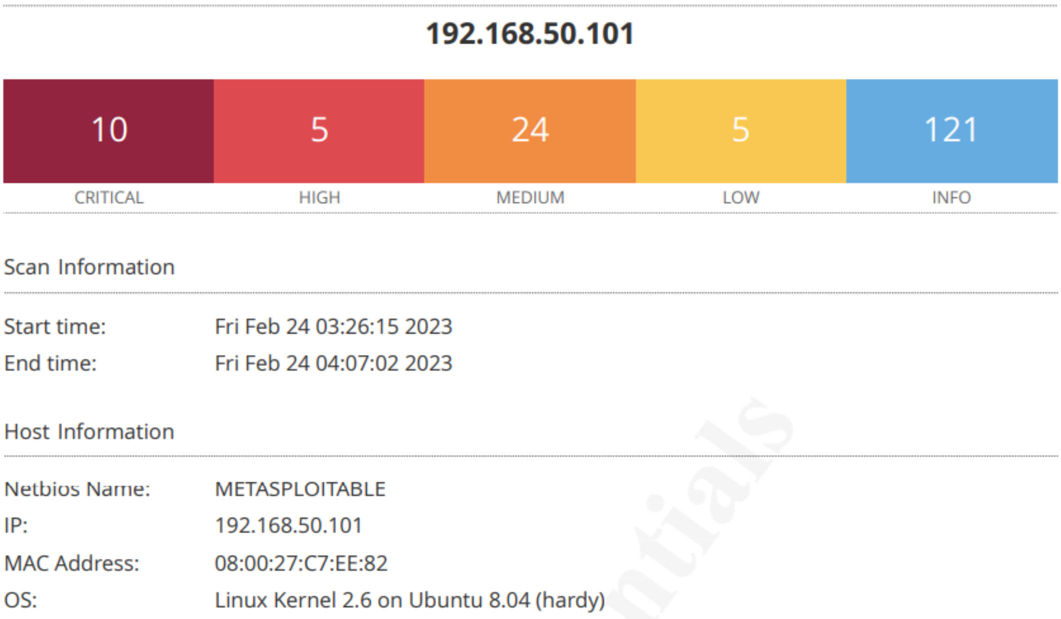
SCANSIONE INIZIALE:



192.168.50.101

10	5	24	5	121
CRITICAL	HIGH	MEDIUM	LOW	INFO

Scan Information

Start time:	Fri Feb 24 03:26:15 2023
End time:	Fri Feb 24 04:07:02 2023

Host Information

Netbios Name:	METASPLOITABLE
IP:	192.168.50.101
MAC Address:	08:00:27:C7:EE:82
OS:	Linux Kernel 2.6 on Ubuntu 8.04 (hardy)

134862 - Apache Tomcat AJP Connector Request Injection (Ghostcat)

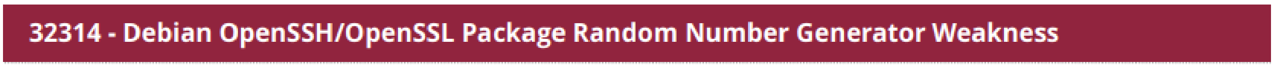
Description: A file read/inclusion vulnerability was found in AJP connector. A remote, unauthenticated attacker could exploit this vulnerability to read web application files from a vulnerable server. In instances where the vulnerable server allows file uploads, an attacker could upload malicious JavaServer Pages (JSP) code within a variety of file types and gain remote code execution (RCE).

Solution: Update the AJP configuration to require authorization and/or upgrade the Tomcat server to 7.0.100, 8.5.51, 9.0.31 or later.

51988 - Bind Shell Backdoor Detection

Description: A shell is listening on the remote port without any authentication being required. An attacker may use it by connecting to the remote port and sending commands directly.

Solution: Verify if the remote host has been compromised, and reinstall the system if necessary



32314 - Debian OpenSSH/OpenSSL Package Random Number Generator Weakness

Description: The remote SSH host key has been generated on a Debian or Ubuntu system which contains a bug in the random number generator of its OpenSSL library. The problem is due to a Debian packager removing nearly all sources of entropy in the remote version of OpenSSL. An attacker can easily obtain the private part of the remote key and use this to set up decipher the remote session or set up a man in the middle attack.

Solution: Consider all cryptographic material generated on the remote host to be guessable. In particuliar, all SSH, SSL and OpenVPN key material should be re-generated.

32321 - Debian OpenSSH/OpenSSL Package Random Number Generator Weakness (SSL check)

Description: The remote x509 certificate on the remote SSL server has been generated on a Debian or Ubuntu system which contains a bug in the random number generator of its OpenSSL library. The problem is due to a Debian packager removing nearly all sources of entropy in the remote version of OpenSSL. An attacker can easily obtain the private part of the remote key and use this to decipher the remote session or set up a man in the middle attack.

Solution: Consider all cryptographic material generated on the remote host to be guessable. In particuliar, all SSH, SSL and OpenVPN key material should be re-generated.

32321 - Debian OpenSSH/OpenSSL Package Random Number Generator Weakness (SSL check)

(come sopra)

11356 - NFS Exported Share Information Disclosure

Description: At least one of the NFS shares exported by the remote server could be mounted by the scanning host. An attacker may be able to leverage this to read (and possibly write) files on remote host.

Solution: Configure NFS on the remote host so that only authorized hosts can mount its remote shares.

20007 - SSL Version 2 and 3 Protocol Detection

Description: The remote service accepts connections encrypted using SSL 2.0 and/or SSL 3.0. These versions of SSL are affected by several cryptographic flaws, including: - An insecure padding scheme with CBC ciphers. - Insecure session renegotiation and resumption schemes. An attacker can exploit these flaws to conduct man-in-the-middle attacks or to decrypt communications between the affected service and clients. Although SSL/TLS has a secure means for choosing the highest supported version of the protocol (so that these versions will be used only if the client or server support nothing better), many web browsers implement this in an unsafe way that allows an attacker to downgrade a connection (such as in POODLE). Therefore, it is recommended that these protocols be disabled entirely. NIST has determined that SSL 3.0 is no longer acceptable for secure communications. As of the date of enforcement found in PCI DSS v3.1, any version of SSL will not meet the PCI SSC's definition of 'strong cryptography'

Solution: Consult the application's documentation to disable SSL 2.0 and 3.0. Use TLS 1.2 (with approved cipher suites) or higher instead.

20007 - SSL Version 2 and 3 Protocol Detection

(come sopra)

33850 - Unix Operating System Unsupported Version Detection

Description: According to its self-reported version number, the Unix operating system running on the remote host is no longer supported. Lack of support implies that no new security patches for the product will be released by the vendor. As a result, it is likely to contain security vulnerabilities.

Solution: Upgrade to a version of the Unix operating system that is currently supported.

61708 - VNC Server 'password' Password

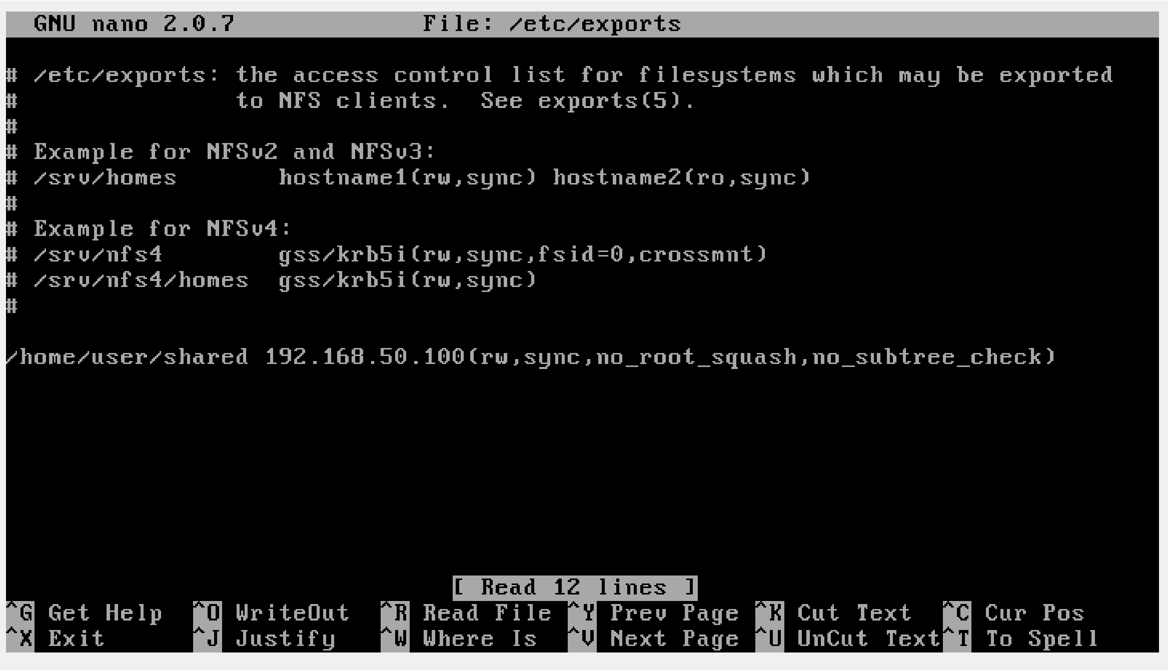
Description: The VNC server running on the remote host is secured with a weak password. Nessus was able to login using VNC authentication and a password of 'password'. A remote, unauthenticated attacker could exploit this to take control of the system.

Solution: Secure the VNC service with a strong password.

REMEDIATION:

NFS Exported Share Information Disclosure

Attraverso il comando sudo nano /etc/exports modifico directory /etc/exports nella seguente maniera:



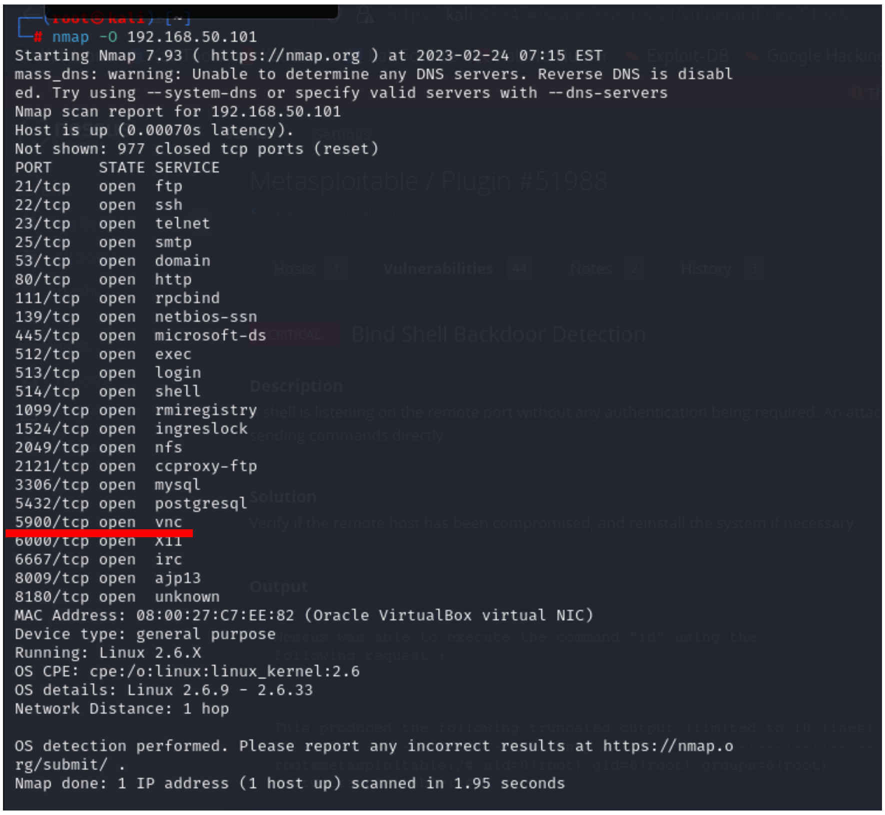
```
  GNU nano 2.0.7                File: /etc/exports

# /etc/exports: the access control list for filesystems which may be exported
#               to NFS clients.  See exports(5).
#
# Example for NFSv2 and NFSv3:
# /srv/homes       hostname1(rw,sync) hostname2(ro,sync)
#
# Example for NFSv4:
# /srv/nfs4        gss/krb5i(rw,sync,fsid=0,crossmnt)
# /srv/nfs4/homes  gss/krb5i(rw,sync)
#

/home/user/shared 192.168.50.100(rw,sync,no_root_squash,no_subtree_check)

                              [ Read 12 lines ]
```

/home/user/shared è il percorso della cartella condivisa, 192.168.50.100 è l'indirizzo IP di Kali consentito e le opzioni: rw (lettura/scrittura), sync (sincronizzazione), no_root_squash (garantisce l'accesso come root ai filesystem) no_subtree_check (accesso a una directory diversa da quella specificata) sono specificati.

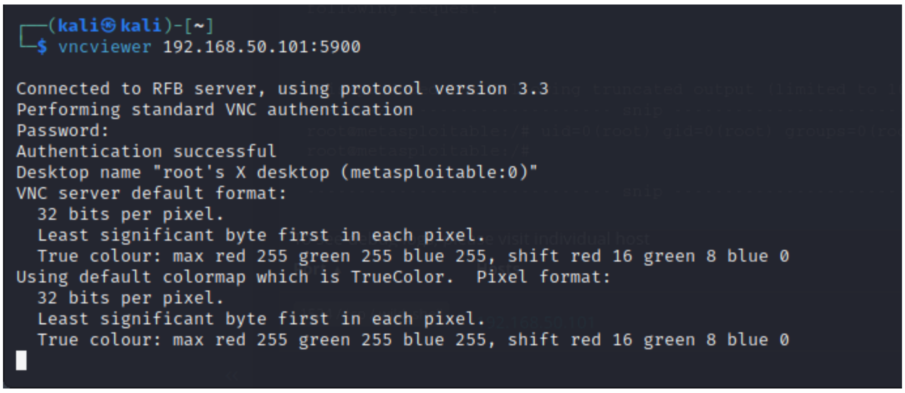
Successivamente riavvio la VM.

VNC Server ‘password’ Password

Effettuo una scansione per verificare che ci siano servizi VNC e su quale porta siano:

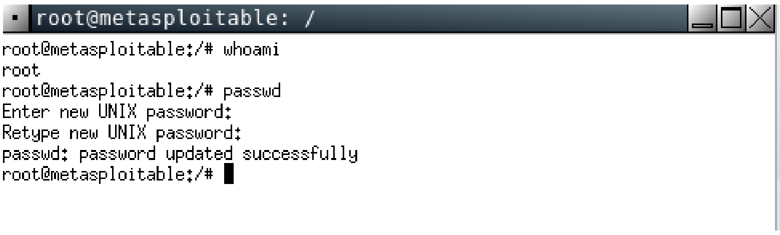


```
┌──(root㉿kali)-[~]
└─# nmap -O 192.168.50.101
Starting Nmap 7.93 ( https://nmap.org ) at 2023-02-24 07:15 EST
mass_dns: warning: Unable to determine any DNS servers. Reverse DNS is disabl
ed. Try using --system-dns or specify valid servers with --dns-servers
Nmap scan report for 192.168.50.101
Host is up (0.00070s latency).
Not shown: 977 closed tcp ports (reset)
PORT     STATE SERVICE
21/tcp   open  ftp
22/tcp   open  ssh
23/tcp   open  telnet
25/tcp   open  smtp
53/tcp   open  domain
80/tcp   open  http
111/tcp  open  rpcbind
139/tcp  open  netbios-ssn
445/tcp  open  microsoft-ds
512/tcp  open  exec
513/tcp  open  login
514/tcp  open  shell
1099/tcp open  rmiregistry
1524/tcp open  ingreslock
2049/tcp open  nfs
2121/tcp open  ccproxy-ftp
3306/tcp open  mysql
5432/tcp open  postgresql
5900/tcp open  vnc
6000/tcp open  X11
6667/tcp open  irc
8009/tcp open  ajp13
8180/tcp open  unknown
MAC Address: 08:00:27:C7:EE:82 (Oracle VirtualBox virtual NIC)
Device type: general purpose
Running: Linux 2.6.X
OS CPE: cpe:/o:linux:linux_kernel:2.6
OS details: Linux 2.6.9 - 2.6.33
Network Distance: 1 hop

OS detection performed. Please report any incorrect results at https://nmap.o
rg/submit/ .
Nmap done: 1 IP address (1 host up) scanned in 1.95 seconds
```



```
┌──(kali㉿kali)-[~]
└─$ vncviewer 192.168.50.101:5900

Connected to RFB server, using protocol version 3.3
Performing standard VNC authentication
Password:
Authentication successful
Desktop name "root's X desktop (metasploitable:0)"
VNC server default format:
  32 bits per pixel.
  Least significant byte first in each pixel.
  True colour: max red 255 green 255 blue 255, shift red 16 green 8 blue 0
Using default colormap which is TrueColor.  Pixel format:
  32 bits per pixel.
  Least significant byte first in each pixel.
  True colour: max red 255 green 255 blue 255, shift red 16 green 8 blue 0
```

Utilizzo il comando ‘’whoami’’ per ottenere l’username e modifico la password:

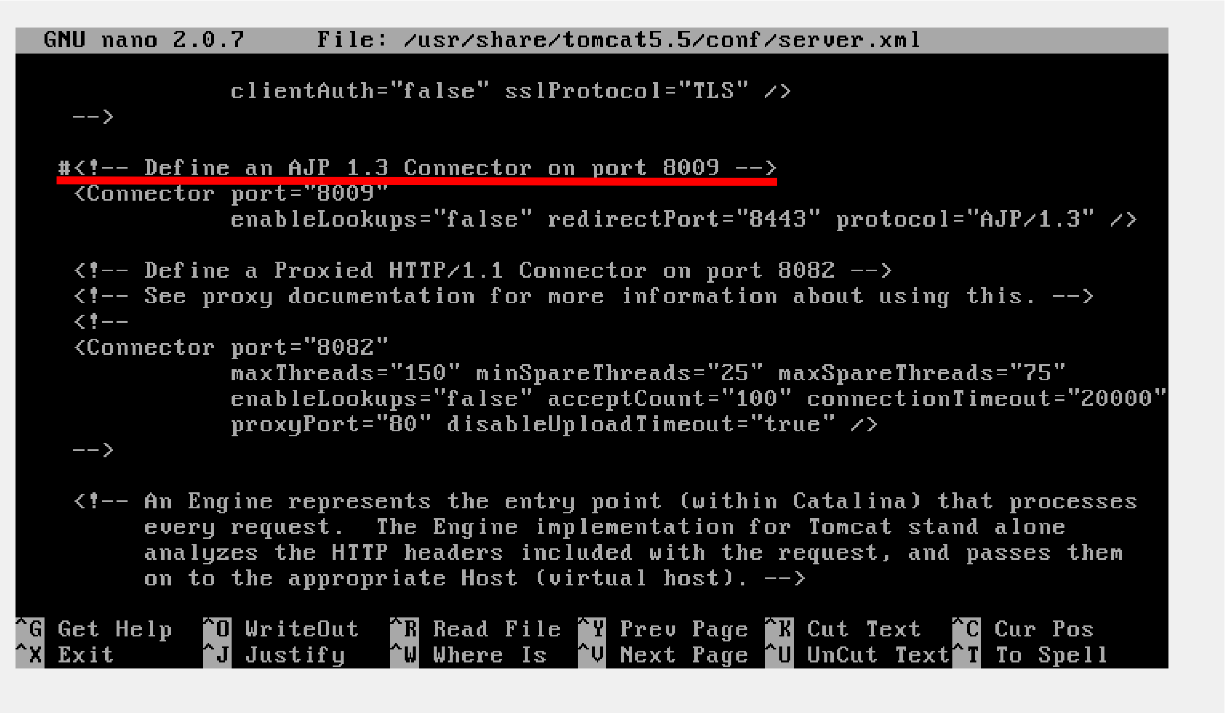


```
root@metasploitable: /
root@metasploitable:/# whoami
root
root@metasploitable:/# passwd
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
root@metasploitable:/#
```

N.B. la scansione finale mi dice che la vulnerabilità c’è ancora, non capisco perché dato che mi viene detto: password updated successfully!

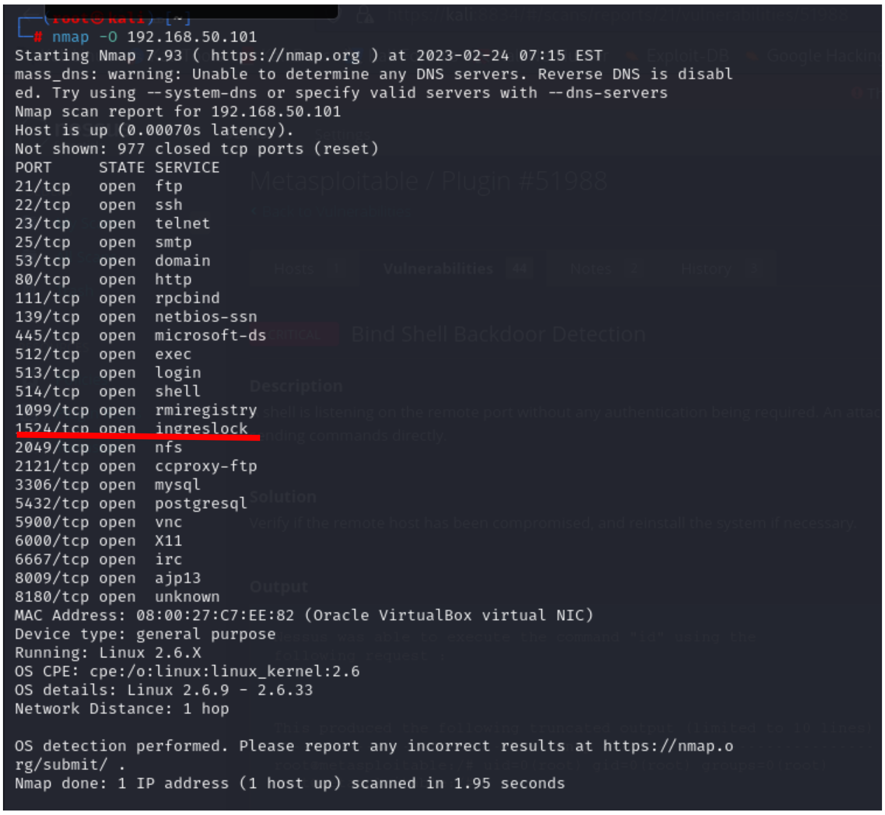
Apache TomCat AJP Connector Tequest Injection (GhostCat)

Ho ricercato il file di configurazione di TomCat e ho disabilitato il protocollo AJP



```
  GNU nano 2.0.7      File: /usr/share/tomcat5.5/conf/server.xml

               clientAuth="false" sslProtocol="TLS" />
    -->

   #<!-- Define an AJP 1.3 Connector on port 8009 -->
    <Connector port="8009"
               enableLookups="false" redirectPort="8443" protocol="AJP/1.3" />

    <!-- Define a Proxied HTTP/1.1 Connector on port 8082 -->
    <!-- See proxy documentation for more information about using this. -->
    <!--
    <Connector port="8082"
               maxThreads="150" minSpareThreads="25" maxSpareThreads="75"
               enableLookups="false" acceptCount="100" connectionTimeout="20000"
               proxyPort="80" disableUploadTimeout="true" />
    -->

    <!-- An Engine represents the entry point (within Catalina) that processes
         every request.  The Engine implementation for Tomcat stand alone
         analyzes the HTTP headers included with the request, and passes them
         on to the appropriate Host (virtual host). -->

^G Get Help  ^O WriteOut  ^R Read File ^Y Prev Page ^K Cut Text  ^C Cur Pos
^X Exit      ^J Justify   ^W Where Is  ^V Next Page ^U UnCut Text^T To Spell
```

Bind Shell Backdoor Detection

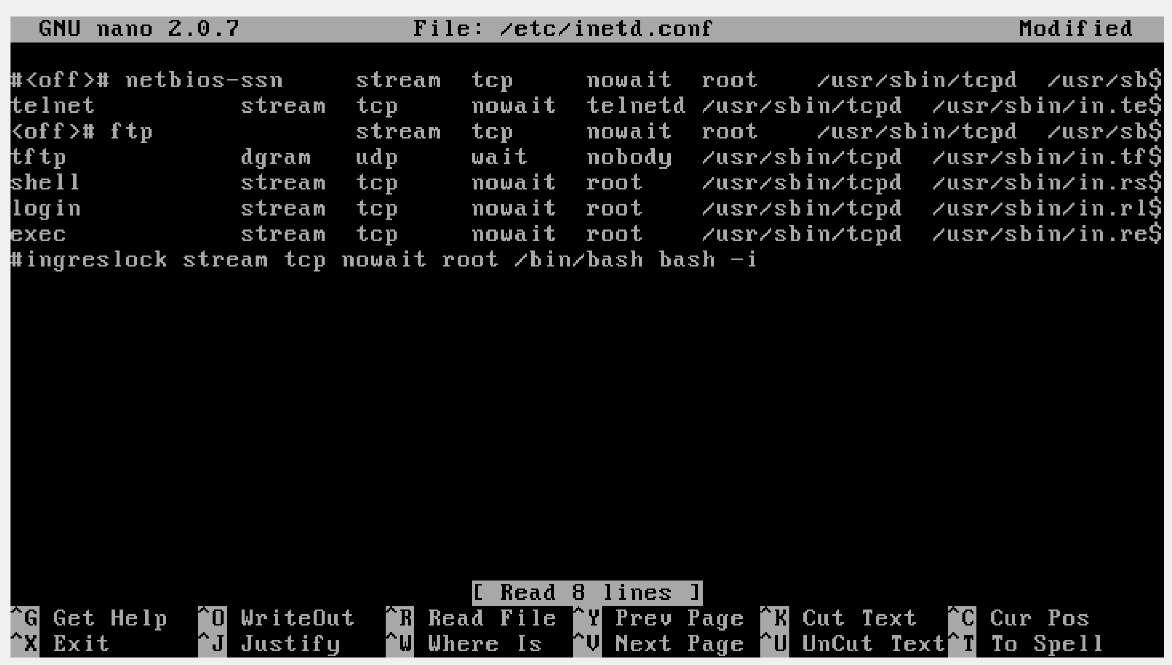


```
[redacted]
└─# nmap -O 192.168.50.101
Starting Nmap 7.93 ( https://nmap.org ) at 2023-02-24 07:15 EST
mass_dns: warning: Unable to determine any DNS servers. Reverse DNS is disabl
ed. Try using --system-dns or specify valid servers with --dns-servers
Nmap scan report for 192.168.50.101
Host is up (0.00070s latency).
Not shown: 977 closed tcp ports (reset)
PORT     STATE SERVICE
21/tcp   open  ftp
22/tcp   open  ssh
23/tcp   open  telnet
25/tcp   open  smtp
53/tcp   open  domain
80/tcp   open  http
111/tcp  open  rpcbind
139/tcp  open  netbios-ssn
445/tcp  open  microsoft-ds
512/tcp  open  exec
513/tcp  open  login
514/tcp  open  shell
1099/tcp open  rmiregistry
1524/tcp open  ingreslock
2049/tcp open  nfs
2121/tcp open  ccproxy-ftp
3306/tcp open  mysql
5432/tcp open  postgresql
5900/tcp open  vnc
6000/tcp open  X11
6667/tcp open  irc
8009/tcp open  ajp13
8180/tcp open  unknown
MAC Address: 08:00:27:C7:EE:82 (Oracle VirtualBox virtual NIC)
Device type: general purpose
Running: Linux 2.6.X
OS CPE: cpe:/o:linux:linux_kernel:2.6
OS details: Linux 2.6.9 - 2.6.33
Network Distance: 1 hop

OS detection performed. Please report any incorrect results at https://nmap.o
rg/submit/ .
Nmap done: 1 IP address (1 host up) scanned in 1.95 seconds
```

Ho cercato su internet una lista di probabili backdoor e ho trovato ingreslock.

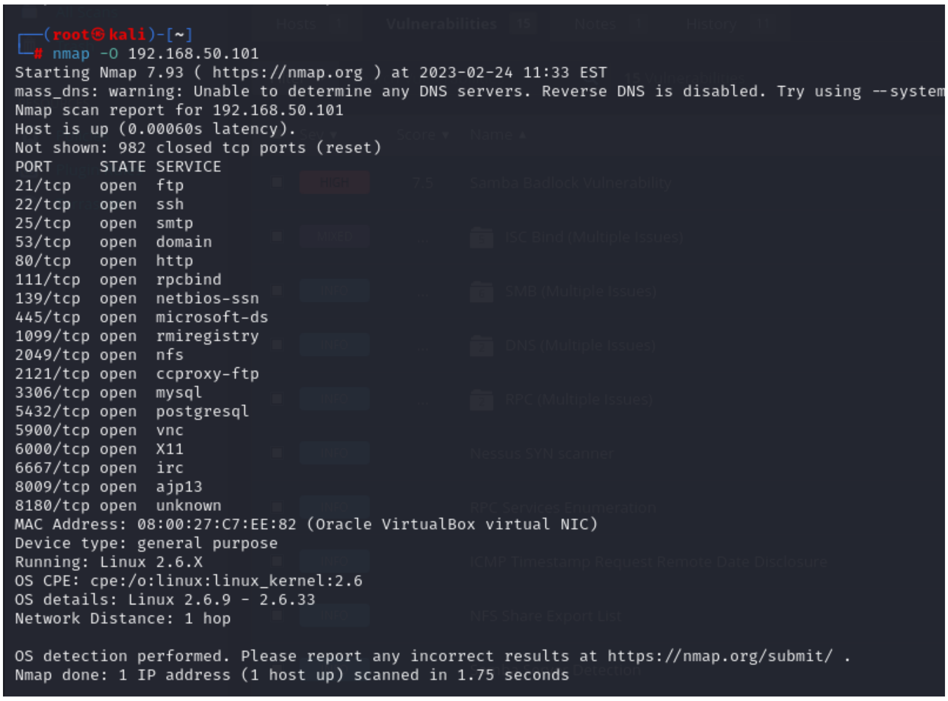
Ho cercato i servizi in ascolto.

Commento ingreslock che corrisponde al servizio trovato nella porta 1524



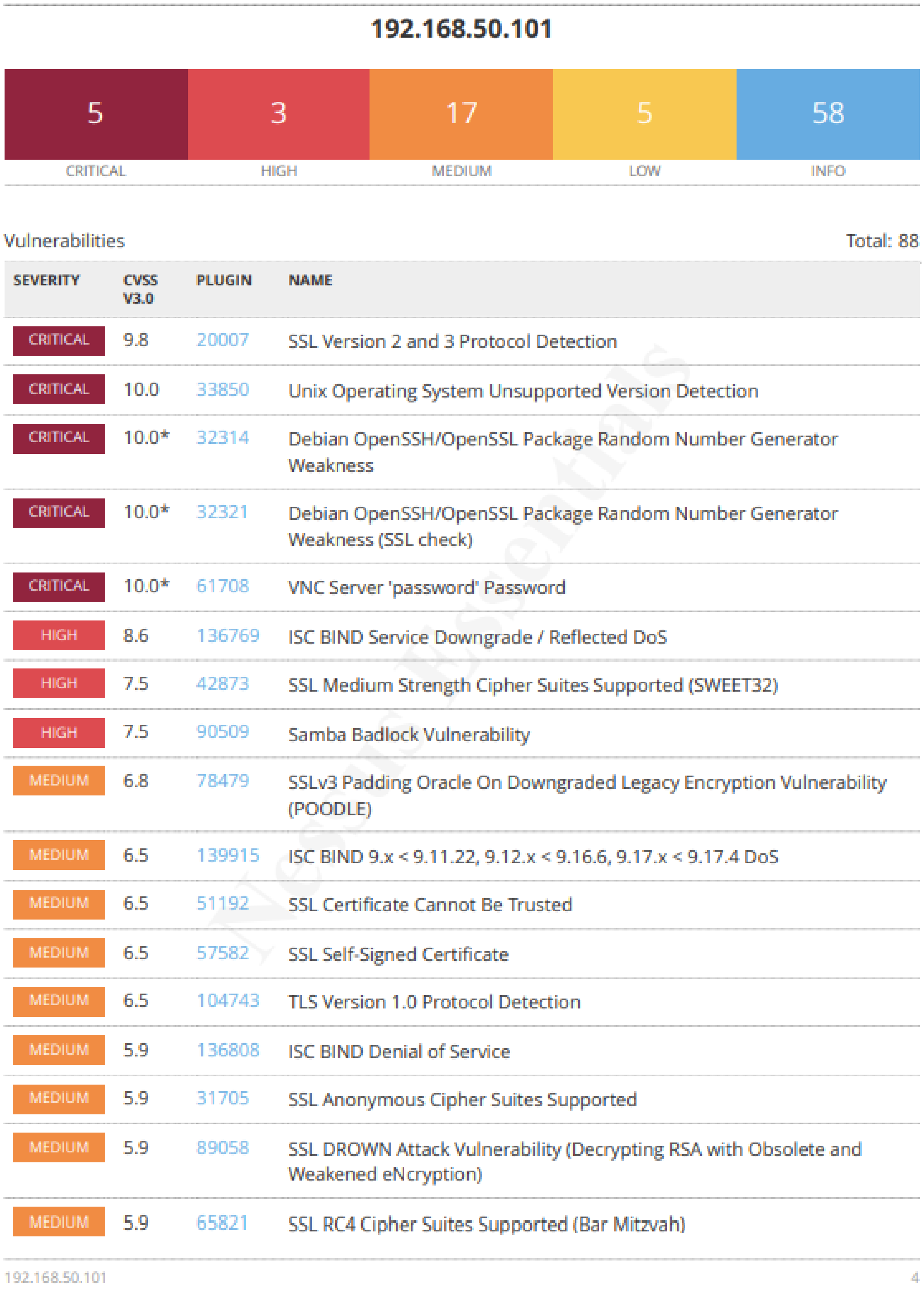
```
  GNU nano 2.0.7                File: /etc/inetd.conf                        Modified

#<off>#  netbios-ssn     stream  tcp     nowait  root    /usr/sbin/tcpd  /usr/sb$
telnet          stream  tcp     nowait  telnetd /usr/sbin/tcpd  /usr/sbin/in.te$
<off>#  ftp             stream  tcp     nowait  root    /usr/sbin/tcpd  /usr/sb$
tftp            dgram   udp     wait    nobody  /usr/sbin/tcpd  /usr/sbin/in.tf$
shell           stream  tcp     nowait  root    /usr/sbin/tcpd  /usr/sbin/in.rs$
login           stream  tcp     nowait  root    /usr/sbin/tcpd  /usr/sbin/in.rl$
exec            stream  tcp     nowait  root    /usr/sbin/tcpd  /usr/sbin/in.re$
#ingreslock stream tcp nowait root /bin/bash bash -i









                                [ Read 8 lines ]
^G Get Help   ^O WriteOut   ^R Read File  ^Y Prev Page  ^K Cut Text   ^C Cur Pos
^X Exit       ^J Justify    ^W Where Is   ^V Next Page  ^U UnCut Text^T To Spell
```

Nella nuova scansione non c’è più la porta 1524:



```
┌──(root㉿kali)-[~]
└─# nmap -O 192.168.50.101
Starting Nmap 7.93 ( https://nmap.org ) at 2023-02-24 11:33 EST
mass_dns: warning: Unable to determine any DNS servers. Reverse DNS is disabled. Try using --system
Nmap scan report for 192.168.50.101
Host is up (0.00060s latency).
Not shown: 982 closed tcp ports (reset)
PORT     STATE SERVICE
21/tcp   open  ftp
22/tcp   open  ssh
25/tcp   open  smtp
53/tcp   open  domain
80/tcp   open  http
111/tcp  open  rpcbind
139/tcp  open  netbios-ssn
445/tcp  open  microsoft-ds
1099/tcp open  rmiregistry
2049/tcp open  nfs
2121/tcp open  ccproxy-ftp
3306/tcp open  mysql
5432/tcp open  postgresql
5900/tcp open  vnc
6000/tcp open  X11
6667/tcp open  irc
8009/tcp open  ajp13
8180/tcp open  unknown
MAC Address: 08:00:27:C7:EE:82 (Oracle VirtualBox virtual NIC)
Device type: general purpose
Running: Linux 2.6.X
OS CPE: cpe:/o:linux:linux_kernel:2.6
OS details: Linux 2.6.9 - 2.6.33
Network Distance: 1 hop

OS detection performed. Please report any incorrect results at https://nmap.org/submit/ .
Nmap done: 1 IP address (1 host up) scanned in 1.75 seconds
```

SCANSIONE FINALE:



192.168.50.101

5	3	17	5	58
CRITICAL	HIGH	MEDIUM	LOW	INFO

Vulnerabilities Total: 88

SEVERITY	CVSS V3.0	PLUGIN	NAME
CRITICAL	9.8	20007	SSL Version 2 and 3 Protocol Detection
CRITICAL	10.0	33850	Unix Operating System Unsupported Version Detection
CRITICAL	10.0*	32314	Debian OpenSSH/OpenSSL Package Random Number Generator Weakness
CRITICAL	10.0*	32321	Debian OpenSSH/OpenSSL Package Random Number Generator Weakness (SSL check)
CRITICAL	10.0*	61708	VNC Server 'password' Password
HIGH	8.6	136769	ISC BIND Service Downgrade / Reflected DoS
HIGH	7.5	42873	SSL Medium Strength Cipher Suites Supported (SWEET32)
HIGH	7.5	90509	Samba Badlock Vulnerability
MEDIUM	6.8	78479	SSLv3 Padding Oracle On Downgraded Legacy Encryption Vulnerability (POODLE)
MEDIUM	6.5	139915	ISC BIND 9.x < 9.11.22, 9.12.x < 9.16.6, 9.17.x < 9.17.4 DoS
MEDIUM	6.5	51192	SSL Certificate Cannot Be Trusted
MEDIUM	6.5	57582	SSL Self-Signed Certificate
MEDIUM	6.5	104743	TLS Version 1.0 Protocol Detection
MEDIUM	5.9	136808	ISC BIND Denial of Service
MEDIUM	5.9	31705	SSL Anonymous Cipher Suites Supported
MEDIUM	5.9	89058	SSL DROWN Attack Vulnerability (Decrypting RSA with Obsolete and Weakened eNcryption)
MEDIUM	5.9	65821	SSL RC4 Cipher Suites Supported (Bar Mitzvah)