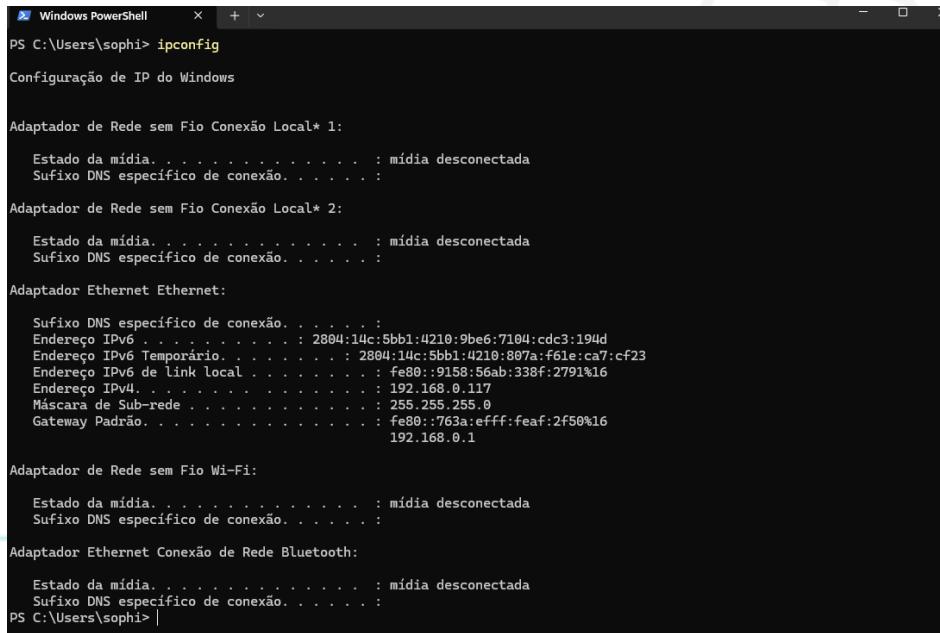


# Exercício Resolvido (1): Identificando seu IP

- Abra o terminal da sua máquina e identifique seu número de IP. No Windows, use o comando ipconfig e, no Linux, ifconfig



```
Windows PowerShell
PS C:\Users\sophi> ipconfig

Configuração de IP do Windows

Adaptador de Rede sem Fio Conexão Local* 1:
  Estado da mídia. . . . . : mídia desconectada
  Sufixo DNS específico de conexão. . . . . :

Adaptador de Rede sem Fio Conexão Local* 2:
  Estado da mídia. . . . . : mídia desconectada
  Sufixo DNS específico de conexão. . . . . :

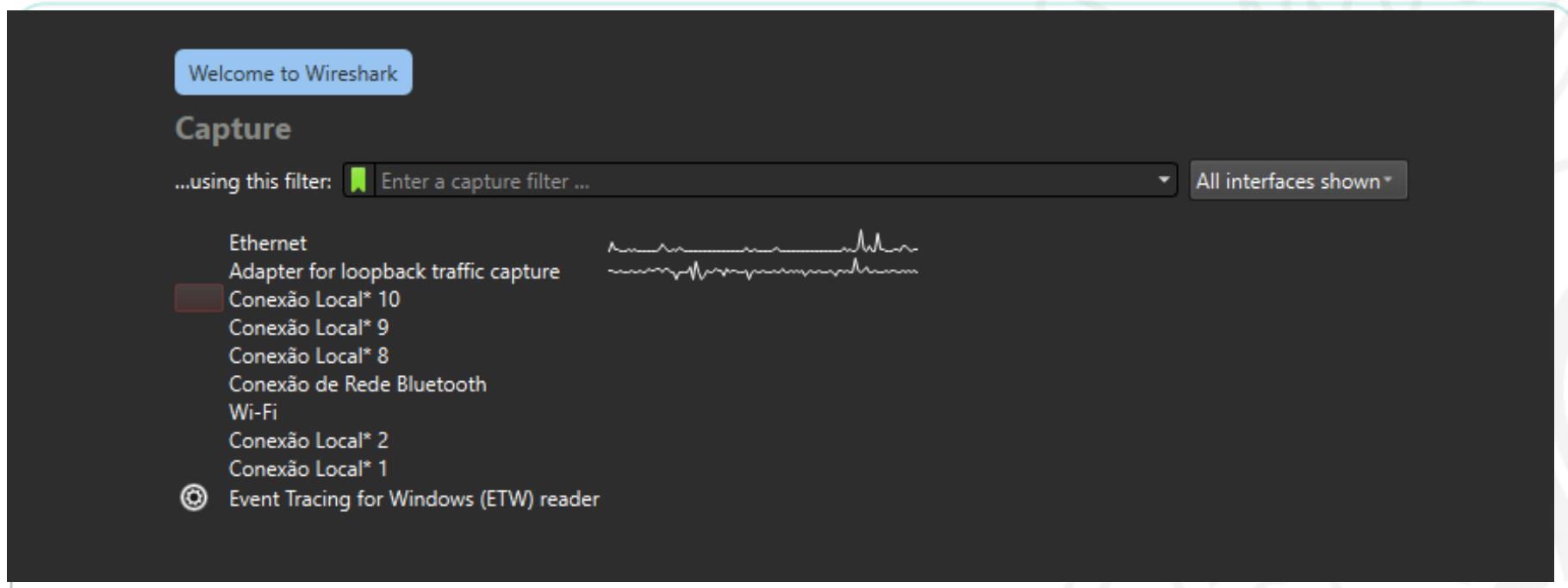
Adaptador Ethernet Ethernet:
  Sufixo DNS específico de conexão. . . . . :
  Endereço IPv6 . . . . . : 2804:14c:5bb1:4210:9be6:7104:cdc3:194d
  Endereço IPv6 Temporário. . . . . : 2804:14c:5bb1:4210:807a:f61e:ca7:cfc23
  Endereço IPv6 de link local . . . . . : fe80::9158:56ab:338f:2791%16
  Endereço IPv4. . . . . : 192.168.0.117
  Máscara de Sub-rede . . . . . : 255.255.255.0
  Gateway Padrão. . . . . : fe80::763a:efff:feaf:2f50%16
                                192.168.0.1

Adaptador de Rede sem Fio Wi-Fi:
  Estado da mídia. . . . . : mídia desconectada
  Sufixo DNS específico de conexão. . . . . :

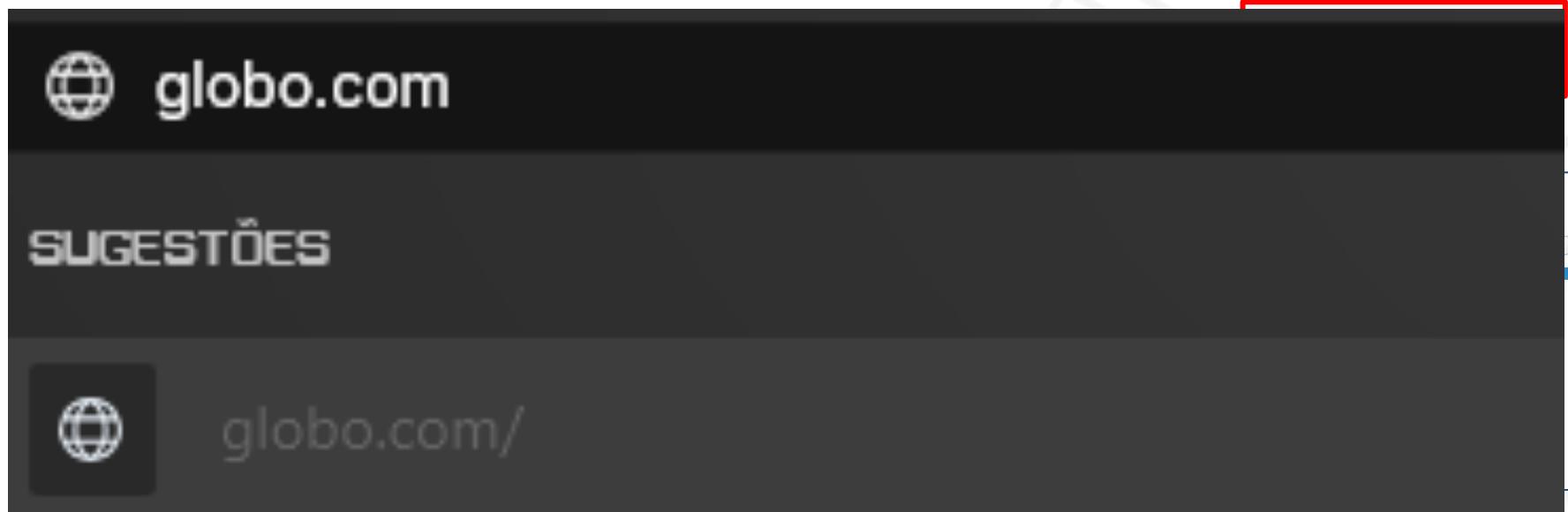
Adaptador Ethernet Conexão de Rede Bluetooth:
  Estado da mídia. . . . . : mídia desconectada
  Sufixo DNS específico de conexão. . . . . :

PS C:\Users\sophi>
```

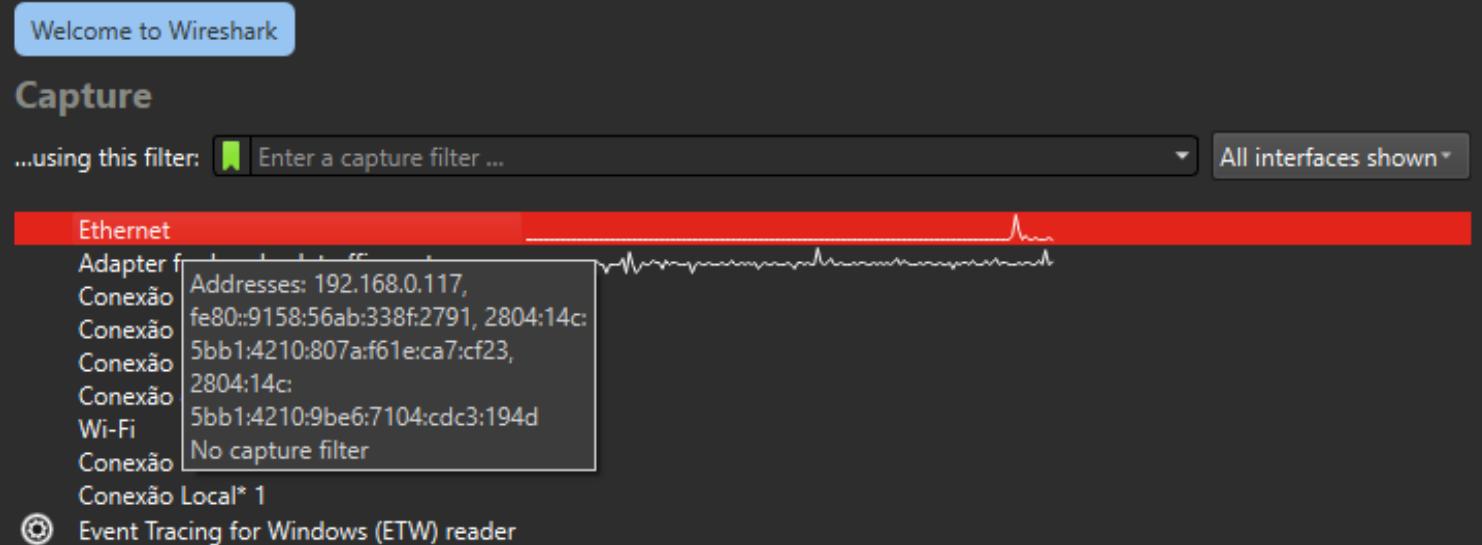
# Exercício Resolvido (2): Tela Inicial



# Exercício Resolvido (3): Abra um Navegador



# Selecione uma Interface de Rede



# Exercício Resolvido (4): Selecione uma Interface

No.	Time	Source	Destination	Protocol	Length Info
846	4.040012	34.1.232.191	192.168.0.117	TCP	60 443 → 52688 [FIN, ACK] Seq=4329 Ack=2594 Win=40192 Len=0
847	4.040093	104.36.113.107	192.168.0.117	TCP	60 443 → 52509 [ACK] Seq=1496 Ack=24987 Win=16448 Len=0
848	4.042227	104.36.113.107	192.168.0.117	TLSv1.2	470 Application Data
849	4.042227	104.36.113.107	192.168.0.117	TLSv1.2	86 Application Data
850	4.042247	192.168.0.117	104.36.113.107	TCP	54 52509 → 443 [ACK] Seq=24987 Ack=1944 Win=252 Len=0
851	4.122930	192.168.0.117	38.99.107.14	TCP	66 [TCP Retransmission] 52698 → 443 [SYN] Seq=0 Win=655
852	4.341520	192.168.0.117	35.206.140.87	QUIC	1292 Initial, DCID=9f6f7a79695f246a, PKN: 6, PING, PING,
853	4.387946	192.168.0.117	38.99.107.14	TCP	66 [TCP Retransmission] 52699 → 443 [SYN] Seq=0 Win=655
854	4.593785	192.168.0.117	35.211.202.130	QUIC	1292 Initial, DCID=79bc64c113d6db26, PKN: 6, CRYPTO, CRYPT
855	4.719092	104.18.16.5	192.168.0.117	TLSv1.2	114 Application Data
856	4.737130	192.168.0.117	59.97.249.134	BT-DHT	107 Ping
857	4.737471	2804:14c:5bb1:4210:...	2001:14bb:cb:394:fc:...	BT-DHT	166 Get_peers Info_hash=1e0e4c2f25e1cb870249046be9419b59
858	4.737752	2804:14c:5bb1:4210:...	2a01:36d:104:41bc:3...	BT-DHT	166 Get_peers Info_hash=87d9d5906ae96ef2f15ad07b2b6c856
859	4.768127	192.168.0.117	104.18.16.5	TCP	54 65378 → 443 [ACK] Seq=233 Ack=121 Win=254 Len=0
860	4.853839	192.168.0.117	104.36.113.111	TLSv1.2	4146 Application Data
861	4.853875	192.168.0.117	104.36.113.111	TLSv1.2	93 Application Data
862	4.989373	2a01:36d:104:41bc:3...	2804:14c:5bb1:4210:...	BT-DHT	481 Response Nodes=8
863	5.041966	2001:14bb:cb:394:fc:...	2804:14c:5bb1:4210:...	BT-DHT	481 Response Nodes=8
864	5.048767	104.36.113.111	192.168.0.117	TCP	60 443 → 52563 [ACK] Seq=1 Ack=1461 Win=6459 Len=0
865	5.054902	104.36.113.111	192.168.0.117	TCP	60 443 → 52563 [ACK] Seq=1 Ack=2921 Win=6824 Len=0
866	5.056505	104.36.113.111	192.168.0.117	TCP	60 443 → 52563 [ACK] Seq=1 Ack=4132 Win=7127 Len=0
867	5.056505	104.36.113.111	192.168.0.117	TLSv1.2	93 Application Data
868	5.058180	104.36.113.111	192.168.0.117	TLSv1.2	195 Application Data
869	5.058180	104.36.113.111	192.168.0.117	TLSv1.2	85 Application Data
870	5.058247	192.168.0.117	104.36.113.111	TCP	54 52563 → 443 [ACK] Seq=4132 Ack=212 Win=253 Len=0
871	5.090927	59.97.249.134	192.168.0.117	BT-DHT	98 Response
872	5.349589	192.168.0.117	186.192.83.12	TCP	55 52075 → 443 [ACK] Seq=1 Ack=1 Win=253 Len=1
873	5.372965	186.192.83.12	192.168.0.117	TCP	66 443 → 52075 [ACK] Seq=1 Ack=2 Win=501 Len=0 SLE=1 SR
874	5.410815	192.168.0.117	186.192.83.12	TCP	55 52077 → 443 [ACK] Seq=1 Ack=1 Win=252 Len=1

: FIG

# Exercício Resolvido (5): Tráfego Destinado ao seu IP

- Na opção de filtro, selecione `ip.dst == seu-ip`

# Exercício Resolvido (6): Ping em 8.8.8.8

p/ tentar ver se  
o tempo de  
resposta

- Abra o terminal e execute o comando **ping 8.8.8.8**
- Na opção de filtro, escolha: **ip.addr == seu-ip and icmp.type == 8 and ip.dst == 8.8.8.8**

origem ou  
destino

pacote ICMP do tipo 8 (echo request, de teste de conectividade)

dentro

```
PS C:\Users\sophi> ping 8.8.8.8

Disparando 8.8.8.8 com 32 bytes de dados:
Resposta de 8.8.8.8: bytes=32 tempo=20ms TTL=54
Resposta de 8.8.8.8: bytes=32 tempo=19ms TTL=54
Resposta de 8.8.8.8: bytes=32 tempo=19ms TTL=54
Resposta de 8.8.8.8: bytes=32 tempo=19ms TTL=54

Estatísticas do Ping para 8.8.8.8:
Pacotes: Enviados = 4, Recebidos = 4, Perdidos = 0 (0% de perda),
Aproximar um número redondo de vezes em milissegundos:
Mínimo = 19ms, Máximo = 20ms, Média = 19ms
```

## Exercício Resolvido (6): Ping em 8.8.8.8

```
ip.addr == 192.168.0.117 and icmp.type == 8 and ip.dst == 8.8.8.8
```

No.	Time	Source	Destination	Protocol	Length	Info
→ 21314	509.576965	192.168.0.117	8.8.8.8	ICMP	74	Echo (ping) request id=0x0001, seq=5/1280, ttl=128 (reply in 21315)
21316	510.592018	192.168.0.117	8.8.8.8	ICMP	74	Echo (ping) request id=0x0001, seq=6/1536, ttl=128 (reply in 21317)
21367	511.597384	192.168.0.117	8.8.8.8	ICMP	74	Echo (ping) request id=0x0001, seq=7/1792, ttl=128 (reply in 21368)
21377	512.608206	192.168.0.117	8.8.8.8	ICMP	74	Echo (ping) request id=0x0001, seq=8/2048, ttl=128 (reply in 21378)

# Exercício (1): Ping em 8.8.8.8

- No exercício anterior, podemos simplificar a expressão `ip.addr == 192.168.0.5 and icmp.type == 8 and ip.dst == 8.8.8.8?` Discuta sua resposta

↳ sim. Se eu remover o `ip.addr` como meu IP e colocar como o 8.8.8.8, aparecerá os pingos (echo requests) em que o IP 8.8.8.8 aparece como origem ou destino.

↳ ou só como dst se quisermos só o destino.

icmp.type == 8 and ip.dst == 8.8.8.8						
No.	Time	Source	Destination	Protocol	Length	Info
→ 21314	509.576965	192.168.0.117	8.8.8.8	ICMP	74	Echo (ping) request id=0x0001, seq=5/1280, ttl=128 (reply in 21315)
21316	510.592018	192.168.0.117	8.8.8.8	ICMP	74	Echo (ping) request id=0x0001, seq=6/1536, ttl=128 (reply in 21317)
21367	511.597384	192.168.0.117	8.8.8.8	ICMP	74	Echo (ping) request id=0x0001, seq=7/1792, ttl=128 (reply in 21368)
21377	512.608206	192.168.0.117	8.8.8.8	ICMP	74	Echo (ping) request id=0x0001, seq=8/2048, ttl=128 (reply in 21378)

# Exercício (2): ICMP

- O que acontece se usarmos o filtro “icmp”?

↓ somente os pacotes de ICMP aparecerão (Internet Control Message Protocol) no tráfego. (Ia sua, requests de conectividade de todos os erros)

icmp						
No.	Time	Source	Destination	Protocol	Length	Info
→ 21314	509.576965	192.168.0.117	8.8.8.8	ICMP	74	Echo (ping) request id=0x0001, seq=5/1280, ttl=128 (reply in 21315)
← 21315	509.597446	8.8.8.8	192.168.0.117	ICMP	74	Echo (ping) reply id=0x0001, seq=5/1280, ttl=54 (request in 21314)
21316	510.592018	192.168.0.117	8.8.8.8	ICMP	74	Echo (ping) request id=0x0001, seq=6/1536, ttl=128 (reply in 21317)
21317	510.610930	8.8.8.8	192.168.0.117	ICMP	74	Echo (ping) reply id=0x0001, seq=6/1536, ttl=54 (request in 21316)
21367	511.597384	192.168.0.117	8.8.8.8	ICMP	74	Echo (ping) request id=0x0001, seq=7/1792, ttl=128 (reply in 21368)
21368	511.616790	8.8.8.8	192.168.0.117	ICMP	74	Echo (ping) reply id=0x0001, seq=7/1792, ttl=54 (request in 21367)
21377	512.608206	192.168.0.117	8.8.8.8	ICMP	74	Echo (ping) request id=0x0001, seq=8/2048, ttl=128 (reply in 21378)
21378	512.628017	8.8.8.8	192.168.0.117	ICMP	74	Echo (ping) reply id=0x0001, seq=8/2048, ttl=54 (request in 21377)

# Exercício Resolvido (7): ARP → caminho de endereço

- No filtro, selecione opção ARP

"quando um dispositivo deseja enviar um pacote para outro na mesma rede local, ele precisa saber o endereço MAC correspondente ao endereço IP de destino. Se não souber, o ARP envia uma solicitação (ARP Request) em broadcast para toda a rede local perguntando "Quem tem este IP?". O dispositivo com o IP correspondente responde com seu endereço MAC (ARP Reply), possibilitando que o remetente envie o quadro corretamente".

Address Resolution Protocol (resolução de endereços IP para endereços MAC na rede local)  
rede  
"rede"  
"endereço (físico)"

No.	Time	Source	Destination	Protocol	Length Info
18845	368.966558	AmazonTechno_64:fb:.. Broadcast		ARP	60 who has 192.168.0.142? Tell 192.168.0.127
18913	369.985304	AmazonTechno_64:fb:.. Broadcast		ARP	60 who has 192.168.0.142? Tell 192.168.0.127
18917	370.327349	KaonGroup_af:2f:50 Dell_62:a2:4a		ARP	60 who has 192.168.0.117? Tell 192.168.0.1
18918	370.327379	Dell_62:a2:4a	KaonGroup_af:2f:50	ARP	42 192.168.0.117 is at 04:bf:1b:62:a2:4a
18927	371.002340	AmazonTechno_64:fb:.. Broadcast		ARP	60 who has 192.168.0.142? Tell 192.168.0.127
18940	372.026229	AmazonTechno_64:fb:.. Broadcast		ARP	60 who has 192.168.0.142? Tell 192.168.0.127
18951	373.051107	AmazonTechno_64:fb:.. Broadcast		ARP	60 who has 192.168.0.142? Tell 192.168.0.127
19225	393.317344	KaonGroup_af:2f:50 Dell_62:a2:4a		ARP	60 who has 192.168.0.117? Tell 192.168.0.1
19226	393.317374	Dell_62:a2:4a	KaonGroup_af:2f:50	ARP	42 192.168.0.117 is at 04:bf:1b:62:a2:4a
19519	416.837644	KaonGroup_af:2f:50 Dell_62:a2:4a		ARP	60 who has 192.168.0.117? Tell 192.168.0.1
19520	416.837668	Dell_62:a2:4a	KaonGroup_af:2f:50	ARP	42 192.168.0.117 is at 04:bf:1b:62:a2:4a
20027	464.477571	KaonGroup_af:2f:50 Dell_62:a2:4a		ARP	60 who has 192.168.0.117? Tell 192.168.0.1
20028	464.477585	Dell_62:a2:4a	KaonGroup_af:2f:50	ARP	42 192.168.0.117 is at 04:bf:1b:62:a2:4a
21310	508.768123	KaonGroup_af:2f:50 Dell_62:a2:4a		ARP	60 who has 192.168.0.117? Tell 192.168.0.1
21311	508.768140	Dell_62:a2:4a	KaonGroup_af:2f:50	ARP	42 192.168.0.117 is at 04:bf:1b:62:a2:4a
23243	552.328428	KaonGroup_af:2f:50 Dell_62:a2:4a		ARP	60 who has 192.168.0.117? Tell 192.168.0.1
23244	552.328461	Dell_62:a2:4a	KaonGroup_af:2f:50	ARP	42 192.168.0.117 is at 04:bf:1b:62:a2:4a
23669	567.635526	TuyaSmart_12:78:12	Broadcast	ARP	60 who has 192.168.0.1? Tell 192.168.0.131
23670	567.667307	TuyaSmart_12:78:12	Broadcast	ARP	60 who has 192.168.0.1? Tell 192.168.0.131
24053	596.938623	KaonGroup_af:2f:50 Dell_62:a2:4a		ARP	60 who has 192.168.0.117? Tell 192.168.0.1
24054	596.938650	Dell_62:a2:4a	KaonGroup_af:2f:50	ARP	42 192.168.0.117 is at 04:bf:1b:62:a2:4a
25078	614.017607	AmazonTechno_64:fb:.. Broadcast		ARP	60 who has 192.168.0.129? Tell 192.168.0.127
25087	615.029570	AmazonTechno_64:fb:.. Broadcast		ARP	60 who has 192.168.0.129? Tell 192.168.0.127
25092	616.053065	AmazonTechno_64:fb:.. Broadcast		ARP	60 who has 192.168.0.129? Tell 192.168.0.127
25100	617.077535	AmazonTechno_64:fb:.. Broadcast		ARP	60 who has 192.168.0.129? Tell 192.168.0.127
25142	618.101242	AmazonTechno_64:fb:.. Broadcast		ARP	60 who has 192.168.0.129? Tell 192.168.0.127
25251	619.125121	AmazonTechno_64:fb:.. Broadcast		ARP	60 who has 192.168.0.129? Tell 192.168.0.127
25510	641.249153	KaonGroup_af:2f:50 Dell_62:a2:4a		ARP	60 who has 192.168.0.117? Tell 192.168.0.1
25511	641.249181	Dell_62:a2:4a	KaonGroup_af:2f:50	ARP	42 192.168.0.117 is at 04:bf:1b:62:a2:4a
26348	684.989146	KaonGroup_af:2f:50 Dell_62:a2:4a		ARP	60 who has 192.168.0.117? Tell 192.168.0.1

```
Frame 21311: 42 bytes on wire (336 bits), 42 bytes captured (336 bits) on interface 'Device\NPF_{E16A71B2-263C-4D17-AE0D-000C902EAD38}'  
Ethernet II, Src: Dell_62:a2:4a (04:bf:1b:62:a2:4a), Dst: KaonGroup_af:2f:50 (74:3a:ef:af:2f:50)  
Address Resolution Protocol (reply)
```

# Exercício (3): ARP

- Qual é a diferença de usarmos os filtros “arp.opcode == 1” e “arp.opcode == 2”?  
→ exibe os pacotes ARP do tipo request

No.	Time	Source	Destination	Protocol	Length Info
19519	416.837644	KaonGroup_af:2f:50	Dell_62:a2:4a	ARP	60 who has 192.168.0.117? Tell 192.168.0.1
20027	416.477571	KaonGroup_af:2f:50	Dell_62:a2:4a	ARP	60 who has 192.168.0.117? Tell 192.168.0.1
21310	508.768123	KaonGroup_af:2f:50	Dell_62:a2:4a	ARP	60 who has 192.168.0.117? Tell 192.168.0.1
23243	552.328428	KaonGroup_af:2f:50	Dell_62:a2:4a	ARP	60 who has 192.168.0.117? Tell 192.168.0.1
23669	567.652526	TuyaSmart_12:78:a4	Broadcast	ARP	60 who has 192.168.0.1? Tell 192.168.0.131
23670	567.657307	TuyaSmart_12:78:a4	Broadcast	ARP	60 who has 192.168.0.1? Tell 192.168.0.131
24063	570.938693	KaonGroup_af:2f:50	Dell_62:a2:4a	ARP	60 who has 192.168.0.117? Tell 192.168.0.1
25978	614.17697	AmazonTechno_64:f1:bc	Broadcast	ARP	60 who has 192.168.0.129? Tell 192.168.0.127
25807	615.029570	AmazonTechno_64:f1:bc	Broadcast	ARP	60 who has 192.168.0.129? Tell 192.168.0.127
25902	616.053065	AmazonTechno_64:f1:bc	Broadcast	ARP	60 who has 192.168.0.129? Tell 192.168.0.127
25108	617.077535	AmazonTechno_64:f1:bc	Broadcast	ARP	60 who has 192.168.0.129? Tell 192.168.0.127
25142	618.101242	AmazonTechno_64:f1:bc	Broadcast	ARP	60 who has 192.168.0.129? Tell 192.168.0.127
25351	619.125121	AmazonTechno_64:f1:bc	Broadcast	ARP	60 who has 192.168.0.129? Tell 192.168.0.127
25510	641.249153	KaonGroup_af:2f:50	Dell_62:a2:4a	ARP	60 who has 192.168.0.117? Tell 192.168.0.1
26340	684.909146	KaonGroup_af:2f:50	Dell_62:a2:4a	ARP	60 who has 192.168.0.117? Tell 192.168.0.1
26918	731.369191	KaonGroup_af:2f:50	Dell_62:a2:4a	ARP	60 who has 192.168.0.117? Tell 192.168.0.1
28150	770.519406	KaonGroup_af:2f:50	Dell_62:a2:4a	ARP	60 who has 192.168.0.117? Tell 192.168.0.1
41417	807.590087	KaonGroup_af:2f:50	Dell_62:a2:4a	ARP	60 who has 192.168.0.117? Tell 192.168.0.1
44734	845.590115	KaonGroup_af:2f:50	Dell_62:a2:4a	ARP	60 who has 192.168.0.117? Tell 192.168.0.1

No.	Time	Source	Destination	Protocol	Length Info
15730	195.306351	Dell_62:a2:4a	KaonGroup_af:2f:50	ARP	42 192.168.0.117 is at 04:bf:1b:62:a2:4a
16122	218.466114	Dell_62:a2:4a	KaonGroup_af:2f:50	ARP	42 192.168.0.117 is at 04:bf:1b:62:a2:4a
16628	245.396565	Dell_62:a2:4a	KaonGroup_af:2f:50	ARP	42 192.168.0.117 is at 04:bf:1b:62:a2:4a
17023	268.756632	Dell_62:a2:4a	KaonGroup_af:2f:50	ARP	42 192.168.0.117 is at 04:bf:1b:62:a2:4a
17333	296.696682	Dell_62:a2:4a	KaonGroup_af:2f:50	ARP	42 192.168.0.117 is at 04:bf:1b:62:a2:4a
18018	320.877061	Dell_62:a2:4a	KaonGroup_af:2f:50	ARP	42 192.168.0.117 is at 04:bf:1b:62:a2:4a
18304	345.787132	Dell_62:a2:4a	KaonGroup_af:2f:50	ARP	42 192.168.0.117 is at 04:bf:1b:62:a2:4a
18918	370.327379	Dell_62:a2:4a	KaonGroup_af:2f:50	ARP	42 192.168.0.117 is at 04:bf:1b:62:a2:4a
19226	396.129447	Dell_62:a2:4a	KaonGroup_af:2f:50	ARP	42 192.168.0.117 is at 04:bf:1b:62:a2:4a
19520	416.837668	Dell_62:a2:4a	KaonGroup_af:2f:50	ARP	42 192.168.0.117 is at 04:bf:1b:62:a2:4a
20028	464.477585	Dell_62:a2:4a	KaonGroup_af:2f:50	ARP	42 192.168.0.117 is at 04:bf:1b:62:a2:4a
21311	508.768140	Dell_62:a2:4a	KaonGroup_af:2f:50	ARP	42 192.168.0.117 is at 04:bf:1b:62:a2:4a
23244	552.328461	Dell_62:a2:4a	KaonGroup_af:2f:50	ARP	42 192.168.0.117 is at 04:bf:1b:62:a2:4a
24054	596.938650	Dell_62:a2:4a	KaonGroup_af:2f:50	ARP	42 192.168.0.117 is at 04:bf:1b:62:a2:4a
25511	641.249181	Dell_62:a2:4a	KaonGroup_af:2f:50	ARP	42 192.168.0.117 is at 04:bf:1b:62:a2:4a
26341	684.909175	Dell_62:a2:4a	KaonGroup_af:2f:50	ARP	42 192.168.0.117 is at 04:bf:1b:62:a2:4a
26911	731.369221	Dell_62:a2:4a	KaonGroup_af:2f:50	ARP	42 192.168.0.117 is at 04:bf:1b:62:a2:4a
28151	770.519429	Dell_62:a2:4a	KaonGroup_af:2f:50	ARP	42 192.168.0.117 is at 04:bf:1b:62:a2:4a
41418	807.980023	Dell_62:a2:4a	KaonGroup_af:2f:50	ARP	42 192.168.0.117 is at 04:bf:1b:62:a2:4a
44235	845.590147	Dell_62:a2:4a	KaonGroup_af:2f:50	ARP	42 192.168.0.117 is at 04:bf:1b:62:a2:4a
49980	887.480374	Dell_62:a2:4a	KaonGroup_af:2f:50	ARP	42 192.168.0.117 is at 04:bf:1b:62:a2:4a
61449	925.100280	Dell_62:a2:4a	KaonGroup_af:2f:50	ARP	42 192.168.0.117 is at 04:bf:1b:62:a2:4a
62789	945.853579	KaonGroup_af:2f:50	Dell_62:a2:4a	ARP	60 192.168.0.1 is at 74:3a:ef:af:2f:00

# Exercício Resolvido (8): ARP

- O que acontece se usarmos o filtro “arp.dst.proto\_ipv4 == seu-ip”?

→ exibe os pacotes ARP  
em que o endereço IP alvo  
é o meu (p/ descobrir o  
meu endereço MAC)

st.proto_ipv4==192.168.0.117					
Time	Source	Destination	Protocol	Length	Info
29 195.306337	KaonGroup_af:2f:50	Dell_62:a2:4a	ARP	60	Who has 192.168.0.117? Tell 192.168.0.1
21 218.466085	KaonGroup_af:2f:50	Dell_62:a2:4a	ARP	60	Who has 192.168.0.117? Tell 192.168.0.1
27 245.396415	KaonGroup_af:2f:50	Dell_62:a2:4a	ARP	60	Who has 192.168.0.117? Tell 192.168.0.1
22 268.756605	KaonGroup_af:2f:50	Dell_62:a2:4a	ARP	60	Who has 192.168.0.117? Tell 192.168.0.1
32 296.696652	KaonGroup_af:2f:50	Dell_62:a2:4a	ARP	60	Who has 192.168.0.117? Tell 192.168.0.1
17 320.877029	KaonGroup_af:2f:50	Dell_62:a2:4a	ARP	60	Who has 192.168.0.117? Tell 192.168.0.1
03 345.787115	KaonGroup_af:2f:50	Dell_62:a2:4a	ARP	60	Who has 192.168.0.117? Tell 192.168.0.1
17 370.327349	KaonGroup_af:2f:50	Dell_62:a2:4a	ARP	60	Who has 192.168.0.117? Tell 192.168.0.1
25 393.317344	KaonGroup_af:2f:50	Dell_62:a2:4a	ARP	60	Who has 192.168.0.117? Tell 192.168.0.1
19 416.837644	KaonGroup_af:2f:50	Dell_62:a2:4a	ARP	60	Who has 192.168.0.117? Tell 192.168.0.1
27 464.477571	KaonGroup_af:2f:50	Dell_62:a2:4a	ARP	60	Who has 192.168.0.117? Tell 192.168.0.1
10 508.768123	KaonGroup_af:2f:50	Dell_62:a2:4a	ARP	60	Who has 192.168.0.117? Tell 192.168.0.1
13 552.328428	KaonGroup_af:2f:50	Dell_62:a2:4a	ARP	60	Who has 192.168.0.117? Tell 192.168.0.1
53 596.938623	KaonGroup_af:2f:50	Dell_62:a2:4a	ARP	60	Who has 192.168.0.117? Tell 192.168.0.1
10 641.249153	KaonGroup_af:2f:50	Dell_62:a2:4a	ARP	60	Who has 192.168.0.117? Tell 192.168.0.1
10 684.909146	KaonGroup_af:2f:50	Dell_62:a2:4a	ARP	60	Who has 192.168.0.117? Tell 192.168.0.1

# Exercício (4): DHCP

→ camada de aplicação

- O que acontece se usarmos o filtro "dhcp"?

Dynamic Host Config. Protocol

mostra as mensagens trocadas durante a config. dinâmica de IPs

(Discover, Offer, Request, ACK, NACK)

↓                    ↓                    ↓  
"quero um ip"    "ok, quero    "recebi,  
                      ~aqui            ele"    valia"  
                      esta em"            "bem,      toca de"

dhcp						
No.	Time	Source	Destination	Protocol	Length	Info
1132...	2611.616913	0.0.0.0	255.255.255.255	DHCP	342	DHCP Request - Transaction ID 0x691e4633

# ICMPv6

- Mesmas funcionalidades do ICMPv4
  - Reportar erros no processamento de pacotes
  - Realizar diagnósticos
  - Enviar mensagens sobre as características da rede
- Assume as funções dos protocolos IPv4:
  - ARP: mapear um endereço físico a partir do lógico (IP)
  - RARP: mapear um endereço lógico a partir do físico
  - IGMP: gerenciamento de membros de grupos multicast

# Exercício (5): ICMPv6

- O que acontece se usarmos o filtro “icmpv6”?

*exibe os pacotes do protocolo de ICMP para IPv6*

No.	.....	Source	Destination	Protocol	Length	Info
1124...	2534.360019	fe80::763a:efff:fea...	2804:14c:5bb1:4210:...	ICMPv6	86	Neighbor Solicitation for 2804:14c:5bb1:4210:807a:f61e:ca7:cf23 from 74:3a:ef:af:2f:50
1124...	2534.360113	2804:14c:5bb1:4210:...	fe80::763a:efff:fea...	ICMPv6	86	Neighbor Advertisement 2804:14c:5bb1:4210:807a:f61e:ca7:cf23 (sol, ovr) is at 04:bf:1b:62:a2:4a
1124...	2539.750408	fe80::763a:efff:fea...	2804:14c:5bb1:4210:...	ICMPv6	86	Neighbor Solicitation for 2804:14c:5bb1:4210:9be6:7104:cdc3:194d from 74:3a:ef:af:2f:50
1124...	2539.750494	2804:14c:5bb1:4210:...	fe80::763a:efff:fea...	ICMPv6	86	Neighbor Advertisement 2804:14c:5bb1:4210:9be6:7104:cdc3:194d (sol, ovr) is at 04:bf:1b:62:a2:4a
1124...	2543.005743	fe80::763a:efff:fea...	ff02::1:1	ICMPv6	174	Router Advertisement from 74:3a:ef:af:2f:50
1126...	2559.500410	fe80::763a:efff:fea...	2804:14c:5bb1:4210:...	ICMPv6	86	Neighbor Solicitation for 2804:14c:5bb1:4210:807a:f61e:ca7:cf23 from 74:3a:ef:af:2f:50
1126...	2559.500448	2804:14c:5bb1:4210:...	fe80::763a:efff:fea...	ICMPv6	86	Neighbor Advertisement 2804:14c:5bb1:4210:807a:f61e:ca7:cf23 (sol, ovr) is at 04:bf:1b:62:a2:4a
1127...	2564.450300	fe80::763a:efff:fea...	2804:14c:5bb1:4210:...	ICMPv6	86	Neighbor Solicitation for 2804:14c:5bb1:4210:9be6:7104:cdc3:194d from 74:3a:ef:af:2f:50
1127...	2564.450362	2804:14c:5bb1:4210:...	fe80::763a:efff:fea...	ICMPv6	86	Neighbor Advertisement 2804:14c:5bb1:4210:9be6:7104:cdc3:194d (sol, ovr) is at 04:bf:1b:62:a2:4a
1129...	2581.859683	2a00:23c7:c929:3b00...	2804:14c:5bb1:4210:...	ICMPv6	175	Destination Unreachable (Address unreachable)
1129...	2586.860800	fe80::763a:efff:fea...	2804:14c:5bb1:4210:...	ICMPv6	86	Neighbor Solicitation for 2804:14c:5bb1:4210:807a:f61e:ca7:cf23 from 74:3a:ef:af:2f:50
1129...	2586.860880	2804:14c:5bb1:4210:...	fe80::763a:efff:fea...	ICMPv6	86	Neighbor Advertisement 2804:14c:5bb1:4210:807a:f61e:ca7:cf23 (sol, ovr) is at 04:bf:1b:62:a2:4a
1129...	2589.550748	fe80::763a:efff:fea...	2804:14c:5bb1:4210:...	ICMPv6	86	Neighbor Solicitation for 2804:14c:5bb1:4210:9be6:7104:cdc3:194d from 74:3a:ef:af:2f:50
1129...	2589.550826	2804:14c:5bb1:4210:...	fe80::763a:efff:fea...	ICMPv6	86	Neighbor Advertisement 2804:14c:5bb1:4210:9be6:7104:cdc3:194d (sol, ovr) is at 04:bf:1b:62:a2:4a
1131...	2603.013184	fe80::763a:efff:fea...	ff02::1:1	ICMPv6	174	Router Advertisement from 74:3a:ef:af:2f:50
1132...	2611.905893	fe80::763a:efff:fea...	ff02::1:1	ICMPv6	174	Router Advertisement from 74:3a:ef:af:2f:50
1132...	2613.590649	fe80::763a:efff:fea...	2804:14c:5bb1:4210:...	ICMPv6	86	Neighbor Solicitation for 2804:14c:5bb1:4210:807a:f61e:ca7:cf23 from 74:3a:ef:af:2f:50
1132...	2613.590740	2804:14c:5bb1:4210:...	fe80::763a:efff:fea...	ICMPv6	86	Neighbor Advertisement 2804:14c:5bb1:4210:807a:f61e:ca7:cf23 (sol, ovr) is at 04:bf:1b:62:a2:4a
1132...	2614.480800	fe80::763a:efff:fea...	2804:14c:5bb1:4210:...	ICMPv6	86	Neighbor Solicitation for 2804:14c:5bb1:4210:9be6:7104:cdc3:194d from 74:3a:ef:af:2f:50
1132...	2614.480841	2804:14c:5bb1:4210:...	fe80::763a:efff:fea...	ICMPv6	86	Neighbor Advertisement 2804:14c:5bb1:4210:9be6:7104:cdc3:194d (sol, ovr) is at 04:bf:1b:62:a2:4a
1132...	2616.497091	fe80::763a:efff:fea...	ff02::1:1	ICMPv6	174	Router Advertisement from 74:3a:ef:af:2f:50
1133...	2621.092155	fe80::763a:efff:fea...	ff02::1:1	ICMPv6	174	Router Advertisement from 74:3a:ef:af:2f:50