GLaDOS

TELEMATIC SERVICES ON INTERNET

Subgrupo 1

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Domain #1: garciarevelles.ddns.net

Subgrupo 2

Autor 1: Carlos Garcia Segura

Autor 2: Angel Amadeo González Ruiz

Domain #2: garciaruiz.ddns.net

BACKGROUND

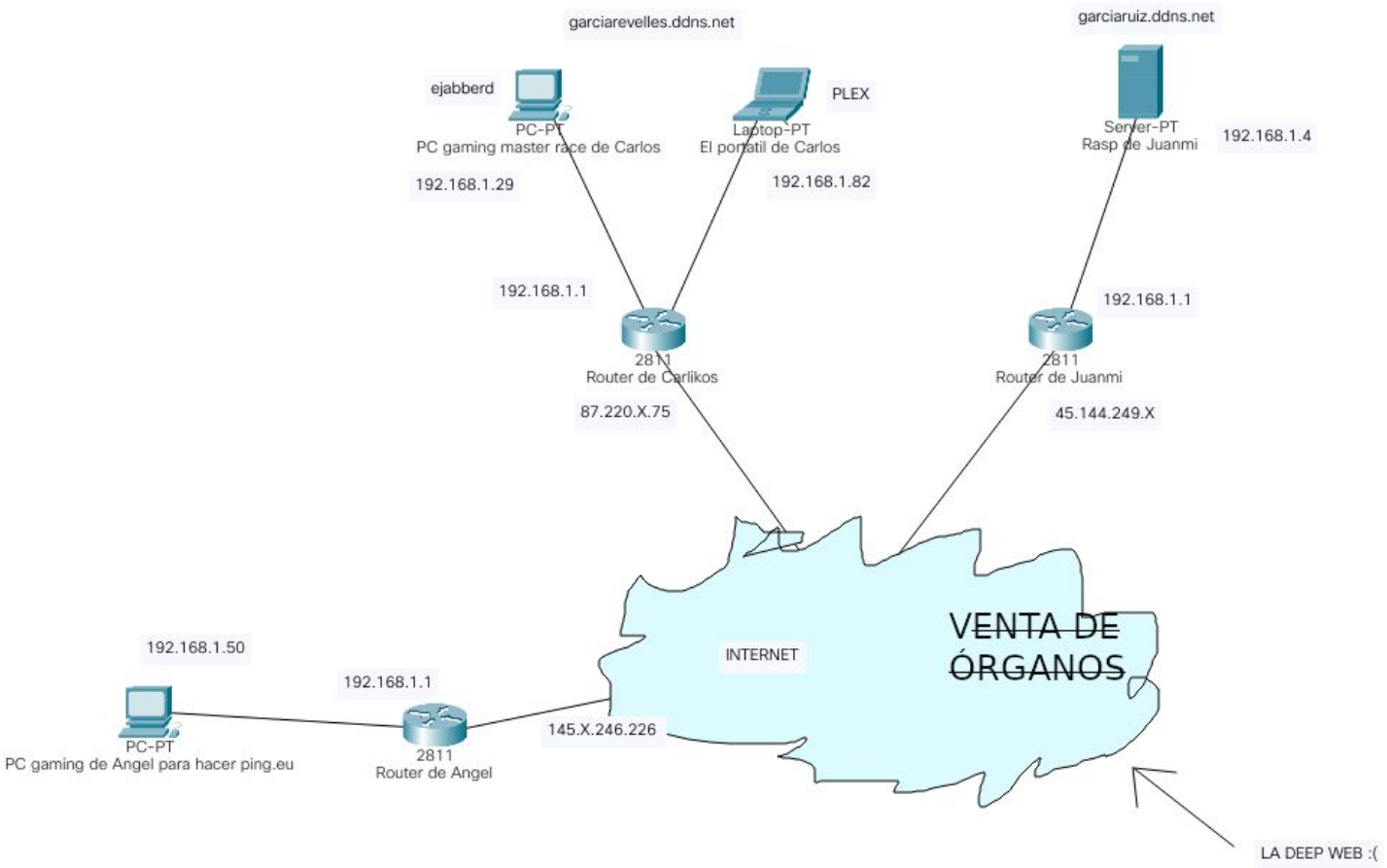
First Service: XMPP Chat Service

- We use Linux OS in both servers.
- Install ejabberd for XMPP server in 2 computers
- Open 5222 and 5269 ports in router interface
- Install XMPP client (pidgin) in Linux OS or Windows
- c2s and s2s connection
- support with Wireshark, netstat and ping

Second Service: Plex Media Center

- Windows 10 OS
- Port 32400 TCP
- Install Plex Media Server.

BACKGROUND TOPOLOGY



TEAM MANAGEMENT

Tools for communication

- Discord.
- Google Meet.
- Jitsi.
- face 2 face meet.

Division of tasks

- Router Configuration.
- Service Configuration.
- Client Configuration.
- Documentation.
- Researching.

We worked together

TEAM MANAGEMENT

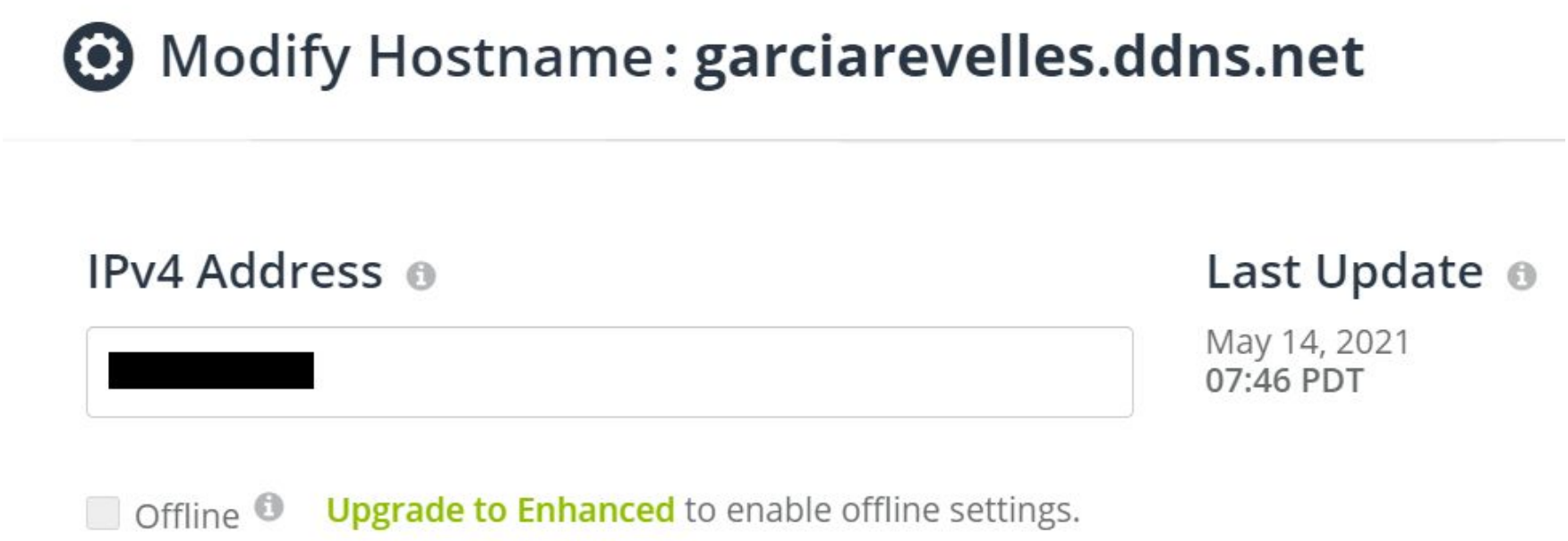
Planning

- Service 1
  - Look for ejabberd documentation.
  - Build it locally and right after configure public IPs.
  - Make c2s work in each server.
  - Make s2s work.
- Service 2
  - Look for Plex documentation.
  - Install Plex Media server at the local machine and configure it.
  - Redirect the necessary ports to make the service work

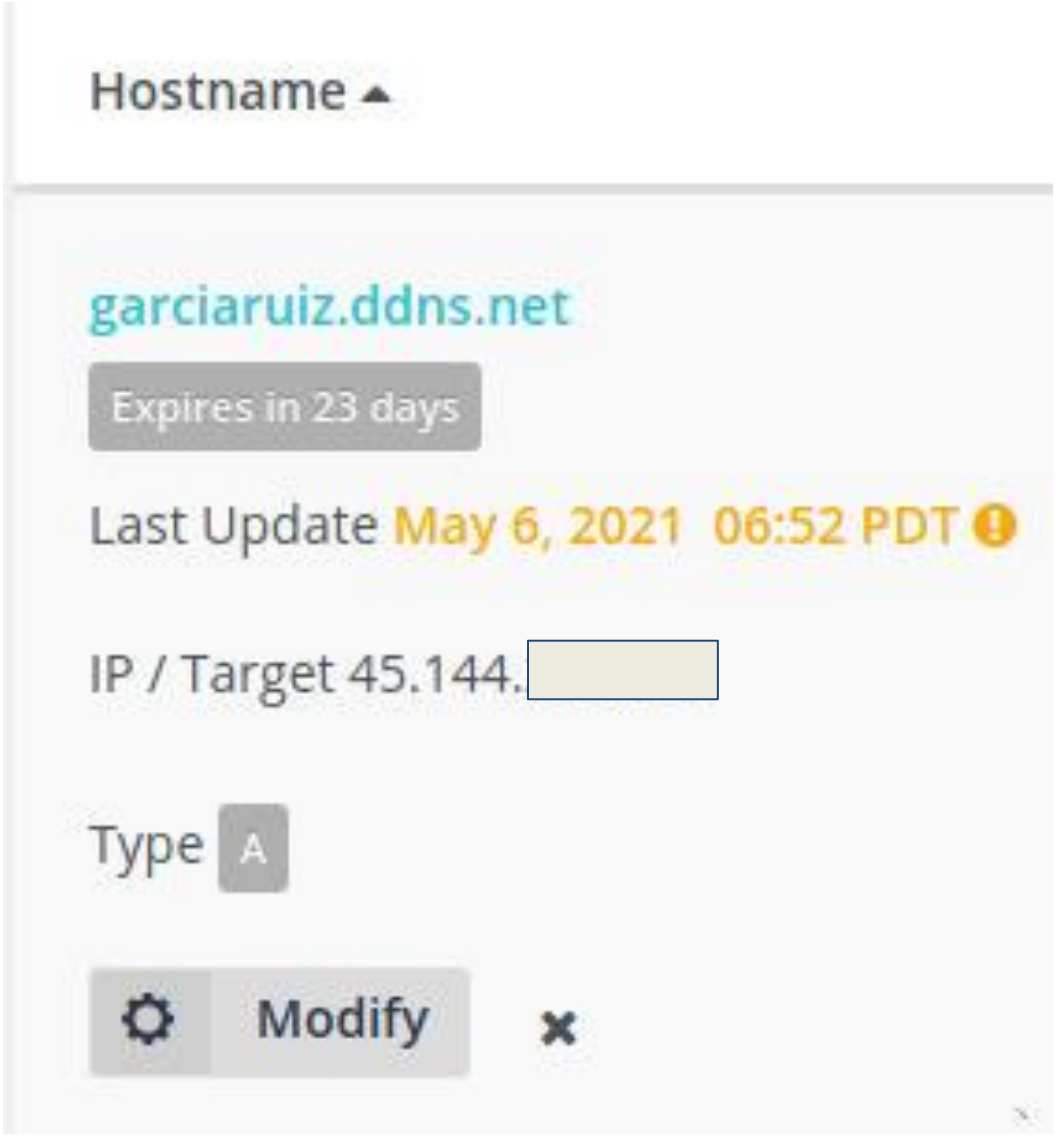
Conflicts

- Difficulties with second service (we tried Asterisk first)
- Making s2s work at ejabberd.

CREATE Dynamic DNS Account: garciarevelles.ddns.net



CREATE Dynamic DNS Account: garciaruiz.ddns.net



CHECK garciarevelles.ddns.net with nslookup and wireshark

```
C:\Program Files (x86)\Microsoft Visual Studio\2019\Community>nslookup garciarevelles.ddns.net
Servidor:  dns.google
Address:  8.8.8.8

Respuesta no autoritativa:
Nombre:  garciarevelles.ddns.net
Address:  87.[redacted].75
```

CHECK garciaruiz.ddns.net with nslookup and wireshark

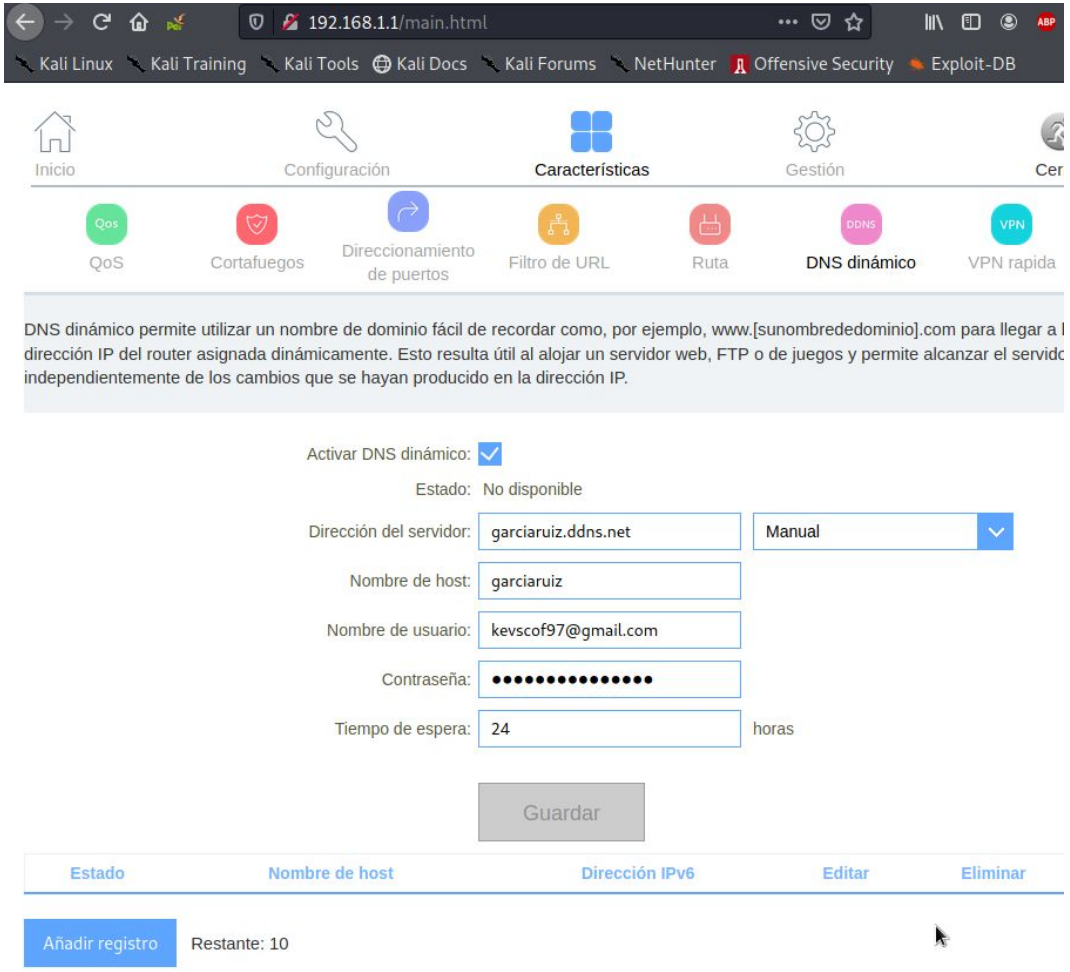
```
C:\Program Files (x86)\Microsoft Visual Studio\2019\Community>nslookup garciaruiz.ddns.net
Servidor:  dns.google
Address:  8.8.8.8

Respuesta no autoritativa:
Nombre:  garciaruiz.ddns.net
Address:  45.[redacted].123
```

Configure DDNS at home garciarevelles.ddns.net

servicio	nombre de host completo	nombre de usuario email	contraseña	última actualización	
dyndns					guardar
NoIP	garciarevelles.ddns.net	carlos.gs.psp@gmail.com	*****	27/04/21 20:04:34	borrar

Configure DDNS at home garciaruiz.ddns.net



Open ports in ADSL router garciarevelles.ddns.net

✓	ejabber_s2s	5269	5269	TCP	192.168.1.82	delete
✓	ejabberd	5222	5222	both	192.168.1.82	delete
✓	PLEX	32400	32400	TCP	192.168.1.29	delete

Open ports in ADSL router garciaruiz.ddns.net

Estado	nombre	IP local	Protocolo	Puerto externo	Puerto interno	Programación	Editar	Eliminar
☑	ejabberd_c2s	192.168.1.4	Both	5222	5222	Siempre activado		
☑	ejabberd_s2s_in	192.168.1.4	Both	5269	5269	Siempre activado		

Install service 1

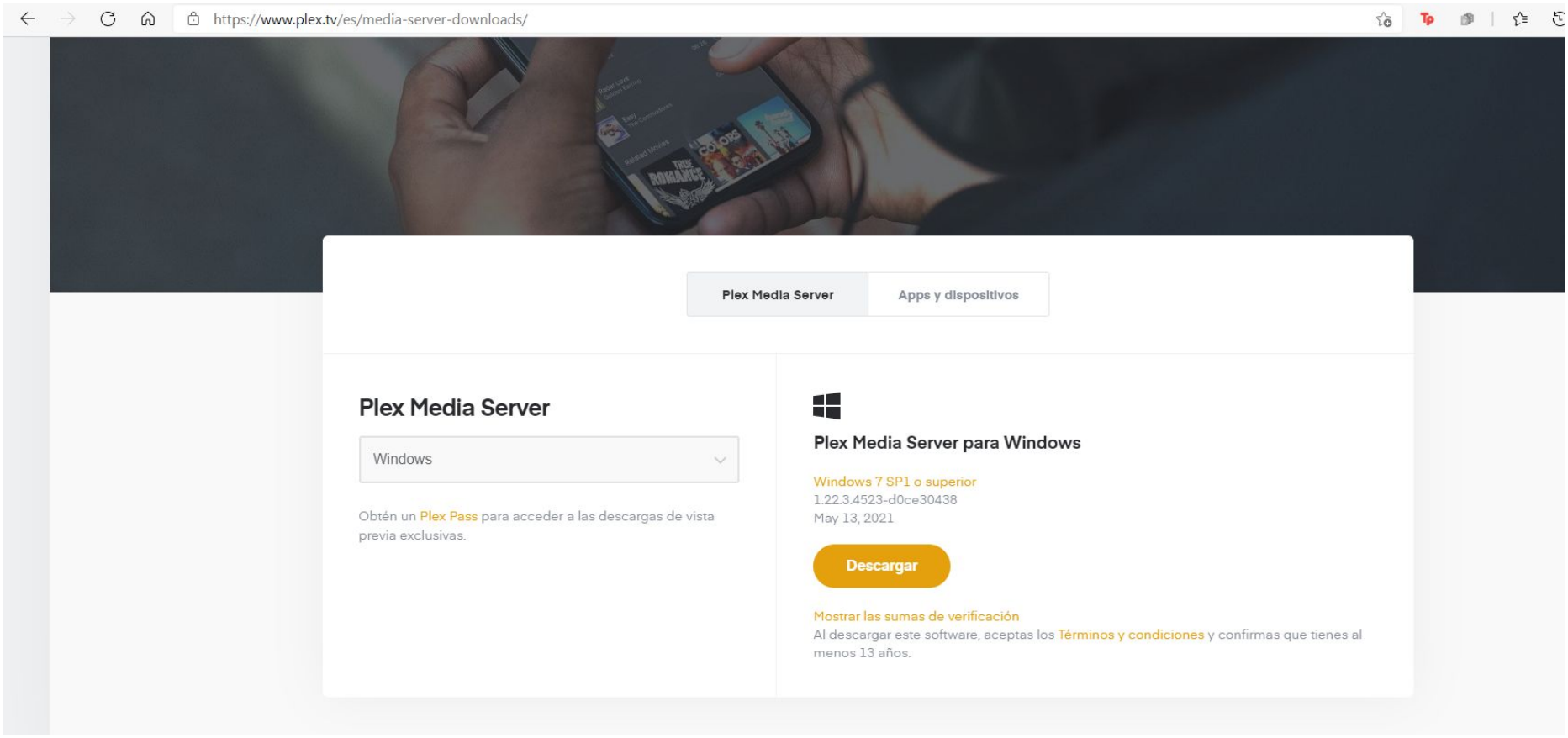
```
carlosgs@CARLOS-PORTATIL-UBUNTU:~$ sudo apt install ejabberd
```

Modify /etc/ejabberd/ejabberd.yml

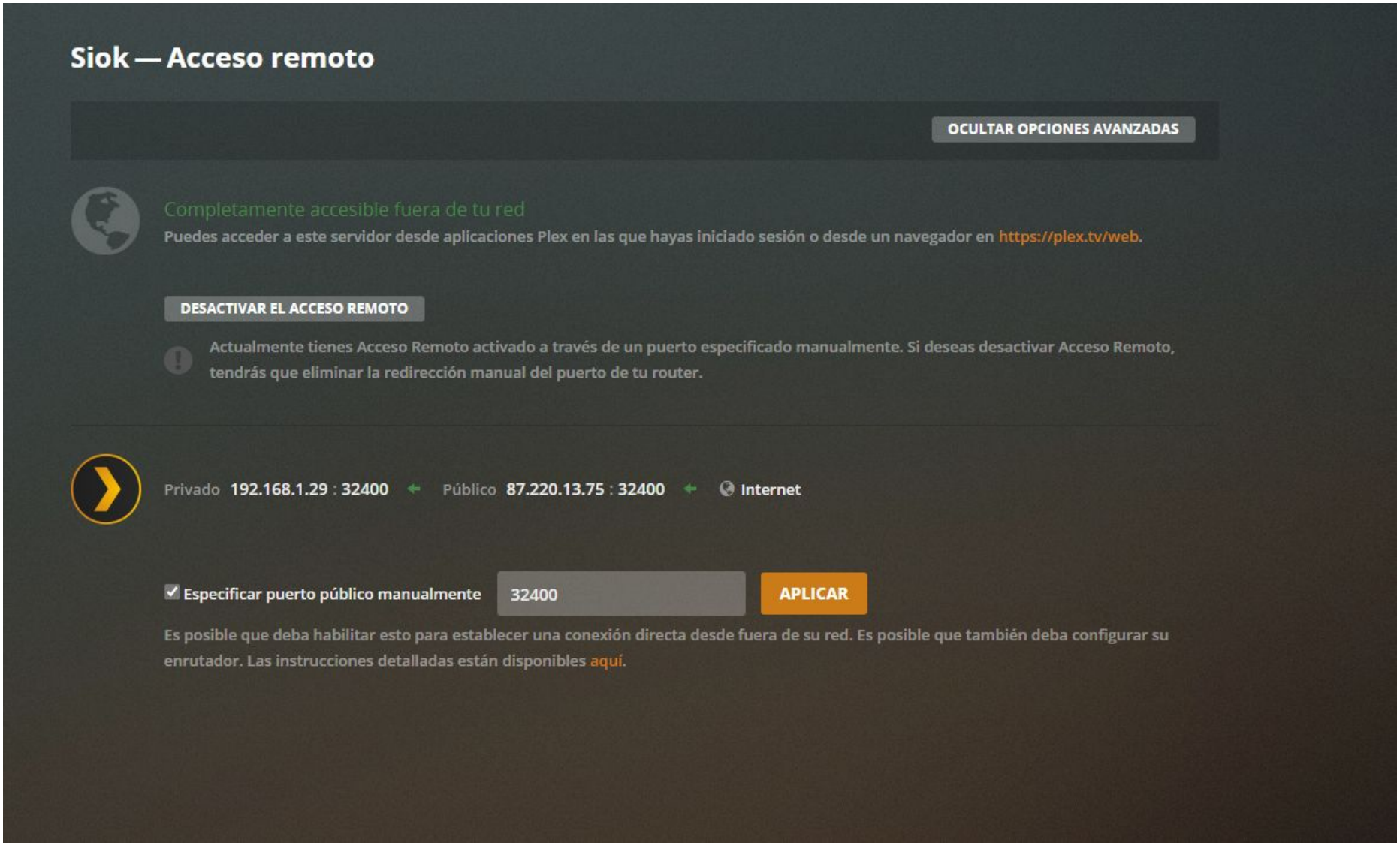
```
hosts:
  - "garciarevelles.ddns.net"
```

```
s2s_use_starttls: optional
```

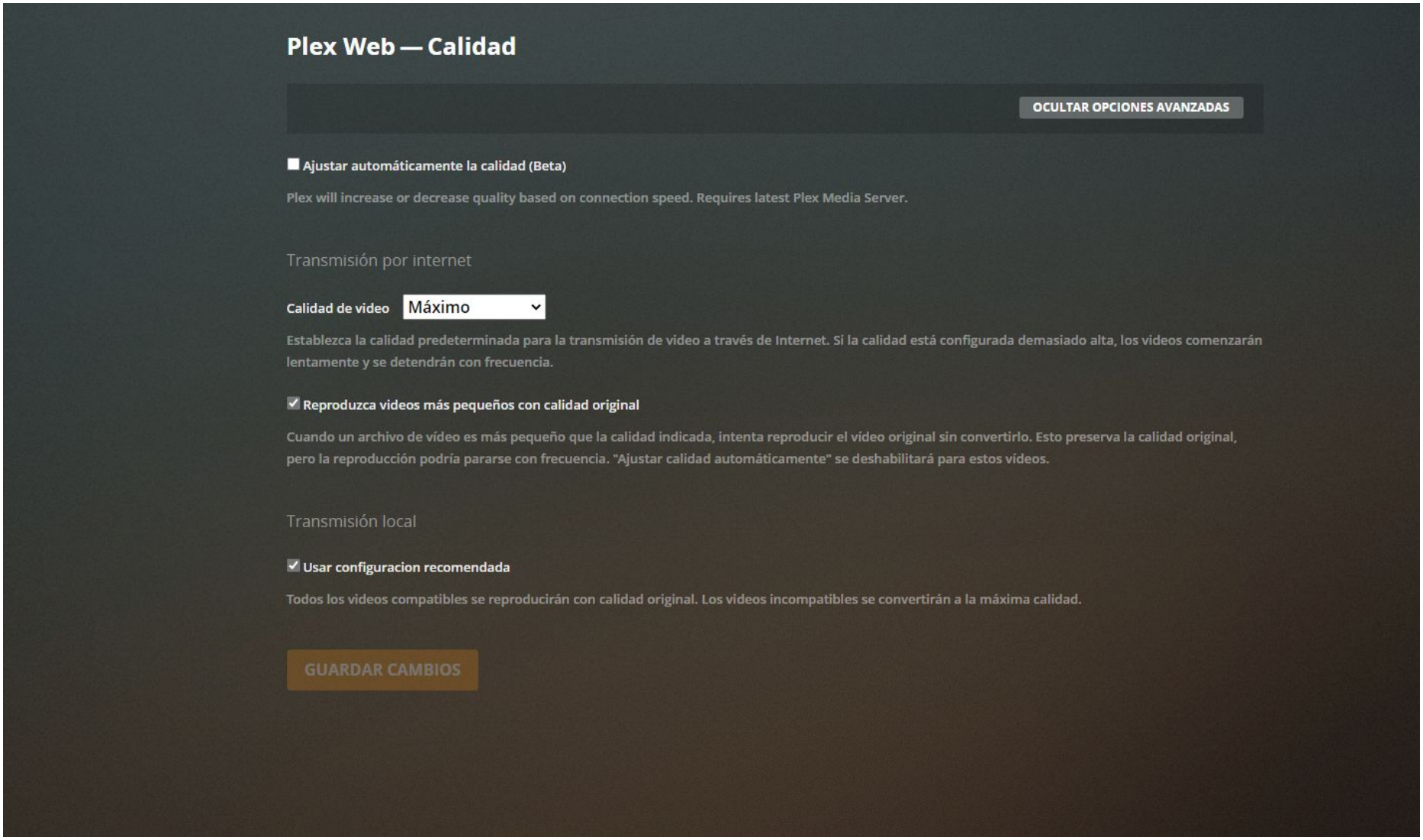
Install service 2



Install service 2

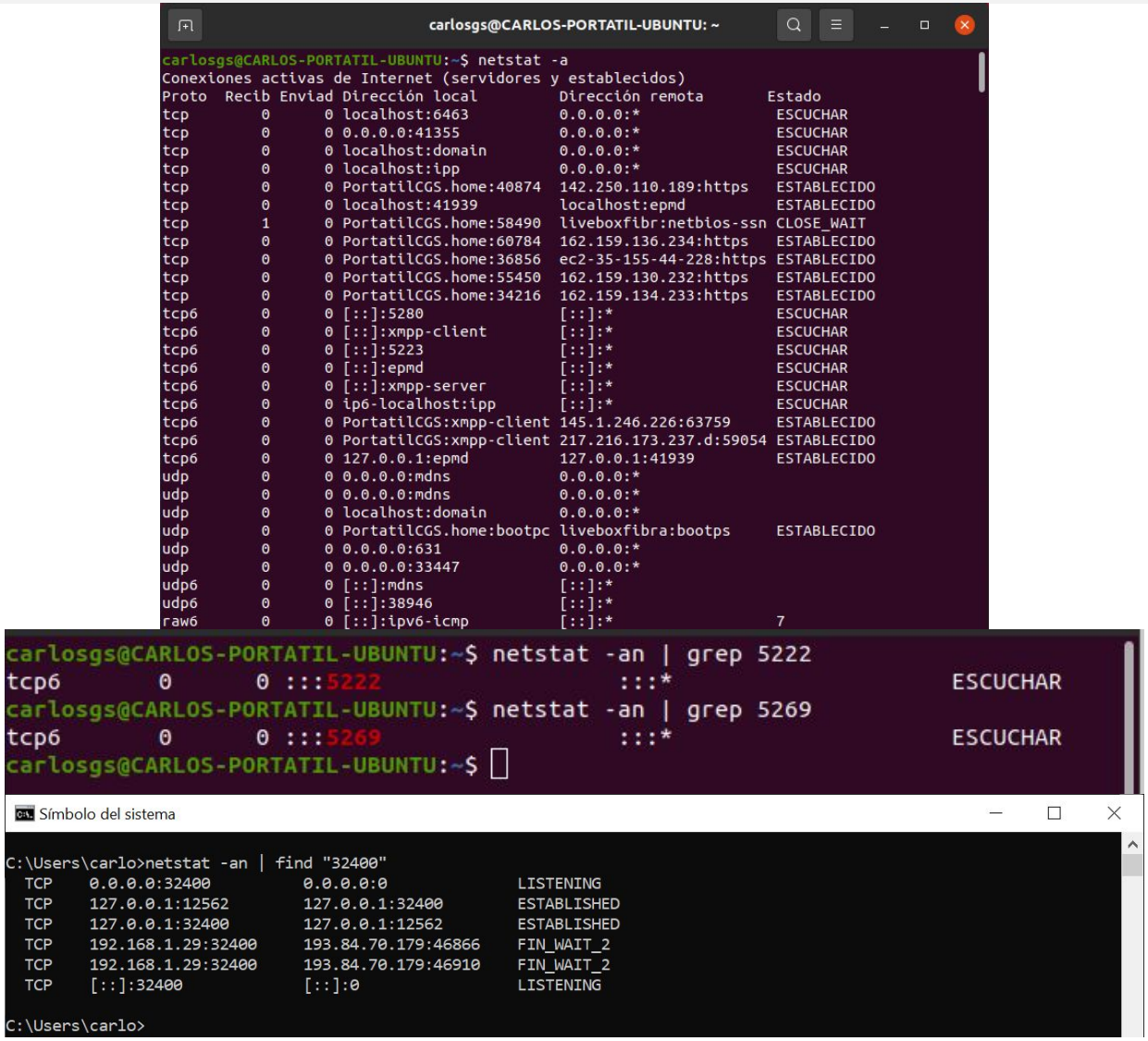


Install service 2



Install service 2

Check ports garciarevelles.ddns.net in your server with netstat -a

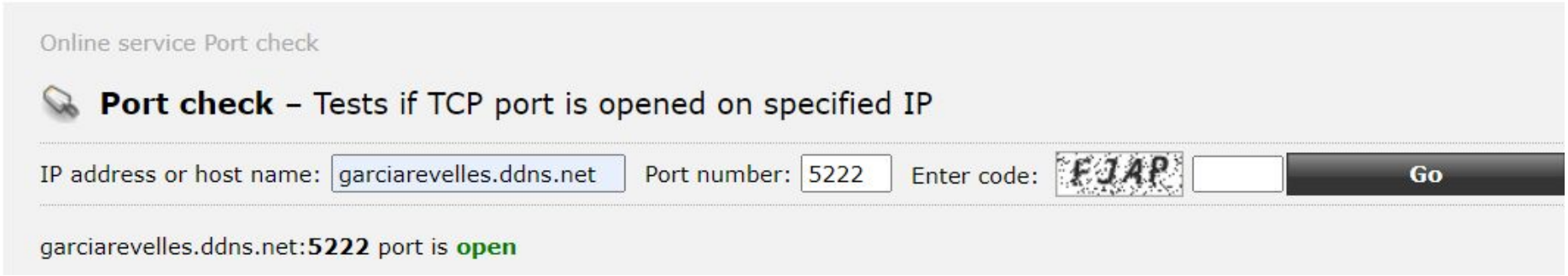


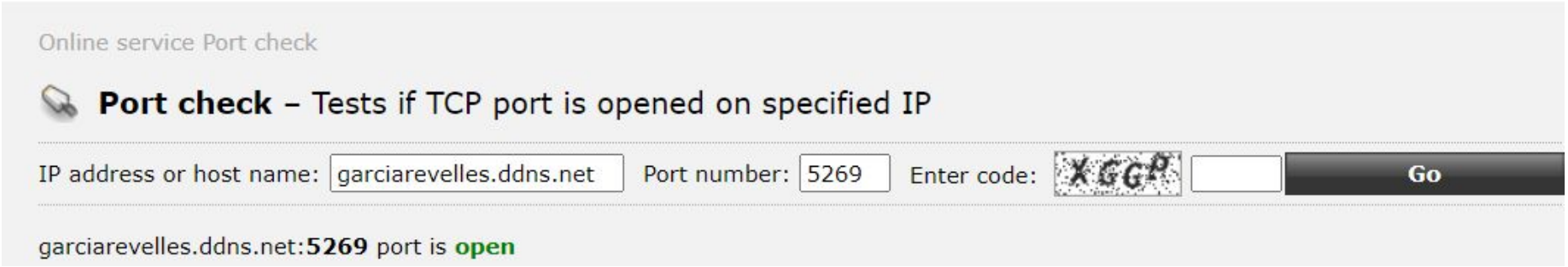
Check ports garciaruiz.ddns.net in your server with netstat -a

```
root@raspberrypi:/etc/ejabberd# netstat -a
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 0.0.0.0:ssh             0.0.0.0:*               LISTEN
tcp        0      0 localhost:ipp           0.0.0.0:*               LISTEN
tcp        0      0 localhost:54183         localhost:epmd          TIME_WAIT
tcp        0      0 localhost:58625         localhost:epmd          TIME_WAIT
tcp        0      0 localhost:47967         localhost:epmd          TIME_WAIT
tcp        0      0 localhost:36357         localhost:epmd          TIME_WAIT
tcp        0      0 localhost:46281         localhost:epmd          TIME_WAIT
tcp        0      0 localhost:58579         localhost:epmd          TIME_WAIT
tcp        0      0 localhost:48069         localhost:epmd          TIME_WAIT
tcp        0      0 localhost:53731         localhost:epmd          TIME_WAIT
tcp        0      0 localhost:59479         localhost:epmd          TIME_WAIT
tcp        0      0 localhost:54687         localhost:epmd          TIME_WAIT
tcp        0      0 localhost:52295         localhost:epmd          TIME_WAIT
tcp        0      0 localhost:53973         localhost:epmd          TIME_WAIT
tcp        0      0 localhost:48319         localhost:epmd          TIME_WAIT
tcp        0      0 localhost:41901         localhost:epmd          TIME_WAIT
tcp        0      0 localhost:42421         localhost:epmd          TIME_WAIT
tcp        0      0 localhost:37381         localhost:epmd          TIME_WAIT
tcp        0    172 192.168.1.4:ssh         kali-jm:16414           ESTABLISHED
tcp        0      0 localhost:37193         localhost:epmd          TIME_WAIT
tcp        0      0 localhost:50641         localhost:epmd          TIME_WAIT
tcp6       0      0 [::]:epmd               [::]:*                  LISTEN
tcp6       0      0 [::]:ssh                [::]:*                  LISTEN
tcp6       0      0 localhost:ipp           [::]:*                  LISTEN
tcp6       0      0 localhost:epmd          localhost:46477         TIME_WAIT
tcp6       0      0 localhost:epmd          localhost:56323         TIME_WAIT
tcp6       0      0 localhost:epmd          localhost:53663         TIME_WAIT
tcp6       0      0 localhost:epmd          localhost:60173         TIME_WAIT
tcp6       0      0 localhost:epmd          localhost:45383         TIME_WAIT
tcp6       0      0 localhost:epmd          localhost:45643         TIME_WAIT
tcp6       0      0 localhost:epmd          localhost:56021         TIME_WAIT
tcp6       0      0 localhost:epmd          localhost:60583         TIME_WAIT
tcp6       0      0 localhost:epmd          localhost:33267         TIME_WAIT
tcp6       0      0 localhost:epmd          localhost:48612         TIME_WAIT
tcp6       0      0 localhost:epmd          localhost:33135         TIME_WAIT
tcp6       0      0 localhost:epmd          localhost:57541         TIME_WAIT
tcp6       0      0 localhost:epmd          localhost:58107         TIME_WAIT
tcp6       0      0 localhost:epmd          localhost:51591         TIME_WAIT
tcp6       0      0 localhost:epmd          localhost:51773         TIME_WAIT
tcp6       0      0 localhost:epmd          localhost:51967         TIME_WAIT
tcp6       0      0 localhost:epmd          localhost:52057         TIME_WAIT
tcp6       0      0 localhost:epmd          localhost:53287         TIME_WAIT
udp        0      0 0.0.0.0:bootpc          0.0.0.0:*
udp        0      0 0.0.0.0:ipp             0.0.0.0:*
udp        0      0 0.0.0.0:52394           0.0.0.0:*
udp        0      0 0.0.0.0:mdns            0.0.0.0:*
udp6       0      0 [::]:mdns               [::]:*
udp6       0      0 [::]:45806              [::]:*
raw6       0      0 [::]:ipv6-icmp          [::]:*                  7
Active UNIX domain sockets (servers and established)
Proto RefCnt Flags       Type       State         I-Node   Path
unix  2      [ ]         DGRAM                    18944    /run/user/1000/systemd/notify
unix  2      [ ACC ]     STREAM     LISTENING     18947    /run/user/1000/systemd/private
unix  2      [ ACC ]     STREAM     LISTENING     18952    /run/user/1000/gnupg/S.gpg-agent.ssh
unix  2      [ ACC ]     STREAM     LISTENING     18953    /run/user/1000/pulse/native
```

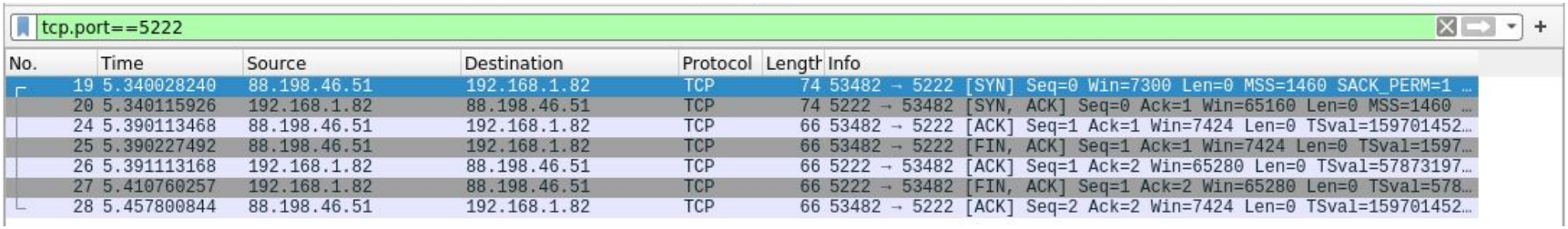
```
root@raspberrypi:/home/pi# netstat -an | grep 5222
tcp        0      0 0.0.0.0:5222            0.0.0.0:*               LISTEN
tcp        0     39 192.168.1.4:5222        217.216.173.237:38364   LAST_ACK
root@raspberrypi:/home/pi# netstat -an | grep 5269
tcp        0      0 0.0.0.0:5269            0.0.0.0:*               LISTEN
```

Check open ports garciarevelles.ddns.net from outside with www.ping.eu

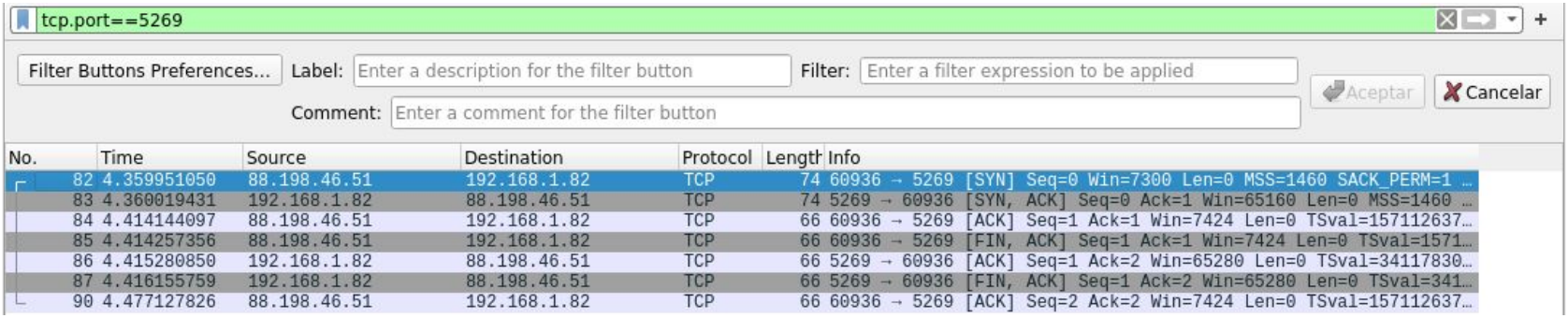




Check open ports garciarevelles.ddns.net from outside with www.ping.eu



No.	Time	Source	Destination	Protocol	Length	Info
19	5.340028240	88.198.46.51	192.168.1.82	TCP	74	53482 → 5222 [SYN] Seq=0 Win=7300 Len=0 MSS=1460 SACK_PERM=1 …
20	5.340115926	192.168.1.82	88.198.46.51	TCP	74	5222 → 53482 [SYN, ACK] Seq=0 Ack=1 Win=65160 Len=0 MSS=1460 …
24	5.390113468	88.198.46.51	192.168.1.82	TCP	66	53482 → 5222 [ACK] Seq=1 Ack=1 Win=7424 Len=0 TSval=159701452…
25	5.390227492	88.198.46.51	192.168.1.82	TCP	66	53482 → 5222 [FIN, ACK] Seq=1 Ack=1 Win=7424 Len=0 TSval=1597…
26	5.391113168	192.168.1.82	88.198.46.51	TCP	66	5222 → 53482 [ACK] Seq=1 Ack=2 Win=65280 Len=0 TSval=57873197…
27	5.410760257	192.168.1.82	88.198.46.51	TCP	66	5222 → 53482 [FIN, ACK] Seq=1 Ack=2 Win=65280 Len=0 TSval=578…
28	5.457800844	88.198.46.51	192.168.1.82	TCP	66	53482 → 5222 [ACK] Seq=2 Ack=2 Win=7424 Len=0 TSval=159701452…



No.	Time	Source	Destination	Protocol	Length	Info
82	4.359951050	88.198.46.51	192.168.1.82	TCP	74	60936 → 5269 [SYN] Seq=0 Win=7300 Len=0 MSS=1460 SACK_PERM=1 …
83	4.360019431	192.168.1.82	88.198.46.51	TCP	74	5269 → 60936 [SYN, ACK] Seq=0 Ack=1 Win=65160 Len=0 MSS=1460 …
84	4.414144097	88.198.46.51	192.168.1.82	TCP	66	60936 → 5269 [ACK] Seq=1 Ack=1 Win=7424 Len=0 TSval=157112637…
85	4.414257356	88.198.46.51	192.168.1.82	TCP	66	60936 → 5269 [FIN, ACK] Seq=1 Ack=1 Win=7424 Len=0 TSval=1571…
86	4.415280850	192.168.1.82	88.198.46.51	TCP	66	5269 → 60936 [ACK] Seq=1 Ack=2 Win=65280 Len=0 TSval=34117830…
87	4.416155759	192.168.1.82	88.198.46.51	TCP	66	5269 → 60936 [FIN, ACK] Seq=1 Ack=2 Win=65280 Len=0 TSval=341…
90	4.477127826	88.198.46.51	192.168.1.82	TCP	66	60936 → 5269 [ACK] Seq=2 Ack=2 Win=7424 Len=0 TSval=157112637…

Check open ports garciaruiz.ddns.net from outside with www.ping.eu

Check open ports garciaruiz.ddns.net from outside with www.ping.eu

tcp.port == 5222

No.	Time	Source	Destination	Protocol	Length	Info
400	20.198657799	88.198.46.51	192.168.1.4	TCP	74	49234 → 5222 [SYN] Seq=0 Win=7300 Len=0 MSS=1400 SACK_PERM=1 TSval=1578933024 TSecr=0 WS=256
401	20.198777538	192.168.1.4	88.198.46.51	TCP	74	5222 → 49234 [SYN, ACK] Seq=0 Ack=1 Win=65160 Len=0 MSS=1460 SACK_PERM=1 TSval=1048770048 TSecr=1578933024 WS=128
402	20.239855353	88.198.46.51	192.168.1.4	TCP	66	49234 → 5222 [ACK] Seq=1 Ack=1 Win=7424 Len=0 TSval=1578933028 TSecr=1048770048
403	20.240104090	88.198.46.51	192.168.1.4	TCP	66	49234 → 5222 [FIN, ACK] Seq=1 Ack=1 Win=7424 Len=0 TSval=1578933028 TSecr=1048770048
404	20.242791383	192.168.1.4	88.198.46.51	TCP	66	5222 → 49234 [FIN, ACK] Seq=1 Ack=2 Win=65280 Len=0 TSval=1048770092 TSecr=1578933028
405	20.283401057	88.198.46.51	192.168.1.4	TCP	66	49234 → 5222 [ACK] Seq=2 Ack=2 Win=7424 Len=0 TSval=1578933032 TSecr=1048770092

tcp.port == 5269

No.	Time	Source	Destination	Protocol	Length	Info
65	2.665185331	88.198.46.51	192.168.1.4	TCP	74	52990 → 5269 [SYN] Seq=0 Win=7300 Len=0 MSS=1400 SACK_PERM=1 TSval=1578982709 TSecr=0 WS=256
66	2.665277756	192.168.1.4	88.198.46.51	TCP	74	5269 → 52990 [SYN, ACK] Seq=0 Ack=1 Win=65160 Len=0 MSS=1460 SACK_PERM=1 TSval=1049266899 TSecr=1578982709 WS=128
67	2.706915405	88.198.46.51	192.168.1.4	TCP	66	52990 → 5269 [ACK] Seq=1 Ack=1 Win=7424 Len=0 TSval=1578982713 TSecr=1049266899
68	2.708218061	88.198.46.51	192.168.1.4	TCP	66	52990 → 5269 [FIN, ACK] Seq=1 Ack=1 Win=7424 Len=0 TSval=1578982713 TSecr=1049266899
69	2.718809207	192.168.1.4	88.198.46.51	TCP	66	5269 → 52990 [FIN, ACK] Seq=1 Ack=2 Win=65280 Len=0 TSval=1049266952 TSecr=1578982713
70	2.759706030	88.198.46.51	192.168.1.4	TCP	66	52990 → 5269 [ACK] Seq=2 Ack=2 Win=7424 Len=0 TSval=1578982718 TSecr=1049266952

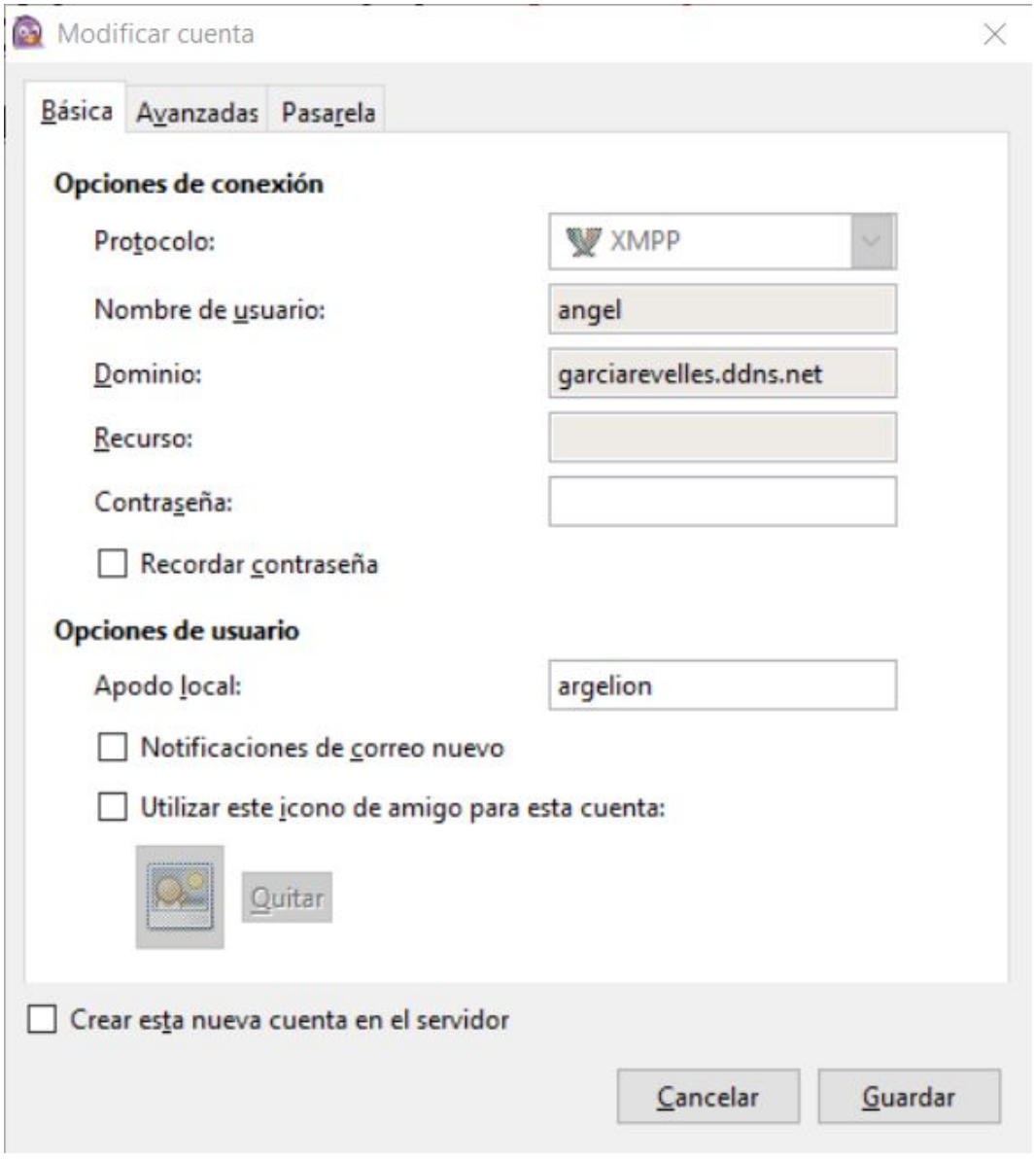
Checking conectivity garciarevelles.ddns.net to server with traceroute from OUTSIDE

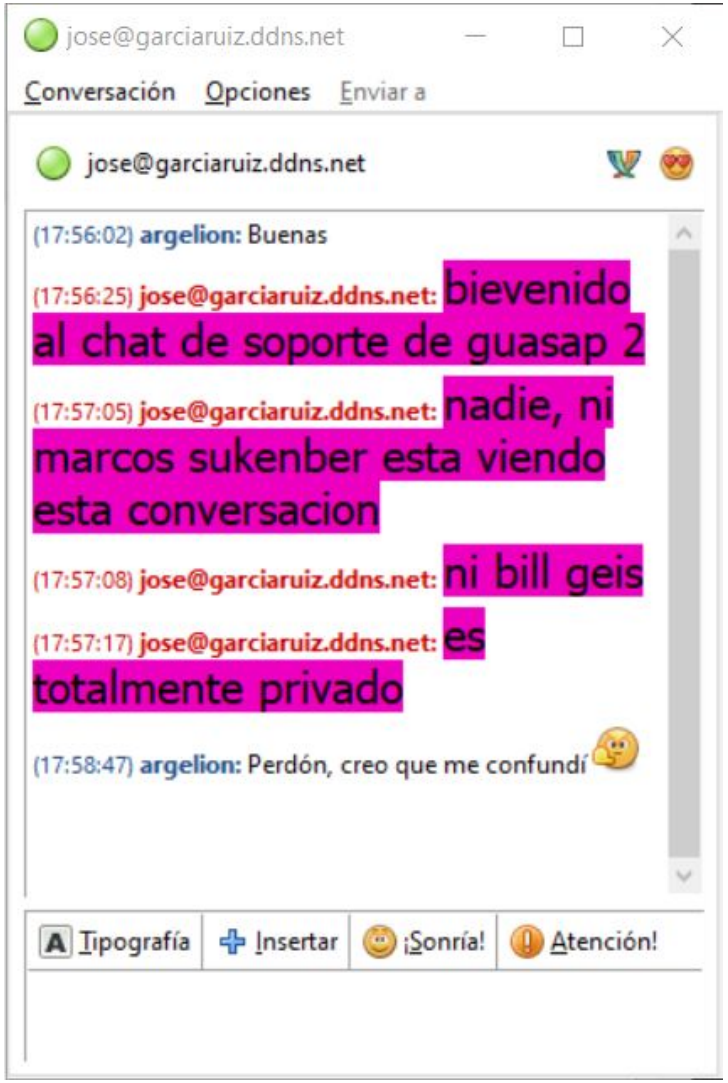
```
josemanu@josemanuKDE:~$ traceroute garciarevelles.ddns.net
traceroute to garciarevelles.ddns.net (87.220.13.75), 64 hops max
  1   192.168.0.1  9,398ms  1,703ms  3,625ms
  2   10.195.52.1  19,831ms  17,855ms  44,528ms
  3   10.80.8.125  86,466ms  14,867ms  11,778ms
  4   172.29.176.117  13,033ms  20,356ms  9,401ms
  5   *  *  *
  6   *  212.166.147.231  20,763ms  20,217ms
  7   87.220.12.1  29,914ms  41,736ms  30,641ms
  8   *  *  *
  9   *  *  *
 10   *  *  *
^X^C
josemanu@josemanuKDE:~$
```

Checking conectivity garciaruiz.ddns.net to server with traceroute from OUTSIDE

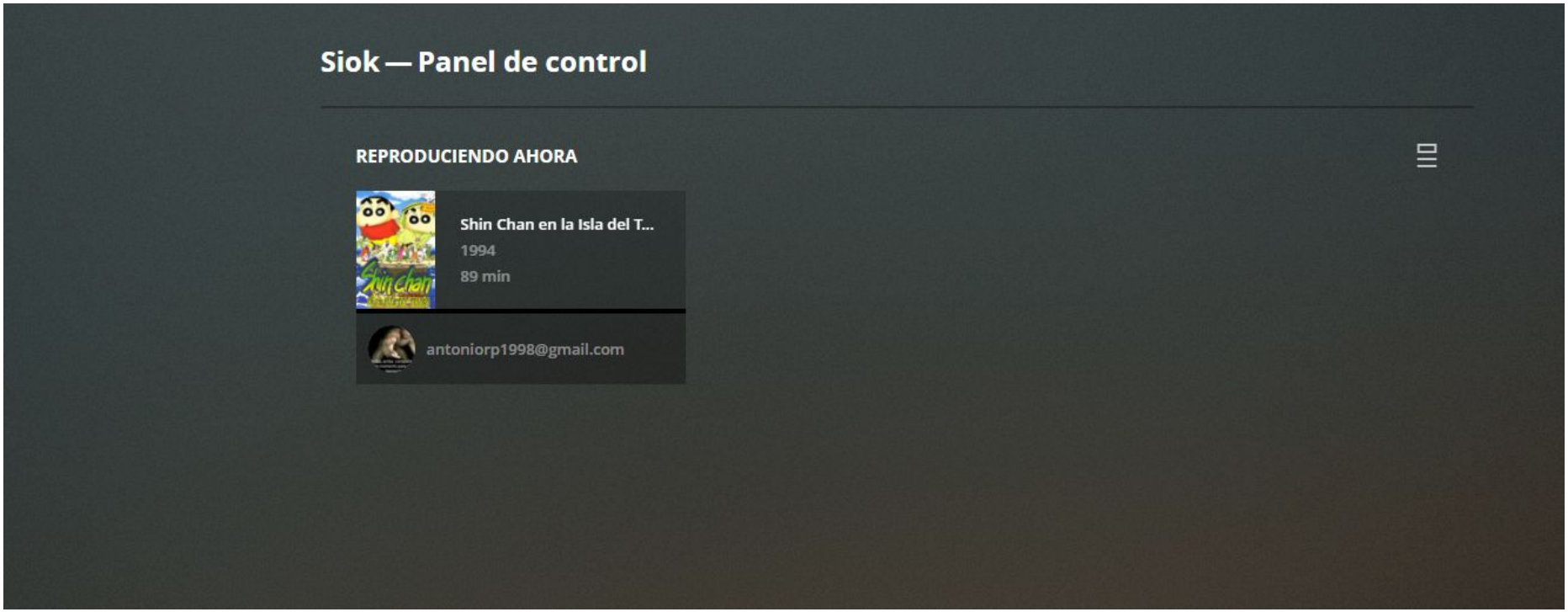
```
antoniorv@Antonio-pc:~$ traceroute garciaruiz.ddns.net
traceroute to garciaruiz.ddns.net (45.144.249.123), 64 hops max
  1   192.168.1.1  2,602ms  2,313ms  2,453ms
  2   81.46.37.52  3,781ms  2,697ms  2,839ms
  3   81.46.35.189  15,972ms  16,167ms  18,567ms
  4   81.46.31.157  18,049ms  32,471ms  16,835ms
  5   *  *  *
  6   81.46.9.142  23,518ms  15,330ms  68,276ms
  7   *  *  *
  8   *  *  *
  9   *  *  *
 10   *  *  *
 11   45.144.249.123  22,642ms  22,661ms  22,618ms
 12   45.144.249.123  23,069ms  22,288ms  22,334ms
 13   *  45.144.249.123  26,037ms !H  0,005ms !H
antoniorv@Antonio-pc:~$
```

Show service 1





Show service 2



CONCLUSIONS

We have learned to make real servers. In many subjects, we made servers but always in a local way, not really focused on public interaction or offering a service to a client.

Play with ports is useful too when you work with multiple services on a server. We have learned how to handle a public server on a private network by redirecting ports. Some of us have played with ports before.

We think, this laboratory is useful and move us closer to real problems.
While it is true, it would have been interesting to explain us some advices and risks of these practices.