

Laboratório V - Programação com soquetes TCP

Redes de Comunicação de Dados

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Com base nos códigos para Matlab de modelo cliente-servidor, obteve-se os resultados mostrados nas figuras abaixo com o auxílio de 2 computadores, um sendo cliente e outro servidor. Neste caso, o IP do servidor foi 192.168.139.252 e do cliente 192.168.138.46. Utilizou-se a ferramenta Wireshark para a descoberta das informações da mensagem, endereço e protocolo utilizado (TCP).

1024	5.386268	00000000.00241df3f7...	00000000.ffffffffffff...	NBIPX	98	Find name PCCLI-ED6E367F3<20>
1057	6.261246	00000000.00241df3f7...	00000000.ffffffffffff...	NBIPX	98	Find name PCCLI-ED6E367F3<20>
1246	7.136174	00000000.00241df3f7...	00000000.ffffffffffff...	NBIPX	98	Find name PCCLI-ED6E367F3<20>
774	4.179030	192.168.136.133	192.168.136.255	DB-LSP...	294	Dropbox LAN sync Discovery Protocol
1660	11.140439	192.168.136.169	192.168.136.255	DB-LSP...	234	Dropbox LAN sync Discovery Protocol
1491	9.678440	192.168.139.252	192.168.138.46	TCP	66	3000 → 2051 [SYN, ACK] Seq=0 Ack=1 Win=8192 Len=0 MSS=1460 WS=256 SACK_PERM=1
1493	9.682001	192.168.139.252	192.168.138.46	TCP	55	3000 → 2051 [PSH, ACK] Seq=1 Ack=1 Win=65536 Len=1
1495	9.691302	192.168.139.252	192.168.138.46	TCP	1053	3000 → 2051 [FIN, PSH, ACK] Seq=2 Ack=1 Win=65536 Len=999
1571	10.209958	192.168.139.252	192.168.138.46	TCP	54	3000 → 2051 [ACK] Seq=1002 Ack=2 Win=65536 Len=0
374	1.651025	200.18.45.29	192.168.139.252	TCP	60	443 → 2012 [ACK] Seq=1 Ack=831 Win=290 Len=0
376	1.705626	200.18.45.29	192.168.139.252	TLSv1.2	438	Application Data
379	1.719422	200.18.45.29	192.168.139.252	TCP	60	443 → 2012 [ACK] Seq=385 Ack=1589 Win=303 Len=0
382	1.760492	200.18.45.29	192.168.139.252	TCP	60	443 → 2013 [ACK] Seq=1 Ack=841 Win=264 Len=0
383	1.767393	200.18.45.29	192.168.139.252	TLSv1.2	687	Application Data
384	1.784296	200.18.45.29	192.168.139.252	TLSv1.2	766	Application Data
386	1.790344	200.18.45.29	192.168.139.252	TCP	60	443 → 2012 [ACK] Seq=1097 Ack=2180 Win=316 Len=0
388	1.836593	200.18.45.29	192.168.139.252	TLSv1.2	1008	Application Data

Figura 1 - Transmissão de dados do servidor para o cliente.

1818	13.036737	192.168.138.230	192.168.143.255	UDP	82	53514 → 1947 Len=40
1889	14.254984	192.168.138.240	255.255.255.255	UDP	82	52133 → 1947 Len=40
723	3.458622	192.168.138.253	255.255.255.255	UDP	82	64216 → 1947 Len=40
1262	7.464118	192.168.138.253	192.168.139.255	UDP	82	64216 → 1947 Len=40
1113	6.688816	192.168.138.46	192.168.139.252	TCP	66	2051 → 3000 [SYN] Seq=0 Win=8192 Len=0 MSS=1460 WS=256 SACK_PERM=1
1490	9.678160	192.168.138.46	192.168.139.252	TCP	66	[TCP Retransmission] 2051 → 3000 [SYN] Seq=0 Win=8192 Len=0 MSS=1460 WS=256 SACK_PERM=1
1492	9.680126	192.168.138.46	192.168.139.252	TCP	60	2051 → 3000 [ACK] Seq=1 Ack=1 Win=65536 Len=0
1496	9.693065	192.168.138.46	192.168.139.252	TCP	60	2051 → 3000 [ACK] Seq=1 Ack=1002 Win=64512 Len=0
1570	10.209698	192.168.138.46	192.168.139.252	TCP	60	2051 → 3000 [FIN, ACK] Seq=1 Ack=1002 Win=64512 Len=0
1607	10.345999	192.168.138.59	192.168.139.255	NBNS	92	Name query NB MARIALVA-HP<00>
1612	10.352370	192.168.138.59	224.0.0.251	MDNS	77	Standard query 0x0000 AAAA MARIALVA-HP.local, "QM" question
1614	10.355472	192.168.138.59	224.0.0.252	LLMNR	71	Standard query 0xf03 A MARIALVA-HP
1617	10.359086	192.168.138.59	224.0.0.252	LLMNR	71	Standard query 0x4037 AAAA MARIALVA-HP
1620	10.362622	192.168.138.59	224.0.0.251	MDNS	77	Standard query 0x0000 AAAA MARIALVA-HP.local, "QM" question
1622	10.365935	192.168.138.59	224.0.0.252	LLMNR	71	Standard query 0x6f7a A MARIALVA-HP
1623	10.368476	192.168.138.59	192.168.139.255	NBNS	92	Name query NB MARIALVA-HP<20>
1625	10.369319	192.168.138.59	224.0.0.252	LLMNR	71	Standard query 0x6e38 AAAA MARIALVA-HP

Figura 2 - Transmissão do ACK para o servidor.

1491	9.678440	192.168.139.252	192.168.138.46	TCP	66 3000 → 2051 [SYN, ACK] Seq=0 Ack=1 Win=8192 Len=0 MSS=1460 WS=256 SACK_PERM=1
▶ Frame 1491: 66 bytes on wire (528 bits), 66 bytes captured (528 bits) on interface 0 Ethernet II, Src: HewlettP_00:d7:0a (c8:d3:ff:00:d7:0a), Dst: HewlettP_00:d7:09 (c8:d3:ff:00:d7:09)					
▶ Destination: HewlettP_00:d7:09 (c8:d3:ff:00:d7:09) Address: HewlettP_00:d7:09 (c8:d3:ff:00:d7:09) 0. = LG bit: Globally unique address (factory default) 0. = IG bit: Individual address (unicast)					
▶ Source: HewlettP_00:d7:0a (c8:d3:ff:00:d7:0a) Address: HewlettP_00:d7:0a (c8:d3:ff:00:d7:0a) 0. = LG bit: Globally unique address (factory default) 0. = IG bit: Individual address (unicast)					
Type: IPv4 (0x0800)					
▶ Internet Protocol Version 4, Src: 192.168.139.252, Dst: 192.168.138.46 0100 = Version: 4 0101 = Header Length: 20 bytes (5) ▶ Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT) Total Length: 52 Identification: 0x27a8 (10152) ▶ Flags: 0x02 (Don't Fragment) Fragment offset: 0 Time to live: 64 Protocol: TCP (6) Header checksum: 0x7ba0 [validation disabled] [Header checksum status: Unverified] Source: 192.168.139.252 Destination: 192.168.138.46 [Source GeoIP: Unknown] [Destination GeoIP: Unknown]					
▶ Transmission Control Protocol, Src Port: 3000, Dst Port: 2051, Seq: 0, Ack: 1, Len: 0 Source Port: 3000 Destination Port: 2051 [Stream index: 4] [TCP Segment Len: 0] Sequence number: 0 (relative sequence number) Acknowledgment number: 1 (relative ack number) 1000 = Header Length: 32 bytes (8)					
▶ Flags: 0x012 (SYN, ACK) Window size value: 8192 [Calculated window size: 8192] Checksum: 0x402b [unverified] [Checksum Status: Unverified] Urgent pointer: 0 ▶ Options: (12 bytes), Maximum segment size, No-Operation (NOP), Window scale, No-Operation (NOP), No-Operation (NOP), SACK permitted ▶ [SEQ/ACK analysis]					

Figura 3 - Informações do primeiro pacote enviado para o cliente.

1493	9.682001	192.168.139.252	192.168.138.46	TCP	55 3000 → 2051 [PSH, ACK] Seq=1 Ack=1 Win=65536 Len=1
▶ Frame 1493: 55 bytes on wire (440 bits), 55 bytes captured (440 bits) on interface 0 Ethernet II, Src: HewlettP_00:d7:0a (c8:d3:ff:00:d7:0a), Dst: HewlettP_00:d7:09 (c8:d3:ff:00:d7:09)					
▶ Destination: HewlettP_00:d7:09 (c8:d3:ff:00:d7:09) Address: HewlettP_00:d7:09 (c8:d3:ff:00:d7:09) 0. = LG bit: Globally unique address (factory default) 0. = IG bit: Individual address (unicast)					
▶ Source: HewlettP_00:d7:0a (c8:d3:ff:00:d7:0a) Address: HewlettP_00:d7:0a (c8:d3:ff:00:d7:0a) 0. = LG bit: Globally unique address (factory default) 0. = IG bit: Individual address (unicast)					
Type: IPv4 (0x0800)					
▶ Internet Protocol Version 4, Src: 192.168.139.252, Dst: 192.168.138.46 0100 = Version: 4 0101 = Header Length: 20 bytes (5) ▶ Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT) Total Length: 41 Identification: 0x27a9 (10153) ▶ Flags: 0x02 (Don't Fragment) Fragment offset: 0 Time to live: 64 Protocol: TCP (6) Header checksum: 0x7baa [validation disabled] [Header checksum status: Unverified] Source: 192.168.139.252 Destination: 192.168.138.46 [Source GeoIP: Unknown] [Destination GeoIP: Unknown]					
▶ Transmission Control Protocol, Src Port: 3000, Dst Port: 2051, Seq: 1, Ack: 1, Len: 1 Source Port: 3000 Destination Port: 2051 [Stream index: 4] [TCP Segment Len: 1] Sequence number: 1 (relative sequence number) [Next sequence number: 2 (relative sequence number)] Acknowledgment number: 1 (relative ack number) 0101 = Header Length: 20 bytes (5)					
▶ Flags: 0x018 (PSH, ACK) Window size value: 256 [Calculated window size: 65536] [Window size scaling factor: 256] Checksum: 0x9df5 [unverified] [Checksum Status: Unverified] Urgent pointer: 0 ▶ [SEQ/ACK analysis] TCP payload (1 byte)					
▶ Data (1 byte) Data: 02 [Length: 1]					

Figura 4 - Informações do segundo pacote de dados enviado para o cliente.

1495	9.691302	192.168.139.252	192.168.138.46	TCP	1053 3000 → 2051 [FIN, PSH, ACK] Seq=2 Ack=1 Win=65536 Len=999
▶ Frame 1495: 1053 bytes on wire (8424 bits), 1053 bytes captured (8424 bits) on interface 0 Ethernet II, Src: HewlettP_00:d7:0a (c8:d3:ff:00:d7:0a), Dst: HewlettP_00:d7:09 (c8:d3:ff:00:d7:09)					
▶ Destination: HewlettP_00:d7:09 (c8:d3:ff:00:d7:09) Address: HewlettP_00:d7:09 (c8:d3:ff:00:d7:09) 0. = LG bit: Globally unique address (factory default) 0. = IG bit: Individual address (unicast)					
▶ Source: HewlettP_00:d7:0a (c8:d3:ff:00:d7:0a) Address: HewlettP_00:d7:0a (c8:d3:ff:00:d7:0a) 0. = LG bit: Globally unique address (factory default) 0. = IG bit: Individual address (unicast) Type: IPv4 (0x0800)					
▶ Internet Protocol Version 4, Src: 192.168.139.252, Dst: 192.168.138.46 0100 = Version: 4 0101 = Header Length: 20 bytes (5) Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT) Total Length: 1039 Identification: 0x27aa (10154) Flags: 0x02 (Don't Fragment) Fragment offset: 0 Time to live: 64 Protocol: TCP (6) Header checksum: 0x77c3 [validation disabled] [Header checksum status: Unverified] Source: 192.168.139.252 Destination: 192.168.138.46 [Source GeoIP: Unknown] [Destination GeoIP: Unknown]					
▶ Transmission Control Protocol, Src Port: 3000, Dst Port: 2051, Seq: 2, Ack: 1, Len: 999 Source Port: 3000 Destination Port: 2051 [Stream index: 4] [TCP Segment Len: 999] Sequence number: 2 (relative sequence number) [Next sequence number: 1002 (relative sequence number)] Acknowledgment number: 1 (relative ack number) 0101 = Header Length: 20 bytes (5)					
▶ Flags: 0x019 (FIN, PSH, ACK) Window size value: 256 [Calculated window size: 65536] [Window size scaling factor: 256] Checksum: 0x4cb4 [unverified] [Checksum Status: Unverified] Urgent pointer: 0 [SEQ/ACK analysis] TCP payload (999 bytes)					
▶ Data (999 bytes) Data: 030405060708090a0b0c0d0e0f101112131415161718191a... [Length: 999]					

Figura 5 - Informações do terceiro pacote de dados enviado para o cliente.

1571	10.209958	192.168.139.252	192.168.138.46	TCP	54 3000 → 2051 [ACK] Seq=1002 Ack=2 Win=65536 Len=0
▶ Frame 1495: 1053 bytes on wire (8424 bits), 1053 bytes captured (8424 bits) on interface 0 Ethernet II, Src: HewlettP_00:d7:0a (c8:d3:ff:00:d7:0a), Dst: HewlettP_00:d7:09 (c8:d3:ff:00:d7:09)					
▶ Destination: HewlettP_00:d7:09 (c8:d3:ff:00:d7:09) Address: HewlettP_00:d7:09 (c8:d3:ff:00:d7:09) 0. = LG bit: Globally unique address (factory default) 0. = IG bit: Individual address (unicast)					
▶ Source: HewlettP_00:d7:0a (c8:d3:ff:00:d7:0a) Address: HewlettP_00:d7:0a (c8:d3:ff:00:d7:0a) 0. = LG bit: Globally unique address (factory default) 0. = IG bit: Individual address (unicast) Type: IPv4 (0x0800)					
▶ Internet Protocol Version 4, Src: 192.168.139.252, Dst: 192.168.138.46 0100 = Version: 4 0101 = Header Length: 20 bytes (5) Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT) Total Length: 1039 Identification: 0x27aa (10154) Flags: 0x02 (Don't Fragment) Fragment offset: 0 Time to live: 64 Protocol: TCP (6) Header checksum: 0x77c3 [validation disabled] [Header checksum status: Unverified] Source: 192.168.139.252 Destination: 192.168.138.46 [Source GeoIP: Unknown] [Destination GeoIP: Unknown]					
▶ Transmission Control Protocol, Src Port: 3000, Dst Port: 2051, Seq: 2, Ack: 1, Len: 999 Source Port: 3000 Destination Port: 2051 [Stream index: 4] [TCP Segment Len: 999] Sequence number: 2 (relative sequence number) [Next sequence number: 1002 (relative sequence number)] Acknowledgment number: 1 (relative ack number) 0101 = Header Length: 20 bytes (5)					
▶ Flags: 0x019 (FIN, PSH, ACK) Window size value: 256 [Calculated window size: 65536] [Window size scaling factor: 256] Checksum: 0x4cb4 [unverified] [Checksum Status: Unverified] Urgent pointer: 0 [SEQ/ACK analysis] TCP payload (999 bytes)					
▶ Data (999 bytes) Data: 030405060708090a0b0c0d0e0f101112131415161718191a... [Length: 999]					

Figura 6 - Informações do quarto pacote de dados enviados para o cliente.

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1113 6.688816      192.168.138.46      192.168.139.252      TCP      66 2051 → 3000 [SYN] Seq=0 Win=8192 Len=0 MSS=1460 WS=256 SACK PERM=1
> Frame 1113: 66 bytes on wire (528 bits), 66 bytes captured (528 bits) on interface 0
# Ethernet II, Src: HewlettP_00:d7:09 (c8:d3:ff:00:d7:09), Dst: HewlettP_00:d7:0a (c8:d3:ff:00:d7:0a)
# Destination: HewlettP_00:d7:0a (c8:d3:ff:00:d7:0a)
  Address: HewlettP_00:d7:0a (c8:d3:ff:00:d7:0a)
    ....0. .... = LG bit: Globally unique address (factory default)
    ....0. .... = IG bit: Individual address (unicast)
# Source: HewlettP_00:d7:09 (c8:d3:ff:00:d7:09)
  Address: HewlettP_00:d7:09 (c8:d3:ff:00:d7:09)
    ....0. .... = LG bit: Globally unique address (factory default)
    ....0. .... = IG bit: Individual address (unicast)
  Type: IPv4 (0x0800)
# Internet Protocol Version 4, Src: 192.168.138.46, Dst: 192.168.139.252
  0100 .... = Version: 4
  ....0101 = Header Length: 20 bytes (5)
  Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
  Total Length: 52
  Identification: 0x4312 (17170)
  Flags: 0x02 (Don't Fragment)
  Fragment offset: 0
  Time to live: 64
  Protocol: TCP (6)
  Header checksum: 0x6036 [validation disabled]
  [Header checksum status: Unverified]
  Source: 192.168.138.46
  Destination: 192.168.139.252
  [Source GeoIP: Unknown]
  [Destination GeoIP: Unknown]
# Transmission Control Protocol, Src Port: 2051, Dst Port: 3000, Seq: 0, Len: 0
  Source Port: 2051
  Destination Port: 3000
  [Stream index: 4]
  [TCP Segment Len: 0]
  Sequence number: 0 (relative sequence number)
  Acknowledgment number: 0
  1000 .... = Header Length: 32 bytes (8)
  Flags: 0x002 (SYN)
    Window size value: 8192
    [Calculated window size: 8192]
    Checksum: 0x5f4a [unverified]
    [Checksum Status: Unverified]
    Urgent pointer: 0
  Options: (12 bytes), Maximum segment size, No-Operation (NOP), Window scale, No-Operation (NOP), No-Operation (NOP), SACK permitted

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Figura 7 - Informações da primeira confirmação enviada do cliente.

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1490 6.674106      192.168.138.46      192.168.139.252      TCP      66 2051 → 3000 [SYN] Seq=0 Win=8192 Len=0 MSS=1460 WS=256 SACK PERM=1
> Frame 1490: 66 bytes on wire (528 bits), 66 bytes captured (528 bits) on interface 0
# Ethernet II, Src: HewlettP_00:d7:09 (c8:d3:ff:00:d7:09), Dst: HewlettP_00:d7:0a (c8:d3:ff:00:d7:0a)
# Destination: HewlettP_00:d7:0a (c8:d3:ff:00:d7:0a)
  Address: HewlettP_00:d7:0a (c8:d3:ff:00:d7:0a)
    ....0. .... = LG bit: Globally unique address (factory default)
    ....0. .... = IG bit: Individual address (unicast)
# Source: HewlettP_00:d7:09 (c8:d3:ff:00:d7:09)
  Address: HewlettP_00:d7:09 (c8:d3:ff:00:d7:09)
    ....0. .... = LG bit: Globally unique address (factory default)
    ....0. .... = IG bit: Individual address (unicast)
  Type: IPv4 (0x0800)
# Internet Protocol Version 4, Src: 192.168.138.46, Dst: 192.168.139.252
  0100 .... = Version: 4
  ....0101 = Header Length: 20 bytes (5)
  Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
  Total Length: 52
  Identification: 0x4319 (17177)
  Flags: 0x02 (Don't Fragment)
  Fragment offset: 0
  Time to live: 64
  Protocol: TCP (6)
  Header checksum: 0x602f [validation disabled]
  [Header checksum status: Unverified]
  Source: 192.168.138.46
  Destination: 192.168.139.252
  [Source GeoIP: Unknown]
  [Destination GeoIP: Unknown]
# Transmission Control Protocol, Src Port: 2051, Dst Port: 3000, Seq: 0, Len: 0
  Source Port: 2051
  Destination Port: 3000
  [Stream index: 4]
  [TCP Segment Len: 0]
  Sequence number: 0 (relative sequence number)
  Acknowledgment number: 0
  1000 .... = Header Length: 32 bytes (8)
  Flags: 0x002 (SYN)
    Window size value: 8192
    [Calculated window size: 8192]
    Checksum: 0x5f4a [unverified]
    [Checksum Status: Unverified]
    Urgent pointer: 0
  Options: (12 bytes), Maximum segment size, No-Operation (NOP), Window scale, No-Operation (NOP), No-Operation (NOP), SACK permitted
  [SEQ/ACK analysis]

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Figura 8 - Informações da segunda confirmação enviada do cliente.

1492	9.680126	192.168.138.46	192.168.139.252	TCP	60	2051 → 3000	[ACK]	Seq=1	Ack=1	Win=65536	Len=0
▶ Frame 1492: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface 0 ▶ Ethernet II, Src: HewlettP_00:d7:09 (c8:d3:ff:00:d7:09), Dst: HewlettP_00:d7:0a (c8:d3:ff:00:d7:0a) ▶ Destination: HewlettP_00:d7:0a (c8:d3:ff:00:d7:0a) Address: HewlettP_00:d7:0a (c8:d3:ff:00:d7:0a)0. = LG bit: Globally unique address (factory default)0. = IG bit: Individual address (unicast) ▶ Source: HewlettP_00:d7:09 (c8:d3:ff:00:d7:09) Address: HewlettP_00:d7:09 (c8:d3:ff:00:d7:09)0. = LG bit: Globally unique address (factory default)0. = IG bit: Individual address (unicast) Type: IPv4 (0x0800) Padding: 000000000000 ▶ Internet Protocol Version 4, Src: 192.168.138.46, Dst: 192.168.139.252 0100 = Version: 40101 = Header Length: 20 bytes (5) ▶ Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT) Total Length: 40 Identification: 0x431a (17178) ▶ Flags: 0x02 (Don't Fragment) Fragment offset: 0 Time to live: 64 Protocol: TCP (6) Header checksum: 0x603a [validation disabled] [Header checksum status: Unverified] Source: 192.168.138.46 Destination: 192.168.139.252 [Source GeoIP: Unknown] [Destination GeoIP: Unknown] ▶ Transmission Control Protocol, Src Port: 2051, Dst Port: 3000, Seq: 1, Ack: 1, Len: 0 Source Port: 2051 Destination Port: 3000 [Stream index: 4] [TCP Segment Len: 0] Sequence number: 1 (relative sequence number) Acknowledgment number: 1 (relative ack number) 0101 = Header Length: 20 bytes (5) ▶ Flags: 0x010 (ACK) Window size value: 256 [Calculated window size: 65536] [Window size scaling factor: 256] Checksum: 0x9ffe [unverified] [Checksum Status: Unverified] Urgent pointer: 0 ▶ [SEQ/ACK analysis]											

Figura 9 - Informações da terceira confirmação enviada do cliente.

1496	9.693065	192.168.138.46	192.168.139.252	TCP	60	2051 → 3000	[ACK]	Seq=1	Ack=1002	Win=64512	Len=0
▶ Frame 1496: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface 0 ▶ Ethernet II, Src: HewlettP_00:d7:09 (c8:d3:ff:00:d7:09), Dst: HewlettP_00:d7:0a (c8:d3:ff:00:d7:0a) ▶ Destination: HewlettP_00:d7:0a (c8:d3:ff:00:d7:0a) Address: HewlettP_00:d7:0a (c8:d3:ff:00:d7:0a)0. = LG bit: Globally unique address (factory default)0. = IG bit: Individual address (unicast) ▶ Source: HewlettP_00:d7:09 (c8:d3:ff:00:d7:09) Address: HewlettP_00:d7:09 (c8:d3:ff:00:d7:09)0. = LG bit: Globally unique address (factory default)0. = IG bit: Individual address (unicast) Type: IPv4 (0x0800) Padding: 000000000000 ▶ Internet Protocol Version 4, Src: 192.168.138.46, Dst: 192.168.139.252 0100 = Version: 40101 = Header Length: 20 bytes (5) ▶ Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT) Total Length: 40 Identification: 0x431b (17179) ▶ Flags: 0x02 (Don't Fragment) Fragment offset: 0 Time to live: 64 Protocol: TCP (6) Header checksum: 0x6039 [validation disabled] [Header checksum status: Unverified] Source: 192.168.138.46 Destination: 192.168.139.252 [Source GeoIP: Unknown] [Destination GeoIP: Unknown] ▶ Transmission Control Protocol, Src Port: 2051, Dst Port: 3000, Seq: 1, Ack: 1002, Len: 0 Source Port: 2051 Destination Port: 3000 [Stream index: 4] [TCP Segment Len: 0] Sequence number: 1 (relative sequence number) Acknowledgment number: 1002 (relative ack number) 0101 = Header Length: 20 bytes (5) ▶ Flags: 0x010 (ACK) Window size value: 252 [Calculated window size: 64512] [Window size scaling factor: 256] Checksum: 0x9c19 [unverified] [Checksum Status: Unverified] Urgent pointer: 0 ▶ [SEQ/ACK analysis]											

Figura 10 - Informações da quarta confirmação enviada do cliente.

Figura 11 – Mensagem trocada.