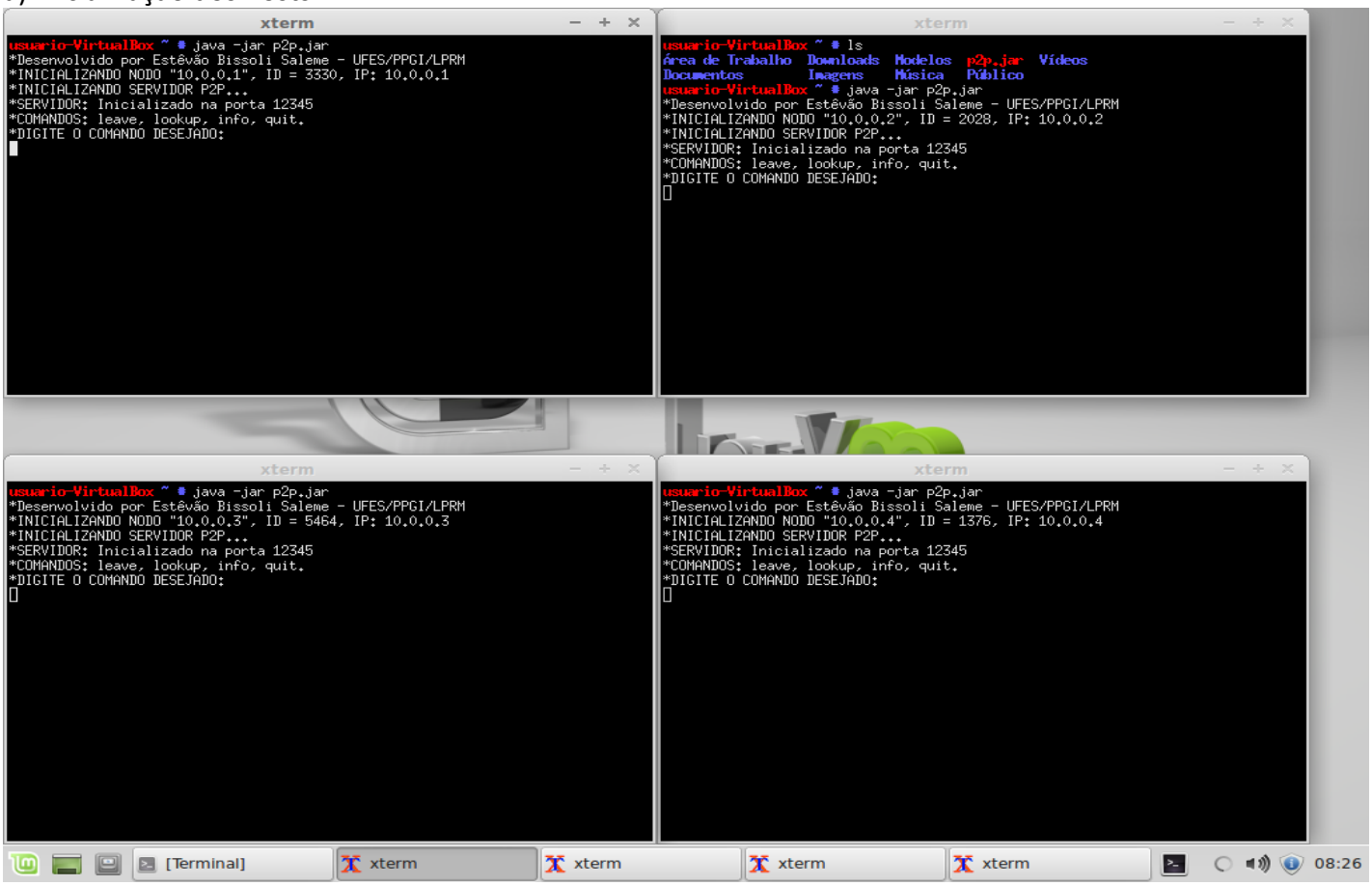
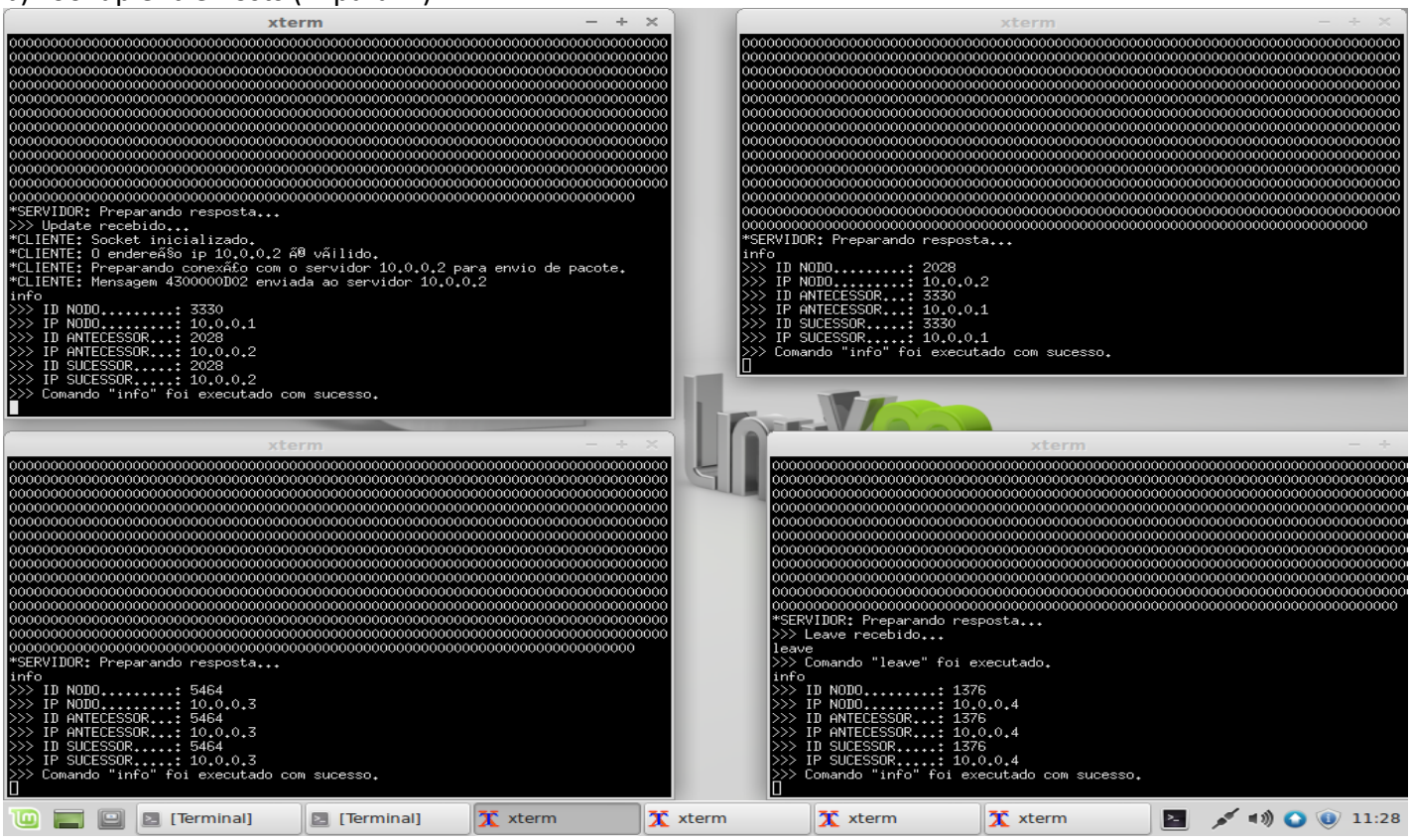
1. Cenários de teste (por Estêvão Bissoli Saleme)

<u>Cenário 1</u>: Formação de rede em anel com 4 nós.

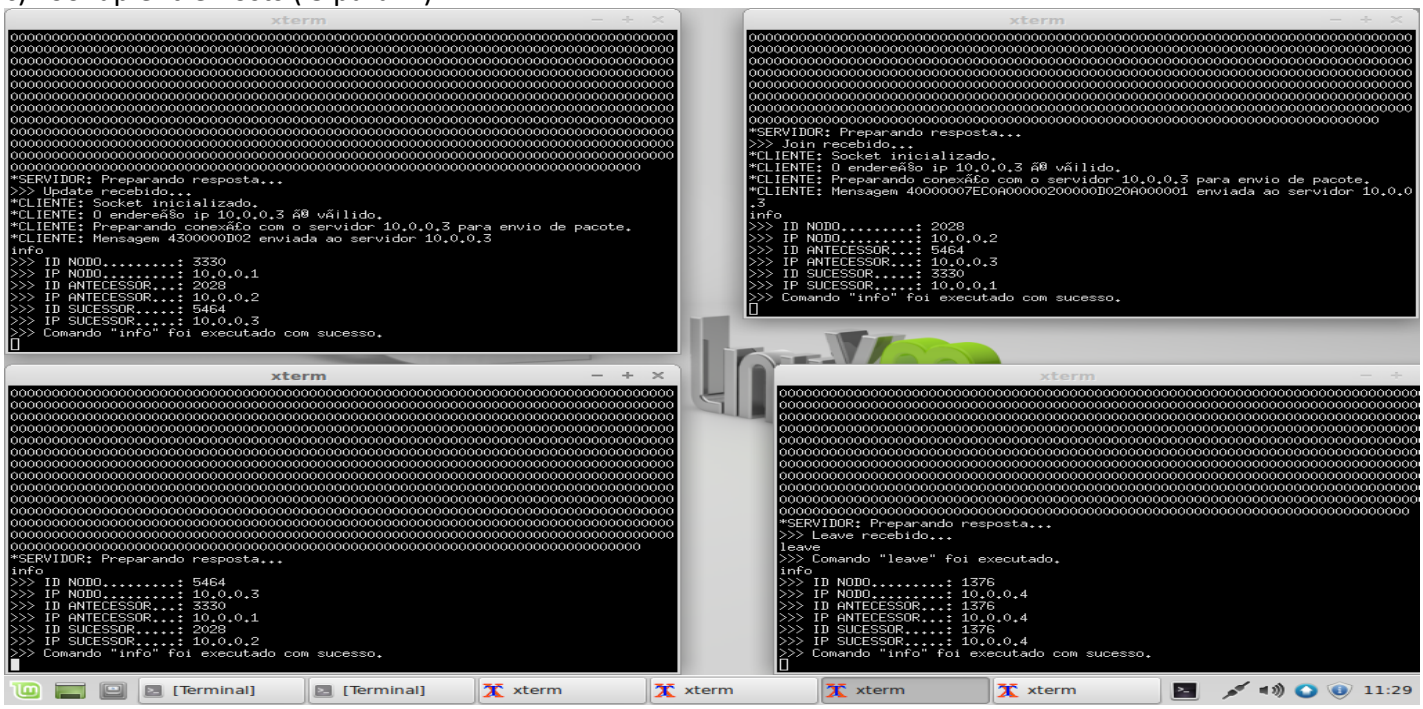
a) Inicialização dos hosts:



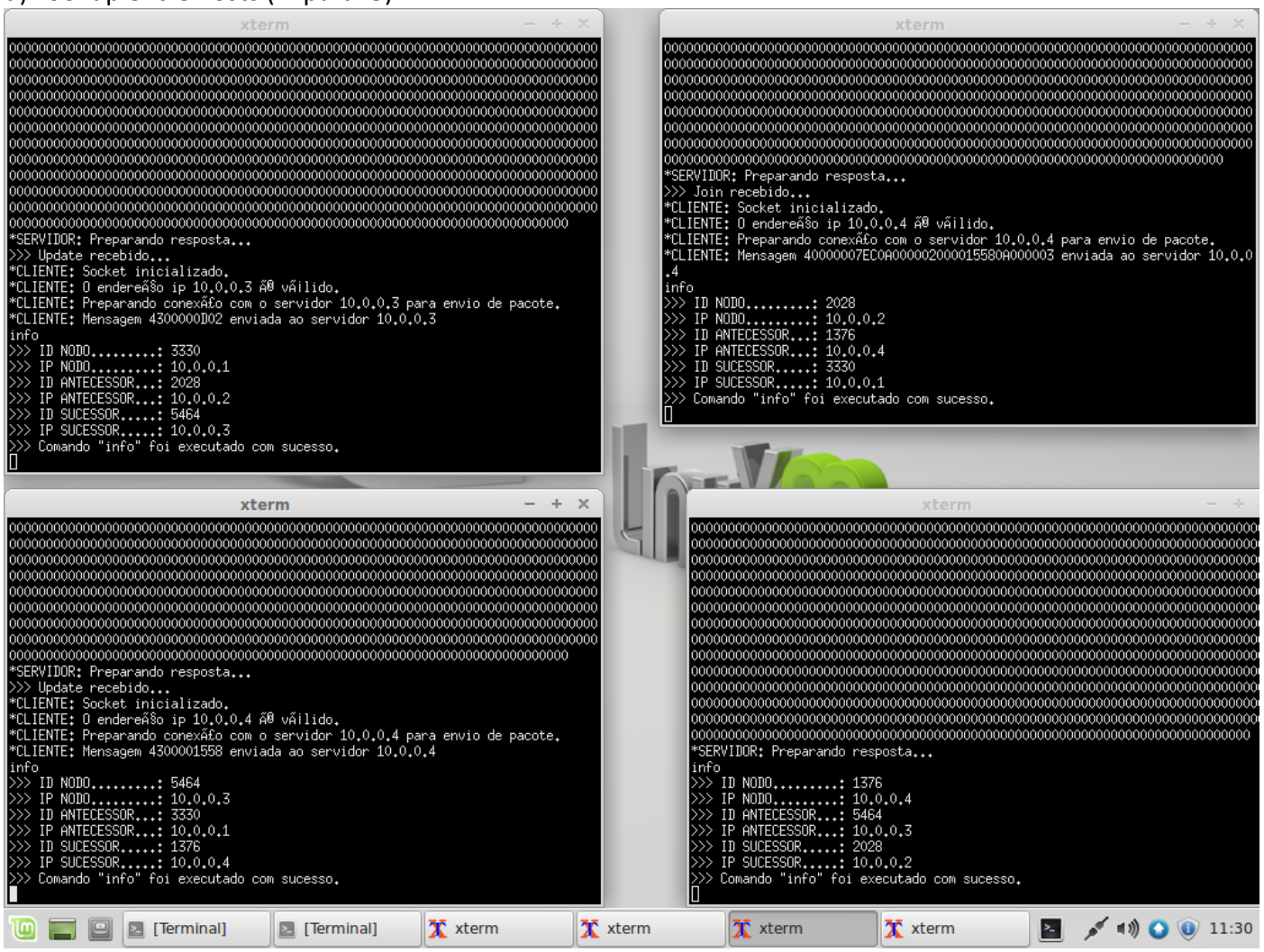
b) Lookup entre hosts (.2 para .1)



c) Lookup entre hosts (.3 para .2)



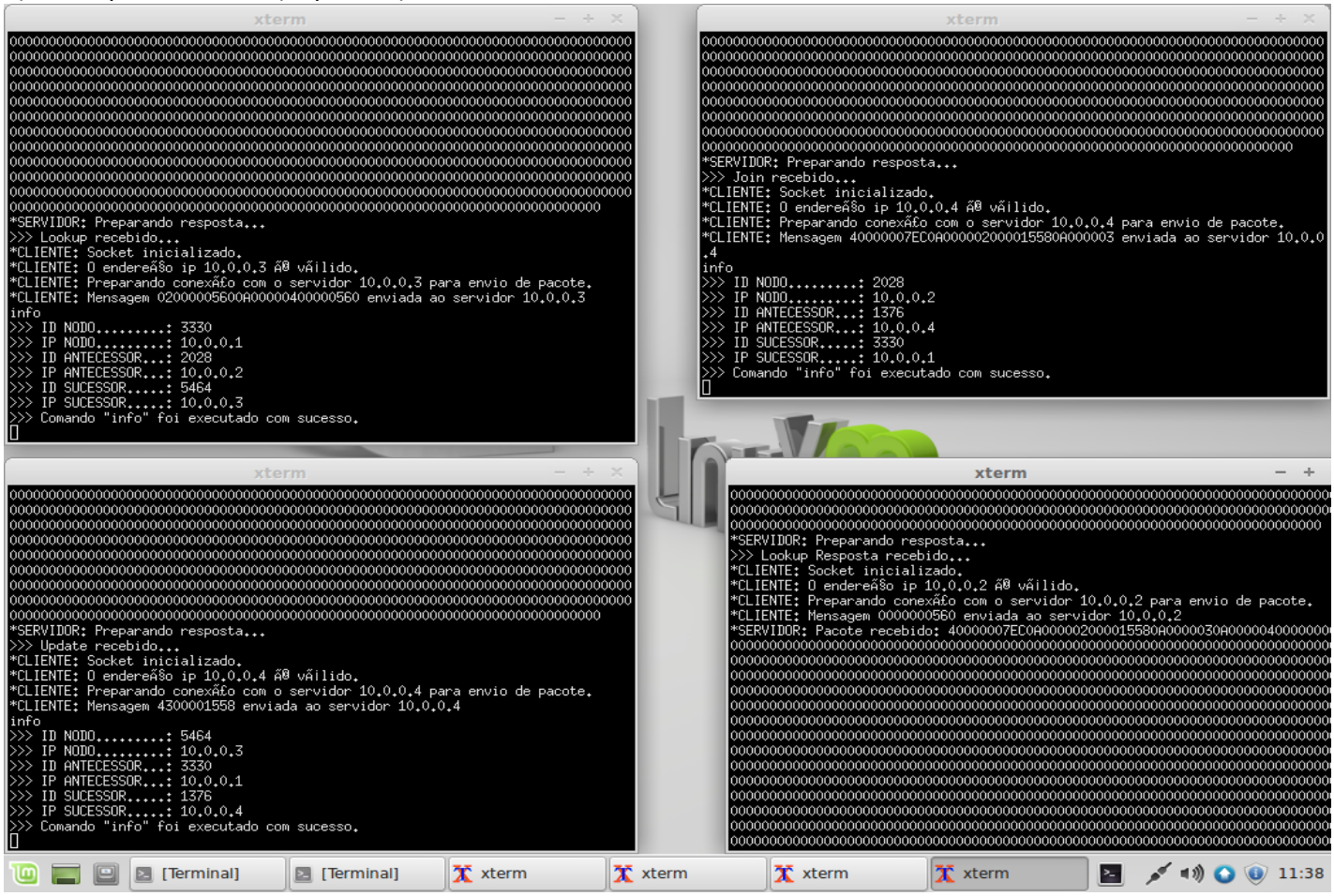
d) Lookup entre hosts (.4 para .3)



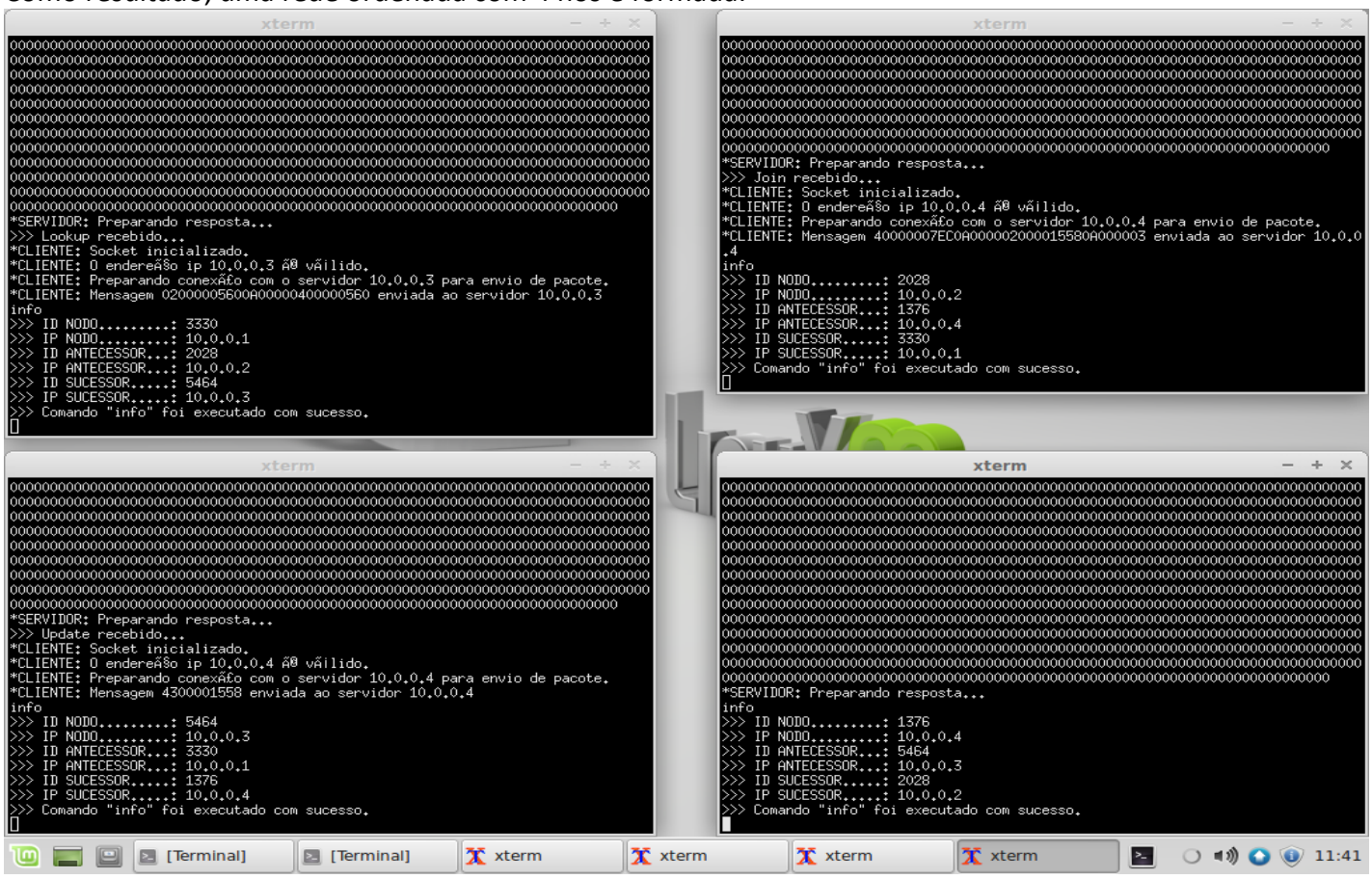
Resultado: rede ordenada com 4 nós.

<u>Cenário 2</u>: Formação de rede em anel com 4 nós com lookup foward.
Este teste parte da letra c) do cenário anterior.

a) Lookup entre hosts (.4 para .2)

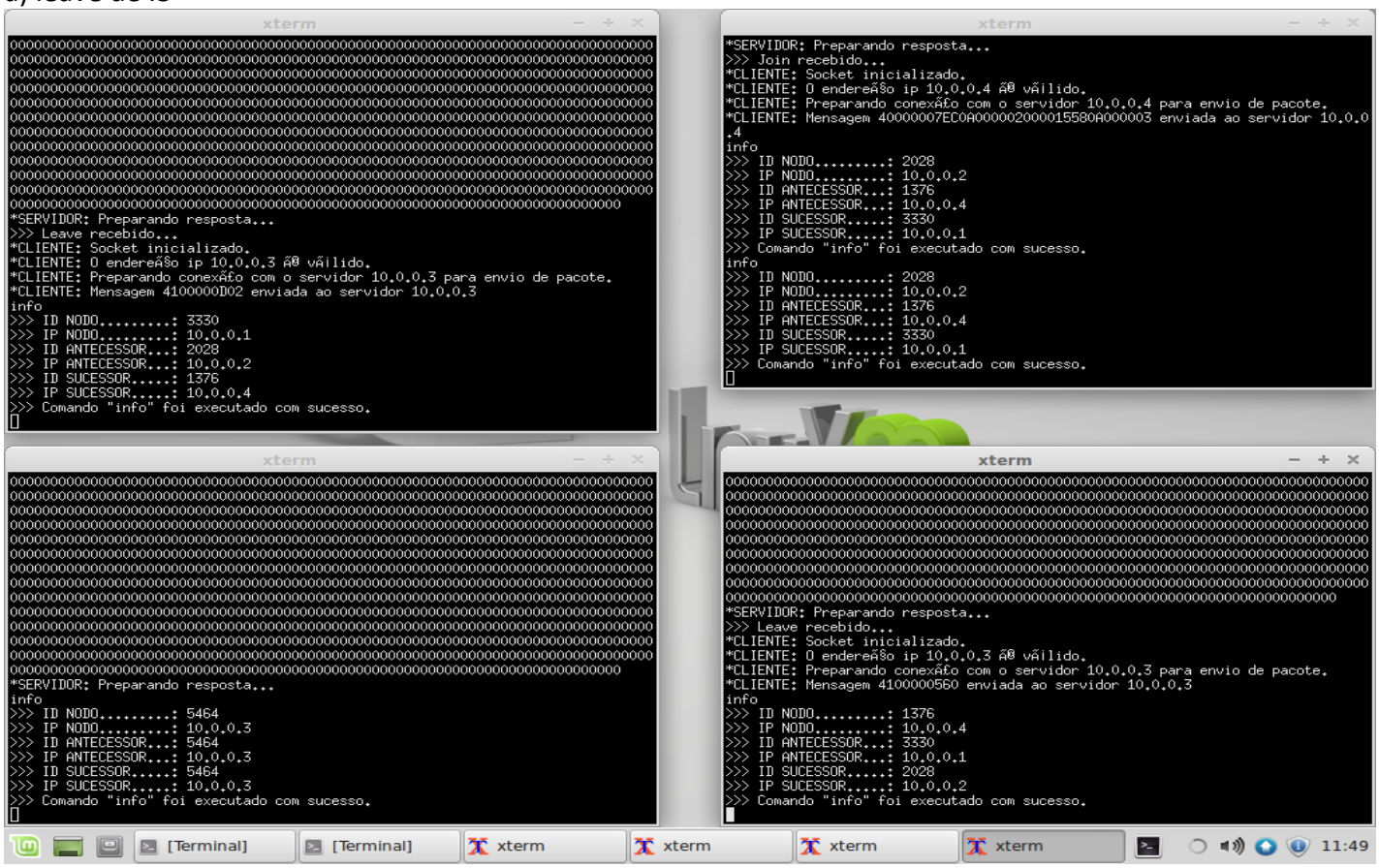


Como resultado, uma rede ordenada com 4 nós é formada:

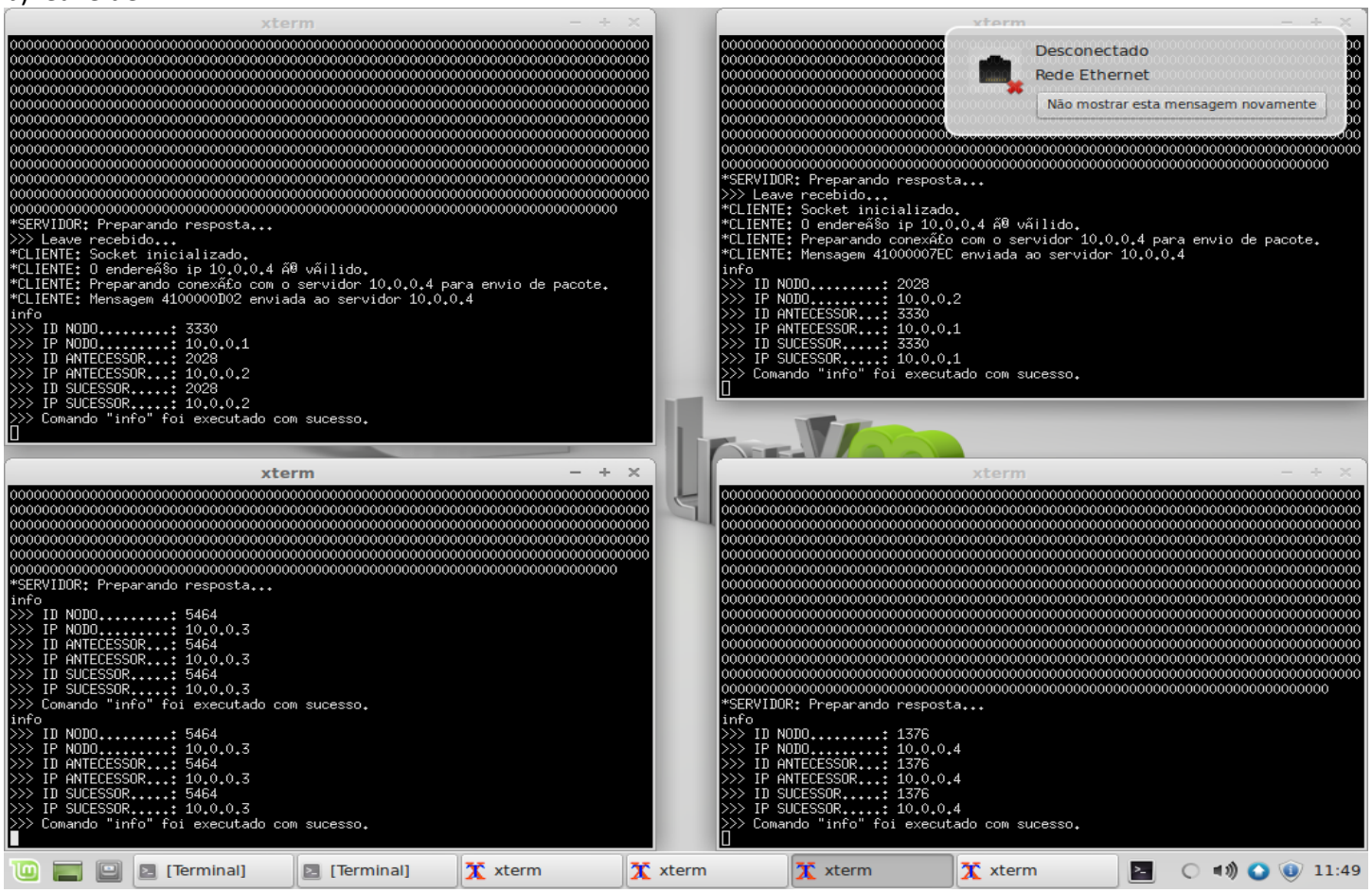


<u>Cenário 3</u>: Saída de nós.

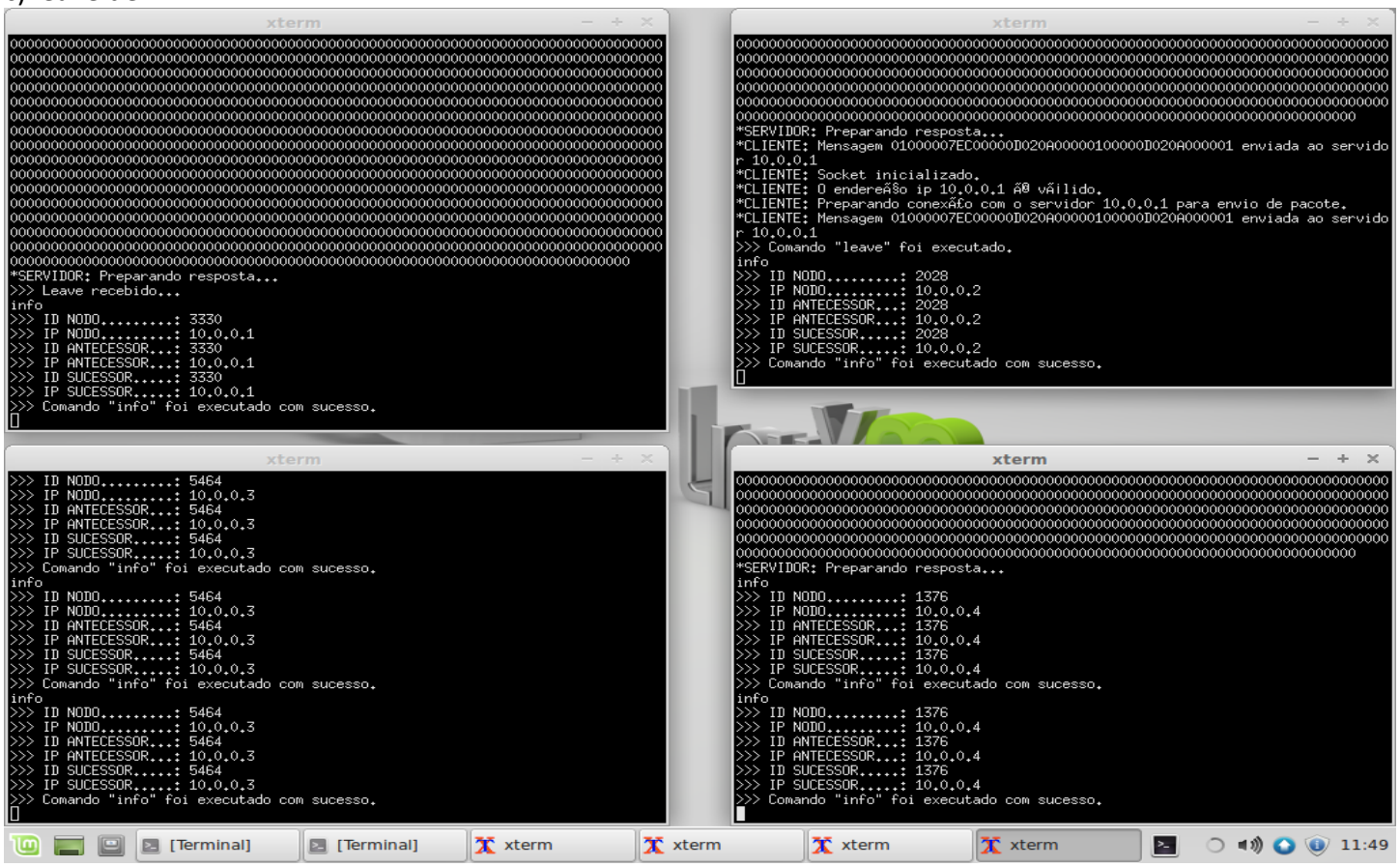
a) leave de .3



b) leave de .4



c) leave de .2


xterm
*SERVIDOR: Preparando resposta...
>>> Leave recebido...
info
>>> ID NODO.....: 3330
>>> IP NODO.....: 10.0.0.1
>>> ID ANTECESSOR...: 3330
>>> IP ANTECESSOR...: 10.0.0.1
>>> ID SUCESSOR.....: 3330
>>> IP SUCESSOR.....: 10.0.0.1
>>> Comando "info" foi executado com sucesso.
xterm
*SERVIDOR: Preparando resposta...
*CLIENTE: Mensagem 01000007EC00000D020A00000100000D020A000001 enviada ao servidor 10.0.0.1
*CLIENTE: Socket inicializado.
*CLIENTE: O endereÃ§o ip 10.0.0.1 Ã© vÃ¡lido.
*CLIENTE: Preparando conexÃ£o com o servidor 10.0.0.1 para envio de pacote.
*CLIENTE: Mensagem 01000007EC00000D020A00000100000D020A000001 enviada ao servidor 10.0.0.1
>>> Comando "leave" foi executado.
info
>>> ID NODO.....: 2028
>>> IP NODO.....: 10.0.0.2
>>> ID ANTECESSOR...: 2028
>>> IP ANTECESSOR...: 10.0.0.2
>>> ID SUCESSOR.....: 2028
>>> IP SUCESSOR.....: 10.0.0.2
>>> Comando "info" foi executado com sucesso.
xterm
>>> ID NODO.....: 5464
>>> IP NODO.....: 10.0.0.3
>>> ID ANTECESSOR...: 5464
>>> IP ANTECESSOR...: 10.0.0.3
>>> ID SUCESSOR.....: 5464
>>> IP SUCESSOR.....: 10.0.0.3
>>> Comando "info" foi executado com sucesso.
info
>>> ID NODO.....: 5464
>>> IP NODO.....: 10.0.0.3
>>> ID ANTECESSOR...: 5464
>>> IP ANTECESSOR...: 10.0.0.3
>>> ID SUCESSOR.....: 5464
>>> IP SUCESSOR.....: 10.0.0.3
>>> Comando "info" foi executado com sucesso.
info
>>> ID NODO.....: 5464
>>> IP NODO.....: 10.0.0.3
>>> ID ANTECESSOR...: 5464
>>> IP ANTECESSOR...: 10.0.0.3
>>> ID SUCESSOR.....: 5464
>>> IP SUCESSOR.....: 10.0.0.3
>>> Comando "info" foi executado com sucesso.
xterm
*SERVIDOR: Preparando resposta...
info
>>> ID NODO.....: 1376
>>> IP NODO.....: 10.0.0.4
>>> ID ANTECESSOR...: 1376
>>> IP ANTECESSOR...: 10.0.0.4
>>> ID SUCESSOR.....: 1376
>>> IP SUCESSOR.....: 10.0.0.4
>>> Comando "info" foi executado com sucesso.
info
>>> ID NODO.....: 1376
>>> IP NODO.....: 10.0.0.4
>>> ID ANTECESSOR...: 1376
>>> IP ANTECESSOR...: 10.0.0.4
>>> ID SUCESSOR.....: 1376
>>> IP SUCESSOR.....: 10.0.0.4
>>> Comando "info" foi executado com sucesso.
[Terminal]
[Terminal]
xterm
xterm
xterm
xterm
11:49

2. Conformidade dos pacotes

Captura de pacote para demonstrar a conformidade das mensagens enviadas e recebidas com a especificação do trabalho:

Lookup

Envio:

```
    197 96.79509600(90.0.0.105          90.0.0.102          UDP        55 Source port: 59567  Destination port: italk
    201 96.89967300(90.0.0.102          90.0.0.105          UDP        55 Source port: italk  Destination port: 59567
    202 96.90151300(90.0.0.105          90.0.0.102          UDP        47 Source port: 59568  Destination port: italk
    203 96.90734900(90.0.0.102          90.0.0.105          UDP        59 Source port: italk  Destination port: 59568
    204 96.91063300(90.0.0.105          90.0.0.102          UDP        55 Source port: 59569  Destination port: italk
    205 96.91747000(90.0.0.102          90.0.0.105          UDP        47 Source port: italk  Destination port: 59569
```

```
⊞ Frame 197: 55 bytes on wire (440 bits), 55 bytes captured (440 bits) on interface 0
⊞ Ethernet II, Src: Tp-LinkT_ec:b9:ba (00:25:86:ec:b9:ba), Dst: IntelCor_5e:41:a1 (b4:b6:76:5e:41:a1)
⊞ Internet Protocol Version 4, Src: 90.0.0.105 (90.0.0.105), Dst: 90.0.0.102 (90.0.0.102)
⊞ User Datagram Protocol, Src Port: 59567 (59567), Dst Port: italk (12345)
⊟ Data (13 bytes)
    Data: 02343933315a00006930656666
    [Length: 13]
```

```
0000  b4 b6 76 5e 41 a1 00 25  86 ec b9 ba 08 00 45 00   ..v^A..% ......E.
0010  00 29 36 40 00 00 80 11  4f b5 5a 00 00 69 5a 00   .)6@.... O.Z..iZ.
0020  00 66 e8 af 30 39 00 15  90 b3 02 34 39 33 31 5a   .f..09.. ...4931Z
0030  00 00 69 30 65 66 66                              ..i0eff
```

Resposta:

```
    197 96.79509600(90.0.0.105          90.0.0.102          UDP        55 Source port: 59567  Destination port: italk
    201 96.89967300(90.0.0.102          90.0.0.105          UDP        55 Source port: italk  Destination port: 59567
    202 96.90151300(90.0.0.105          90.0.0.102          UDP        47 Source port: 59568  Destination port: italk
    203 96.90734900(90.0.0.102          90.0.0.105          UDP        59 Source port: italk  Destination port: 59568
    204 96.91063300(90.0.0.105          90.0.0.102          UDP        55 Source port: 59569  Destination port: italk
    205 96.91747000(90.0.0.102          90.0.0.105          UDP        47 Source port: italk  Destination port: 59569
```

```
⊞ Frame 201: 55 bytes on wire (440 bits), 55 bytes captured (440 bits) on interface 0
⊞ Ethernet II, Src: IntelCor_5e:41:a1 (b4:b6:76:5e:41:a1), Dst: Tp-LinkT_ec:b9:ba (00:25:86:ec:b9:ba)
⊞ Internet Protocol Version 4, Src: 90.0.0.102 (90.0.0.102), Dst: 90.0.0.105 (90.0.0.105)
⊞ User Datagram Protocol, Src Port: italk (12345), Dst Port: 59567 (59567)
⊟ Data (13 bytes)
    Data: 42306566663065666665a000066
    [Length: 13]
```

```
0000  00 25 86 ec b9 ba b4 b6  76 5e 41 a1 08 00 45 00   .%...... v^A...E.
0010  00 29 3f c2 00 00 80 11  46 33 5a 00 00 66 5a 00   .)?..... F3Z..fZ.
0020  00 69 30 39 e8 af 00 15  f2 83 42 30 65 66 66 30   .i09.... ..B0eff0
0030  65 66 66 5a 00 00 66                              effZ..f
```

Join

Envio:

```
    197 96.79509600(90.0.0.105          90.0.0.102          UDP        55 Source port: 59567  Destination port: italk
    201 96.89967300(90.0.0.102          90.0.0.105          UDP        55 Source port: italk  Destination port: 59567
    202 96.90151300(90.0.0.105          90.0.0.102          UDP        47 Source port: 59568  Destination port: italk
    203 96.90734900(90.0.0.102          90.0.0.105          UDP        59 Source port: italk  Destination port: 59568
    204 96.91063300(90.0.0.105          90.0.0.102          UDP        55 Source port: 59569  Destination port: italk
    205 96.91747000(90.0.0.102          90.0.0.105          UDP        47 Source port: italk  Destination port: 59569
```

```
⊞ Frame 202: 47 bytes on wire (376 bits), 47 bytes captured (376 bits) on interface 0
⊞ Ethernet II, Src: Tp-LinkT_ec:b9:ba (00:25:86:ec:b9:ba), Dst: IntelCor_5e:41:a1 (b4:b6:76:5e:41:a1)
⊞ Internet Protocol Version 4, Src: 90.0.0.105 (90.0.0.105), Dst: 90.0.0.102 (90.0.0.102)
⊞ User Datagram Protocol, Src Port: 59568 (59568), Dst Port: italk (12345)
⊟ Data (5 bytes)
    Data: 0034393331
    [Length: 5]
```

```
0000  b4 b6 76 5e 41 a1 00 25  86 ec b9 ba 08 00 45 00   ..v^A..% ......E.
0010  00 21 36 41 00 00 80 11  4f bc 5a 00 00 69 5a 00   .!6A.... O.Z..iZ.
0020  00 66 e8 b0 30 39 00 0d  c7 b3 00 34 39 33 31      .f..09.. ...4931
```

Resposta:

```
    197 96.79509600(90.0.0.105          90.0.0.102          UDP      55 Source port: 59567  Destination port: italk
    201 96.89967300(90.0.0.102          90.0.0.105          UDP      55 Source port: italk  Destination port: 59567
    202 96.90151300(90.0.0.105          90.0.0.102          UDP      47 Source port: 59568  Destination port: italk
    203 96.90734900(90.0.0.102          90.0.0.105          UDP      59 Source port: italk  Destination port: 59568
    204 96.91063300(90.0.0.105          90.0.0.102          UDP      55 Source port: 59569  Destination port: italk
    205 96.91747000(90.0.0.102          90.0.0.105          UDP      47 Source port: italk  Destination port: 59569
```

```
⊞ Frame 203: 59 bytes on wire (472 bits), 59 bytes captured (472 bits) on interface 0
⊞ Ethernet II, Src: IntelCor_5e:41:a1 (b4:b6:76:5e:41:a1), Dst: Tp-LinkT_ec:b9:ba (00:25:86:ec:b9:ba)
⊞ Internet Protocol Version 4, Src: 90.0.0.102 (90.0.0.102), Dst: 90.0.0.105 (90.0.0.105)
⊞ User Datagram Protocol, Src Port: italk (12345), Dst Port: 59568 (59568)
⊟ Data (17 bytes)
    Data: 40306566665a000066306566665a000066
    [Length: 17]
```

```
0000  00 25 86 ec b9 ba b4 b6  76 5e 41 a1 08 00 45 00   .%...... v^A...E.
0010  00 2d 3f c3 00 00 80 11  46 2e 5a 00 00 66 5a 00   .-?..... F.Z..fZ.
0020  00 69 30 39 e8 b0 00 19  8e 20 40 30 65 66 66 5a   .i09.... . @0effZ
0030  00 00 66 30 65 66 66 5a  00 00 66                 ..f0effZ ..f
```

Update

Envio:

```
    204 96.91063300(90.0.0.105          90.0.0.102          UDP      55 Source port: 59569  Destination port: italk
    205 96.91747000(90.0.0.102          90.0.0.105          UDP      47 Source port: italk  Destination port: 59569
```

```
⊞ Frame 204: 55 bytes on wire (440 bits), 55 bytes captured (440 bits) on interface 0
⊞ Ethernet II, Src: Tp-LinkT_ec:b9:ba (00:25:86:ec:b9:ba), Dst: IntelCor_5e:41:a1 (b4:b6:76:5e:41:a1)
⊞ Internet Protocol Version 4, Src: 90.0.0.105 (90.0.0.105), Dst: 90.0.0.102 (90.0.0.102)
⊞ User Datagram Protocol, Src Port: 59569 (59569), Dst Port: italk (12345)
⊟ Data (13 bytes)
    Data: 0334393331343933315a000069
    [Length: 13]
```

```
0000  b4 b6 76 5e 41 a1 00 25  86 ec b9 ba 08 00 45 00   ..v^A..% ......E.
0010  00 29 36 42 00 00 80 11  4f b3 5a 00 00 69 5a 00   .)6B.... O.Z..iZ.
0020  00 66 e8 b1 30 39 00 15  f0 e0 03 34 39 33 31 34   .f..09.. ...49314
0030  39 33 31 5a 00 00 69                              931Z..i
```

Resposta:

```
    205 96.91747000(90.0.0.102          90.0.0.105          UDP      47 Source port: italk  Destination port: 59569
```

```
⊞ Frame 205: 47 bytes on wire (376 bits), 47 bytes captured (376 bits) on interface 0
⊞ Ethernet II, Src: IntelCor_5e:41:a1 (b4:b6:76:5e:41:a1), Dst: Tp-LinkT_ec:b9:ba (00:25:86:ec:b9:ba)
⊞ Internet Protocol Version 4, Src: 90.0.0.102 (90.0.0.102), Dst: 90.0.0.105 (90.0.0.105)
⊞ User Datagram Protocol, Src Port: italk (12345), Dst Port: 59569 (59569)
⊟ Data (5 bytes)
    Data: 4334393331
    [Length: 5]
```

```
0000  00 25 86 ec b9 ba b4 b6  76 5e 41 a1 08 00 45 00   .%...... v^A...E.
0010  00 21 3f c4 00 00 80 11  46 39 5a 00 00 66 5a 00   .!?..... F9Z..fZ.
0020  00 69 30 39 e8 b1 00 0d  84 b2 43 34 39 33 31      .i09.... ..C4931
```

Leave

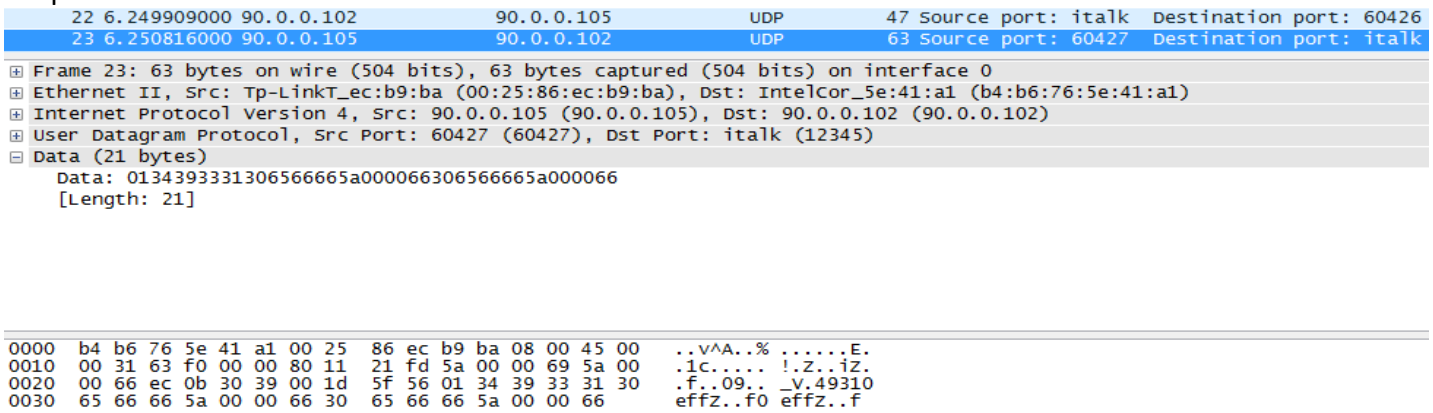
Envio:

```
     22 6.249909000 90.0.0.102          90.0.0.105          UDP      47 Source port: italk  Destination port: 60426
     23 6.250816000 90.0.0.105          90.0.0.102          UDP      63 Source port: 60427  Destination port: italk
```

```
⊞ Frame 22: 47 bytes on wire (376 bits), 47 bytes captured (376 bits) on interface 0
⊞ Ethernet II, Src: IntelCor_5e:41:a1 (b4:b6:76:5e:41:a1), Dst: Tp-LinkT_ec:b9:ba (00:25:86:ec:b9:ba)
⊞ Internet Protocol Version 4, Src: 90.0.0.102 (90.0.0.102), Dst: 90.0.0.105 (90.0.0.105)
⊞ User Datagram Protocol, Src Port: italk (12345), Dst Port: 60426 (60426)
⊟ Data (5 bytes)
    Data: 4130656666
    [Length: 5]
```

```
0000  00 25 86 ec b9 ba b4 b6  76 5e 41 a1 08 00 45 00   .%...... v^A...E.
0010  00 21 44 7f 00 00 80 11  41 7e 5a 00 00 66 5a 00   .!D..... A~Z..fZ.
0020  00 69 30 39 ec 0a 00 0d  22 2a 41 30 65 66 66      .i09.... "*A0eff
```

Resposta:


22 6.249909000 90.0.0.102 90.0.0.105 UDP 47 Source port: italk Destination port: 60426
23 6.250816000 90.0.0.105 90.0.0.102 UDP 63 Source port: 60427 Destination port: italk
Frame 23: 63 bytes on wire (504 bits), 63 bytes captured (504 bits) on interface 0
Ethernet II, Src: Tp-LinkT_ec:b9:ba (00:25:86:ec:b9:ba), Dst: IntelCor_5e:41:a1 (b4:b6:76:5e:41:a1)
Internet Protocol Version 4, Src: 90.0.0.105 (90.0.0.105), Dst: 90.0.0.102 (90.0.0.102)
User Datagram Protocol, Src Port: 60427 (60427), Dst Port: italk (12345)
Data (21 bytes)
Data: 013439333130656666 5a000066306566665a000066
[Length: 21]
0000 b4 b6 76 5e 41 a1 00 25 86 ec b9 ba 08 00 45 00 ..v^A..% ......E.
0010 00 31 63 f0 00 00 80 11 21 fd 5a 00 00 69 5a 00 .1c..... !.z..iz.
0020 00 66 ec 0b 30 39 00 1d 5f 56 01 34 39 33 31 30 .f..09.. _v.49310
0030 65 66 66 5a 00 00 66 30 65 66 66 5a 00 00 66 effz..f0 effz..f