

# Suricata IDS Workshop



# IDS vs IPS



**INTRUSION  
DETECTION  
SYSTEM**



**INTRUSION  
PREVENTION  
SYSTEM**

# IDP Conceptualmente

*“Analizar la información de sistemas informáticos para identificar y potencialmente bloquear los intentos de intrusión”.*

# IDP Fuentes de Información

- Información almacenada en los sistemas
- Eventos ocurridos
- Tráfico de red

# IDP según su ubicación

Al igual que los FW, los IDPs puede ubicarse en:

- Network: NIDS / NIPS
- Host: HIDS / HIPS

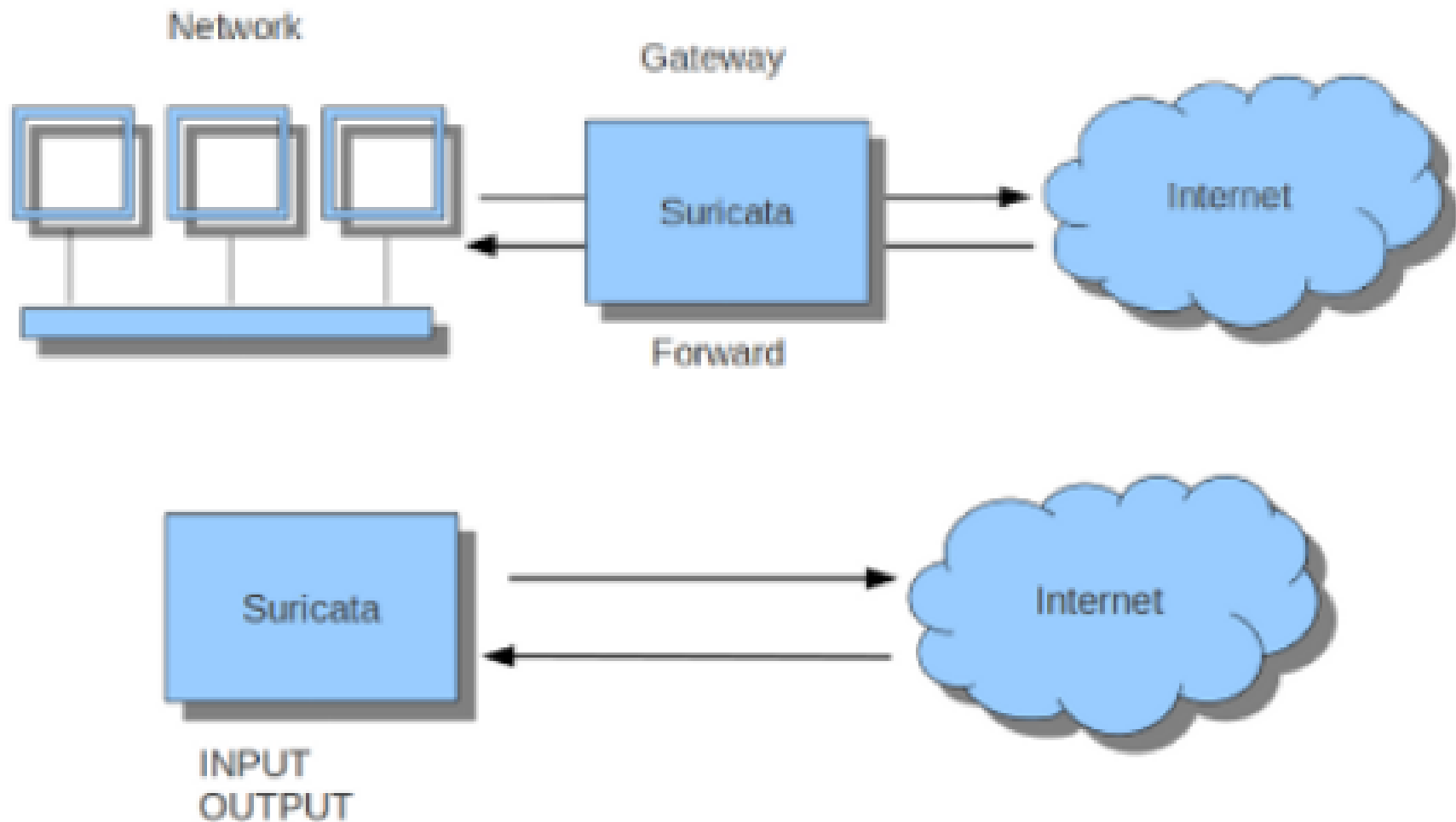
# IDP Soluciones Open Source



# Suricata

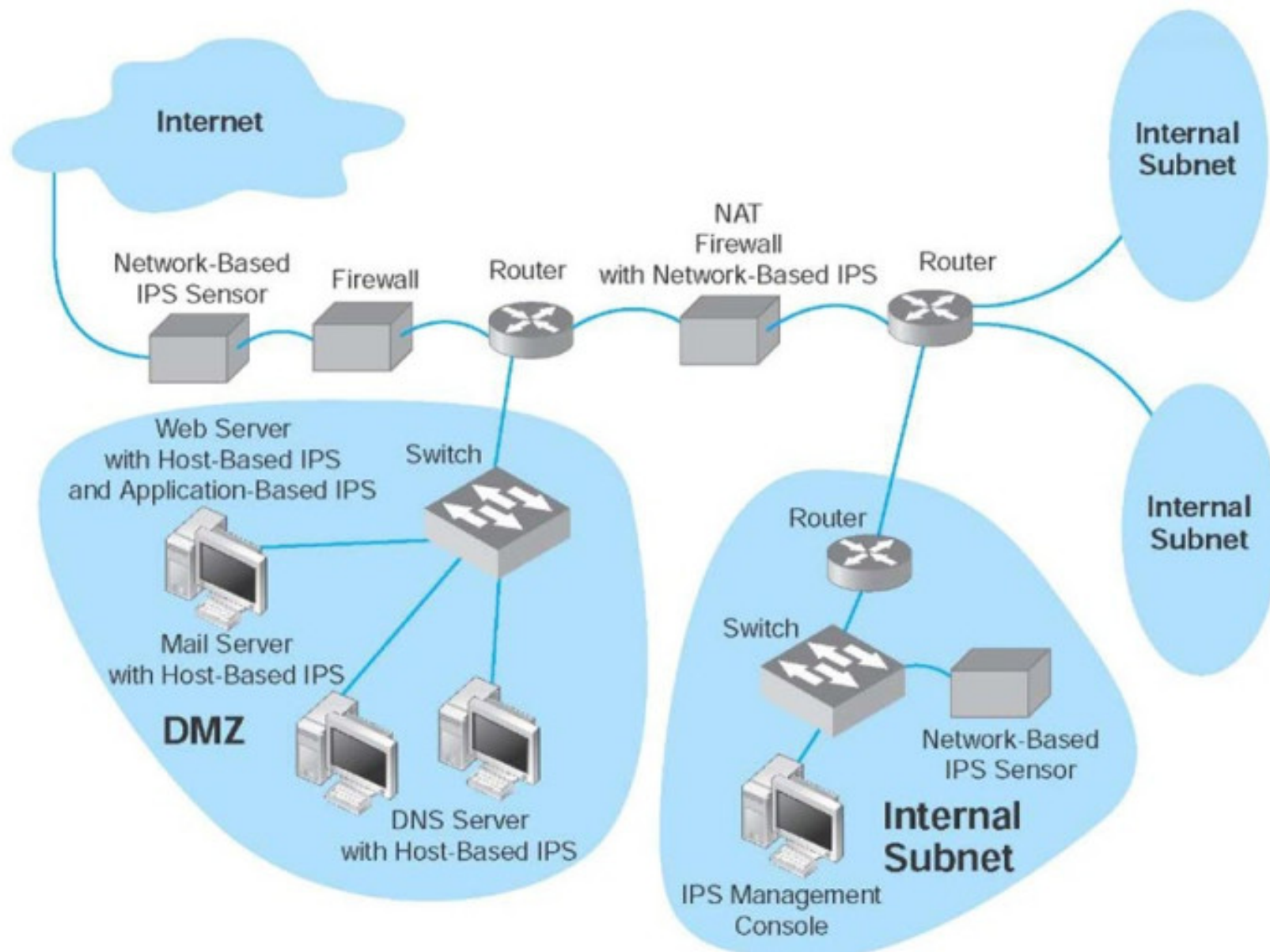
- Open Source Next Generation Intrusion Detection and Prevention Engine
- Multi-threading
- La librería HTP es un normalizador y analizador de HTTP escrito por Ivan Ristic
- Funciona tanto como IDS e IPS
- Reglas compatibles con Snort

# Suricata - Ubicaciones





# Suricata - Sensores



# Sistemas Operativos Soportados

- Linux
- FreeBSD
- OpenBSD
- Mac OS X
- Windows

# ¿Detección Basada en Qué?

- Reglas
- Anomalías

# Instalación

```
git clone https://github.com/securetia/suricata-workshop
```

```
apt-get install --no-install-recommends suricata
```

```
cd suricata-workshop
```

```
cp suricata.yaml /etc/suricata/
```

```
cp securetia.rules /etc/suricata/rules/
```

# Ejecución y Archivos Importantes

```
suricata -i eth0
```

```
suricata -i eth0 -c /etc/suricata/suricata.yaml
```

```
tail -f /var/log/suricata/fast.log
```

# Reglas

```
drop tcp $HOME_NET any -> $EXTERNAL_NET any (msg:"ET  
TROJAN Likely Bot  
Nick in IRC (USA +..)"; flow:established,to_server;  
flowbits:isset,is_proto_irc; content:"NICK "; pcre:"/NICK  
.*USA.*[0-9]{3,}/i"; classtype:trojan-activity;  
reference:url,doc.emergingthreats.net/2008124;  
reference:url,www.emergingthreats.net/cgi-  
bin/cvsweb.cgi/sigs/VIRUS/TROJAN_IRC_Bots;  
sid:2008124; rev:2;)
```



Action



Header



Rule options

# Reglas - Acción

**pass | drop | reject | alert**

```
drop tcp $HOME_NET any -> $EXTERNAL_NET any (msg:"ET  
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reference:url,www.emergingthreats.net/cgi-  
bin/cvsweb.cgi/sigs/VIRUS/TROJAN_IRC_Bots;  
sid:2008124; rev:2;)
```

# Reglas - Protocolo

**tcp | udp | ip | http | ftp | ...**

```
drop tcp $HOME_NET any -> $EXTERNAL_NET any (msg:"ET  
TROJAN Likely Bot  
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reference:url,doc.emergingthreats.net/2008124;  
reference:url,www.emergingthreats.net/cgi-  
bin/cvsweb.cgi/sigs/VIRUS/TROJAN_IRC_Bots;  
sid:2008124; rev:2;)
```





# Reglas - Origen

## ip | variable

```
drop tcp $HOME_NET any -> $EXTERNAL_NET any (msg:"ET  
TROJAN Likely Bot  
Nick in IRC (USA +..)"; flow:established,to_server;  
flowbits:isset,is_proto_irc; content:"NICK "; pcre:"/NICK  
.*USA.*[0-9]{3,}/i"; classtype:trojan-activity;  
reference:url,doc.emergingthreats.net/2008124;  
reference:url,www.emergingthreats.net/cgi-  
bin/cvswweb.cgi/sigs/VIRUS/TROJAN_IRC_Bots;  
sid:2008124; rev:2;)
```

# Reglas - Destino

## ip | variable

```
drop tcp $HOME_NET any -> $EXTERNAL_NET any (msg:"ET  
TROJAN Likely Bot  
Nick in IRC (USA +..)"; flow:established,to_server;  
flowbits:isset,is_proto_irc; content:"NICK "; pcre:"/NICK  
.*USA.*[0-9]{3,}/i"; classtype:trojan-activity;  
reference:url,doc.emergingthreats.net/2008124;  
reference:url,www.emergingthreats.net/cgi-  
bin/cvsweb.cgi/sigs/VIRUS/TROJAN_IRC_Bots;  
sid:2008124; rev:2;)
```

# Reglas - Puertos

```
drop tcp $HOME_NET any -> $EXTERNAL_NET any (msg:"ET  
TROJAN Likely Bot  
Nick in IRC (USA +..)"; flow:established,to_server;  
flowbits:isset,is_proto_irc; content:"NICK "; pcre:"/NICK  
.*USA.*[0-9]{3,}/i"; classtype:trojan-activity;  
reference:url,doc.emergingthreats.net/2008124;  
reference:url,www.emergingthreats.net/cgi-  
bin/cvswweb.cgi/sigs/VIRUS/TROJAN_IRC_Bots;  
sid:2008124; rev:2;)
```



# Reglas - Dirección

```
drop tcp $HOME_NET any -> $EXTERNAL_NET any (msg:"ET  
TROJAN Likely Bot  
Nick in IRC (USA +..)"; flow:established,to_server;  
flowbits:isset,is_proto_irc; content:"NICK "; pcre:"/NICK  
.*USA.*[0-9]{3,}/i"; classtype:trojan-activity;  
reference:url,doc.emergingthreats.net/2008124;  
reference:url,www.emergingthreats.net/cgi-  
bin/cvsweb.cgi/sigs/VIRUS/TROJAN_IRC_Bots;  
sid:2008124; rev:2;)
```

# Reglas - Meta Información

**msg** | **sid** | **rev** | **classtype** | **reference** | **priority**

```
drop tcp $HOME_NET any -> $EXTERNAL_NET any (msg:"ET  
TROJAN Likely Bot  
Nick in IRC (USA +..)"; flow:established,to_server;  
flowbits:isset,is_proto_irc; content:"NICK "; pcre:"/NICK  
.*USA.*[0-9]{3,}/i"; classtype:trojan-activity;  
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.*USA.*[0-9]{3,}/i"; classtype:trojan-activity;  
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sid:2008124; rev:2;)
```

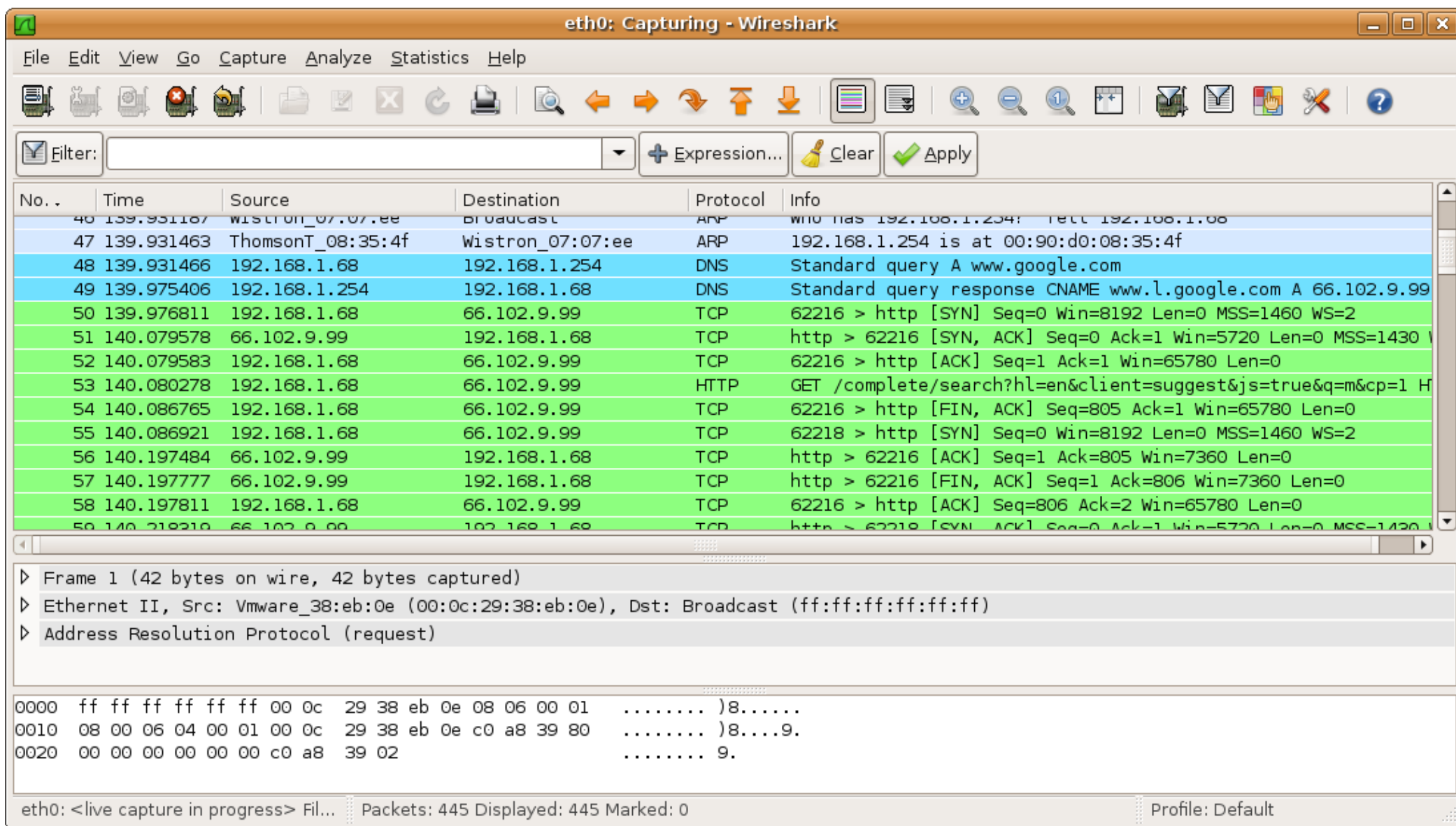


# Reglas - Meta Información

msg | sid | rev | classtype | reference | **priority**

```
drop tcp $HOME_NET any -> $EXTERNAL_NET any (msg:"ET  
TROJAN Likely Bot  
Nick in IRC (USA +..)"; flow:established,to_server;  
flowbits:isset,is_proto_irc; content:"NICK "; pcre:"/NICK  
.*USA.*[0-9]{3,}/i"; classtype:trojan-activity;  
reference:url,doc.emergingthreats.net/2008124;  
reference:url,www.emergingthreats.net/cgi-  
bin/cvsweb.cgi/sigs/VIRUS/TROJAN_IRC_Bots;  
sid:2008124; rev:2;)
```

# Wireshark



eth0: Capturing - Wireshark

File Edit View Go Capture Analyze Statistics Help

Filter:  + Expression... Clear Apply

No.	Time	Source	Destination	Protocol	Info
46	139.931187	Wistron_07:07:ee	Broadcast	ARP	Who has 192.168.1.254? Tell 192.168.1.68
47	139.931463	ThomsonT_08:35:4f	Wistron_07:07:ee	ARP	192.168.1.254 is at 00:90:d0:08:35:4f
48	139.931466	192.168.1.68	192.168.1.254	DNS	Standard query A www.google.com
49	139.975406	192.168.1.254	192.168.1.68	DNS	Standard query response CNAME www.l.google.com A 66.102.9.99
50	139.976811	192.168.1.68	66.102.9.99	TCP	62216 > http [SYN] Seq=0 Win=8192 Len=0 MSS=1460 WS=2
51	140.079578	66.102.9.99	192.168.1.68	TCP	http > 62216 [SYN, ACK] Seq=0 Ack=1 Win=5720 Len=0 MSS=1430
52	140.079583	192.168.1.68	66.102.9.99	TCP	62216 > http [ACK] Seq=1 Ack=1 Win=65780 Len=0
53	140.080278	192.168.1.68	66.102.9.99	HTTP	GET /complete/search?hl=en&client=suggest&js=true&q=m&cp=1 H
54	140.086765	192.168.1.68	66.102.9.99	TCP	62216 > http [FIN, ACK] Seq=805 Ack=1 Win=65780 Len=0
55	140.086921	192.168.1.68	66.102.9.99	TCP	62218 > http [SYN] Seq=0 Win=8192 Len=0 MSS=1460 WS=2
56	140.197484	66.102.9.99	192.168.1.68	TCP	http > 62216 [ACK] Seq=1 Ack=805 Win=7360 Len=0
57	140.197777	66.102.9.99	192.168.1.68	TCP	http > 62216 [FIN, ACK] Seq=1 Ack=806 Win=7360 Len=0
58	140.197811	192.168.1.68	66.102.9.99	TCP	62216 > http [ACK] Seq=806 Ack=2 Win=65780 Len=0
59	140.218218	66.102.9.99	192.168.1.68	TCP	http > 62218 [SYN, ACK] Seq=0 Ack=1 Win=5720 Len=0 MSS=1430

Frame 1 (42 bytes on wire, 42 bytes captured)

Ethernet II, Src: Vmware\_38:eb:0e (00:0c:29:38:eb:0e), Dst: Broadcast (ff:ff:ff:ff:ff:ff)

Address Resolution Protocol (request)

```
0000  ff ff ff ff ff ff 00 0c 29 38 eb 0e 08 06 00 01  ..... )8.....
0010  08 00 06 04 00 01 00 0c 29 38 eb 0e c0 a8 39 80  ..... )8....9.
0020  00 00 00 00 00 00 c0 a8 39 02  ..... 9.
```

eth0: <live capture in progress> Fil... Packets: 445 Displayed: 445 Marked: 0 Profile: Default

# Laboratorio (sólo por hoy)

**ec2-184-73-114-110.compute-1.amazonaws.com**

**184.73.114.110**

# Conexiones FTP

**alert tcp any any -> any 21 (msg:"FTP"; sid:10; rev:1;)**

# Conexiones FTP

**alert tcp any any -> \$FTP\_SERVERS 21 (msg:"FTP"; sid:10; rev:1;)**

# Detección de Protocolo FTP

```
alert ftp any any -> any 21 (msg:"FTP"; sid:11; rev:2;)
```

# FTP Anónimo

```
alert tcp any any -> any 21 (msg:"FTP Anonimo";  
content:"anonymous"; sid:12; rev:1;)
```



# FTP Anónimo (depth)

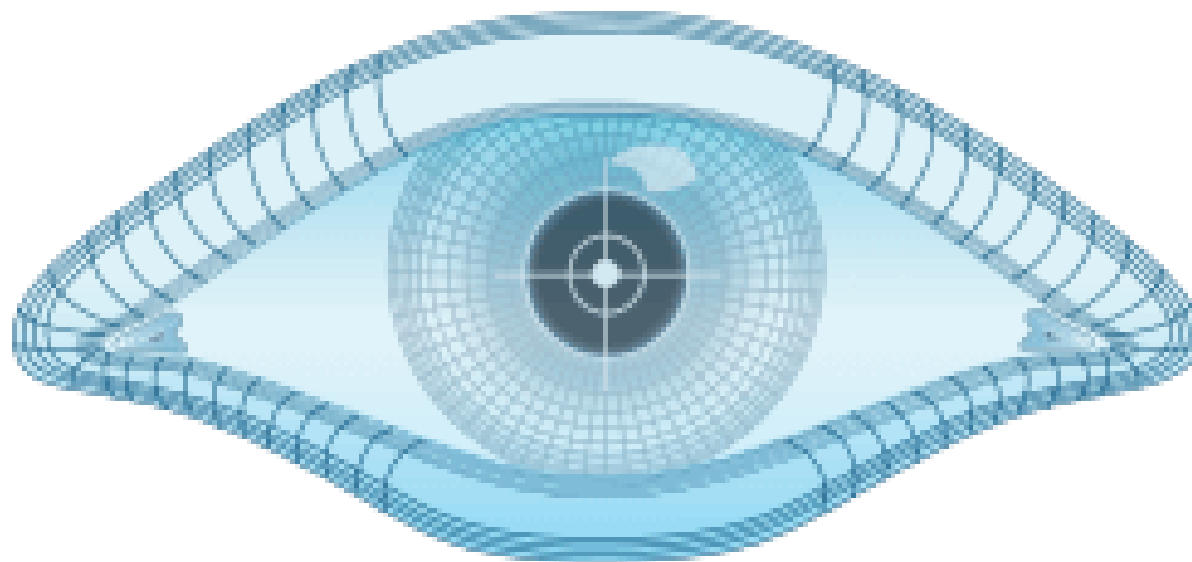
```
alert tcp any any -> any 21 (msg:"FTP Anonimo";  
content:"anonymous"; depth:32; sid:13; rev:1;)
```

# FTP Anónimo (nocase)

```
alert tcp any any -> any 21 (msg:"FTP Anonimo";  
content:"anonymous"; nocase; depth:32; sid:14; rev:2;) 
```

# FTP Anónimo (user anonymous)

```
alert tcp any any -> $FTP_SERVERS 21 (msg:"FTP Anonimo";  
content:"user anonymous"; nocase; depth:32; sid:15; rev:3;) )
```



# NMAP

# Nmap -sT en Wireshark

# Suricata flags

- F - FIN (LSB in TCP Flags byte)
- S - SYN
- R - RST
- P - PSH
- A - ACK
- U - URG
- 2 - Reserved bit 2
- 1 - Reserved bit 1 (MSB in TCP Flags byte)

There are also logical operators that can be used to specify matching criteria for the indicated flags:

- + - ALL flag, match on all specified flags plus any others
- \* - ANY flag, match on any of the specified flags
- ! - NOT flag, match if the specified flags aren't set in the packet

# Regla Nmap -sT

```
alert tcp any any -> any any (msg:"Port Scan"; flags:S; threshold: type both, track by_src, count 20, seconds 3; sid:3; rev:1;)
```

# Suricata thresholds

threshold:

type <threshold|limit|both>, track <by\_src|by\_dst>, count <N>, seconds <T>



# Nmap -sS en Wireshark

# Regla Nmap -sS

```
alert tcp any any -> any any (msg:"Nmap -sS"; flags:S; COMPLETAR;  
sid:4; rev:1;)
```

# Nmap -sA en Wireshark

# Regla Nmap -sA

```
alert tcp any any -> any any (msg:"Port Scan"; flags:A; threshold: type  
both, track by_src, count 20, seconds 3; sid:5; rev:1;)
```

# Nmap -sF en Wireshark

# Regla Nmap -sF

```
alert tcp any any -> any any (msg:"Port Scan"; flags:F; threshold: type  
both, track by_src, count 20, seconds 3; sid:6; rev:1;)
```

# onesixtyone en Wireshark

**onesixtyone -c /usr/share/doc/onesixtyone/dict.txt 127.0.0.1**

# Regla onesixtyone

**alert udp any any -> any 161 (msg:"onesixtyone"; threshold: type both, track by\_src, count 5, seconds 10; flow:to\_server; sid:7; rev:1;)**



# Regla onesixtyone

```
alert udp any any -> any any (msg:"onesixtyone"; content:"|02 01 00  
02 01 00 30 0E 30 0C 06 08 2B 06 01 02 01 01 01 00 05 00|";  
threshold: type both, track by_src, count 5, seconds 10; sid:7; rev:2;)
```

# Reglas complejas y probadas

**<https://rules.emergingthreats.net/>**

# Preguntas

