Hachetetepé dos puntos
SLAAC SLACC

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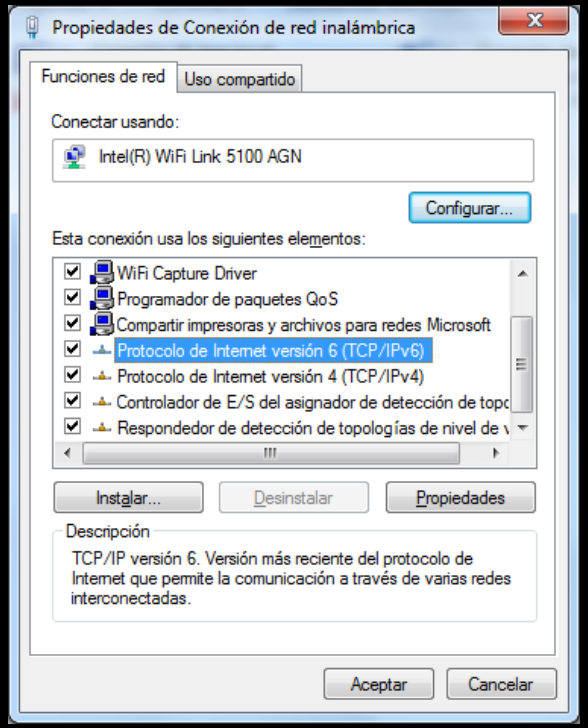
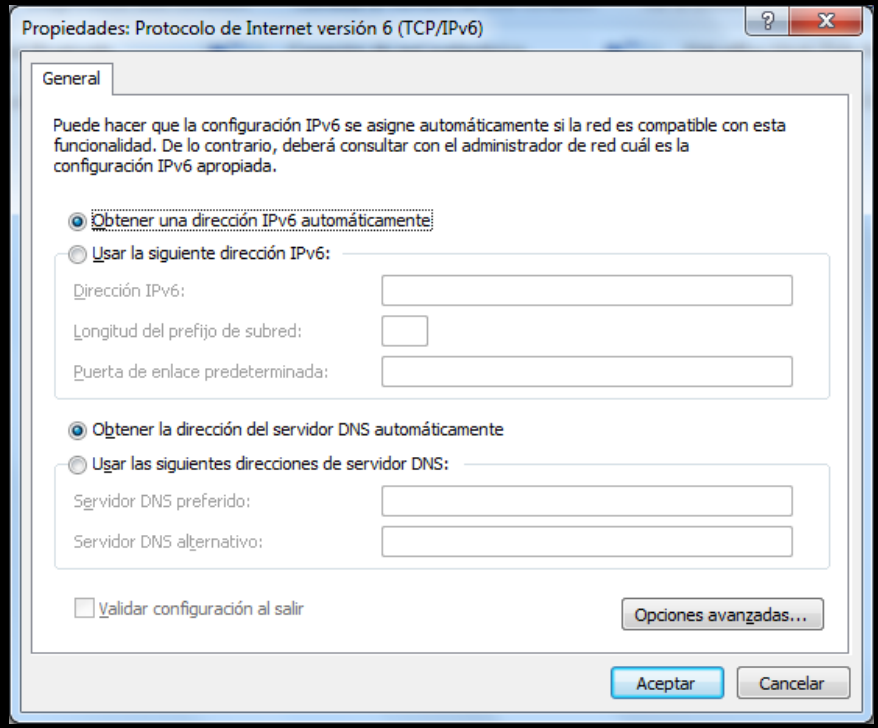
IPv6 is on your box!





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And it works!: ipconfig

```
Adaptador de Ethernet Conexión de área local:

   Sufijo DNS específico para la conexión. . :
   Vínculo: dirección IPv6 local. . . : fe80::f47c:d2ae:b534:40b2%11
   Dirección IPv4. . . . . . . . . . . . : 192.168.1.204
   Máscara de subred . . . . . . . . . . : 255.255.255.0
   Puerta de enlace predeterminada . . . . . : 192.168.1.1
```

And it works!: route print

```
IPv6 Tabla de enrutamiento
===========================================================
Rutas activas:
 Cuando destino de red métrica           Puerta de enlace
  1     306 ::1/128                      En vínculo
 12     261 fe80::/64                    En vínculo
 12     261 fe80::5488:6a23:31ef:3505/128
                                         En vínculo
  1     306 ff00::/8                     En vínculo
 12     261 ff00::/8                     En vínculo
===========================================================
Rutas persistentes:
  Ninguno
```

And it works!: ping

```
C:\Users\user>ping -a 192.168.0.1

Haciendo ping a server [192.168.0.1] con 32 bytes de datos:
Respuesta desde 192.168.0.1: bytes=32 tiempo=1ms TTL=128
Respuesta desde 192.168.0.1: bytes=32 tiempo<1m TTL=128
Respuesta desde 192.168.0.1: bytes=32 tiempo<1m TTL=128
Respuesta desde 192.168.0.1: bytes=32 tiempo=3ms TTL=128

Estadísticas de ping para 192.168.0.1:
    Paquetes: enviados = 4, recibidos = 4, perdidos = 0
    (0% perdidos),
Tiempos aproximados de ida y vuelta en milisegundos:
    Mínimo = 0ms, Máximo = 3ms, Media = 1ms
```

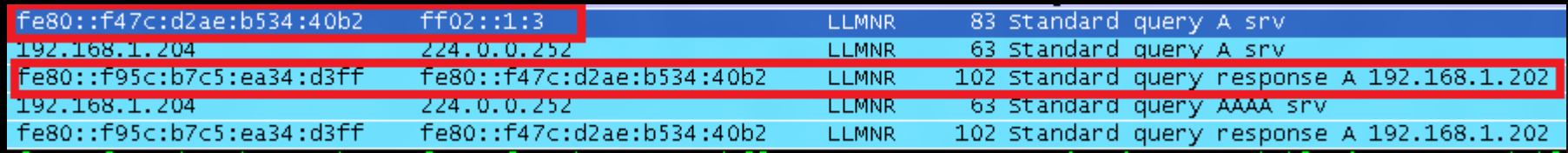
And it works!: ping

```
C:\Users\user>ping server

Haciendo ping a server [fe80::5d06:f13f:dcb1:279a%12] con 32 bytes de datos:
Respuesta desde fe80::5d06:f13f:dcb1:279a%12: tiempo=1ms
Respuesta desde fe80::5d06:f13f:dcb1:279a%12: tiempo<1m
Respuesta desde fe80::5d06:f13f:dcb1:279a%12: tiempo<1m
Respuesta desde fe80::5d06:f13f:dcb1:279a%12: tiempo<1m

Estadísticas de ping para fe80::5d06:f13f:dcb1:279a%12:
    Paquetes: enviados = 4, recibidos = 4, perdidos = 0
    (0% perdidos),
Tiempos aproximados de ida y vuelta en milisegundos:
    Mínimo = 0ms, Máximo = 1ms, Media = 0ms
```

LLMNR



fe80::f47c:d2ae:b534:40b2	ff02::1:3	LLMNR	83	Standard query A srv
192.168.1.204	224.0.0.252	LLMNR	63	Standard query A srv
fe80::f95c:b7c5:ea34:d3ff	fe80::f47c:d2ae:b534:40b2	LLMNR	102	Standard query response A 192.168.1.202
192.168.1.204	224.0.0.252	LLMNR	63	Standard query AAAA srv
fe80::f95c:b7c5:ea34:d3ff	fe80::f47c:d2ae:b534:40b2	LLMNR	102	Standard query response A 192.168.1.202

And it works!: Neightbors

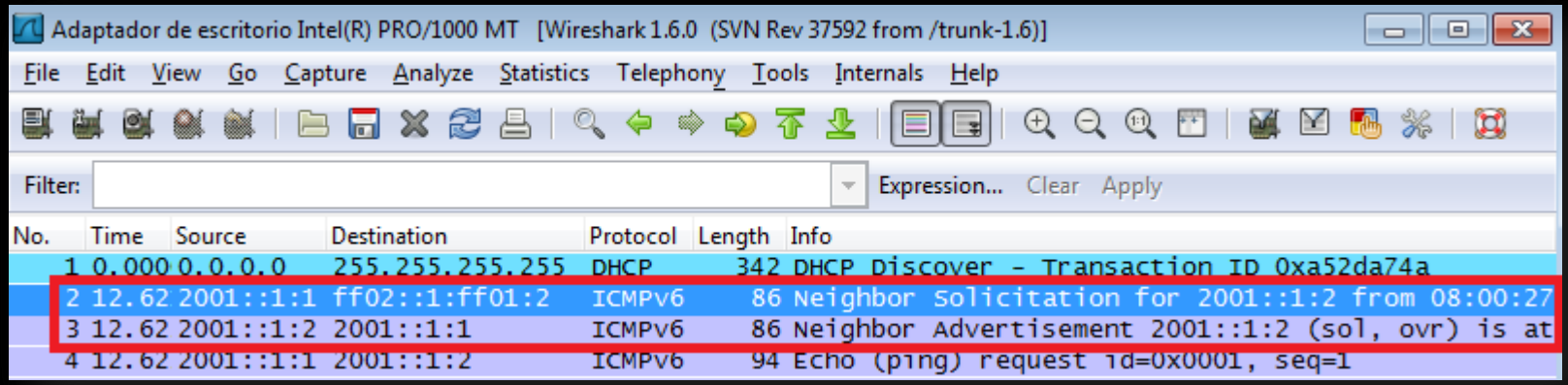
```
C:\Users\user>netsh interface ipv6 show neighbors

Dirección de Internet                          Dirección física   Tipo
---------------------------------------------  -----------------  -----------
fe80::49c1:a835:9559:63ee                      00-15-5d-5a-17-03  Accesible
fe80::5d06:f13f:dcb1:279a                      00-15-5d-5a-17-05  Obsoleto (Enrut
ador)
ff02::2                                        33-33-00-00-00-02  Permanente
ff02::c                                        33-33-00-00-00-0c  Permanente
ff02::16                                       33-33-00-00-00-16  Permanente
ff02::1:2                                      33-33-00-01-00-02  Permanente
ff02::1:3                                      33-33-00-01-00-03  Permanente
ff02::1:ff59:63ee                              33-33-ff-59-63-ee  Permanente
ff02::1:ffef:3505                              33-33-ff-ef-35-05  Permanente
```

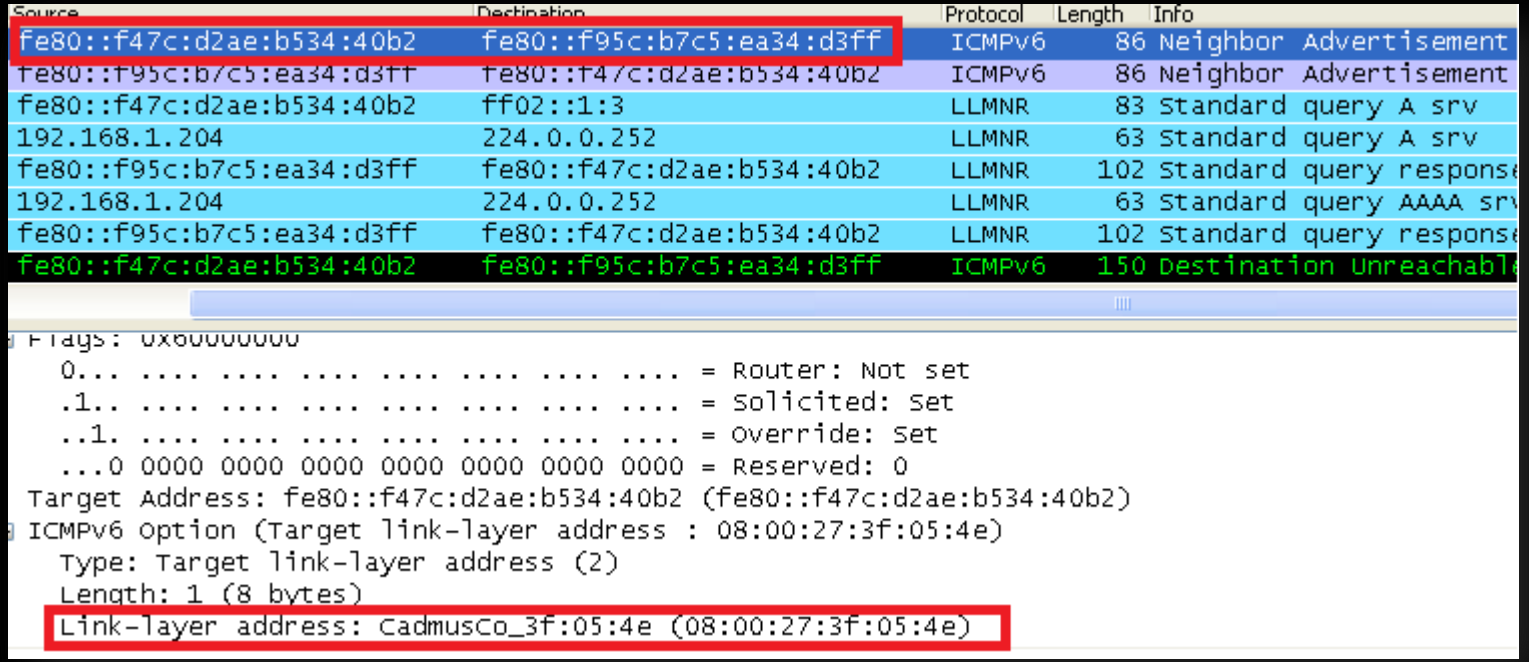
ICMPv6

- No ARP
  - No ARP Spoofing
  - Tools anti-ARP Spoofing are useless
- Neighbor Discover uses ICPMv6
  - NS: Neighbor Solicitation
  - NA: Neighbor Advertisement

NS/NA


Adaptador de escritorio Intel(R) PRO/1000 MT [Wireshark 1.6.0 (SVN Rev 37592 from /trunk-1.6)]
File Edit View Go Capture Analyze Statistics Telephony Tools Internals Help
Filter: Expression... Clear Apply
No. Time Source Destination Protocol Length Info
1 0.000 0.0.0.0 255.255.255.255 DHCP 342 DHCP Discover - Transaction ID 0xa52da74a
2 12.62 2001::1:1 ff02::1:ff01:2 ICMPv6 86 Neighbor Solicitation for 2001::1:2 from 08:00:27
3 12.62 2001::1:2 2001::1:1 ICMPv6 86 Neighbor Advertisement 2001::1:2 (sol, ovr) is at
4 12.62 2001::1:1 2001::1:2 ICMPv6 94 Echo (ping) request id=0x0001, seq=1

NA Spoofing



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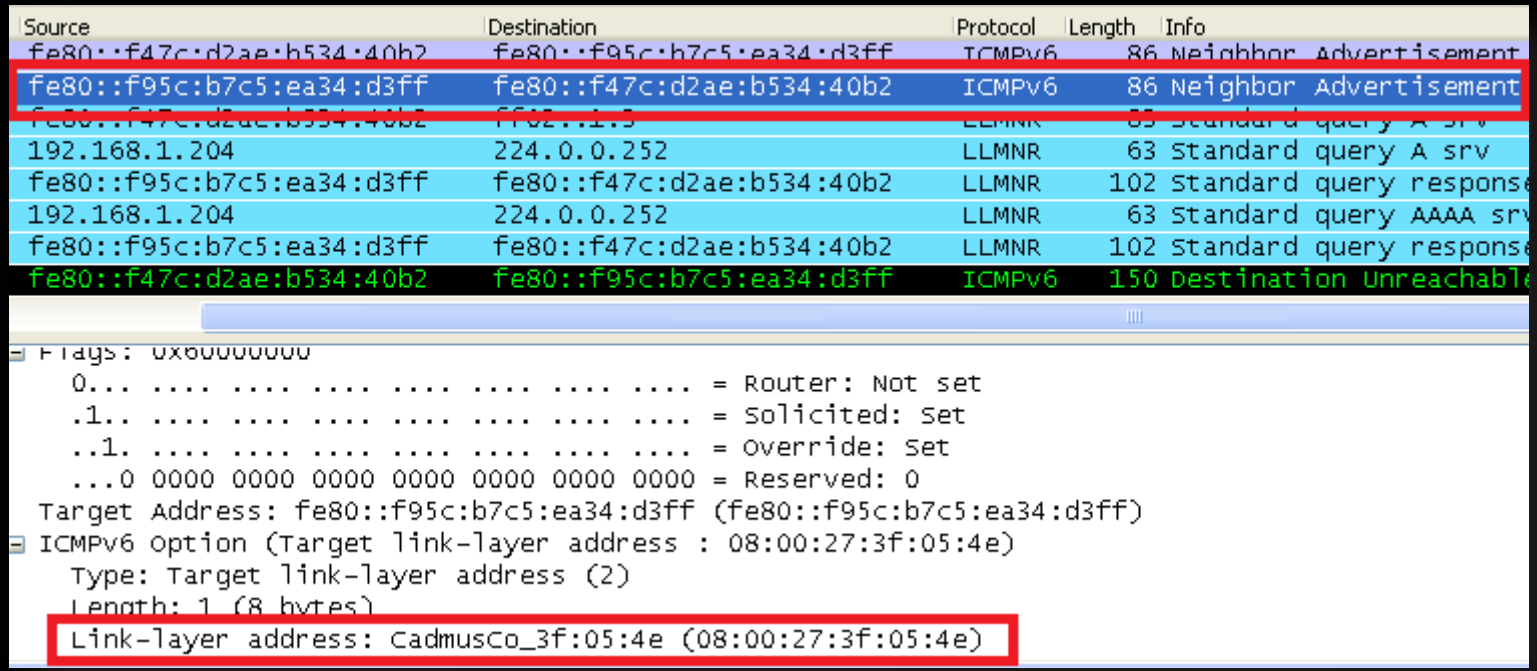
NA Spoofing



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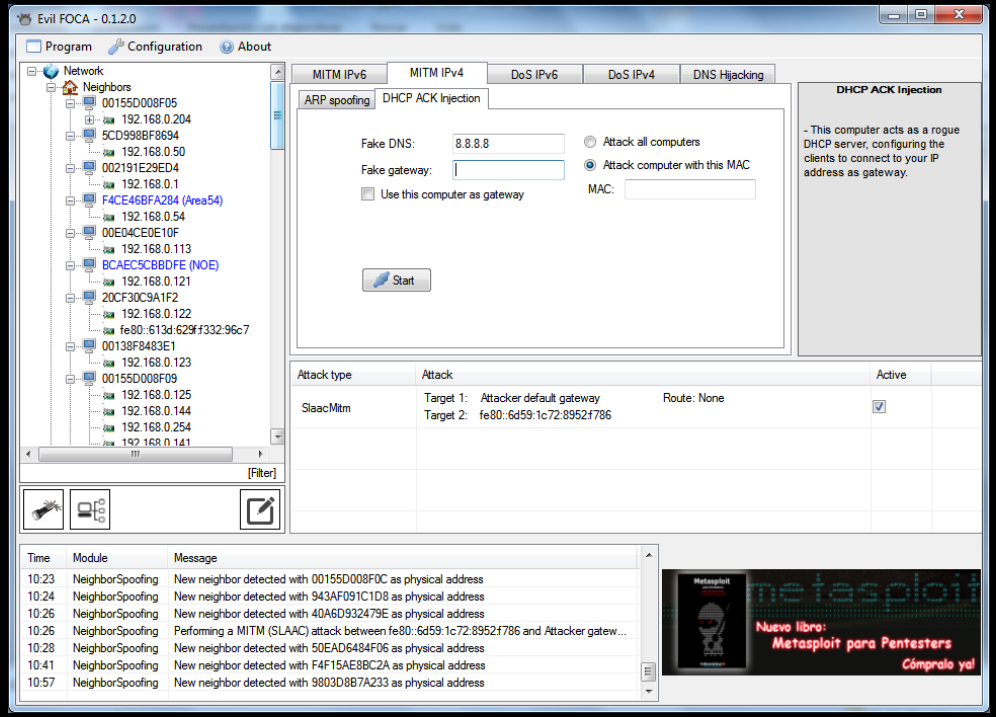
Evil FOCA



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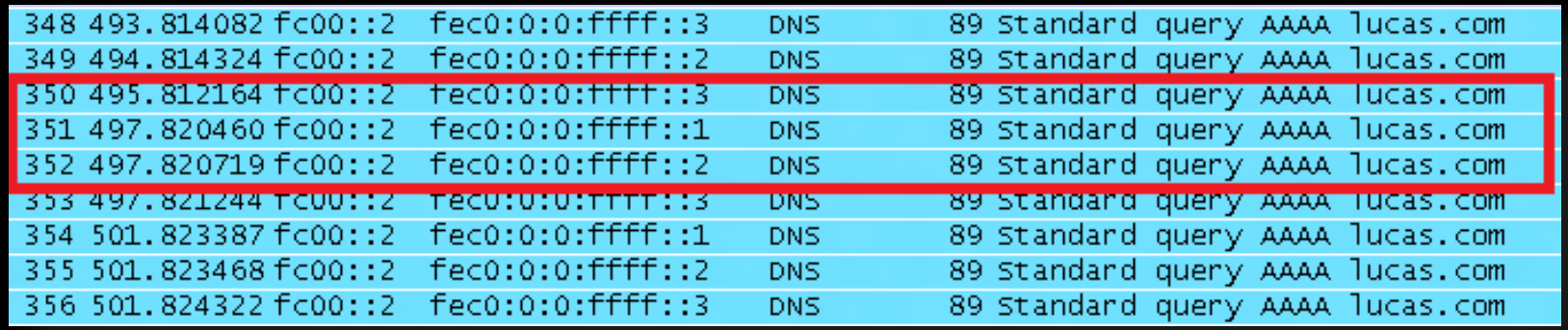
Demo 1: Mitm using NA Spoofing

ICMPv6: SLAAC

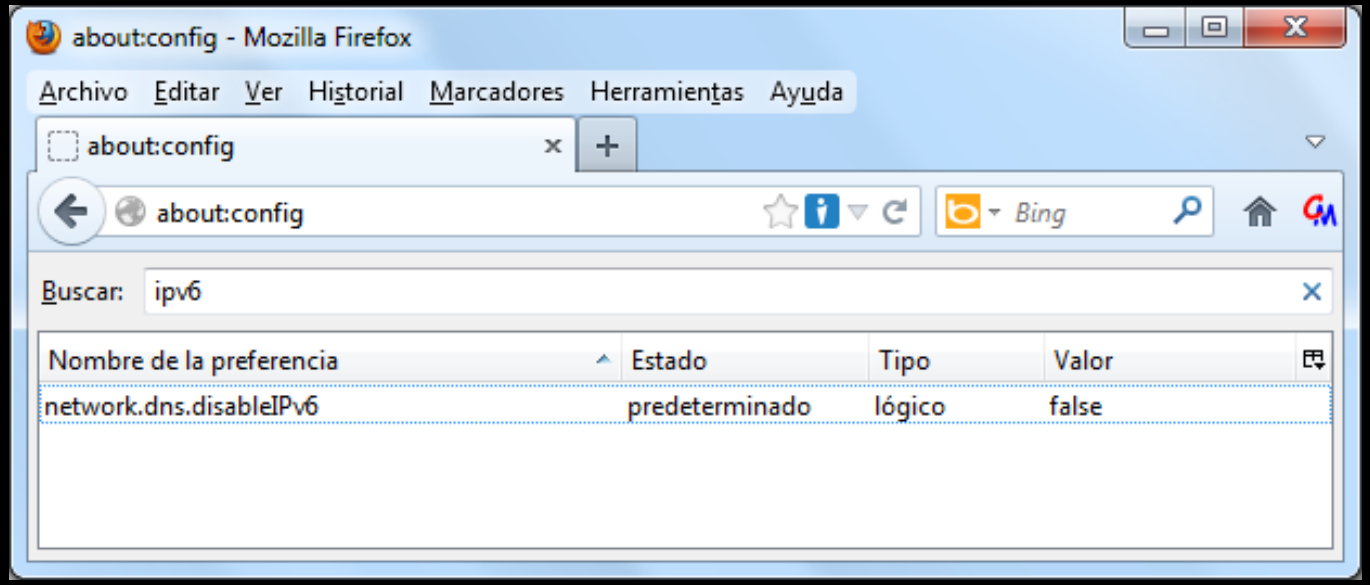
- Stateless Address Auto Configuration
- Devices ask for routers
- Routers public their IPv6 Address
- Devices auto-configure IPv6 and Gateway
  - RS: Router Solicitation
  - RA: Router Advertisement

DNS Autodiscovery



348	493.814082	fc00::2	fec0:0:0:ffff::3	DNS	89	Standard query AAAA lucas.com
349	494.814324	fc00::2	fec0:0:0:ffff::2	DNS	89	Standard query AAAA lucas.com
350	495.812164	fc00::2	fec0:0:0:ffff::3	DNS	89	Standard query AAAA lucas.com
351	497.820460	fc00::2	fec0:0:0:ffff::1	DNS	89	Standard query AAAA lucas.com
352	497.820719	fc00::2	fec0:0:0:ffff::2	DNS	89	Standard query AAAA lucas.com
353	497.821244	fc00::2	fec0:0:0:ffff::3	DNS	89	Standard query AAAA lucas.com
354	501.823387	fc00::2	fec0:0:0:ffff::1	DNS	89	Standard query AAAA lucas.com
355	501.823468	fc00::2	fec0:0:0:ffff::2	DNS	89	Standard query AAAA lucas.com
356	501.824322	fc00::2	fec0:0:0:ffff::3	DNS	89	Standard query AAAA lucas.com

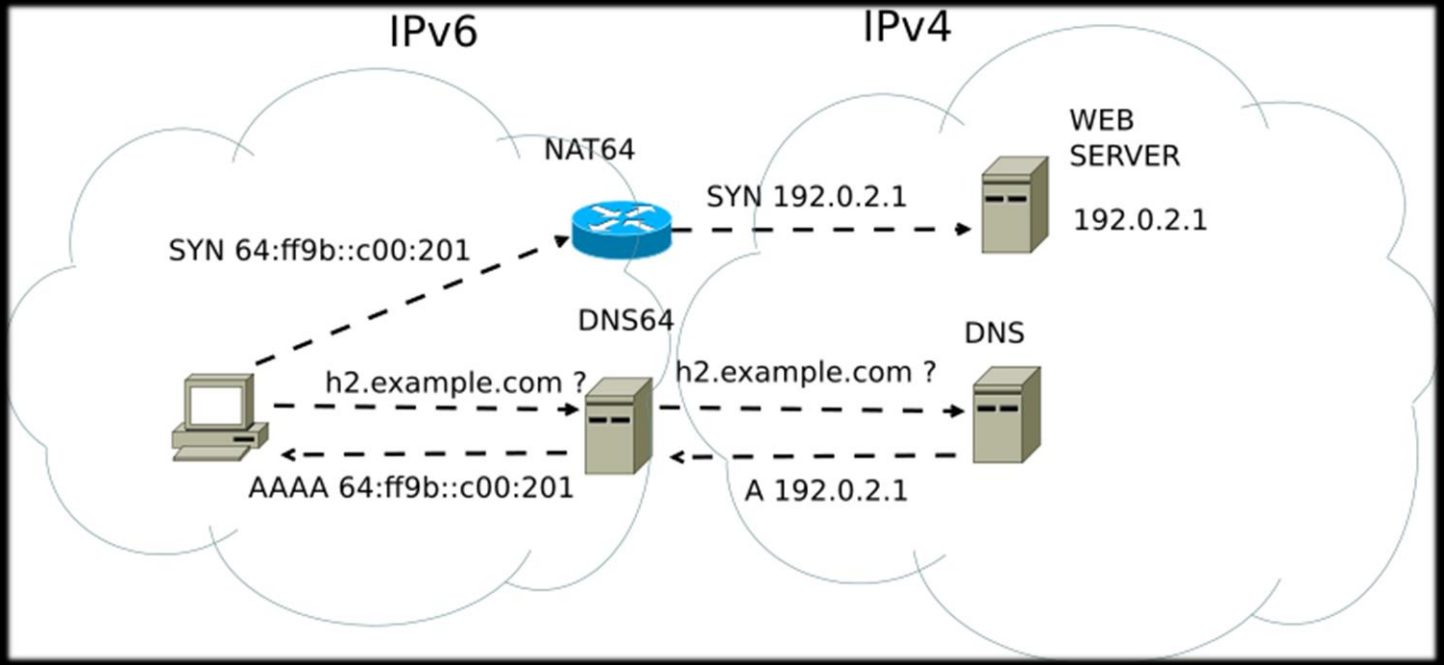
And it works!: Web Browser



Windows Behavior

- IPv4 & IPv6
  - DNSv4 queries A & AAAA
- IPv6 Only
  - DNSv6 queries A
- IPv6 & IPv4 Local Link
  - DNSv6 queries AAAA

DNS64 & NAT64



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HTTP-s Connections

- SSL Strip
  - Remove “S” from HTTP-s links
- SSL Sniff
  - Use a Fake CA to create dynamicly Fake CA
- Evil FOCA does SSL Strip (so far)

Demo 2: Windows behavior

Demo 2: hachetetepé dos puntos SLAAC SLACC

SLAAC D.O.S.

```
C:\Windows\system32>ipconfig

Windows IP Configuration


Ethernet adapter Local Area Connection:

 Connection-specific DNS Suffix: localdomain
 IPv6 Address. . . . . . . . . . . : 4:1:1:0:156d:9e7e:48d3:704e
 IPv6 Address. . . . . . . . . . . : 4:2:1:0:156d:9e7e:48d3:704e
 IPv6 Address. . . . . . . . . . . : 4:3:1:0:156d:9e7e:48d3:704e
 IPv6 Address. . . . . . . . . . . : 4:4:1:0:156d:9e7e:48d3:704e
 IPv6 Address. . . . . . . . . . . : 4:5:1:0:156d:9e7e:48d3:704e
 IPv6 Address. . . . . . . . . . . : 4:6:1:0:156d:9e7e:48d3:704e
 IPv6 Address. . . . . . . . . . . : 4:7:1:0:156d:9e7e:48d3:704e
 IPv6 Address. . . . . . . . . . . : 4:8:1:0:156d:9e7e:48d3:704e
 IPv6 Address. . . . . . . . . . . : 4:9:1:0:156d:9e7e:48d3:704e
 IPv6 Address. . . . . . . . . . . : 4:10:1:0:156d:9e7e:48d3:704e
 IPv6 Address. . . . . . . . . . . : 4:11:1:0:156d:9e7e:48d3:704e
 IPv6 Address. . . . . . . . . . . : 4:12:1:0:156d:9e7e:48d3:704e
 IPv6 Address. . . . . . . . . . . : 4:13:1:0:156d:9e7e:48d3:704e
 IPv6 Address. . . . . . . . . . . : 4:14:1:0:156d:9e7e:48d3:704e
```

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Conclusions

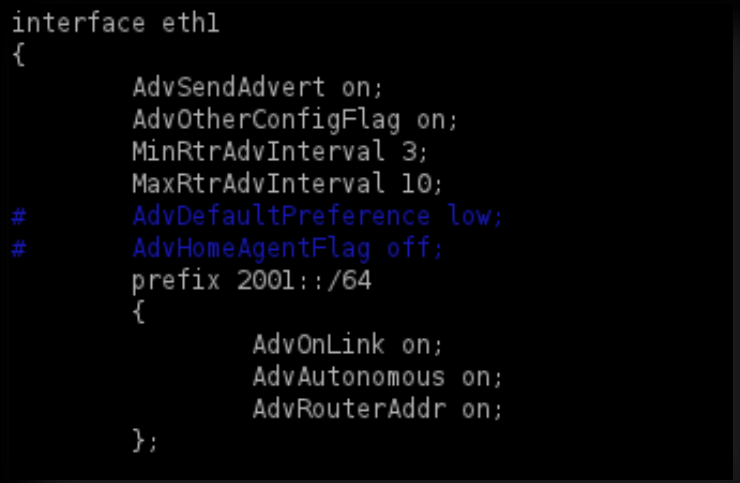
- IPv6 is on your box
  - Configure it or kill it (if possible)
- IPv6 is on your network
  - IPv4 security controls are not enough
  - Topera

Conclusions

FEAR (the EVIL) FOCA!

Thanks to

- THC (The Hacking Choice)
  - Included in Back Track
  - Parasite6
  - Redir6
  - Flood_router6
  - .....
- Scappy



```
interface eth1
{
        AdvSendAdvert on;
        AdvOtherConfigFlag on;
        MinRtrAdvInterval 3;
        MaxRtrAdvInterval 10;
#       AdvDefaultPreference low;
#       AdvHomeAgentFlag off;
        prefix 2001::/64
        {
                AdvOnLink on;
                AdvAutonomous on;
                AdvRouterAddr on;
        };
```

Questions?

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