



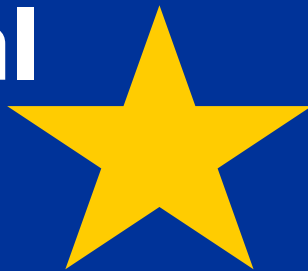
# SharkFest '17 Europe

## Solving Real Problems for Real People

Step-by-step case studies

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# Packet A-(nalysis) Team

Helping strangers on the Internet via  
[packetbomb.com](http://packetbomb.com)





# PCAPS

<http://packetbomb.com/sf17eu>





# Slow Tput for first 6.5 Sec

- Post on /r/networking
- Rack of 7 Dell PowerEdge servers
- 1Gbps TOR switch
- Low throughput
- Initial delay of 6.5sec
- Troubleshooting for over a month
- Show me the pcap





# 6.5 Sec Delay Takeaway

- Capture the 3way handshake
  - MSS tells you the MTU
  - Need wscale to calculate receive window
- Add TCP seq numbers to columns
- Big round numbers mean something- 200, 400, 800
- Set a time reference
- Learn TCP/IP basics
  - PMTUD
  - MTU probing - `/proc/sys/net/ipv4/tcp_mtu_probing`





# Slow FTP Upload

- Replaced Fortigate firewall with new Checkpoint
- Video team complains of slow upload to London
- NetEng team doesn't deal with many performance issues
- ~5Mbps now, was ~20Mbps
- To the pcaps!





# Slow FTP Upload Takeaway

- Always look at RTT
- Latency is a huge factor for some apps/protocols
- PSH bit can be an indicator of buffer size
- Bytes in flight should reach BDP





# DC2DC Transfer Performance

- Poor TCP performance between two DCs in one direction
- Easily reproducible with FTP or iperf
- Problem doesn't exist in the opposite direction







# DC2DC Performance Takeaway

- Tcptrace stream graph is your friend
- Look at the angle of the line in the stream graph
- Changes in angle means something happened
- Do sequence number analysis
  - Go slow and be patient
  - Double and triple check
- Get captures from both ends





# Contact

- Fill out the session survey!
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