data: 46494e495348						
0000	00000000	00000000	00000000	00000000	00000000	00000000
0008	00000000	00000000	00000000	00000000	00001000	00000000
0010	00000000	00100010	10110100	00010001	01000000	01000000
0018	10001000	10110110	01111111	00000000	00000000	01111111
0020	00000000	00000001	00011111	10010000	11010110	11110011
0028	11111110	00100001	01000110	01001001	01001110	01010011

The above case is for successful file transfer.

Now, considering the case of **FILE NOT FOUND**, that is trying to transfer the elements of a file, which is not present in the local directory.

In this case, only 2 packets are captured, one is the name of the file and other is the NOTFOUND message.(File name: 22CS10045\_File.txt)



File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

udp.port == 8080

No.	Time	Source	Destination	Protocol	Length	Info
16	0.000898985	127.0.0.1	127.0.0.1	TCP	156	49152 → 59456 [PSH, ACK] Seq=442 Ack=186 Win=512 Len=90 TSval=...
17	0.000919805	127.0.0.1	127.0.0.1	TCP	67	49152 → 59456 [PSH, ACK] Seq=532 Ack=186 Win=512 Len=1 TSval=...
18	0.000986899	127.0.0.1	127.0.0.1	TCP	66	59456 → 49152 [ACK] Seq=186 Ack=533 Win=9207 Len=0 TSval=2592...
19	0.001040780	127.0.0.1	127.0.0.1	TCP	122	59456 → 49152 [PSH, ACK] Seq=186 Ack=533 Win=9207 Len=56 TSva...
20	0.001063118	127.0.0.1	127.0.0.1	TCP	67	59456 → 49152 [PSH, ACK] Seq=242 Ack=533 Win=9207 Len=1 TSval=...
21	0.001130033	127.0.0.1	127.0.0.1	TCP	66	49152 → 59456 [ACK] Seq=533 Ack=243 Win=512 Len=0 TSval=25920...
22	0.001255896	127.0.0.1	127.0.0.1	TCP	247	49152 → 59456 [PSH, ACK] Seq=533 Ack=243 Win=512 Len=181 TSva...
23	0.001278388	127.0.0.1	127.0.0.1	TCP	67	49152 → 59456 [PSH, ACK] Seq=714 Ack=243 Win=512 Len=1 TSval=...
24	0.001330420	127.0.0.1	127.0.0.1	TCP	66	59456 → 49152 [ACK] Seq=243 Ack=715 Win=9207 Len=0 TSval=2592...
25	1.166838093	127.0.0.1	127.0.0.1	UDP	60	59145 → 8080 Len=18
26	1.166987539	127.0.0.1	127.0.0.1	UDP	50	8080 → 59145 Len=8
27	2.001066382	127.0.0.1	127.0.0.1	TCP	128	59456 → 49152 [PSH, ACK] Seq=243 Ack=715 Win=9207 Len=62 TSva...
28	2.001106156	127.0.0.1	127.0.0.1	TCP	67	59456 → 49152 [PSH, ACK] Seq=305 Ack=715 Win=9207 Len=1 TSval=...
29	2.001173333	127.0.0.1	127.0.0.1	TCP	66	49152 → 59456 [ACK] Seq=715 Ack=306 Win=512 Len=0 TSval=25920...

Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1

User Datagram Protocol, Src Port: 59145, Dst Port: 8080

Source Port: 59145  
Destination Port: 8080  
Length: 26  
Checksum: 0xfe2d [unverified]  
[Checksum Status: Unverified]  
[Stream index: 0]  
[Timestamps]

Data (18 bytes)

Data: 3232435331303034355f46696c652e747874

0000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 .....  
0008 00000000 00000000 00000000 00000000 00001000 00000000 01000101 .....E.  
0010 00000000 00101110 10011111 11010110 01000000 00000000 01000000 00010001 ..-@-@-@  
0018 10011100 11100110 01111111 00000000 00000000 00000001 01111111 00000000 .....  
0020 00000000 00000001 11100111 00001001 00011111 10010000 00000000 00011010 .....  
0028 11111110 00101101 00110010 00110010 01000011 01010011 00110001 00110000 ...-22CS10  
0030 00110000 00110100 00110101 01011111 01000110 01101001 01101100 01100101 ...045\_File  
0038 00101110 01110100 01111000 01110100 .....txt

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

udp.port == 8080

No.	Time	Source	Destination	Protocol	Length	Info
16	0.000898985	127.0.0.1	127.0.0.1	TCP	156	49152 → 59456 [PSH, ACK] Seq=442 Ack=186 Win=512 Len=90 TSval=...
17	0.000919805	127.0.0.1	127.0.0.1	TCP	67	49152 → 59456 [PSH, ACK] Seq=532 Ack=186 Win=512 Len=1 TSval=...
18	0.000986899	127.0.0.1	127.0.0.1	TCP	66	59456 → 49152 [ACK] Seq=186 Ack=533 Win=9207 Len=0 TSval=2592...
19	0.001040780	127.0.0.1	127.0.0.1	TCP	122	59456 → 49152 [PSH, ACK] Seq=186 Ack=533 Win=9207 Len=56 TSva...
20	0.001063118	127.0.0.1	127.0.0.1	TCP	67	59456 → 49152 [PSH, ACK] Seq=242 Ack=533 Win=9207 Len=1 TSval=...
21	0.001130033	127.0.0.1	127.0.0.1	TCP	66	49152 → 59456 [ACK] Seq=533 Ack=243 Win=512 Len=0 TSval=25920...
22	0.001255896	127.0.0.1	127.0.0.1	TCP	247	49152 → 59456 [PSH, ACK] Seq=533 Ack=243 Win=512 Len=181 TSva...
23	0.001278388	127.0.0.1	127.0.0.1	TCP	67	49152 → 59456 [PSH, ACK] Seq=714 Ack=243 Win=512 Len=1 TSval=...
24	0.001330420	127.0.0.1	127.0.0.1	TCP	66	59456 → 49152 [ACK] Seq=243 Ack=715 Win=9207 Len=0 TSval=2592...
25	1.166838093	127.0.0.1	127.0.0.1	UDP	60	59145 → 8080 Len=18
26	1.166987539	127.0.0.1	127.0.0.1	UDP	50	8080 → 59145 Len=8
27	2.001066382	127.0.0.1	127.0.0.1	TCP	128	59456 → 49152 [PSH, ACK] Seq=243 Ack=715 Win=9207 Len=62 TSva...
28	2.001106156	127.0.0.1	127.0.0.1	TCP	67	59456 → 49152 [PSH, ACK] Seq=305 Ack=715 Win=9207 Len=1 TSval=...
29	2.001173333	127.0.0.1	127.0.0.1	TCP	66	49152 → 59456 [ACK] Seq=715 Ack=306 Win=512 Len=0 TSval=25920...

Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1

User Datagram Protocol, Src Port: 8080, Dst Port: 59145

Source Port: 8080  
Destination Port: 59145  
Length: 16  
Checksum: 0xfe23 [unverified]  
[Checksum Status: Unverified]  
[Stream index: 0]  
[Timestamps]

Data (8 bytes)

Data: 4e4f54464f554e44

0000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 .....  
0008 00000000 00000000 00000000 00000000 00001000 00000000 01000101 .....E.  
0010 00000000 00100100 10011111 11010111 01000000 00000000 01000000 00010001 ..\$-@-@  
0018 10011100 11101111 01111111 00000000 00000000 00000001 01111111 00000000 .....  
0020 00000000 00000001 00011111 10010000 11100111 00001001 00000000 00010000 .....  
0028 11111110 00100011 01001110 01001111 01010100 01000110 01001111 01010101 ...#NOTFOU  
0030 01001110 01000100 .....ND

## **2. PROTOCOL INFORMATION:**

- Protocol Used: UDP (User Datagram Protocol)
- The application uses connectionless datagram sockets (SOCK\_DGRAM)

## **3. CONNECTION DETAILS:**

Server Address : 127.0.0.1

Server Port : 8080

Client Address : 127.0.0.1

Client Port : Dynamic for different file transfers

The client port is different for different file transfers because when the client creates a UDP socket without explicitly binding it to a specific port, the operating system automatically assigns a random available port number from the ephemeral port range.

## **4. FILENAME REQUEST ANALYSIS**

The size of the FILENAME request is 61 bytes for successful file transfer and is 60 bytes for FILENOTFOUND case.

## **5. SERVER RESPONSE ANALYSIS**

HELLO response size : 47 bytes

WORD 1 response size(CS31206 in this case) : 49 bytes

## **6. UDP PAYLOAD ANALYSIS**

The screenshots for the data transmitted in each packet is pasted above in the first part of the analysis.(The payloads are present in the screenshots itself in the data section)



## 7. TIME ANALYSIS

As observed from the screenshots,

For successful file transfer,

Time of the first packet : 0.304271186

Time of the last packet : 0.306376142

Hence, total time taken is **0.0021 seconds or 2.1 milliseconds**

For unsuccessful file transfer,

Time of first packet : 1.166838093

Time of second(last) packet : 1.166987539

Hence, time taken is **0.00014 seconds or 0.14 milliseconds**

## 8. PACKET SIZE STATISTICS

Using the Statistics tool from WireShark, the following screenshots have been captured:

Topic / Item	Count	Average	Min val	Max val	Rate (ms)	Percent	Burst rate	Burst start
▼ Packet Lengths	10	49.50	47	61	4.7507	100%	0.1000	0.304
0-19	0	-	-	-	0.0000	0.00%	-	-
20-39	0	-	-	-	0.0000	0.00%	-	-
40-79	10	49.50	47	61	4.7507	100.00%	0.1000	0.304
80-159	0	-	-	-	0.0000	0.00%	-	-
160-319	0	-	-	-	0.0000	0.00%	-	-
320-639	0	-	-	-	0.0000	0.00%	-	-
640-1279	0	-	-	-	0.0000	0.00%	-	-
1280-2559	0	-	-	-	0.0000	0.00%	-	-
2560-5119	0	-	-	-	0.0000	0.00%	-	-
5120 and greater	0	-	-	-	0.0000	0.00%	-	-

The above one is for successful file transfer...Average packet size is **49.5 bytes**

Topic / Item	Count	Average	Min val	Max val	Rate (ms)	Percent	Burst rate	Burst start
▼ Packet Lengths	2	55.00	50	60	13.3828	100%	0.0200	1.167
0-19	0	-	-	-	0.0000	0.00%	-	-
20-39	0	-	-	-	0.0000	0.00%	-	-
40-79	2	55.00	50	60	13.3828	100.00%	0.0200	1.167
80-159	0	-	-	-	0.0000	0.00%	-	-
160-319	0	-	-	-	0.0000	0.00%	-	-
320-639	0	-	-	-	0.0000	0.00%	-	-
640-1279	0	-	-	-	0.0000	0.00%	-	-
1280-2559	0	-	-	-	0.0000	0.00%	-	-
2560-5119	0	-	-	-	0.0000	0.00%	-	-
5120 and greater	0	-	-	-	0.0000	0.00%	-	-

The above one is for NOTFOUND file transfer...Average Packet size is **55 bytes**

The screenshot of terminal for the client and server are:

```

user swlab-PC ~/Desktop/DSP_CN2 gcc -o wordclient wordclient.c
user swlab-PC ~/Desktop/DSP_CN2 ./wordclient file1.txt file2.txt
file transfer completed successfully
user swlab-PC ~/Desktop/DSP_CN2 ./wordclient file1.txt file2.txt
file transfer completed successfully
user swlab-PC ~/Desktop/DSP_CN2 gcc -o wordclient wordclient.c
user swlab-PC ~/Desktop/DSP_CN2 ./wordclient file1.txt file2.txt
file transfer completed successfully
user swlab-PC ~/Desktop/DSP_CN2 ./wordclient file1.txt file2.txt
file transfer completed successfully
user swlab-PC ~/Desktop/DSP_CN2 ./wordclient file1.txt file2.txt
file transfer completed successfully
user swlab-PC ~/Desktop/DSP_CN2 ./wordclient 22CS10045_File1.txt 22CS10045_File1_new.txt
file transfer completed successfully
user swlab-PC ~/Desktop/DSP_CN2 ./wordclient 22CS10045_File2.txt 22CS10045_File2_new.txt
file transfer completed successfully
user swlab-PC ~/Desktop/DSP_CN2 ./wordclient 22CS10045_File3.txt 22CS10045_File3_new.txt
file transfer completed successfully
user swlab-PC ~/Desktop/DSP_CN2 ./wordclient 22CS10045_File1.txt 22CS10045_File1_new.txt
file transfer completed successfully
user swlab-PC ~/Desktop/DSP_CN2 ./wordclient 22CS10045_File.txt 22CS10045_File1_new.txt
FILE NOT FOUND
user swlab-PC ~/Desktop/DSP_CN2
user swlab-PC ~/Desktop/DSP_CN2 ./wordclient 22CS10045_File.txt 22CS10045_File1_new.txt
FILE NOT FOUND

user swlab-PC ~/Desktop/DSP_CN2 ./wordserver
Server listening on port 8080...
Received request for file: 22CS10045_File3.txt
Sending HELLO to client
Waiting for WORD request...
Received request : WORD 1
Waiting for WORD request...
Received request : WORD 2
Waiting for WORD request...
Received request : WORD 3
Waiting for WORD request...
Received request : WORD 4
Sent FINISH, closing server
Server terminated successfully
user swlab-PC ~/Desktop/DSP_CN2 ./wordserver
Server listening on port 8080...
Received request for file: 22CS10045_File1.txt
Sending HELLO to client
Waiting for WORD request...
Received request : WORD 1
Waiting for WORD request...
Received request : WORD 2
Waiting for WORD request...
Received request : WORD 3
Waiting for WORD request...
Received request : WORD 4
Sent FINISH, closing server
Server terminated successfully
user swlab-PC ~/Desktop/DSP_CN2 ./wordserver
Server listening on port 8080...
Received request for file: 22CS10045_File.txt
user swlab-PC ~/Desktop/DSP_CN2 ./wordserver
Server listening on port 8080...
Received request for file: 22CS10045_File.txt

```