Detect DOS and DDOS Attacks with Wireshark

@mmar

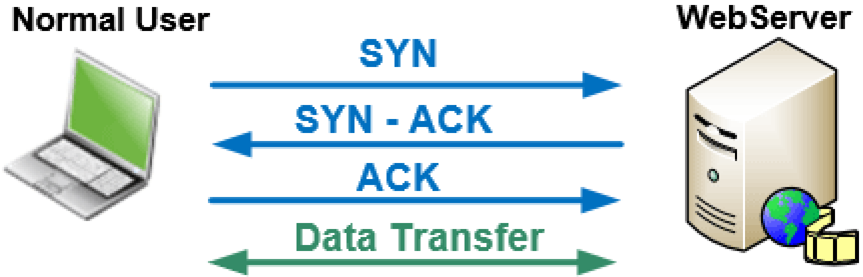
Wireshark

Few tools are as useful to the IT professional as **Wireshark**, the go-to network packet capture tool. Wireshark will help you capture network packets and display them at a granular level. Once these packets are broken down, you can use them for real-time or offline analysis. This tool lets you put your network traffic under a microscope, and then filter and drill down into it, zooming in on the root cause of problems, assisting with network analysis and ultimately network security

Threeway Handshake

3- way Handhake

- When a client attempts to connect to a server using the TCP protocol e.g. (HTTP or HTTPS), it is first required to perform a three-way handshake before any data is exchanged between the two. Since the three-way TCP handshake is always initiated by the client it sends a SYN packet to the server.



- The server next replies acknowledging the request and at the same time sends its own SYN request – this is the SYN-ACK packet. Finally, the client sends an ACK packet which confirms both two hosts agree to create a connection. The connection is therefore established and data can be transferred between them.

DOS Detection

Wireshark provides an easy interface to detect DOS and DDOS attacks and detect malicious IPs

Manual Inspection

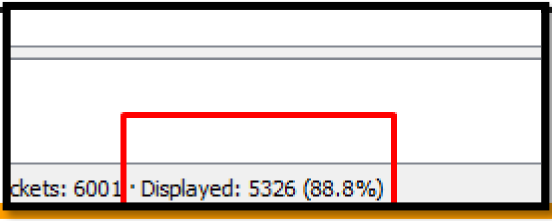
DOS Detection

- You can detect a DOS attack by simply viewing a pcap file, a large no of packets from a source to the target within a short span of time indicate a DOS attack
- Whereas in DDOS, you will see, a number of IP addresses (Mostly spoofed) sending packets to a single target

Detecting DDOS

- A big giveaway is a large number of SYN packets being sent to a single PC. We are able to note the start of the attack by a huge flood of TCP traffic. We can check the number of syn packets with the following flags

```
tcp.flags.syn == 1 and tcp.flags.ack == 0
tcp.flags.syn == 1
```

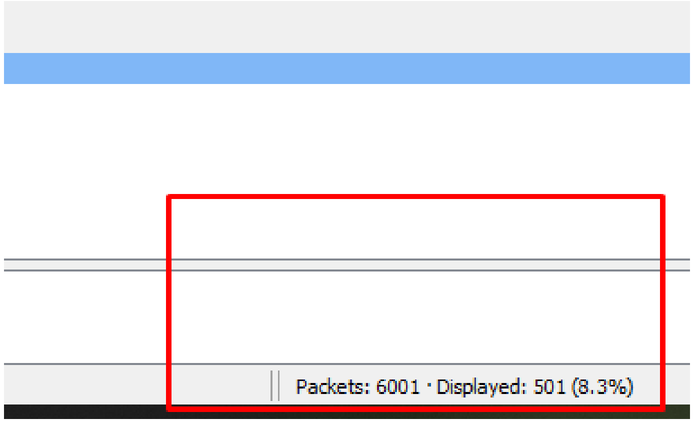


ckets: 6001 · Displayed: 5326 (88.8%)

Detecting DDOS

- Moreover, If we use the following display filter to display syn/ack packets there will be a huge discrepancy between them and the previous filter packets

```
tcp.flags.syn == 1 and tcp.flags.ack == 1
```

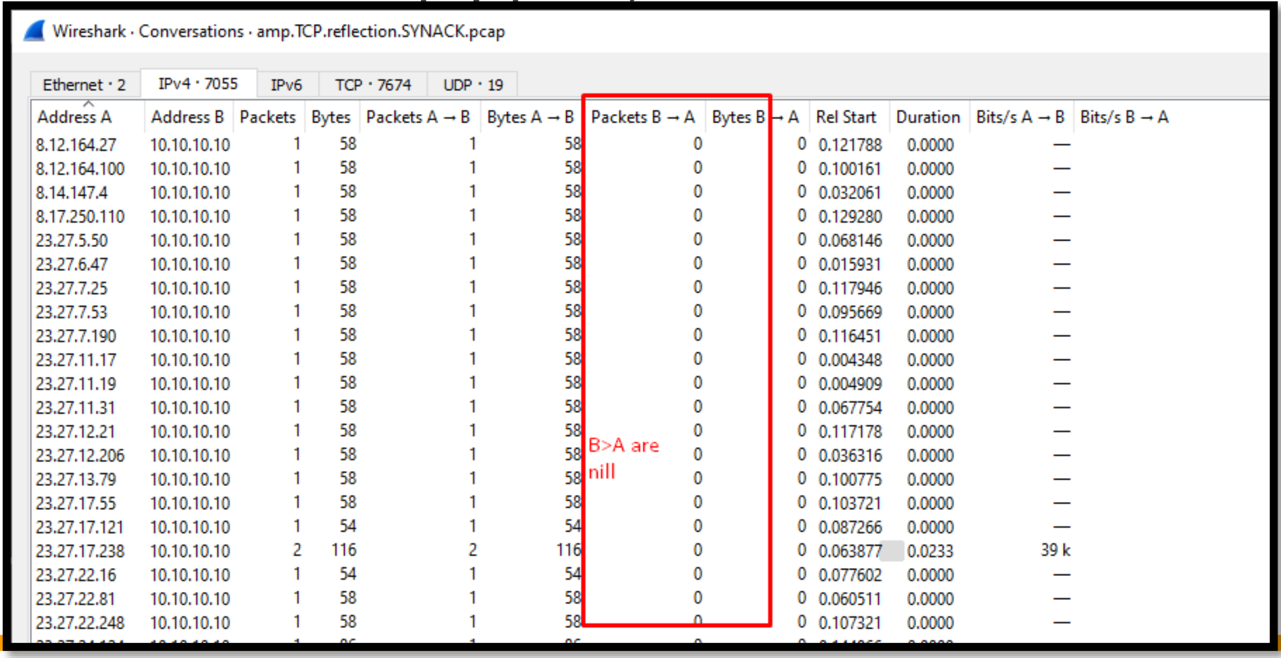


Packets: 6001 · Displayed: 501 (8.3%)

Detection with Conversations

Detecting DDOS

- Go to statistics and select conversations. If there are a number of packets targeted on one IP from different Source Addresses and no reply pack, it indicates DDOS



Wireshark · Conversations · amp.TCP.reflection.SYNACK.pcap

Address A	Address B	Packets	Bytes	Packets A → B	Bytes A → B	Packets B → A	Bytes B → A	Rel Start	Duration	Bits/s A → B	Bits/s B → A
8.12.164.27	10.10.10.10	1	58	1	58	0	0	0.121788	0.0000	—	
8.12.164.100	10.10.10.10	1	58	1	58	0	0	0.100161	0.0000	—	
8.14.147.4	10.10.10.10	1	58	1	58	0	0	0.032061	0.0000	—	
8.17.250.110	10.10.10.10	1	58	1	58	0	0	0.129280	0.0000	—	
23.27.5.50	10.10.10.10	1	58	1	58	0	0	0.068146	0.0000	—	
23.27.6.47	10.10.10.10	1	58	1	58	0	0	0.015931	0.0000	—	
23.27.7.25	10.10.10.10	1	58	1	58	0	0	0.117946	0.0000	—	
23.27.7.53	10.10.10.10	1	58	1	58	0	0	0.095669	0.0000	—	
23.27.7.190	10.10.10.10	1	58	1	58	0	0	0.116451	0.0000	—	
23.27.11.17	10.10.10.10	1	58	1	58	0	0	0.004348	0.0000	—	
23.27.11.19	10.10.10.10	1	58	1	58	0	0	0.004909	0.0000	—	
23.27.11.31	10.10.10.10	1	58	1	58	0	0	0.067754	0.0000	—	
23.27.12.21	10.10.10.10	1	58	1	58	0	0	0.117178	0.0000	—	
23.27.12.206	10.10.10.10	1	58	1	58	0	0	0.036316	0.0000	—	
23.27.13.79	10.10.10.10	1	58	1	58	0	0	0.100775	0.0000	—	
23.27.17.55	10.10.10.10	1	58	1	58	0	0	0.103721	0.0000	—	
23.27.17.121	10.10.10.10	1	54	1	54	0	0	0.087266	0.0000	—	
23.27.17.238	10.10.10.10	2	116	2	116	0	0	0.063877	0.0233	39 k	
23.27.22.16	10.10.10.10	1	54	1	54	0	0	0.077602	0.0000	—	
23.27.22.81	10.10.10.10	1	58	1	58	0	0	0.060511	0.0000	—	
23.27.22.248	10.10.10.10	1	58	1	58	0	0	0.107321	0.0000	—	

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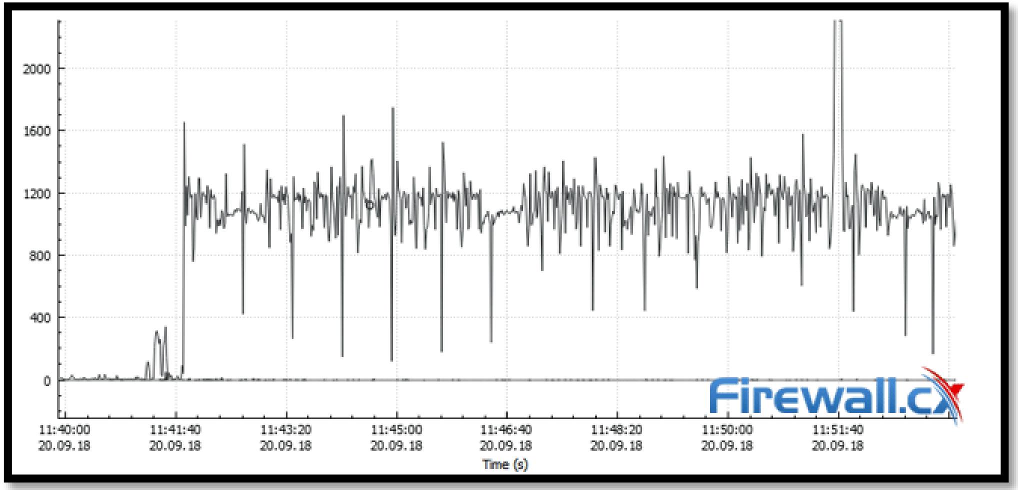
Detection with Graphs

Detecting DOS/ DDOS

- We can also view Wireshark’s graphs for a visual representation of the uptick in traffic. The I/O graph can be found via the Statistics>I/O Graph menu. It shows a massive spike in overall packets from near 0 to up to 2400 packets a second.



DEMO

THANKS