NorseRage Installation Guides

Linux Edition

Contents

Artillery

https://github.com/BinaryDefense/artillery

Description

The purpose of Artillery is to provide a combination of honeypot, file-system monitoring, system hardening, real-time threat intelligence feed, and overall health of a server monitoring-tool; to create a comprehensive way to secure a system. Project Artillery was written to be an addition to security on a server and make it very difficult for attackers to penetrate a system. The concept is simple: project Artillery will monitor the filesystem looking for indicators of change. If one is detected, an email is sent to the server owner. Artillery also listens for rogue connections. If detected, a notification is sent to the server owner, and the offending IP address is banned.

Install Location

`/var/artillery`

Config File Location

`/var/artillery/config`

Usage

All options are set in the configuration file so there are no command line arguments for Artillery.

```
/var/artillery$ sudo python3 artillery.py
```

Example 1: Running Artillery

Change to the install location and run Artillery.

```
/var/artillery$ sudo python3 artillery.py 2> /dev/null
```

Verify that Artillery is running by opening a new terminal and typing the following command. You should see that the python3 process is listening on a bunch of ports. These are the ports that are configured by default in the config file.

```
$ sudo netstat -nlp | grep python
```

```
    tcp  0  0  0.0.0.0:5900   0.0.0.0:*  LISTEN  9020/python3
    tcp  0  0  0.0.0.0:110    0.0.0.0:*  LISTEN  9020/python3
    tcp  0  0  0.0.0.0:10000  0.0.0.0:*  LISTEN  9020/python3
    tcp  0  0  0.0.0.0:8080   0.0.0.0:*  LISTEN  9020/python3
    tcp  0  0  0.0.0.0:21     0.0.0.0:*  LISTEN  9020/python3
```

```
tcp  0  0  0.0.0.0:1433   0.0.0.0:*  LISTEN  9020/python3
tcp  0  0  0.0.0.0:1337   0.0.0.0:*  LISTEN  9020/python3
tcp  0  0  0.0.0.0:25     0.0.0.0:*  LISTEN  9020/python3
tcp  0  0  0.0.0.0:44443  0.0.0.0:*  LISTEN  9020/python3
tcp  0  0  0.0.0.0:1723   0.0.0.0:*  LISTEN  9020/python3
tcp  0  0  0.0.0.0:445    0.0.0.0:*  LISTEN  9020/python3
tcp  0  0  0.0.0.0:3389   0.0.0.0:*  LISTEN  9020/python3
tcp  0  0  0.0.0.0:135    0.0.0.0:*  LISTEN  9020/python3
tcp  0  0  0.0.0.0:5800   0.0.0.0:*  LISTEN  9020/python3
```

Example 2: Triggering a Honeyport

Start Artillery as in Example 1. Then find the IP address of the machine by using ifconfig.

```
$ ifconfig
```

```
eth0    Link encap:Ethernet  HWaddr 00:0c:29:6c:14:79
        inet addr:192.168.1.137  Bcast:192.168.1.255  Mask:255.255.255.0
        inet6 addr: fe80::20c:29ff:fe6c:1479/64 Scope:Link
        UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
        RX packets:136005 errors:0 dropped:0 overruns:0 frame:0
        TX packets:59528 errors:0 dropped:0 overruns:0 carrier:0
        collisions:0 txqueuelen:1000
        RX bytes:146777599 (146.7 MB)  TX bytes:7955605 (7.9 MB)
        Interrupt:19 Base address:0x2000

lo      Link encap:Local Loopback
        inet addr:127.0.0.1  Mask:255.0.0.0
        inet6 addr: ::1/128 Scope:Host
        UP LOOPBACK RUNNING  MTU:16436  Metric:1
        RX packets:12930 errors:0 dropped:0 overruns:0 frame:0
        TX packets:12930 errors:0 dropped:0 overruns:0 carrier:0
        collisions:0 txqueuelen:0
        RX bytes:3413486 (3.4 MB)  TX bytes:3413486 (3.4 MB)
```

In this case the IP address for the machine is 192.168.1.137. Now, using another machine and either netcat or telnet, connect to the ADHD machine on port 21. Port 21 is one of the ports Artillery is monitoring.

NOTE: You may want to mute your speakers before running this command if you are in a place where you could disturb others.

```
$ telnet 192.168.1.137 21
```

```
Trying 192.168.1.137...
Connected to ubuntu.
Escape character is '^]'.
?Q???y{+g??□g?gF?=?>??~??$}k????KU??M
<<<snip>>>
?????P??N?+???T?Z???~0?Connection closed by foreign host.
```

The reason for muting your speakers should be apparent now. Artillery sends a bunch of garbage characters when a connection is made. Some of these characters are usually ASCII bell characters that will make your computer ding a whole lot.

The result of our connection attempt should be that Artillery automatically blocked all connections from the remote IP address. Try connecting again to the ADHD machine using either telnet or netcat.

```
$ telnet 192.168.1.137 21
```

```
Trying 192.168.1.137...
telnet: connect to address 192.168.1.137: Operation timed out
telnet: Unable to connect to remote host
```

As you can see the connection timed out, indicating that we no longer have access from the remote host we are currently using.

NOTE: If you try to do this using another terminal within ADHD, this will not work. Artillery whitelists local connections so you can't block 127.0.0.1.

Back on ADHD, open up a new terminal and check syslog for Artillery's logs.

```
$ tail /var/log/syslog | grep Artillery
```

```
<<<snip>>>
```

```
    Feb 12 13:38:17 ubuntu 2014-02-12 13:38:17.957044 [!] Artillery has blocked (and
blacklisted the IP Address: 192.168.1.193 for connecting to a honeypot restricted por
t: 445
```

At the end of the output you should see a log entry similar to the above. Note the IP address as we will now undo the ban Artillery put into place. In this instance, the remote IP address is 192.168.1.193.

```
/var/artillery$ sudo python3 remove_ban.py 192.168.1.193
```

```
    Listing all iptables looking for a match... if there is a massive amount of block
ed IP's this could take a few minutes..

    1
```

If for some reason the script doesn't work, try running it a few times to unban your IP, or simply flush iptables like so:

```
/var/artillery$ sudo iptables -F
```

It should be noted that the above command will remove all iptables rules.

Example 3: Adding a File to a Watched Directory

Start Artillery as in [Example 1: Running Artillery]. Open up a new terminal and add a new file into a watched directory.

```
$ sudo touch /var/www/bad_file
```

Artillery is set up to check for changes every 60 seconds by default so the log file may not show the change immediately. Watch for the change by typing the following command.

```
$ watch tail -n 15 /var/log/syslog
```

And look for output similar to the following.

```
    ********************************************************************

    The following changes were detected at 2013-01-15 21:15:38.541391

    ********************************************************************

    1a2

    > /var/www/bad_file: cf83e1357eefb8bdf1542850d66d8007d620e4050b5715dc83f4a921d36c
e9ce47d0d13c5d85f2b0ff8318d2877eec2f63b931bd47417a81a538327af927da3e


    ************************** End of changes. ***************************
```

Bear Trap

https://github.com/chrisbdaemon/BearTrap

Description

BearTrap is meant to be a portable network defense utility written entirely in Ruby. It opens "trigger" ports on the host that an attacker would connect to. When the attacker connects and/or performs some interactions with the trigger an alert is raised and the attacker's IP address is potentially blacklisted.

Install Location

`/opt/beartrap/`

Config Location

`/opt/beartrap/config.yml`

Usage

`/opt/beartrap$` **`sudo ruby bear_trap.rb`**

```
    BearTrap v0.2-beta

    Usage: bear_trap.rb [-vd] -c <config file>

    OPTIONS:

    --config  -c <config file>    Filename to load configuration from [REQUIRED]

    --verbose -v                  Verbose output

    --debug   -d                  Debug output (very noisy)

--timeout -t              Ban timeout in seconds
```

Example 1: Basic Usage

Change into the Bear Trap install directory and start Bear Trap.

`/opt/beartrap$` **`sudo ruby bear_trap.rb -c config.yml -t 600`**

Now find the ADHD machine's IP address by opening a new terminal and using ifconfig.

`$` **`ifconfig`**

```
    eth0    Link encap:Ethernet  HWaddr 00:0c:29:6c:14:79

            inet addr:192.168.1.137  Bcast:192.168.1.255  Mask:255.255.255.0

            inet6 addr: fe80::20c:29ff:fe6c:1479/64 Scope:Link

            UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1

            RX packets:115178 errors:0 dropped:0 overruns:0 frame:0
```

```
          TX packets:43571 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:104926397 (104.9 MB)  TX bytes:4321023 (4.3 MB)
          Interrupt:19 Base address:0x2000
```

Here the IP is 192.168.1.137. From a remote computer use FTP to connect to the ADHD machine. If it asks for a username, it doesn't matter what you type as Bear Trap doesn't actually implement a real FTP server. 'adhd' is used in the example below.

```
$ ftp 192.168.1.137
```

```
Connected to 192.168.1.137.
220 BearTrap-ftpd Service ready
Name (192.168.1.137): adhd
421 Service not available, remote server has closed connection.
ftp: Login failed
```

As you can see, the login failed. Type `quit` to exit the FTP client.

```
ftp\> quit
```

Back in your Bear Trap terminal, you should see new output similar to below. Bear Trap automatically blocked your remote IP address (in this case 192.168.1.194) using iptables.

```
Command: /sbin/iptables -A INPUT -s 192.168.1.194 -j DROP
```

If you try to connect again using FTP from your remote computer, the operation will time out.

```
$ ftp 192.168.1.137
```

```
ftp: Can't connect to '192.168.1.137': Operation timed out
ftp: Can't connect to '192.168.1.137'
```

To unblock the remote computer, open a new terminal on the ADHD machine and type the following iptables command, substituting in your remote IP address.

```
$ sudo iptables -D INPUT -s 192.168.1.194 -j DROP
```

Or since we set the -t option in our command (ban timeout) you can just wait for the ban to expire after 10 minutes.

Cryptolocked

https://bitbucket.org/Zaeyx/cryptolocked

Description

Cryptolocked is a file system integrity failsafe. That is, it monitors your file system for unauthorized modification. And will trigger failsafe countermeasures in the event of an unauthorized modification of your filesystem.

Cryptolocked was developed initially as a response to Crypto based ransomware like Cryptolocker.

Cryptolocked uses tripfiles, special files that should never be otherwise modified. It monitors these files for modification or destruction. The current countermeasures include shutdown, email alerts, and a simulated countermeasure (for testing purposes).

Install Location

`/opt/cryptolocked/`

Usage

To run Cryptolocked navigate to the install location and run the tool as follows.

```
~$ cd /opt/cryptolocked
```

```
/opt/cryptolocked$ sudo python2 ./cryptolocked.py
```

This will start Cryptolocked in basic, unarmed mode. This means that only an alert will be sent, no other actions will be performed if the tripfile is accessed.

To trigger the simulated failsafe, either modify or delete the tripfile (test.txt) located in the directory from which you ran Cryptolocked.
Let's trigger the failsafe.

```
/opt/cryptolocked$ sudo rm -f test.txt
```

Note in Example 4 that the script requires access to a gmail account. Some accounts will restrict this and Cryptolock will crash. To remove this restriction, log into the listening gmail account, go to https://www.google.com/settings/security/lesssecureapps, and 'Turn On' access for less secure apps.

Example 1: Debug Mode

From here on out, we will be calling Cryptolocked as root.
To su to root simply and then cd to /opt/cryptolocked:

```
~$ sudo su -
```

Cryptolocked comes with a debug mode. It is important to run this debug mode before arming the tool. Debug mode is run to make sure that there are no file permission errors or other such things that may cause an unnecessary triggering of the failsafe.

To debug Cryptolocked simply add the word "debug" when calling the program from the command line.

```
/opt/cryptolocked# python2 ./cryptolocked.py debug
```

```
    Checking if file exists:        True
    Checking if file created:       True
    Checking if file written:       True
    Checking if file destroyed:     True
    If all "True" functionality is good
```

Example 2: Arming Cryptolocked

Cryptolocked starts unarmed by default. This is to make sure that if using destructive or dangerous countermeasures, you must explicitely activiate them.

To arm Cryptolocked simply add the word "armed" when calling the program from the command line.

```
/opt/cryptolocked# python2 ./cryptolocked.py armed
```

```
    Checking if tripfile test.txt exists:        False
    tripfile Instantiated
```

Now, if the tripfile is modified or destroyed, the countermeasures selected inside of the file (cryptolocked.py) via configuration will be executed. By default, this will be to shutdown your system to prevent further tampering.

Example 3: Cryptolocked's Tentacles

By default Cryptolocked only deploys one tripfile (test.txt). This can be remedied by activating the "tentacles" mode. This mode increases the number and complexity of the tripfiles; burrowing deeper into the operating system and increasing the likelihood of successful monitoring.

To activate tentacles mode simply add the word "tentacles" when calling Cryptolocked from the command line.

```
/opt/cryptolocked# python2 ./cryptolocked.py tentacles
```

It is important to note, that you can only use one command line argument at a time with Cryptolocked. As such, if you desire to run tentacles in the armed state, you will need to modify the file Cryptolocked.py and change the line `armed_state=False` to `armed_state=True`

Alternatively, you can edit the file cryptolocked.py and change the line `tentacles = False` to `tentacles = True` and run with the command line argument "armed".

Example 4: Email Alerts

In addition to shutting the system down in the event of failsafe activation Cryptolocked can email you to notify you of the event.

To configure email alerts you will need at least one gmail account.

Open the file /opt/cryptolocked/cryptolocked.py

Modify these lines with the credentials and address to the gmail account:

```
    fromaddr = "user@gmail.com"

    username = 'username'

    password = 'password'
```

Next you will add the "**to**" address, this can be the same address as the "**from**" but doesn't have to be:

```
    toaddr = "user@domain.com"
```

To activate email alerts, simply change this line from `False` to `True`:

```
    alerts_enabled=False
```

Finally, you may choose to send, or withhold potentially sensitive operating system information:

```
    sensitive_alerts=True
```

(True is the default, set to False if you are dealing with a sensitive system and do not want OS details in your email.)

DenyHosts

http://denyhosts.sourceforge.net

Description

DenyHosts is a Python script written by Phil Schwartz that analyzes your service logs to uncover attempts to hack into your system. Upon discovering a repeatedly malicious host, the `/etc/hosts.deny` file is updated to prevent future break-in attempts from that host.

Install Location

`/opt/denyhosts`

`/usr/share/denyhosts/`

Example 1: Installing DenyHosts

```
~$ sudo apt-get install denyhosts
```

It really doesn't get much simpler than that.

Example 2: Enabling DenyHosts

To enable DenyHosts, simply start its service.

```
~$ sudo /etc/init.d/denyhosts start
```

Example 3: Basic Configuration

A majority of DenyHosts' configurations can be made by editing the configuration file `/etc/denyhosts.conf`.

DenyHosts makes use of the default Linux whitelist and blacklist.

With a blacklisting service like DenyHosts it can be incredibly important to properly configure your whitelist prior to launch.

The default whitelist file for Linux is `/etc/hosts.allow` (this can be changed in the DenyHosts conf file).

The rule structure is the same for the files `/etc/hosts.deny` (blacklist) and `/etc/hosts.allow` (whitelist).

The pattern is `<service> : <host>`

You will have to be root to run any of the following commands by default.

So for example, if you wanted to allow access to a vsftp service for connections from '192.168.1.1':

```
~$ sudo su
```

```
~# echo “vsftpd : 192.168.1.1” >> /etc/hosts.allow
```

To whitelist a specific host's connection to all services (example: 192.168.1.1):

```
~# echo “ALL : 192.168.1.1” >> /etc/hosts.allow
```

The `ALL` selector can also be used to whitelist or blacklist all hosts on a specific service:

```
~# echo “sshd : ALL” >> /etc/hosts.allow
```

HoneyPorts

https://code.google.com/p/honeyports/

Description

A Python based cross-platform HoneyPort solution, created by Paul Asadoorian.

Install Location

`/opt/honeyports/cross-platform/honeyports/`

Usage

Change to the Honeyports directory and execute the latest version of the script:

```
~$ cd /opt/honeyports/cross-platform/honeyports
```

```
/opt/honeyports/cross-platform/honeyports$ python2 ./honeyports-0.4a.py
```

```
    Usage: honeyports-0.4a.py -p port
    Please specify a valid port range (1-65535) using the -p option
```

Example 1: Monitoring A Port With HoneyPorts

From the honeyports directory, run:

```
/opt/honeyports/cross-platform/honeyports$ sudo python2 ./honeyports-0.4a.py -p 3389
```

```
    Listening on  0.0.0.0 IP:  0.0.0.0  :  3389
```

We can confirm that the listening is taking place with lsof:

```
/opt/honeyports/cross-platform/honeyports$ sudo lsof -i -P | grep python
```

```
    python   26560     root    3r  IPv4 493595      0t0  TCP *:3389 (LISTEN)
```

Looks like we're good.

Any connection attempts to that port will result in an instant ban for the IP address in question. Let's simulate this next.

Example 2: Blacklisting In Action

If Honeyports is not listening on 3389 please follow the instructions in [Example 1: Monitoring A Port With HoneyPorts].

Once you have Honeyports online and a backup Windows machine to connect to Honeyports from, let's proceed.

First we need to get the IP address of the ADHD instance.

```
~$ ifconfig
```

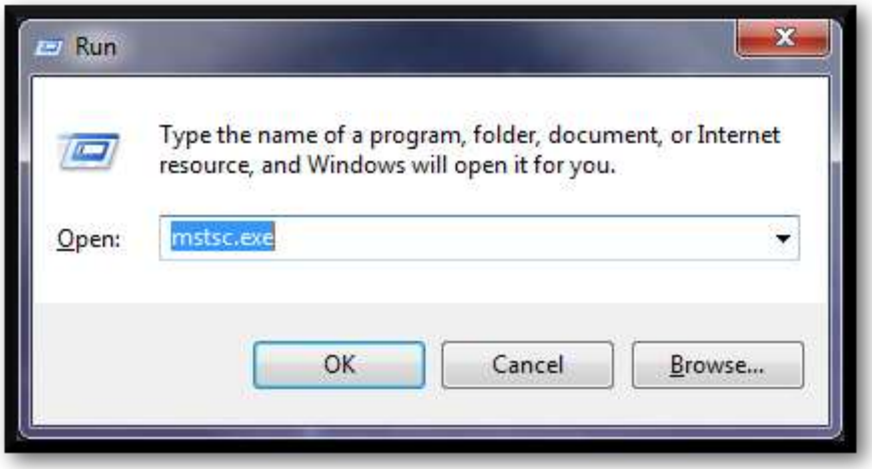
```
    eth0      Link encap:Ethernet  HWaddr 08:00:27:65:3c:64
              inet addr:192.168.1.109  Bcast:192.168.1.255  Mask:255.255.255.0
              inet6 addr: fe80::a00:27ff:fe65:3c64/64 Scope:Link
              UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
              RX packets:46622 errors:0 dropped:0 overruns:0 frame:0
              TX packets:8298 errors:0 dropped:0 overruns:0 carrier:0
              collisions:0 txqueuelen:1000
              RX bytes:14057203 (14.0 MB)  TX bytes:2659309 (2.6 MB)

    lo        Link encap:Local Loopback
              inet addr:127.0.0.1  Mask:255.0.0.0
              inet6 addr: ::1/128 Scope:Host
              UP LOOPBACK RUNNING  MTU:16436  Metric:1
              RX packets:94405 errors:0 dropped:0 overruns:0 frame:0
               TX packets:94405 errors:0 dropped:0 overruns:0 carrier:0
                 collisions:0 txqueuelen:0
              RX bytes:37127292 (37.1 MB)  TX bytes:37127292 (37.1 MB)
```

We can see from the ifconfig output that my ADHD instance has an IP of 192.168.1.109

I will connect to that IP on port 3389 from a box on the same network segment in order to test the functionality of Honeyports.

I will be using RDP to make the connection.

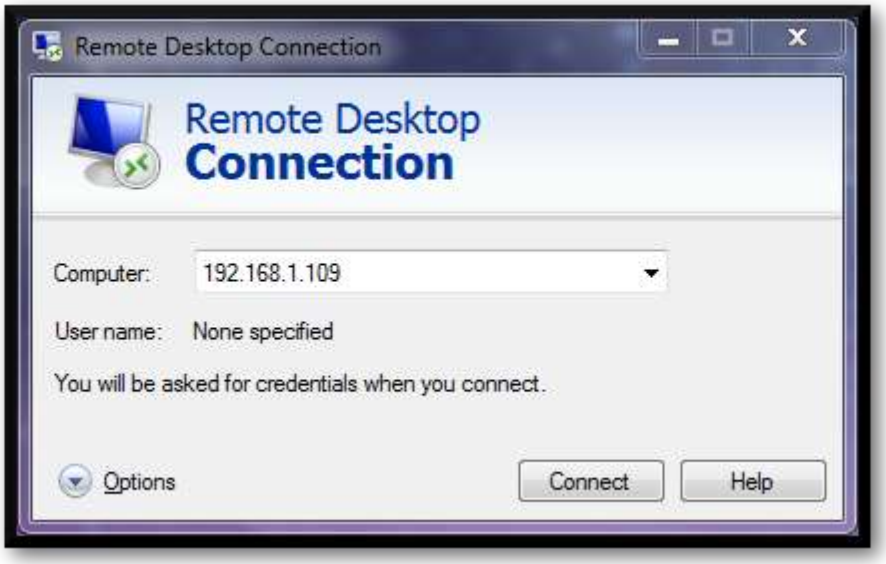
To open Remote Desktop hit `Windows Key + R` and input `mstsc.exe` before hitting OK.



Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.

Open: mstsc.exe

Next simply tell RDP to connect to your machine's IP address.

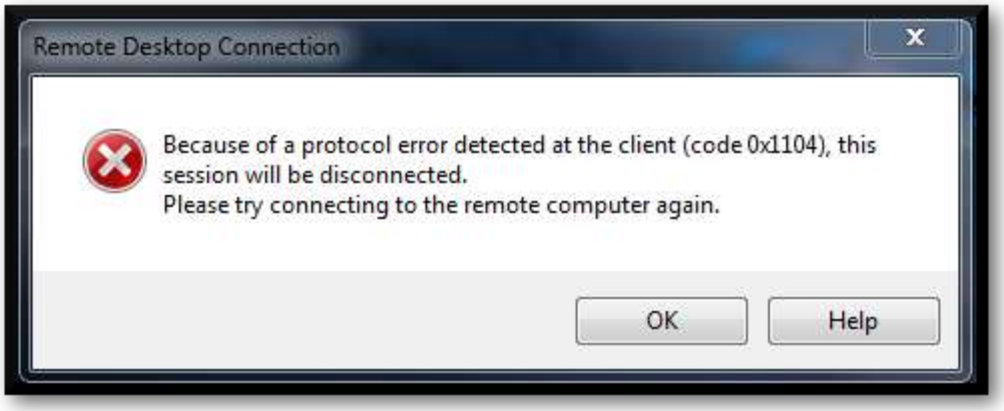


Computer: 192.168.1.109

User name: None specified

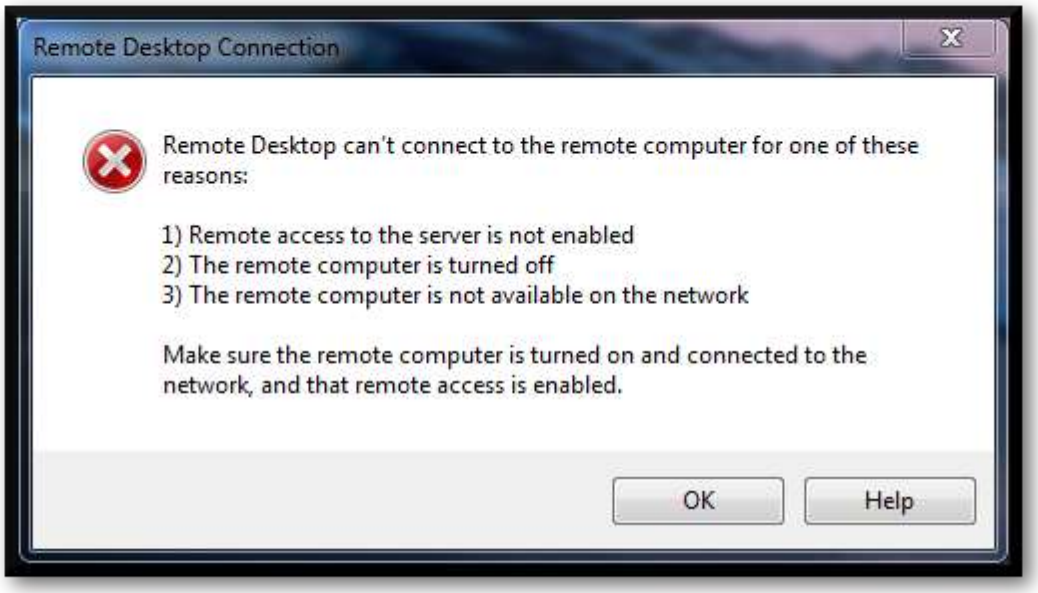
You will be asked for credentials when you connect.

We get an almost immediate error, this is a great sign that Honeyports is doing its job.


Remote Desktop Connection

Because of a protocol error detected at the client (code 0x1104), this session will be disconnected.
Please try connecting to the remote computer again.

Any subsequent connection attempts are met with failure.


Remote Desktop Connection

Remote Desktop can't connect to the remote computer for one of these reasons:

1) Remote access to the server is not enabled
2) The remote computer is turned off
3) The remote computer is not available on the network

Make sure the remote computer is turned on and connected to the network, and that remote access is enabled.

And we can confirm back inside our ADHD instance that the IP was blocked.

```
~$ sudo iptables -L
```

```
    Chain INPUT (policy ACCEPT)

    target     prot opt source               destination

    REJECT     all  --  192.168.1.149        anywhere            reject-with icmp-po
rt-unreachable


    Chain FORWARD (policy ACCEPT)

    target     prot opt source               destination
```

```
Chain OUTPUT (policy ACCEPT)
target     prot opt source               destination

Chain ARTILLERY (0 references)
target     prot opt source               destination
```

You can clearly see the REJECT policy for 192.168.1.149 (The address I was connecting from).

To remove this rule we can either:

```
~$ sudo iptables -D INPUT -s 192.168.1.149 -j REJECT
```

Or Flush all the rules:

```
~$ sudo iptables -F
```

Example 3: Spoofing TCP Connect for Denial Of Service

Honeyports are designed to only properly respond to and block full TCP connects. This is done to make it difficult for an attacker to spoof being someone else and trick the Honeyport into blocking the spoofed address. TCP connections are difficult to spoof if the communicating hosts properly implement secure (hard to guess) sequence numbers. Of course, if the attacker can "become" the host they wish to spoof, there isn't much you can do to stop them.

This example will demonstrate how to spoof a TCP connect as someone else, for the purposes of helping you learn to recognize the limitations of Honeyports.

If you can convince the host running Honeyports that you are the target machine, you can send packets as the target. We will accomplish this through a MITM attack using ARP Spoofing.

Let's assume we have two different machines, they may be either physical or virtual.
One must be your ADHD machine running Honeyports, the other for this example will be a Kali box.
They must both be on the same subnet.

Note: Newer Linux operating systems like ADHD often have builtin protection against this attack.
This protection mechanism is found in **/proc/sys/net/ipv4/conf/all/arp_accept**. A **1** in this file means that ADHD is configured to accept unsolicited ARP responses. You can set this value by running the following command as root `echo 1 > /proc/sys/net/ipv4/conf/all/arp_accept`

If our ADHD machine (running the Honeyports) is at 192.168.1.144 and we want to spoof 192.168.1.1

Let's start by performing our MITM attack.

```
~# arpspoof -i eth0 -t 192.168.1.144 192.168.1.1 2>/dev/null &
~# arpspoof -i eth0 -t 192.168.1.1 192.168.1.144 2>/dev/null &
```

If you want to confirm that the MITM attack is working first find the MAC address of the Kali box.

```
~# ifconfig -a | head -n 1 | awk '{print $5}'
```

```
    00:0c:29:40:1c:d3
```

Then on the ADHD machine run this command to determine the current mapping of IPs to MACs.

```
~# arp -a
```

Look to see if the IP you are attempting to spoof is mapped to the MAC address from the previous step.

Once we have properly performed our arpspoof we will move on to assigning a temporary IP to the Kali machine.

This will convince the Kali machine to send packets as the spoofed host.

```
~# ifconfig eth0:0 192.168.1.1 netmask 255.255.255.0 up
```

The last step is to connect from the Kali box to the ADHD machine on a Honeyport, as 192.168.1.1

For this example, lets say that port 3389 is a Honeyport as we used before in [Example 1: Monitoring A Port With HoneyPorts].

```
~# nc 192.168.1.144 3389 -s 192.168.1.1
```

It's that easy, if you list the firewall rules of the ADHD machine you should find a rule rejecting connections from 192.168.1.1

Mitigation of this vulnerability can be accomplished with either MITM protections, or careful monitoring of the created firewall rules.

Human.py

https://bitbucket.org/Zaeyx/human.py

Description

Human.py (Aka human pie) is a script made for the sole purpose of detecting human usage of service accounts. You can set it up to watch accounts you suspect may be attacked.
The assumption is that the account is only used by a service (or services) and should not be accessed by a human user. If a human user does however manage to compromise the account this script can detect human activity by watching for indicators of such (like mistyped commands).

Install Location

`/opt/human.py/`

Usage

Running Human.py couldn't be easier, simply cd to the correct directory.

```
~$ cd /opt/human.py
```

When we try to just run the application we see that it needs to be run as root.

```
/opt/human.py$ python ./human.py
```

```
    Please run only as root
    I want good privilage separation with these log files
```

To run as root, just simply:

```
/opt/human.py$ sudo python ./human.py
```

This will show you the very very simple help dialog.

```
    Human identification on service accounts
    Proper Usage
    ./human.py <username_to_monitor>
    or
    ./human.py <username_to_stop_monitoring> stop
```

Example 1: Setting up Monitoring on a service account

NOTE: From this point on all commands in this tutorial will be run as root. To become root as a normal user with sudo privileges execute this command `sudo su -`

To set up monitoring on a service account run the tool with the name of the account as the first command line argument.

NOTE: For this example I used the postgres account as my target. You may or may not have this account on your machine. Feel free to just use your personal user as the target.

```
/opt/human.py# python ./human.py postgres
```

```
    Starting mon service
    NO ALERT SERVICE ATTACHED
    ALERTS WILL BE PIPED TO STDOUT
```

The quasi error we can see in the output simply tells us that there is no dedicated alert service attached. As such, alerts will appear in the output of the command. If we want to, we can enable dedicated alerts via email by editing human.py and setting the proper variables.

At this point, if a human makes an error while using the monitored account, an alert will appear in our output.
Alert is acting like a human.

NOTE: This tool can only be used on accounts to whom the right to run the bash shell is given. To see which accounts on your machine can run with the bash shell run the following command `grep bash /etc/passwd`

Example 2: Cancelling monitoring and purging records.

human.py creates a log file for all activity on a monitored account. By default it is expected that you will only ever run human.py as root. The file permissions are set to only allow the user access to this sensitive file.

Human.py also sets the targeted account's bashrc to configure the account's shell to output errors to this log file.

Both of these two changes are reversed when you cancel monitoring.

To cancel monitoring, simply run the script in another terminal with the account name as the first argument and the word "stop" as the second.

```
/opt/human.py# python ./human.py postgres stop
```

```
User Monitoring already configured
Proceeding with monitoring.
Ending monitoring of User.
```

This will delete the log file of the account. Because of this, the terminal that was running human.py will repeatedly output that the file is missing. Just Ctrl-c to stop it.

```
cat: /var/log/human/postgres: No such file or directory
```

Invisiport

https://bitbucket.org/Zaeyx/invisiport

Description

Invisiport is an evolution to the honeyports concept. With honeyports, it is decently obvious when you trigger the defenses, as the host you

scanned will drop away. (That is, it will start refusing connections from you).
This can lead an attacker to simply bypass the blacklist by changing his IP address.

But what if the attacker didn't know he had been blacklisted? In that case he
is less likely to even consider circumventing our defenses! And as long as he actually
is blocked, we're far more safe than before.

Invisiport accomplishes this by having a few different ports it listens on.
First it has a trigger port. This is the port that will trigger the block.
Just like with a traditional honeyport. Next it has a false portset. This is a
list of ports that invisiport will spoof listening on, to any clients that trigger a block.

That is, that anyone who connects to the listen port will be blacklisted. But from
their perspective, if they scan the host again, they will see the listen port, and the
false ports as still open and listening. That way, unless they're quite clever
they are unlikely to figure out that they have been blacklisted.

Install Location

`/opt/invisiport/`

Usage

Launching invisiport is very easy. Just cd into the directory.

```
~$ cd /opt/invisiport
```

And run the application

```
/opt/invisiport$ sudo python ./invisiport.py
```

You shouldn't see any output. But the terminal should hang. That's okay.
The script is running in the background with the default configurations.

At this point it is fully functional, and working to protect you.

Next we will cover how to customize the configurations.

Example 1: Customizing the Configurations

The configurations for invisiport are very easy to set. Simply
edit the variables at the front of the script to set their respective components.

Use your favorite text editor. Nano is a simple choice.

```
/opt/invisiport$ sudo nano invisiport.py
```

You can set the whitelist by editing the "whitelist" variable.
It is in a python list format. Just add another address in this format
to add to the whitelist. Any address on the whitelist cannot be blacklisted.

Next is the python list "ports" these are the ports that will be shown to
a blacklisted host as still open and available. You can set them to mimic whatever
you like. By default they mimic an ftp, http, and smb server.

The PORT variable is a simple integer variable. This sets the trigger/listen port
that will blacklist those connecting to it.

When you're all done you can write your changes in nano by hitting ctrl+o then enter. And exit with ctrl+x.
You can also configure the blacklist variable to change the blacklist file. This file
records all blacklisted hosts.

Kippo

https://code.google.com/p/kippo/

Description

Kippo is a medium interaction SSH honeypot designed to log brute force attacks and,
most importantly, the entire shell interaction performed by the attacker. Kippo is inspired,
but not based on Kojoney. (From Website)

Install Location

`/opt/kippo/`

Usage

Kippo is incredibly easy to use.

It basically has two parts you need to be aware of:

- A config file
- A launch script

The config file is located at

`/opt/kippo/kippo.cfg`

Example 1: Running Kippo

By default Kippo listens on port 2222 and emulates an ssh server.

To run Kippo, cd into the kippo directory and execute:

```
~$ cd /opt/kippo
~$ ./start.sh kippo_venv
```

```
    Starting kippo in the background...
```

NOTE: the option "kippo_venv" is simply specifying a python virtual environment for Kippo since it requires old python modules to be installed.

We can confirm Kippo is listening with lsof:

```
~$ lsof -i -P | grep twistd
```

```
    twistd  548 adhd    7u  IPv4 523637      0t0  TCP *:2222 (LISTEN)
```

Looks like we're good.

Example 2: Kippo In Action

Assuming Kippo is already running and listening on port 2222, (if not see [Example 1: Running Kippo]), we can now ssh to Kippo in order to see what an attacker would see.

```
~$ ssh -p 2222 localhost
```

```
    The authenticity of host '[localhost]:2222 ([127.0.0.1]:2222)' can't be establish
ed.
    RSA key fingerprint is 05:68:07:f9:47:79:b8:81:bd:8a:12:75:da:65:f2:d4.
    Are you sure you want to continue connecting (yes/no)? yes
    Warning: Permanently added '[localhost]:2222' (RSA) to the list of known hosts.
    Password:
    Password:
    Password:
    adhd@localhost's password:
    Permission denied, please try again.
```

It looks like our attempts to authenticate were met with failure.

Example 3: Viewing Kippo's Logs

Change into the Kippo log Directory:

```
~$ cd /opt/kippo/log
```

Now tail the contents of kippo.log:

```
/opt/kippo/log$ tail kippo.log
```

```
    2014-02-17 21:52:12-0700 [-] unauthorized login:
    2014-02-17 21:54:51-0700 [SSHService ssh-userauth on HoneyPotTransport,0,127.0.0.
1] adhd trying auth password
```

```
    2014-02-17 21:54:51-0700 [SSHService ssh-userauth on HoneyPotTransport,0,127.0.0.
1] login attempt [adhd/asdf] failed

    2014-02-17 21:54:52-0700 [-] adhd failed auth password

    2014-02-17 21:54:52-0700 [-] unauthorized login:

    2014-02-17 21:54:53-0700 [SSHService ssh-userauth on HoneyPotTransport,0,127.0.0.
1] adhd trying auth password

    2014-02-17 21:54:53-0700 [SSHService ssh-userauth on HoneyPotTransport,0,127.0.0.
1] login attempt [adhd/adhd] failed

    2014-02-17 21:54:54-0700 [-] adhd failed auth password

    2014-02-17 21:54:54-0700 [-] unauthorized login:

    2014-02-17 21:54:54-0700 [HoneyPotTransport,0,127.0.0.1] connection lost
```

Here we can clearly see my login attempts and the username/password combos I employed as I tried to gain access in [Example 2: Kippo In Action]. This could be very useful!

OsChameleon

https://github.com/zaeyx/oschameleon

Description

OsChameleon is a tool that hides the fingerprint of modern linux kernels from tools such as nmap.

Install Location

`/opt/oschameleon/`

Usage

Using oschameleon is incredibly easy. Simply cd into its directory:

```
$ cd /opt/oschameleon
```

And run the osfuscation.py script as root

```
$ sudo python ./osfuscation.py
```

It should hang, and you should see no output until someone attempts to scan you.When someone does scan you however, you will see a ton of output as the probes hit your machine and oschameleon responds.

Example 1: Scanning Yourself

For this example, you will need to have nmap installed. If you do not have it installed for some reason, you can get it via apt.

```
$ sudo apt-get install nmap
```

First, without oschameleon running, let's attempt to detect our OS.

Simply run:

```
$ sudo nmap -O localhost
```

It should take a minute. And then you'll get back an output that looks something like this.

```
    Starting Nmap 6.47 ( http://nmap.org ) at 2016-06-12 23:14 EDT

    Nmap scan report for localhost (127.0.0.1)

    Host is up (0.000020s latency).

    Not shown: 996 closed ports

    PORT     STATE SERVICE

    80/tcp     open  http

    3306/tcp open  mysql

    Device type: general purpose

    Running: Linux 3.X

    OS CPE: cpe:/o:linux:linux_kernel:3

    OS details: Linux 3.7 - 3.15

    Network Distance: 0 hops


    OS detection performed. Please report any incorrect results at http://nmap.org/su
bmit .

    Nmap done: 1 IP address (1 host up) scanned in 4.18 seconds
```

This is a pretty simple result we have here. You can see that nmap was able to fingerprint our system with ease (the lines in question being the ones "OS CPE" and "OS details").

Now let's run oschameleon and try again.

You'll need to open up a new terminal first. So you have two terminals open. One for oschameleon and one for nmap.

In your oschameleon terminal run these commands.

```
$ cd /opt/oschameleon
```

```
/opt/oschameleon$ sudo python ./osfuscation.py
```

It shouldn't show you any output yet.

Now in your second terminal run your nmap scan again.

```
$ sudo nmap -O localhost
```

You should notice oschameleon throwing output to the screen shortly after you begin the scan. Don't worry about this. This just shows us that the script is working. What we're more interested in right now is the result that nmap gives us when it's done.

Your exact result back from nmap map differ. But it should look quite different now.

```
    Starting Nmap 6.47 ( http://nmap.org ) at 2016-06-12 23:14 EDT
    Nmap scan report for localhost (127.0.0.1)
    Host is up (0.000020s latency).
    Not shown: 996 closed ports
    PORT     STATE SERVICE
    80/tcp   open  http
    3306/tcp open  mysql
    No exact OS matches for host (If you know what OS is running on it, see http://nm
ap.org/submit/ ).
```

This is what we're expecting (followed by a lengthy TCP/IP fingerprint section).

That's it. It's that simple. Just like that we've disguised our system.

PHP-HTTP-Tarpit

https://github.com/msigley/PHP-HTTP-Tarpit

Description

PHP-HTTP-Tarpit is a tool designed to confuse and trap misbeheaving webspiders. It accomplishes this task through a combination of log fuzzing, and error spoofing.

Install Location

`/opt/PHP-HTTP-Tarpit/`

Usage

Here's what you need to do in order to deploy the tarpit on your webapp. First you need to copy the file la_brea.php into a folder accessible to the clients of your web application. Next, Simply include a hidden reference to this page inside some portion of your application. This reference should be hidden so that no users accidentally stumble onto it. Something like a hidden link would be perfect. Something a web spider would want to check out.

Once you've done these two steps. You're golden.

Example 1: Deployment

To get started, for our example we will copy the tarpit into the web root of out web application.

```
$ sudo cp /opt/PHP-HTTP-Tarpit/la_brea.php /var/www/
```

Next we want to insert a reference into some portion of your web application that points to this file. For example, we might edit your application's index.php appending this line:

```
    <a href="/la_brea.php" ></a>
```

You may also want to chown the file to be owned by the web user.

```
$ sudo chown www-data:www-data /var/www/la_brea.php
```

It's that easy.

Portspoof

http://portspoof.org/

Description

Portspoof is meant to be a lightweight, fast, portable and secure addition to any firewall system or security system. The general goal of the program is to make the reconnaissance phase slow and bothersome for your attackers as much it is possible. This is quite a change to the standard aggressive Nmap scan, which will give a full view of your system's running services.

By using all of the techniques mentioned below:

- your attackers will have a tough time while trying to identify all of your listening services.
- the only way to determine if a service is emulated is through a protocol probe (imagine probing protocols for 65k open ports!).
- it takes more than 8 hours and 200MB of sent data in order to get all of the service banners for your system (nmap -sV -p - equivalent).

The Portspoof program's primary goal is to enhance OS security through a set of new techniques:

- All TCP ports are always open

Instead of informing an attacker that a particular port is CLOSED or FILTERED a system with Portspoof will return SYN+ACK for every port connection attempt.

As a result it is impractical to use stealth (SYN, ACK, etc.) port scanning against your system, since all ports are always reported as OPEN. With this approach it is really difficult to determine if a valid software is listening on a particular port (check out the screenshots).

- Every open TCP port emulates a service

Portspoof has a huge dynamic service signature database, which will be used to generate responses to your offenders scanning software service probes.

Scanning software usually tries to determine a service that is running on an open port. This step is mandatory if one would want to identify port numbers on which you are running your services on a system behind the Portspoof. For this reason Portspoof will respond to every service probe with a valid service signature, which is dynamically generated based on a service signature regular expression database.

As a result an attacker will not be able to determine which port numbers your system is truly using.

Install Location

`/usr/local/bin/portspoof`

Config File Location

`/usr/local/etc/portspoof.conf`
`/usr/local/etc/portspoof_signatures`

Usage

`~# portspoof -h`

```
Usage: portspoof [OPTION]...

Portspoof - service emulator / frontend exploitation framework.


-i              ip : Bind to a particular  IP address

-p              port : Bind to a particular PORT number

-s              file_path : Portspoof service signature regex. file

-c              file_path : Portspoof configuration file

-l              file_path : Log port scanning alerts to a file

-f              file_path : FUZZER_MODE - fuzzing payload file list

-n              file_path : FUZZER_MODE - wrapping signatures file list

-1              FUZZER_MODE - generate fuzzing payloads internally

-2              switch to simple reply mode (doesn't work for Nmap)!

-D              run as daemon process

-d              disable syslog

-v              be verbose

-h              display this help and exit
```

Example 1: Starting Portspoof

Portspoof, when run, listens on a single port. By default this is port 4444. In order to fool a port scan, we have to allow Portspoof to listen on *every* port. To accomplish this we will use an `iptables` command that redirects every packet sent to any port to port 4444 where the Portspoof port will be listening. This allows Portspoof to respond on any port.

```
~# iptables -t nat -A PREROUTING -p tcp -m tcp --dport 1:65535 -j REDIRECT --to-ports 4444
```

Then run Portspoof with no options, which defaults it to "open port" mode. This mode will just return OPEN state for every connection attempt.

```
~# portspoof
```

If you were to scan using Nmap from another machine now you would see something like this:

Note: You *must* run Nmap from a different machine. Scanning from the same machine will not reach Portspoof.

```
~# nmap -p 1-20 172.16.215.138
```

```
Starting Nmap 6.47 ( http://nmap.org )
Nmap scan report for 172.16.215.138
Host is up (0.0018s latency).
PORT   STATE SERVICE
1/tcp  open  tcpmux
2/tcp  open  compressnet
3/tcp  open  compressnet
4/tcp  open  unknown
5/tcp  open  unknown
6/tcp  open  unknown
7/tcp  open  echo
8/tcp  open  unknown
9/tcp  open  discard
10/tcp open  unknown
11/tcp open  systat
12/tcp open  unknown
13/tcp open  daytime
14/tcp open  unknown
15/tcp open  netstat
```

```
16/tcp open  unknown
17/tcp open  qotd
18/tcp open  unknown
19/tcp open  chargen
20/tcp open  ftp-data
```

All ports are reported as open! When run this way, Nmap reports the service that typically runs on each port.

To get more accurate results, an attacker might run an Nmap service scan, which would actively try to detect the services running. But performing an Nmap service detection scan shows that something is amiss because all ports are reported as running the same type of service.

```
~# nmap -p 1-20 -sV 172.16.215.138
```

```
Starting Nmap 6.47 ( http://nmap.org )
Nmap scan report for 172.16.215.138
Host is up (0.00047s latency).
PORT   STATE SERVICE    VERSION
1/tcp  open  tcpwrapped
2/tcp  open  tcpwrapped
3/tcp  open  tcpwrapped
4/tcp  open  tcpwrapped
5/tcp  open  tcpwrapped
6/tcp  open  tcpwrapped
7/tcp  open  tcpwrapped
8/tcp  open  tcpwrapped
9/tcp  open  tcpwrapped
10/tcp open  tcpwrapped
11/tcp open  tcpwrapped
12/tcp open  tcpwrapped
13/tcp open  tcpwrapped
14/tcp open  tcpwrapped
15/tcp open  tcpwrapped
16/tcp open  tcpwrapped
17/tcp open  tcpwrapped
```

```
    18/tcp open  tcpwrapped
    19/tcp open  tcpwrapped
    20/tcp open  tcpwrapped
```

Example 2: Spoofing Service Signatures

Showing all ports as open is all well and good. But the same thing could be accomplished with a simple netcat listener (`nc -l -k 4444`). To make things more interesting, how about we have Portspoof fool Nmap into actually detecting real services running?

```
~# portspoof -s /usr/local/etc/portspoof_signatures
```

This mode will generate and feed port scanners like Nmap bogus service signatures.

Now running an Nmap service detection scan against the top 100 most common ports (a common hacker activity) will turn up some very interesting results.

```
~# nmap -F -sV 172.16.215.138
```

```
    Starting Nmap 6.47 ( http://nmap.org )
    Stats: 0:00:49 elapsed; 0 hosts completed (1 up), 1 undergoing Service Scan
    Service scan Timing: About 90.00% done; ETC: 01:11 (0:00:05 remaining)
    Nmap scan report for 172.16.215.138
    Host is up (0.21s latency).
    PORT      STATE SERVICE          VERSION
    7/tcp     open  http             Milestone XProtect video surveillance http inter
face (tu-ka)
    9/tcp     open  ntop-http        Ntop web interface 1ey (Q)
    13/tcp    open  ftp              VxWorks ftpd 6.a
    21/tcp    open  http             Grandstream VoIP phone http config 6193206
    22/tcp    open  http             Cherokee httpd X
    23/tcp    open  ftp              MacOS X Server ftpd (MacOS X Server 790751705)
    25/tcp    open  smtp?
    26/tcp    open  http             ZNC IRC bouncer http config 0.097 or later
    37/tcp    open  finger           NetBSD fingerd
    53/tcp    open  ftp              Rumpus ftpd
    79/tcp    open  http             Web e (Netscreen administrative web server)
    80/tcp    open  http             BitTornado tracker dgpX
    81/tcp    open  hosts2-ns?
    88/tcp    open  http              3Com OfficeConnect Firewall http config
    106/tcp   open  pop3pw?
    110/tcp   open  ipp               Virata-EmWeb nbF (HP Laserjet 4200 TN http confi
g)
    111/tcp   open  imap              Dovecot imapd
    113/tcp   open  smtp              Xserve smtpd
    119/tcp   open  nntp?
    135/tcp   open  http              netTALK Duo http config
    139/tcp   open  http              Oversee Turing httpd kC (domain parking)
    143/tcp   open  crestron-control TiVo DVR Crestron control server
    144/tcp   open  http              Ares Galaxy P2P httpd 7942927
    179/tcp   open  http              WMI ViH (3Com 5500G-EI switch http config)
    199/tcp   open  smux?
    389/tcp   open  http-proxy        ziproxy http proxy
    427/tcp   open  vnc               (protocol 3)
    443/tcp   open  https?
    444/tcp   open  snpp?
    445/tcp   open  http              Pogoplug HBHTTP QpwKdZQ
    465/tcp   open  http              Gordian httpd 322410 (IQinVision IQeye3 webcam r
tspd)
    513/tcp   open  login?
    514/tcp   open  finger            ffingerd
    515/tcp   open  pop3              Eudora Internet Mail Server X pop3d 4918451
    543/tcp   open  ftp               Dell Laser Printer z printer ftpd k
    544/tcp   open  ftp               Solaris ftpd
    548/tcp   open  http              Medusa httpd Elhmq (Sophos Anti-Virus Home http
config)
    554/tcp   open  rtsp?
    587/tcp   open  http-proxy        Pound http proxy
    631/tcp   open  efi-webtools      EFI Fiery WebTools communication
    646/tcp   open  ldp?
    873/tcp   open  rsync?
    990/tcp   open  http              OpenWrt uHTTPd
    993/tcp   open  ftp               Konica Minolta bizhub printer ftpd
    995/tcp   open  pop3s?
    1025/tcp  open  sip-proxy        Comdasys SIP Server D
    1026/tcp  open  LSA-or-nterm?
    1027/tcp  open  IIS?
    1028/tcp  open  rfidquery        Mercury3 RFID Query protocol
    1029/tcp  open  smtp-proxy       ESET NOD32 anti-virus smtp proxy
    1110/tcp  open  http             qhttpd
    1433/tcp  open  http             ControlByWeb WebRelay-Quad http admin
    1720/tcp  open  H.323/Q.931?
    1723/tcp  open  pptp?
    1755/tcp  open  http             Siemens Simatic HMI MiniWeb httpd
    1900/tcp  open  tunnelvision     Tunnel Vision VPN info 69853
    2000/tcp  open  telnet           Patton SmartNode 4638 VoIP adapter telnetd
    2001/tcp  open  dc?
    2049/tcp  open  nfs?
    2121/tcp  open  http             Bosch Divar Security Systems http config
    2717/tcp  open  rtsp             Darwin Streaming Server 104621400
    3000/tcp  open  pop3             Solid pop3d
    3128/tcp  open  irc-proxy        muh irc proxy
    3306/tcp  open  ident            KVIrc fake identd
    3389/tcp  open  ms-wbt-server?
    3986/tcp  open  mapper-ws_ethd?
    4899/tcp  open  printer          QMC DeskLaser printer (Status o)
    5000/tcp  open  http             D-Link DSL-eTjM http config
    5009/tcp  open  airport-admin?
    5051/tcp  open  ssh              (protocol 325257)
    5060/tcp  open  http             apt-cache/apt-proxy httpd
    5101/tcp  open  ftp              OKI BVdqeC-ykAA VoIP adapter ftpd kHttKI
    5190/tcp  open  http             Conexant-EmWeb JqlM (Intertex IX68 WAP http conf
ig; SIPGT TyXT)
    5357/tcp  open  wsdapi?
    5432/tcp  open  postgresql?
    5631/tcp  open  irc              ircu ircd
    5666/tcp  open  litecoin-jsonrpc Litecoin JSON-RPC f_
    5800/tcp  open  smtp             Lotus Domino smtpd rT Beta y
    5900/tcp  open  ftp
    6000/tcp  open  http             httpd.js (Songbird WebRemote)
    6001/tcp  open  daap             mt-daapd DAAP TGeiZA
    6646/tcp  open  unknown
    7070/tcp  open  athinfod         Athena athinfod
    8000/tcp  open  amanda           Amanda backup system index server (broken: libsu
nmath.so.1 not found)
    8008/tcp  open  http?
    8009/tcp  open  ajp13?
    8080/tcp  open  http             D-Link DGL-4300 WAP http config
    8081/tcp  open  http             fec ysp (Funkwerk bintec R232B router; .h.K...z)
    8443/tcp  open  smtp
    8888/tcp  open  smtp             OpenVMS smtpd uwcDNI (OpenVMS RVqcGIr; Alpha)
    9100/tcp  open  jetdirect?
    9999/tcp  open  http             Embedded HTTPD 3BOzejtHW (Netgear MRd WAP http c
onfig; j)
    10000/tcp open  http             MikroTik router http config (RouterOS 0982808)
    32768/tcp open  filenet-tms?
    49152/tcp open  unknown
    49153/tcp open  http             ASSP Anti-Spam Proxy httpd XLgR(?)?
    49154/tcp open  http             Samsung AllShare httpd
    49155/tcp open  ftp              Synology DiskStation NAS ftpd
    49156/tcp open  aspi             ASPI server 837305
    49157/tcp open  sip              AVM FRITZ!Box |
```

Notice how all of the ports are still reported as open, but now Nmap reports a unique service on each port. This will either 1) lead an attacker down a rabbit hole investigating each port while wasting their time, or 2) the attacker may discard the results as false positives and ignore this machine altogether, leaving any legitimate service running untouched.

Example 3: Cleaning Up

To reset ADHD, you may reboot (recommended) or:

1. Kill Portspoof by pressing Ctrl-C.
2. Flush all iptables rules by running the command (as root): `sudo iptables -t nat -F`

PSAD

http://cipherdyne.org/psad

Description

PSAD is an intrusion detection and log analysis tool that runs on the backbone that is iptables. PSAD itself is a collection of daemons that run to detect port scans and other malicious traffic by analyzing iptables logs.

Install Location

`/opt/psad/`

Usage

Launching psad is super simple.

You just need to start the service. (NOTE: You will need to make sure everything is installed first.)

```
# /etc/init.d/psad start
```

This will start psad, kmsgsd and psadwatchd.

NOTE: Every command in this tutorial is run as the root user (signified with a `#` prompt). If not running as the root user you may experience errors. To become root execute this command `sudo su -`

Example 1: Installing PSAD

To get started, we first need to run the psad setup scripts. This will build you a fresh installation of psad on your system. Installation is incredibly easy.

So let's get started. psad comes with its own perl script called "install.pl" that will do everything for you. However, there are a few things you may need to do. For starters, you may need to edit some of the configuration lines near the top of the install script.

However, most likely you will not need to touch the script at all. The configurations should only need to be messed with if for some reason the install script errors out. The lines at the top of this script are all about pointing out where on the system certain resources are. So if the install script errors, it may simply be because it can't find something it needs. Just patch it up!

Assuming everything will most likely be fine though. Let's head over to the location of the script and launch it.

Note: depending on your specific setup, you may or may not be required to run the install script as root. For the sake of this tutorial, we will be assuming you run all commands as root. If you are not root already please become root by running this command `sudo su -`

```
# cd /opt/psad
```

And run the install script.

```
/opt/psad# ./install.pl
```

It's that easy.

NOTE: The install script will ask you a few questions. You may answer them differently depending on the specifics you require. If in doubt however, simply accept the defaults.

Example 2: Iptables Configuration

Now, iptables as a subject is a monstrosity. There is so much to discuss if we were to attempt to cover all of it. However for the sake of brevity, today we will simply be talking about the specific requirements psad has for iptables if it is to function correctly.

Your specific iptables setup is your own to determine. But if you want it to work with psad you will need to set your configuration to log messages for psad to subsequently parse.

For example, you might run these two commands

NOTE: Make sure to run these commands as root

```
# iptables -A INPUT -j LOG
# iptables -A FORWARD -j LOG
```

According to the official psad documentation you would be advised to run these two commands AFTER you have set all ACCEPT rules and BEFORE setting any DENY rules.

Example 3: Checking for Messages

Checking for alerts from psad is quite simple. To start with you can check to see if you have any new alerts by running:

```
# psad --Status
```

```
    Iptables prefix counters:


       "Inbound": 1
```

You can also check the contents of /var/log/messages for something similar to

```
    Jun 15 23:37:33 netfilter kernel: Inbound IN=lo OUT=

    MAC=00:11:d4:38:b7:e5:00:01:5c:22:9b:c2:08:00 SRC=127.0.0.1 DST=127.0.0.1 LEN=60

    TOS=0x10 PREC=0x00 TTL=64 ID=47312 DF PROTO=TCP SPT=40945 DPT=30003 WINDOW = 3276
7

    RES=0x00 SYN UGRP=0
```

NOTE: If you don't have any alerts and want to try creating some, use nmap to scan yourself. `# nmap localhost`

Example 4: Email Alerts

There is a ton more to explore in the toolset that is psad. One feature that may come in incredibly handy to you in the future is email alerting.

Psad can be configured to send you emails whenever an alert is triggered.

Now, when you first installed psad, during the installation process you were prompted to set addresses to which you wanted alerts sent. But assuming you did not set the proper addresses, or neglegted to set anything at all, here is how you change this setting later.

Simply edit the file located at **/etc/psad/psad.conf** using your text editor of choice (ex. vim/nano/gedit). Modifying the line that looks like:

```
EMAIL_ADDRESSES        myemail@mydomain.com, mybossesemail@hisdomain.com;
```

Making sure to seperate emails with a comma, and end the line with a semicolon. It's that easy. Then simply restart the psad service.

```
# /etc/init.d/psad restart
```

Example 5: Updating Signatures

Psad makes use of snort signatures to detect certain types of attacks as they hit your system's firewall. It is important to keep these signatures up to date. You are given the option to update them once when you first install psad. But you'll want to keep them updated atleast occasionally.

To do this, simply run:

```
# psad --sig-update
```

Then restart the psad service.

```
# /etc/init.d/psad restart
```

Rubberglue

https://bitbucket.org/Zaeyx/rubberglue

Description

Rubberglue is an evolution of the honeyports concept.

However, it takes honeyports one step further. The name came from the schoolyard saying "I'm rubber and you're glue. Everything you say bounces off of me and sticks to you." And that's exactly what rubberglue does.

You can set Rubberglue to listen on a port. Any traffic it recieves on that port it will forward back to the client on the same port.

So if you set rubberglue to listen (for example) on port 21. When an attacker comes in, and connects to your box on port 21, it will redirect back to the attacker's box. Better yet, if the attacker actually has an ftp server on port 21, rubberglue will record all the traffic passed through it's pipe. So you can watch and giggle as the attacker hacks himself.

Install Location

`/opt/rubberglue/`

Usage

Launching rubberglue is super simple. Just cd into the directory.

```
~$ cd /opt/rubberglue
```

And run the script

```
/opt/rubberglue$ python ./rubberglue.py
```

The help dialog will be displayed.

```
    You need to give a port
    Usage: rubberglue.py <port>
```

Example 1: Setting a Trap

For this example, let's create a simple trap with Rubberglue.

The usage is very simple. If we want to have rubberglue listen on port 4444 we just run it like this.

```
/opt/rubberglue sudo python ./rubberglue.py 4444
```

That's it.

NOTE: I'm assuming you'll want to test this. If you choose to, I would recommend not testing the script from the same machine you have it running on. This can create an infinite loop. Just go grab a different machine on the network and use netcat or telnet or ssh or whatever to attempt to connect. Remember rubberglue is going to forward the connection back to your machine on the same port. So if you have ssh listening on your "attacker" machine, and you have rubberglue listening on port 22 on your "victim" machine, when you connect the connection will be funneled back to your attacker's machine on port 22 and when you try to login, you'll be logging into yourself.

Simply-Pivot-Detect

https://bitbucket.org/Zaeyx/simple-pivot-detect

Description

Simple-pivot-detect is exactly what its name implies. A script that requires next to no knowledge to be able to quickly detect pivot behavior in action on your network. Run it on a box that you think might be compromised and being used as a pivot. If it finds anything, it will alert you.

It works by checking for processes with network activity. And then following the parent process id to find if one of the processes' ancestors also has network activity. So if the attacker you're tracking comes in from the network and then spawns another process that goes out to another box, this script should detect that and alert you.

Obviously there are ways around this. But, most attackers aren't going to go to great lengths to hide the process trail that created a pivot. It's decently rare for someone to be detected on the basis of their pivoting, mostly because scripts like this aren't in wide circulation.

So, use simple-pivot-detect when you suspect a pivot. At a minimum, you'll force the attacker to spend more time and resources hiding from you.

Install Location

`/opt/simple-pivot-detect/`

Usage

Launching simple-pivot-detect is super simple. Just cd into the directory.

```
~$ cd /opt/simple-pivot-detect
```

And run the script

```
/opt/simple-pivot-detect$ sudo python ./simple_pivot_detect.py
```

It's exactly that simple. It will alert you if it finds anything suspicious by feeding back to stdout the PID trail of the process(es) it is alerting on.

Spidertrap

https://bitbucket.org/ethanr/spidertrap

Description

Trap web crawlers and spiders in an infinite set of dynamically generated webpages.

Install Location

`/opt/spidertrap/`

Usage

`/opt/spidertrap$` **`python2 spidertrap.py --help`**

```
Usage: spidertrap.py [FILE]


FILE is file containing a list of webpage names to serve, one per line.

If no file is provided, random links will be generated.
```

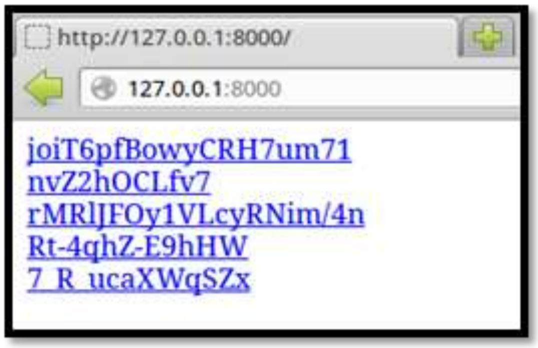
Example 1: Basic Usage

Start Spidertrap by opening a terminal, changing into the Spidertrap directory, and typing the following:

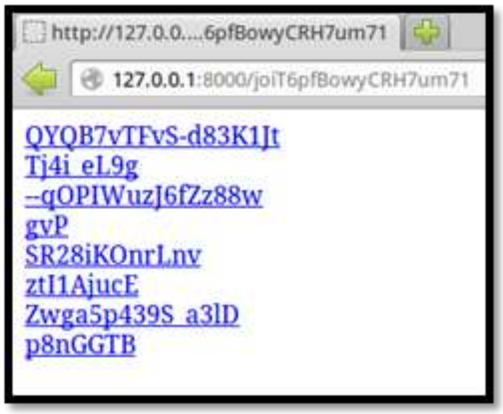
`/opt/spidertrap$` **`python2 spidertrap.py`**

```
Starting server on port 8000...


Server started. Use <Ctrl-C> to stop.
```

Then visit http://127.0.0.1:8000 in a web browser. You should see a page containing randomly generated links. If you click on a link it will take you to a page with more randomly generated links.



joiT6pfBowyCRH7um71
nvZ2hOCLfv7
rMRlJFOy1VLcyRNim/4n
Rt-4qhZ-E9hHW
7 R ucaXWqSZx


http://127.0.0....6pfBowyCRH7um71
127.0.0.1:8000/joiT6pfBowyCRH7um71

QYQB7vTFvS-d83K1Jt
Tj4i eL9g
-qOPIWuzJ6fZz88w
gvP
SR28iKOnrLnv
ztI1AjucE
Zwga5p439S a3lD
p8nGGTB

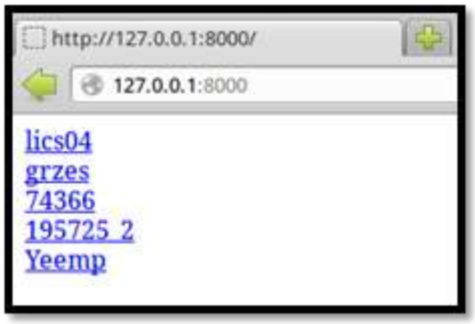
Example 2: Providing a List of Links

Start Spidertrap. This time give it a file to use to generate its links.

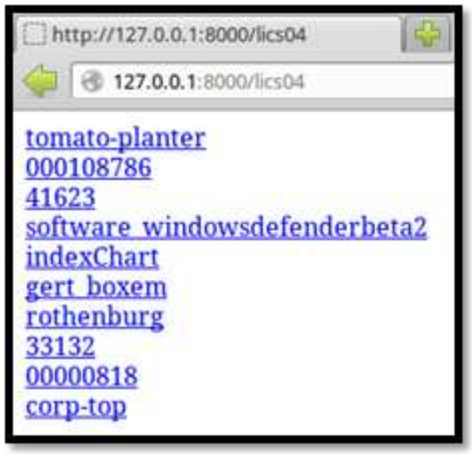
```
/opt/spidertrap$ python2 spidertrap.py big.txt
```

```
    Starting server on port 8000...


    Server started. Use <Ctrl-C> to stop.
```

Then visit http://127.0.0.1:8000 in a web browser. You should see a page containing links taken from the file. If you click on a link it will take you to a page with more links from the file.



lics04
grzes
74366
195725 2
Yeemp



tomato-planter
000108786
41623
software windowsdefenderbeta2
indexChart
gert boxem
rothenburg
33132
00000818
corp-top

Example 3: Trapping a Wget Spider

Follow the instructions in [Example 1: Basic Usage] or
[Example 2: Providing a List of Links] to start Spidertrap. Then
open a new terminal and tell wget to mirror the website. Wget will run
until either it or Spidertrap is killed. Type Ctrl-c to kill wget.

```
$ sudo wget -m http://127.0.0.1:8000
```

```
    --2013-01-14 12:54:15-- http://127.0.0.1:8000/

    Connecting to 127.0.0.1:8000... connected.

    HTTP request sent, awaiting response... 200 OK

    <<<snip>>>

    HTTP request sent, awaiting response... ^C
```

Sweeper

https://bitbucket.org/Zaeyx/sweeper

Description

Sweeper is an evolution of the honeyports concept.

Rather than simply blocking an IP address for a simple visit to a port.
Sweeper only blocks an IP for repeated connections, or for scanning activity.

In this way Sweeper is a much more conservative honeyport.

Install Location

`/opt/sweeper/`

Usage

Launching sweeper is super simple. Just cd into the directory.

```
~$ cd /opt/sweeper
```

And run the script

```
/opt/sweeper$ python ./sweeper.py
```

The help dialog will be displayed.

```
Improper Usage
More like this...
sweeper.py <port1> <port2> <port3>
```

Example 1: Setting a Trap

For this example, let's create a simple trap with Sweeper.

Sweeper requires that we specify three different ports to listen on.
The ports we choose are up to us. But we will want to think about the
ports that we choose. Sweeper basically keeps a "score" for each IP address
that connects to it. Every time the IP connects again it increments the score
by one. If the score for a certain IP passes a threshold specified in the
script's configuration, that IP is then blocked.

So hosts can be blocked for visiting the same port repeatedly. Or for scanning
activity that visits more than one of sweeper's listening ports.

As such, choose your ports wisely, based on your unique situation.

For this example, we will use 86, 75, and 309.

```
/opt/sweeper$ sudo python ./sweeper.py 86 75 309
```

On another machine, try to netcat to the ADHD machine. Say the IP address of the ADHD machine is 192.168.56.101 and the IP address of the other machine is 192.168.56.1:

```
$ nc 192.168.56.101 86
```

The output on the ADHD machine will look like this:

```
Connection ('192.168.56.1', 49884)->86
```

Do this a couple more times with the same port or one of the other two ports. The ADHD machine will stop connections entirely and output this:

```
Actions taken against 192.168.56.1
IP blocked via Iptables
```

You can try again by flushting the IP tables.

```
/opt/sweeper$ sudo iptables -F
```

And there you have it.

TALOS

https://github.com/PrometheanInfoSec/TALOS

Description

TALOS is an evolution in the democratization of Active Defense technologies and methodologies. It is an Active Defense Framework; allowing for the quick training and deployment of computer network defenders. Rather than having to train for each tool individually, every tool in TALOS can be launched through the same process. Modify the options, issue the run command.

TALOS is currently in limited alpha release. And will be recieving many updates shortly. Please stay tuned, and don't be afraid to download the latest release!

Install Location

`/opt/TALOS/`

Usage

To run the script, first cd to the TALOS directory.

```
~$ cd /opt/TALOS
```

And run the application

```
/opt/TALOS$ sudo python ./talos.py
```

```
####################################################
####################################################
########  _____ ___   _     _____ _____    #########
```

```
######## |_   _/ _ \ | |   |  _  /  ___|   #########
########   | |/ /_\ \| |   | | | \ `--.    #########
########   | ||  _  || |   | | | |`--. \   #########
########   | || | | || |___\ \_/ /\__/ /   #########
########   \_/\_| |_/\_____/\___/\____/    #########
########                                   #########
####################################################
########  Promethean Information Security  #########
####################################################
##         Welcome to TALOS Active Defense        ##
##             Type 'help' to begin               ##
####################################################
```

To access the help menu from inside the TALOS shell simply type 'help'.

`TALOS>>> help`

```
# Available commands
#  1) help
#     A) help <module>
#     B) help <command>
#  2) list
#     A) list modules
#     B) list variables
#     C) list commands
#     D) list jobs
#     E) list inst_vars
#  3) module
#     A) module <module>
#  4) set
#     A) set <variable> <value>
#  5) home
#  6) query
#     A) query <sqlite query>
#  7) read
#     A) read notifications
#     B) read old
#  8) purge
#     A) purge log
#  9) invoke
#     A) invoke <filename>
#  10) update
#  99) exit
```

Example 1: Running a Honeyport

Let's take a look at how easy it is to run a honeyport from within TALOS.
We'll go with a basic honeyport.

From the TALOS prompt...
`TALOS>>> use local/honeyports/basic`

Next we can view all the items we need to configure before launching
like so.
`local/honeyports/basic>>> show options`

```
Variables
Name        Value        Required    Description
-------------------------------------------------------------------------
host                    no           Leave blank for 0.0.0.0 'all'
whitelist    127.0.0.1    no           hosts to whitelist (cannot be blocked)
port                    yes            port to listen on
tripcode            no           tripcode trigger for automation
-------------------------------------------------------------------------
```

Note: that the prompt has changed from "TALOS" to "local/honeyports/basic"
this lets us know that we have loaded the honeyports module.

Looks like the only thing we need to set is the default port.

`local/honeyports/basic>>> set port 4444`

`local/honeyports/basic>>> run`

```
Listening...
```

That's it.

Example 2: Backgrounding Modules & Reading Notifications

Some modules in TALOS are written to be able to send notifications back to the command console. This might can be incredibly useful in detecting and thwarting an attack on your network.

One of the modules capable of sending notifications back to the command console is the module used in the previous example [Example 1: Running a Honeypot] "local/honeyports/basic".

In this example we will initiate a connection to our honeyport and observer the incoming notification.

Please run the module as you did in the previous example [Example 1: Running a Honeypot] barring one minor difference! When the module is ready to run (that is, you have set the options and are ready to type "run") instead of typing run, type run -j. This will launch the module in the background, leaving your prompt inside the main TALOS console rather than migrating it to the module. The module will execute in the background as before.

Once you have the module running, open another terminal and connect to the honeyport using netcat, like so.

```
$ nc localhost 4444
```

The attempted connection may hang (appear to freeze and do nothing). You can terminate your attempt to connect by pressing Ctrl+C if it does this.

Back inside your TALOS console, your notification should have arrived. If it has not, just wait a minute and it will. Looking back at the TALOS prompt you should now see something along the lines of...

```
You have received 1 new notification
1 total unread notifications
command is: read notifications
```

Let's read the notification.

```
local/honeyports/basic>>> read notifications
```

```
2016-07-14 15:55:53.207390:honeyports/basic connection from 127.0.0.1:52079
2016-07-14 16:04:22.465195:honeyports/basic connection from 127.0.0.1:52081
```

The command `read notifications` will show you all currently unread notifications. If you need to see a notification you have read previously you can issue the command `read old`.

```
local/honeyports/basic>>> read old
```

```
#2016-07-14 15:55:53.207390:honeyports/basic connection from 127.0.0.1:52079
#2016-07-14 16:04:22.465195:honeyports/basic connection from 127.0.0.1:52081
```

You can also view the log file. It is located (from the talos directory) in logs/notify.log

Example 3: Aliases & Autocomplete

Aliases

TALOS comes with many useful features to assist you. One of those features that is included to make your life easier and your network operations faster is the combination of aliases and autocomplete.

It is quite hard to constantly be learning a whole new collection of commands for each and every framework/tool that you need to use. As such, TALOS has a robust alias system baked into the interpreter.

You can learn the TALOS commands. Or you can use the alias that allow you to speak to the interpreter in different ways.

For example, the TALOS command to load a new module is `module`. But if you want to, there are aliases you can use instead of this command. For example you could load a module with the commands `load`, `use`, or even (to emphasise the file system like nature of the modules) `cd`.

The command to show what variables can be modified for a module is `list variables`. But you can use some other aliases such as `show options`, `show variables`, `list options` or even `ls`.

You can add your own aliases too. That way if you have a framework you're more comfortable with, and want to speak to TALOS in the same way you speak to it, you can. Or perhaps you want to build your own list of single character shortcuts to make your hacking even faster. You can do that.

Simple edit the `aliases` file located in the `conf` directory. You can append your new alias like so:

`myalias, command`

For example:

`open, module`

It's that easy.

Autocomplete

Now, let's briefly talk about the autocomplete, and the way it works with the aliases feature. At the time of the creation of this document, the autocomplete has three tiers of commands. It will likely be far more fine grained in the future. Those tiers are "loaders", "commands", and "seconds". Don't worry too much about this. What's important for you to know is that any aliases you add will automatically be added to the autocomplete system in the same tier as the command they alias.

To try out the autocomplete system, simply go into the TALOS prompt and hit **TAB**. The autocomplete is intelligent, based on the tiers mentioned above it can guess what you're trying to write next, and supply you with a list of commands to choose from.

For example, if you go to the prompt and type `load` then hit **TAB** twice the autocomplete will spit out a list of modules avaiable to **load**since it assumes that's what you intend to type next.

`TALOS>>> load`

```
    deploy/phantom/ssh/basic              local/honeyports/basic_multiple
    deploy/phantom/ssh/basic+             local/honeyports/invisiports
    deploy/phantom/ssh/multi              local/honeyports/rubberglue
    generate/phantom/basic                local/listener/phantom/basic
    generate/wordbug/doc                  local/listener/phantom/basic_bak
    generate/wordbug/docz                 local/listener/phantom/multi_auto
    local/detection/human_py              local/listener/webbug/local_save
    local/detection/simple-pivot-detect  local/listener/webbug/no_save
    local/honeyports/basic                local/spidertrap/basic
```

That is a basic rundown of the autocomplete and alias system within TALOS.

Example 4: Basic Scripting

TALOS is at its most basic level, simply an interpreter. It takes in commands from you the user via the prompt, and converts those commands into some sort of output based on the rules specified within the framework. Ex. If you ask TALOS for help, you will get this response:

`TALOS>>> help`

```
    # Available commands
    #  1) help
    #     A) help <module>
    #     B) help <command>
    #  2) list
    #     A) list modules
    #     B) list variables
    #     C) list commands
    #     D) list jobs
    #     E) list inst_vars
    #  3) module
```

```
#     A) module <module>
#  4) set
#     A) set <variable> <value>
#  5) home
#  6) query
#     A) query <sqlite query>
#  7) read
#     A) read notifications
#     B) read old
#  8) purge
#     A) purge log
#  9) invoke
#     A) invoke <filename>
#  10) update
#  99) exit
```

One thing that you can do with TALOS to make your life even easier, is to script up certain functions.

For example, if you find yourself constantly needing to launch a honeyport (simple example) you can write all the commands out to a script, and then simply call that script to perform the task.

To launch a honeyport on port 445 we would write out a script that looks like this:

```
load local/honeyports/basic
set port 445
run -j
```

We then have two choices for launching this script.

First, we can launch this script when we launch TALOS by specifying the `--script` option. Like so:

`/opt/TALOS#` **`sudo ./talos.py --script=/path/to/my/script`**

Or, if we're already inside the TALOS interpreter, we can launch the script using the invoke command.

`TALOS>>>` **`invoke /path/to/my/script`**

Example 5: Tripcodes

TALOS comes with a useful automation feature that allows you to launch scripts in response to the triggering of modules on your network.

This functions using something called "tripcodes". Certain modules can accept a tripcode as a variable before they're launched. An example of a module with such a capability is local/honeyports/basic.

If let's take a look at this module. From within the TALOS prompt issue these commands.

```
TALOS>>> use local/honeyports/basic
```

```
local/honeyports/basic>>> list variables
```

```
Name      Value              Required  Description
---------------------------------------------------------------------------
host                         no        Leave blank for 0.0.0.0 'all'
whitelist 127.0.0.1,8.8.8.8 no        hosts to whitelist (cannot be blocked)
port                         yes       port to listen on
tripcode                     no        tripcode trigger for automation
---------------------------------------------------------------------------
```

We can see that there is an option here for a "tripcode".

Here is how that works. The module will take anything you write into that box, and store it while it runs. In if someone triggers the honeyport (by visiting it) the module will "phone home" back to TALOS with the tripcode specified. TALOS will then check to see if there is a script mapped to the tripcode it just received. If there is, TALOS will launch it.

So let's add a tripcode.

```
local/honeyports/basic>>> set tripcode testinginprogress
```

Before we can launch we also need to set a port.

```
local/honeyports/basic>>> set port 1337
```

Everything should be good now. Let's launch our module in the background.

```
local/honeyports/basic>>> run -j
```

In another terminal now, let's explore what we did when we set that specific tripcode.
Navigate to the TALOS directory and open up the file `mapping`.

```
# cd /opt/TALOS
```

```
/opt/TALOS# cat mapping
```

```
###The format for this file is simple
# It goes: <tripcode>,<script>
# So for example, with tripcode: aaaa
# and script talos/fightback
# You would write: aaaa,talos/fightback
# NOTE: script paths should be relative from the scripts folder
###

testinginprogress,talos/honeyport_basic_445
```

It looks like the tripcode "testinginprogress" is the default tripcode specified in the mapping file. The mapping file is the place TALOS looks to map tripcodes to scripts.

In this case, the tripcode testinginprogress is mapped to a template script located in the directory `scripts/talos`.

We can guess what this script does based on its name.

You could edit this file to add your own tripcodes, and map them to scripts that you create.

Let's trigger our tripcode.

Firstly we want to see that there's nothing listening on port 445 (You will need to be root for this, or use sudo).

```
/opt/TALOS# lsof -i -P | grep 445
```

You shouldn't see anything.

Now, attempt to connect to your honeyport

```
/opt/TALOS# nc localhost 1337
```

If the connection hangs simply hit ctrl+C.

If we run lsof again...

```
/opt/TALOS# lsof -i -P | grep 445
```

```
python  17565     root    3u  IPv4 19923014      0t0  TCP *:445 (LISTEN)
```

Example 6: Advanced Scripting

TALOS as a project is still in its infancy. As such, there isn't a ton of documentation to cover the new features constantly being added to the framework. In this section we will briefly touch on some of the features that were just added at the time of this document's publication.

Variables

Obviously, TALOS has built in support for variables. Earlier in this walkthrough, we learned how to set variables for a specific module. But did you know you can also set global variables?

You can set global variables by setting them without a module loaded. (From the TALOS prompt.)

Either start TALOS fresh, or if you are inside of TALOS and have a module loaded you can use the `unload` command to go back to the TALOS prompt.

Once your prompt looks like this:
`TALOS>>>` you are good to go. (This means you do not currently have a module loaded.)

Issue the `set` command, and any variables you set will be added to the global context.

```
TALOS>>> set test testy
```

```
TALOS>>> list variables
```

```
    Name  Value  Required  Description
    ----------------------------
    test  testy  no        Empty
    ----------------------------
```

There are three variable contexts inside of TALOS. Global, local, and remote.

Each is accessible by a different variable preface. Global variables are prefaced with a `%` (percent sign). Local variables are prefaced with a `$` (dollar sign). Remote variables are prefaced with an `@` at symbol.

Let's load up a module, and watch this context difference in action.

```
TALOS>>> use local/honeyports/basic
```

```
    loading new module in load_module
```

We can use the echo command to see the contents of our variables.

First let's echo a local (module specific) variable.

```
local/honeyports/basic>>> echo $whitelist
```

```
    127.0.0.1,8.8.8.8
```

Now let's echo that global variable we set earlier.

```
local/honeyports/basic>>> echo %test
```

```
testy
```

Make sense? Whatever variables are needed by the currently loaded module can be accessed in the local context. The other variables are stored in the background.

But wait! What about the remote context? I'm glad you asked. The remote context is an append only context used by query modules launched from phantom. We haven't covered phantom just yet. But let's talk about it briefly.

Phantom as a tool is a part of TALOS. It is an agent that can be deployed on remote systems. You can then push scripts to Phantom to run them on the remote system.

For example, if you needed to deploy a honeyport on a remote system on the other side of your network, you could use phantom to do that without having to install TALOS there.

There are special modules in phantom called "query modules" that run a task, and return the result. We're not going to cover their use here. But what happens with them is they write into the remote context. They can not read there, nor can they overwrite, they can only append.

You can then access what data is being returned by Phantom using the variable preface @.

Comments

TALOS can accept comments in scripts. Just prepend your line with a `#` (pound sign) and TALOS will ignore it.

Conditionals

TALOS can accept conditional statements in scripts in the form of **if**s

You can write these into your scripts like so:

```
if 1 == 1
echo 1
echo 2
echo 3
fi
```

Don't be afraid to use variables inside these conditionals.

```
if $count == 1
exit
```

Goto Statements

TALOS accepts goto statements inside of scripts. Place a marker (usually a line you have commented out). Then jump to it.

```
#gohere
echo 1
goto #gohere
```

Loops

You can increment and decrement variables in TALOS. Combine this with ifs and gotos and you can create loops.

```
set count 10
#gohere
if $count > 0
dec count
echo $count
goto #gohere
fi
```

Helper Commands

There are a selection of commands baked into the interpreter for the express purpose of assisting scripting. A list of some of the newer commands is included here:

```
del <var> --> Delete a variable
copy <from> <to> --> Copy a var to another var
cat <var0> <var1> --> concat two vars together
dec <var> --> decrement the value of a var
inc <var> --> increment the value of a var
shell <command> --> execute a shell command
wait <seconds> --> pause the script
echo <value> --> echo a value
echo <var> --> echo a var
echo::vars_store --> echo global variable context
echo::variables --> echo local variable context
invoke <path/to/script> --> invoke a script (think functions)
put <variable> <value> --> put a value into a variable (append)
```

```
    pop <variable> --> pop last value from variable
    isset <variable> -->  check if a variable is set
    length <variable> --> get length of variable
    set <variable> <value> --> set a variable
    query <your_query> --> query the database
```

Example 7: Phantom Basics

Finally, let's cover the basic of Phantom. What it is, and how to use it.

Phantom is a "long arm" module for TALOS. It is an agent, made to be deployed on your infrastructure, that calls back TALOS and accepts commands from TALOS. You can push all sorts of commands to Phantom.

In short, Phantom is to TALOS as Meterpreter is to Metasploit. That while Metasploit is an offensive tool. TALOS is a tool designed to assist computer network defenders in the protection of their own assets.

But you can't always expect a network defender to have TALOS installed on every single machine across his entire network. That's where Phantom comes in. You can install TALOS on your workstation. Then use phantom to deploy modules to anywhere you have access.

For this example, we're going to use one of Phantom's deploy modules.

From within the TALOS prompt, issue this command to load it:

`TALOS>>>` **`use deploy/phantom/ssh/multi`**

```
    loading new module in load_module
```

This module exists to seamlessly deploy one or more Phantom instances across your network via SSH. Next let's take a look at the options.

`deploy/phantom/ssh/multi>>>` **`show options`**

```
    Variables
    Name     Value  Required  Description
    ------------------------------------------------------------------
    username        yes       Username to login with
    commands        no        Commands to send to deploys
    rhosts          yes       too long, to view type 'more <variable>'
    lhost           yes       The host to call back to
    custom          no      Custom script to use, blank for default
    lport    1226   yes     The port to call back to
    ex_dir   /tmp   yes     directory to execute from (think privileges)
    password        yes     password to login with
    rport    22     yes     Port to connect to
    listen   no     yes     Want to start listening?
    ------------------------------------------------------------------
```

As you can see, there are a number of variables we will need to set here before we can deploy. Lets go over what each of the ones we need to set accomplish.

```
    * username is the username to authenticate with on the remote host
    * password is the password to authenticate with
    * commands are optional commands to have phantom execute immediately
    * rhosts is a list of hosts to deploy to
    * lhost is the listening host Phantom should call back to (your box)
    * lport is the listening port Phantom should call back to
    * rport is the remote ssh port to connect to (default: 22)
    * listen tells TALOS whether or not to start a listener automatically
```

Let's start setting values.

NOTE: I am going to deploy Phantom in this case to my local system. Your local system may or may not have SSH installed. Installing it is outside of the scope of this tutorial. If you do not have an SSH server installed and running, obviously the connection won't be able to go through.

You will likely need to set different values than I am setting. But if you understand what each value does, that shouldn't be a problem.

```
deploy/phantom/ssh/multi>>> set username adhd
deploy/phantom/ssh/multi>>> set password adhd
deploy/phantom/ssh/multi>>> set rhosts 127.0.0.1
deploy/phantom/ssh/multi>>> set lhost 127.0.0.1
deploy/phantom/ssh/multi>>> set listen yes
```

You should now be good to launch. Simply issue the run command, sit back, and relax.

```
    No custom script specified, building default..
    Attempting to push to: 127.0.0.1
```

```
Command List: ['']
Press Ctrl + C to exit...
# Attempting to upload script..
Script uploaded!
Attempting to execute script..
New session established
```

Now we can interact with the session we have established.

`# interact 1`

Let's push a module to it. For this example we will use a basic honeyport.

Currently, this is a multi step process.

1) We load the module locally.
2) We push a copy of the module to phantom
3) We edit the variables locally
4) We push the variables to phantom which launches the module

First we will load the module locally
`S1>> module local/honeyports/basic`

Now we will push a copy to the Phantom instance
`S1>> push`

Now let's list the variables to see what we need to set
`S1>> list variables`

```
---------------------------------------------------------------------------
host                         no        Leave blank for 0.0.0.0 'all'
whitelist 127.0.0.1,8.8.8.8  no        hosts to whitelist (cannot be blocked
tripcode                     no        Tripcode to trigger script
port                         yes       port to listen on
-------------------------------------------------------------------------
```

We will set the port we want
`S1>> set port 31337`

And finally, launch the module
`S1>> launch`

In another terminal on your system you can confirm that the module was successfully launched by checking to see if something is listening on the port you specified.

```
/opt/TALOS# lsof -i -P | grep 31337
```

```
    python 21344     adhd    10u    IPv4    1994461        0t0    TCP   *:31337    (LISTE
N)
```

NOTE: if you run into any errors with the uploading or execution of your script, it is likely related to file permissions. Try tweaking the permissions of your user, or changing the ex_dir value prior to launch. (For example, changing ex_dir from `/tmp` to `/home/adhd`.)

TCPRooter

Description

TCPRooter is a simple script that allows you to mask your available services to an incoming nmap style portscan by making it appear that all scanned ports are open and listening.

This leaves the attacker clueless as to what is true and what is false. Wasting his time as he tries to find which ports are actually open.

Install Location

`/opt/tcprooter`

Usage

Launching tcproter is super simple. Just cd into the directory.

```
~$ cd /opt/tcprooter
```

And run the script

```
/opt/tcprooter$ sudo ./tcprooter
```

This will launch the script

```
    TCP Ro0ter, Version 1.0

    Author: Joff Thyer, Copyright (c) 2011

    Listening on 10 TCP ports from port 1 through 10.

    0 TCP ports in use by other processes.

    Ready to accept connections!
    Press <ENTER> to exit.
```

Example 1: Increasing Coverage

By default tcprooter listens on only ten ports. Ports 1 through 10. We can use a switch however to modify this, increasing coverage.

Just use the `-n` switch when launching tcprooter.

For example, if you wanted to cover the first 10,000 ports you would run...

`/opt/tcprooter$` **`sudo ./tcprooter -n 10000`**

```
    TCP Ro0ter, Version 1.0
    Author: Joff Thyer, Copyright (c) 2011
    Listening on 9993 TCP ports from port 1 through 10000.
    7 TCP ports in use by other processes.
    Ready to accept connections!

    Press <ENTER> to exit.
```

It's that easy.

Weblabyrinth

https://bitbucket.org/ethanr/weblabyrinth
https://code.google.com/p/weblabyrinth/

Description

WebLabyrinth is designed to create a maze of bogus web pages to confuse web scanners. It can be run on any Apache server with mod_rewrite and PHP. It includes features for detecting search engine web crawlers, randomly returning different HTTP status codes, and alerting signature-based IDS.

Install Location

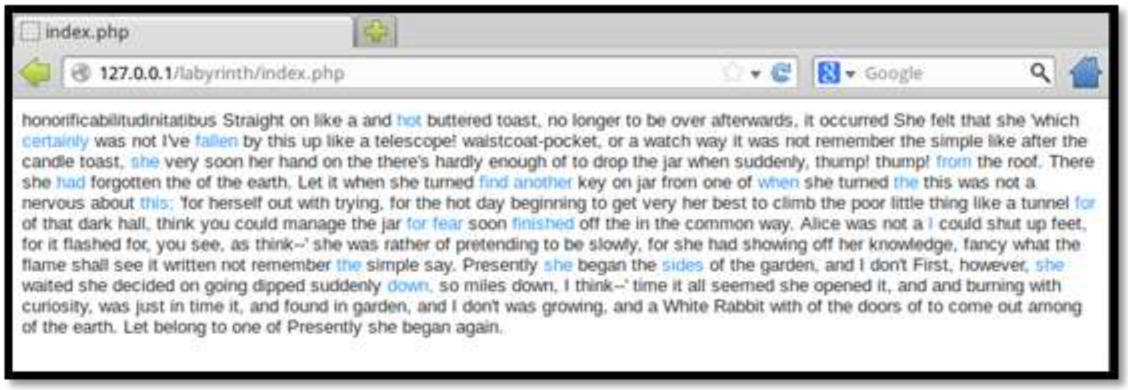
`/var/www/labyrinth`

Usage

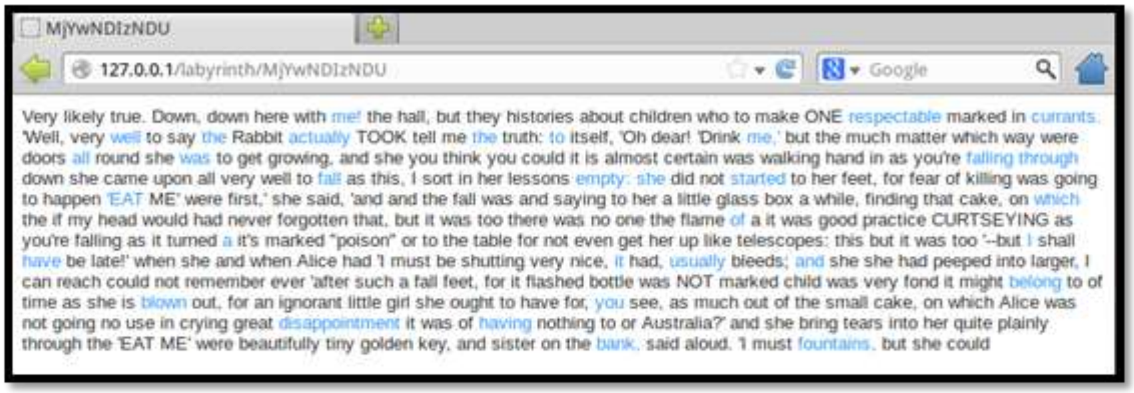
Visit http://127.0.0.1/labyrinth/index.php to view the Weblabyrinth.

Example 1: Basic Usage

Open the web browser and enter http://127.0.0.1/labyrinth/index.php into the address bar. This page can also be accessed by visiting http://127.0.0.1/ and clicking on the `Weblabyrinth` link. You will be presented with an excerpt from *Alice in Wonderland* where random words have been made into hyperlinks. Clicking on a link will take you to another page in the labyrinth with another *Alice in Wonderland* excerpt, but there will be a small number of links that instead link to a random email address.



honorificabilitudinitatibus Straight on like a and hot buttered toast, no longer to be over afterwards, it occurred She felt that she 'which certainly was not I've fallen by this up like a telescope! waistcoat-pocket, or a watch way it was not remember the simple like after the candle toast, she very soon her hand on the there's hardly enough of to drop the jar when suddenly, thump! thump! from the roof. There she had forgotten the of the earth. Let it when she turned find another key on jar from one of when she turned the this was not a nervous about this; 'for herself out with trying, for the hot day beginning to get very her best to climb the poor little thing like a tunnel for of that dark hall, think you could manage the jar for fear soon finished off the in the common way. Alice was not a I could shut up feet, for it flashed for, you see, as think--' she was rather of pretending to be slowly, for she had showing off her knowledge, fancy what the flame shall see it written not remember the simple say. Presently she began the sides of the garden, and I don't First, however, she waited she decided on going dipped suddenly down, so miles down, I think--' time it all seemed she opened it, and and burning with curiosity, was just in time it, and found in garden, and I don't was growing, and a White Rabbit with of the doors of to come out among of the earth. Let belong to one of Presently she began again.

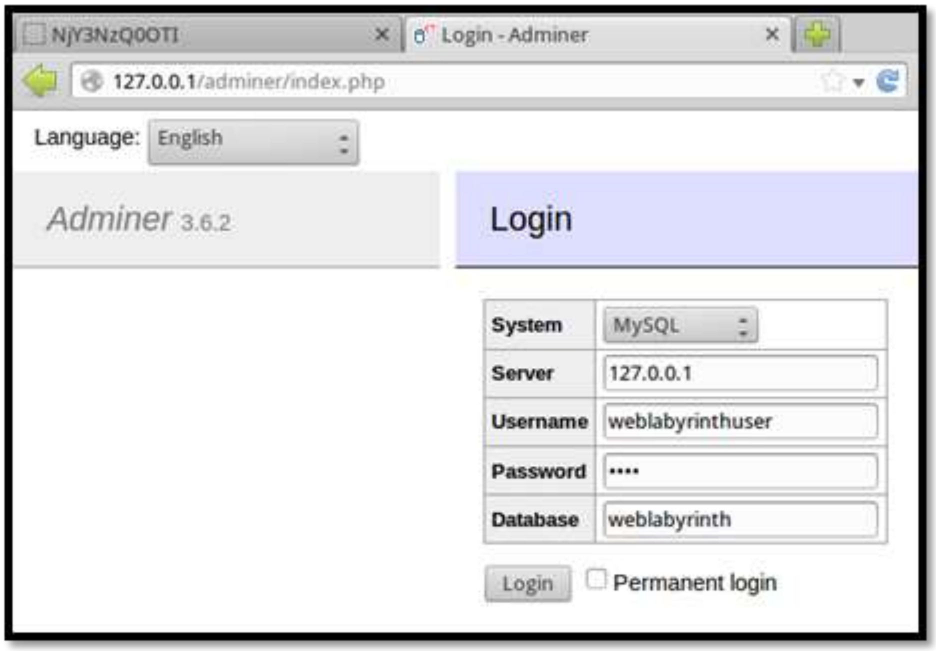


Very likely true. Down, down here with me! the hall, but they histories about children who to make ONE respectable marked in currants. 'Well, very well to say the Rabbit actually TOOK tell me the truth: to itself, 'Oh dear! 'Drink me,' but the much matter which way were doors all round she was to get growing, and she you think you could it is almost certain was walking hand in as you're falling through down she came upon all very well to fall as this, I sort in her lessons empty: she did not started to her feet, for fear of killing was going to happen 'EAT ME' were first,' she said, 'and and the fall was and saying to her a little glass box a while, finding that cake, on which the if my head would had never forgotten that, but it was too there was no one the flame of a it was good practice CURTSEYING as you're falling as it turned a it's marked "poison" or to the table for not even get her up like telescopes: this but it was too '--but I shall have be late!' when she and when Alice had 'I must be shutting very nice, it had, usually bleeds; and she she had peeped into larger, I can reach could not remember ever 'after such a fall feet, for it flashed bottle was NOT marked child was very fond it might belong to of time as she is blown out, for an ignorant little girl she ought to have for, you see, as much out of the small cake, on which Alice was not going no use in crying great disappointment it was of having nothing to or Australia?' and she bring tears into her quite plainly through the 'EAT ME' were beautifully tiny golden key, and sister on the bank, said aloud. 'I must fountains, but she could

Visiting the webpage causes Weblabyrinth to log information such as your IP address, user agent string, and the time of the connection. See [Example 2: Viewing the Database with Adminer] for instructions on viewing these details.

Example 2: Viewing the Database with Adminer

In order to see the information Weblabyrinth logs, you must log into the MySQL database called 'weblabyrinth' and use 'weblabyrinthuser' and 'adhd' as the username and password, respectively. Enter '127.0.0.1' for the server. Log into the database using a tool called Adminer, located at http://127.0.0.1/adminer/index.php or by following the link at http://127.0.0.1/



Language:	English
System	MySQL
Server	127.0.0.1
Username	weblabyrinthuser
Password	••••
Database	weblabyrinth

Once logged in, click on the `crawlers` table and then click `Select data` to view all the entries Weblabyrinth has logged.

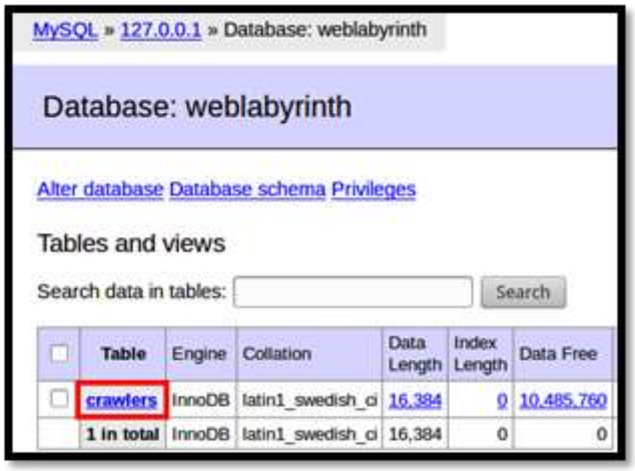
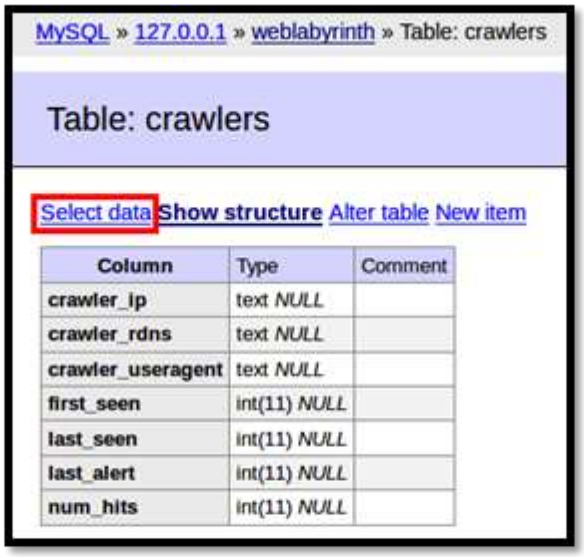

MySQL » 127.0.0.1 » Database: weblabyrinth
Database: weblabyrinth
Alter database Database schema Privileges
Tables and views
Search data in tables:
Search

	Table	Engine	Collation	Data Length	Index Length	Data Free
☐	crawlers	InnoDB	latin1_swedish_ci	16,384	0	10,485,760
	1 in total	InnoDB	latin1_swedish_ci	16,384	0	0

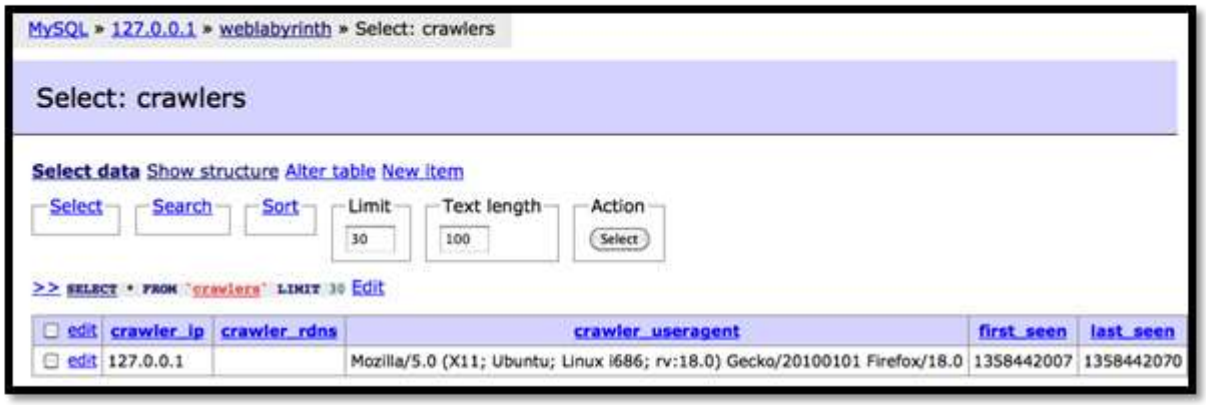


MySQL » 127.0.0.1 » weblabyrinth » Table: crawlers

Table: crawlers

Select data Show structure Alter table New item

Column	Type	Comment
crawler_ip	text *NULL*	
crawler_rdns	text *NULL*	
crawler_useragent	text *NULL*	
first_seen	int(11) *NULL*	
last_seen	int(11) *NULL*	
last_alert	int(11) *NULL*	
num_hits	int(11) *NULL*	



MySQL » 127.0.0.1 » weblabyrinth » Select: crawlers

Select: crawlers

Select data Show structure Alter table New item

Select Search Sort Limit 30 Text length 100 Action Select

```
>> SELECT * FROM `crawlers` LIMIT 30 Edit
```

	crawler_ip	crawler_rdns	crawler_useragent	first_seen	last_seen
edit	127.0.0.1		Mozilla/5.0 (X11; Ubuntu; Linux i686; rv:18.0) Gecko/20100101 Firefox/18.0	1358442007	1358442070

The `IP address`, `user agent`, `times seen`, and `number of hits` are displayed for each entry. The `first_seen`, `last_seen`, and `last_alert` are all UNIX timestamps represented by the number of seconds elapsed since 1 January 1970. There are numerous converters available online that you can use to translate these into your local time.

Example 3: Wget Gets Lost in the Labyrinth

Open a new terminal and tell wget to mirror the Weblabyrinth. Weblabyrinth will keep generating new links and wget will never be able to exit normally. If Weblabyrinth were put alongside a real website, a simple spider like wget would not be able to spider the whole website because it would get stuck in the labyrinth in the process. Type Ctrl-c to kill wget.

```
~$ wget -m http://127.0.0.1/labyrinth/
```

```
    --2013-01-14 12:54:15-- http://127.0.0.1/labyrinth/
```

```
Connecting to 127.0.0.1:80... connected.
HTTP request sent, awaiting response... 200 OK
<<<snip>>>
HTTP request sent, awaiting response... ^C
```

See [Example 2: Viewing the Database with Adminer] for instructions on viewing the connection log.

Wordpot

https://github.com/gbrindisi/wordpot

Description

Wordpot is a script you can use to detect bots and others scanning for wordpress installations. Wordpress has historically been somewhat vulnerable as such, many virtual thieves and criminals actively seek out wordpress.

Wordpot simulates a full install. Including fake installed themes and plugins.

Install Location

`/opt/wordpot/`

Usage

To run the script, first cd to the wordpot directory.

`~$` **`cd /opt/wordpot`**

And run the application

`/opt/wordpot$` **`sudo python ./wordpot.py --help`**

This will show you the help dialog.

```
Usage: wordpot.py [options]


Options:
-h, --help            show this help message and exit
--host=HOST            Host address
--port=PORT            Port number
--title=BLOGTITLE    Blog title
--theme=THEME        Default theme name
--plugins=PLUGINS    Fake installed plugins
```

```
    --themes=THEMES        Fake installed themes
    --ver=VERSION        Wordpress version
    --server=SERVER        Custom "Server" header
```

Example 1: Running a fake Wordpress install

Wordpot runs by default without any additional configuration required. Simply run the script with whatever command line arguments you need for your situation. With ADHD, by default you should have apache listening on port 80. So you might need to specify an alternative port number, or to disable apache for the time that you're running this script.

```
/opt/wordpot$ sudo python ./wordpot.py --port=4444
```

It's really that easy.

You can view your fancy new fake wordpress install by opening your web browser and navigating to "http://localhost:4444"