

# Lista 7 - Redes

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No.	Time	Source	Destination	Protocol	Length	Info
16	0.184166975	127.0.0.1	127.0.0.1	TCP	74	48178 → 9871 [SYN] Seq=0 Win=65495 Len=0 MSS=65495 SACK_PERM TSval=435986784 T...
17	0.184185573	127.0.0.1	127.0.0.1	TCP	74	9871 → 48178 [SYN, ACK] Seq=0 Ack=1 Win=65483 Len=0 MSS=65495 SACK_PERM TSval=...
18	0.184208468	127.0.0.1	127.0.0.1	TCP	66	48178 → 9871 [ACK] Seq=1 Ack=1 Win=65536 Len=0 TSval=435986784 TSecr=435986784
35	7.924343515	127.0.0.1	127.0.0.1	TCP	67	48178 → 9871 [PSH, ACK] Seq=1 Ack=1 Win=65536 Len=1 TSval=435994524 TSecr=4359...
36	7.924387625	127.0.0.1	127.0.0.1	TCP	66	9871 → 48178 [ACK] Seq=1 Ack=2 Win=65536 Len=0 TSval=435994524 TSecr=435994524
37	7.924767796	127.0.0.1	127.0.0.1	TCP	67	48178 → 9871 [PSH, ACK] Seq=2 Ack=1 Win=65536 Len=1 TSval=435994525 TSecr=4359...
38	7.924781405	127.0.0.1	127.0.0.1	TCP	66	9871 → 48178 [ACK] Seq=1 Ack=3 Win=65536 Len=0 TSval=435994525 TSecr=435994525
39	7.924839407	127.0.0.1	127.0.0.1	TCP	67	48178 → 9871 [PSH, ACK] Seq=3 Ack=1 Win=65536 Len=1 TSval=435994525 TSecr=4359...
40	7.924848444	127.0.0.1	127.0.0.1	TCP	66	9871 → 48178 [ACK] Seq=1 Ack=4 Win=65536 Len=0 TSval=435994525 TSecr=435994525
41	7.924899968	127.0.0.1	127.0.0.1	TCP	67	48178 → 9871 [PSH, ACK] Seq=4 Ack=1 Win=65536 Len=1 TSval=435994525 TSecr=4359...
42	7.924907734	127.0.0.1	127.0.0.1	TCP	66	9871 → 48178 [ACK] Seq=1 Ack=5 Win=65536 Len=0 TSval=435994525 TSecr=435994525
43	7.924958242	127.0.0.1	127.0.0.1	TCP	67	48178 → 9871 [PSH, ACK] Seq=5 Ack=1 Win=65536 Len=1 TSval=435994525 TSecr=4359...
44	7.924966292	127.0.0.1	127.0.0.1	TCP	66	9871 → 48178 [ACK] Seq=1 Ack=6 Win=65536 Len=0 TSval=435994525 TSecr=435994525
45	7.925018043	127.0.0.1	127.0.0.1	TCP	67	48178 → 9871 [PSH, ACK] Seq=6 Ack=1 Win=65536 Len=1 TSval=435994525 TSecr=4359...
46	7.925026384	127.0.0.1	127.0.0.1	TCP	66	9871 → 48178 [ACK] Seq=1 Ack=7 Win=65536 Len=0 TSval=435994525 TSecr=435994525
47	7.925077399	127.0.0.1	127.0.0.1	TCP	67	48178 → 9871 [PSH, ACK] Seq=7 Ack=1 Win=65536 Len=1 TSval=435994525 TSecr=4359...
48	7.925085189	127.0.0.1	127.0.0.1	TCP	66	9871 → 48178 [ACK] Seq=1 Ack=8 Win=65536 Len=0 TSval=435994525 TSecr=435994525
49	7.925133255	127.0.0.1	127.0.0.1	TCP	67	48178 → 9871 [PSH, ACK] Seq=8 Ack=1 Win=65536 Len=1 TSval=435994525 TSecr=4359...
50	7.925140551	127.0.0.1	127.0.0.1	TCP	66	9871 → 48178 [ACK] Seq=1 Ack=9 Win=65536 Len=0 TSval=435994525 TSecr=435994525
51	7.925192250	127.0.0.1	127.0.0.1	TCP	67	48178 → 9871 [PSH, ACK] Seq=9 Ack=1 Win=65536 Len=1 TSval=435994525 TSecr=4359...
52	7.925201312	127.0.0.1	127.0.0.1	TCP	66	9871 → 48178 [ACK] Seq=1 Ack=10 Win=65536 Len=0 TSval=435994525 TSecr=435994525
53	7.925251661	127.0.0.1	127.0.0.1	TCP	67	48178 → 9871 [PSH, ACK] Seq=10 Ack=1 Win=65536 Len=1 TSval=435994525 TSecr=435...
54	7.925260102	127.0.0.1	127.0.0.1	TCP	66	9871 → 48178 [ACK] Seq=1 Ack=11 Win=65536 Len=0 TSval=435994525 TSecr=435994525
55	7.925309908	127.0.0.1	127.0.0.1	TCP	67	48178 → 9871 [PSH, ACK] Seq=11 Ack=1 Win=65536 Len=1 TSval=435994525 TSecr=435...
56	7.925318121	127.0.0.1	127.0.0.1	TCP	66	9871 → 48178 [ACK] Seq=1 Ack=12 Win=65536 Len=0 TSval=435994525 TSecr=435994525
57	7.925368121	127.0.0.1	127.0.0.1	TCP	67	48178 → 9871 [PSH, ACK] Seq=12 Ack=1 Win=65536 Len=1 TSval=435994525 TSecr=435...
58	7.925376604	127.0.0.1	127.0.0.1	TCP	66	9871 → 48178 [ACK] Seq=1 Ack=13 Win=65536 Len=0 TSval=435994525 TSecr=435994525
59	7.927153537	127.0.0.1	127.0.0.1	TCP	67	48178 → 9871 [PSH, ACK] Seq=13 Ack=1 Win=65536 Len=1 TSval=435994527 TSecr=435...
60	7.927188058	127.0.0.1	127.0.0.1	TCP	66	9871 → 48178 [ACK] Seq=1 Ack=14 Win=65536 Len=0 TSval=435994527 TSecr=435994527
61	7.929978592	127.0.0.1	127.0.0.1	TCP	67	9871 → 48178 [PSH, ACK] Seq=1 Ack=14 Win=65536 Len=1 TSval=435994530 TSecr=435...
62	7.930019392	127.0.0.1	127.0.0.1	TCP	66	48178 → 9871 [ACK] Seq=14 Ack=2 Win=65536 Len=0 TSval=435994530 TSecr=435994530
63	7.930095072	127.0.0.1	127.0.0.1	TCP	67	9871 → 48178 [PSH, ACK] Seq=2 Ack=14 Win=65536 Len=1 TSval=435994530 TSecr=435...
64	7.930105015	127.0.0.1	127.0.0.1	TCP	66	48178 → 9871 [ACK] Seq=14 Ack=3 Win=65536 Len=0 TSval=435994530 TSecr=435994530

Frame 17: 74 bytes on wire (592 bits), 74 bytes captured (592 bits) on interface  
Ethernet II, Src: 00:00:00:00:00:00 (00:00:00:00:00:00), Dst: 00:00:00:00:00:00  
Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1

Wireshark: wireshark\_loQOD542.pcapng Packets: 168 - Displayed: 58 (34.5%) Profile: Default

## a) Transferência Confiável (TCP)

Client → Server: [PSH, ACK] Seq=1 Ack=1 Len=1 (dados: "mensagem")

Server → Client: [ACK] Seq=1 Ack=2 (confirma recebimento)

## b) Início de Conexão (Three-Way Handshake)

1. [SYN] Cliente (porta aleatória) → Servidor (9871)
2. [SYN,ACK] Servidor (9871) → Cliente
3. [ACK] Cliente → Servidor

## c) Término de Conexão (Four-Way Handshake)

1. [SYN] Cliente (porta aleatória) → Servidor (9871)
2. [SYN,ACK] Servidor (9871) → Cliente
3. [ACK] Cliente → Servidor

A comunicação TCP entre o cliente e o servidor começa com o three-way handshake: o cliente envia um SYN para iniciar a conexão, o servidor responde com SYN-ACK confirmando e o cliente finaliza com ACK, estabelecendo o link. Durante a troca de dados, o cliente envia uma mensagem com a flag PSH (dados urgentes), e o servidor responde usando ACK para confirmar cada pacote, garantindo entrega confiável e em ordem.

O encerramento da conexão ocorre com o four-way handshake: o cliente envia FIN para fechar, o servidor confirma com ACK e envia seu próprio FIN, finalizado pelo ACK do cliente. O controle de fluxo é visível no campo Window Size, que ajusta a velocidade de transmissão para evitar sobrecarga. Assim, o TCP garante comunicação ordenada, sem perdas e com gerenciamento eficiente de tráfego.

