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Cliente- Servidor FTP

Usando sockets em Python 3.7

Para executar o Servidor:

```
python serv.py <numero da porta>
```

Cliente:

```
python cli.py <URLservidor> <numero porta> (se executado localmente, então  
URLservidor = localhost)
```

Exemplo:

```
python serv.py 50000
```

-

```
python cli.py localhost 50000
```

Comandos

```
'get <nome>' download arquivo do servidor
```

```
'put <nome>' upload arquivo para servidor
```

```
'ls' lista os arquivos no servidor
```

```
'quit' desconecta
```

Exemplos de teste feito com o sistema:

*Adapter for loopback traffic capture

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-/> Expression...

| No. | Time | Source | Destination | Protocol | Length | Info |
|-----|-----------|---------------|-----------------|-----------|--------|-----------------------------------------------------------------------------------|
| 1 | 0.000000 | 127.0.0.1 | 127.0.0.1 | TCP | 67 | 62264 → 50000 [PSH, ACK] Seq=1 Ack=1 Win=10231 Len=23 |
| 2 | 0.000089 | 127.0.0.1 | 127.0.0.1 | TCP | 44 | 50000 → 62264 [ACK] Seq=1 Ack=24 Win=10233 Len=0 |
| 3 | 0.003921 | 127.0.0.1 | 127.0.0.1 | TCP | 59 | 50000 → 62264 [PSH, ACK] Seq=1 Ack=24 Win=10233 Len=15 |
| 4 | 0.003995 | 127.0.0.1 | 127.0.0.1 | TCP | 44 | 62264 → 50000 [ACK] Seq=24 Ack=16 Win=10231 Len=0 |
| 5 | 0.007425 | 127.0.0.1 | 127.0.0.1 | TCP | 56 | 62347 → 62346 [SYN] Seq=0 Win=65535 Len=0 MSS=65495 WS=256 SACK_PERM=1 |
| 6 | 0.007538 | 127.0.0.1 | 127.0.0.1 | TCP | 56 | 62346 → 62347 [SYN, ACK] Seq=0 Ack=1 Win=65535 Len=0 MSS=65495 WS=256 SACK_PERM=1 |
| 7 | 0.007617 | 127.0.0.1 | 127.0.0.1 | TCP | 44 | 62347 → 62346 [ACK] Seq=1 Ack=1 Win=2619648 Len=0 |
| 8 | 0.009257 | 127.0.0.1 | 127.0.0.1 | TCP | 765 | 62347 → 62346 [PSH, ACK] Seq=1 Ack=1 Win=2619648 Len=721 |
| 9 | 0.009333 | 127.0.0.1 | 127.0.0.1 | TCP | 44 | 62346 → 62347 [ACK] Seq=1 Ack=722 Win=2619648 Len=0 |
| 10 | 0.013145 | 127.0.0.1 | 127.0.0.1 | TCP | 44 | 62347 → 62346 [FIN, ACK] Seq=722 Ack=1 Win=2619648 Len=0 |
| 11 | 0.013222 | 127.0.0.1 | 127.0.0.1 | TCP | 44 | 62346 → 62347 [ACK] Seq=1 Ack=723 Win=2619648 Len=0 |
| 12 | 0.018318 | 127.0.0.1 | 127.0.0.1 | TCP | 44 | 62346 → 62347 [RST, ACK] Seq=1 Ack=723 Win=0 Len=0 |
| 13 | 10.928933 | 192.168.0.104 | 192.168.0.255 | UDP | 76 | 57621 → 57621 Len=44 |
| 14 | 30.699331 | 192.168.0.104 | 239.255.255.250 | SSDP | 206 | M-SEARCH * HTTP/1.1 |
| 15 | 31.700036 | 192.168.0.104 | 239.255.255.250 | SSDP | 206 | M-SEARCH * HTTP/1.1 |
| 16 | 32.700575 | 192.168.0.104 | 239.255.255.250 | SSDP | 206 | M-SEARCH * HTTP/1.1 |
| 17 | 33.701151 | 192.168.0.104 | 239.255.255.250 | SSDP | 206 | M-SEARCH * HTTP/1.1 |
| 18 | 39.643997 | :::1 | :::1 | WireGu... | 84 | Handshake Initiation, sender=0x00000020[Malformed Packet] |
| 19 | 40.934104 | 192.168.0.104 | 192.168.0.255 | UDP | 76 | 57621 → 57621 Len=44 |

[Header checksum status: Unverified]
Source: 127.0.0.1
Destination: 127.0.0.1

Transmission Control Protocol, Src Port: 62264, Dst Port: 50000, Seq: 1, Ack: 1, Len: 23
Source Port: 62264
Destination Port: 50000
[Stream index: 0]
[TCP Segment Len: 23]
Sequence number: 1 (relative sequence number)
[Next sequence number: 24 (relative sequence number)]
Acknowledgment number: 1 (relative ack number)
0101 = Header Length: 20 bytes (5)
> Flags: 0x018 (PSH, ACK)
Window size value: 10231
[Calculated window size: 10231]
[Window size scaling factor: -1 (unknown)]

```
0000 02 00 00 00 45 00 00 3f e3 83 40 00 80 06 00 00 .....E...?..@....
0010 7f 00 00 01 7f 00 00 01 f3 38 c3 50 c9 ca e3 47 .....8.P...G
0020 54 2e 03 56 50 18 27 f7 c2 90 00 00 30 30 30 30 T..VP...'....0000
0030 30 30 30 30 31 33 70 75 74 20 74 65 73 74 65 2e 000013pu t teste.
0040 74 78 74 txt
```

Exemplo de captura via Wireshark para comando put para upload do arquivo no servidor.
Servidor iniciado na porta 50000. Porta do cliente: 62264.

- Layout das mensagens trocadas armazenadas no arquivo server.log.