Coordinated Distributions Method for Tracking Botnets Sending out Spam

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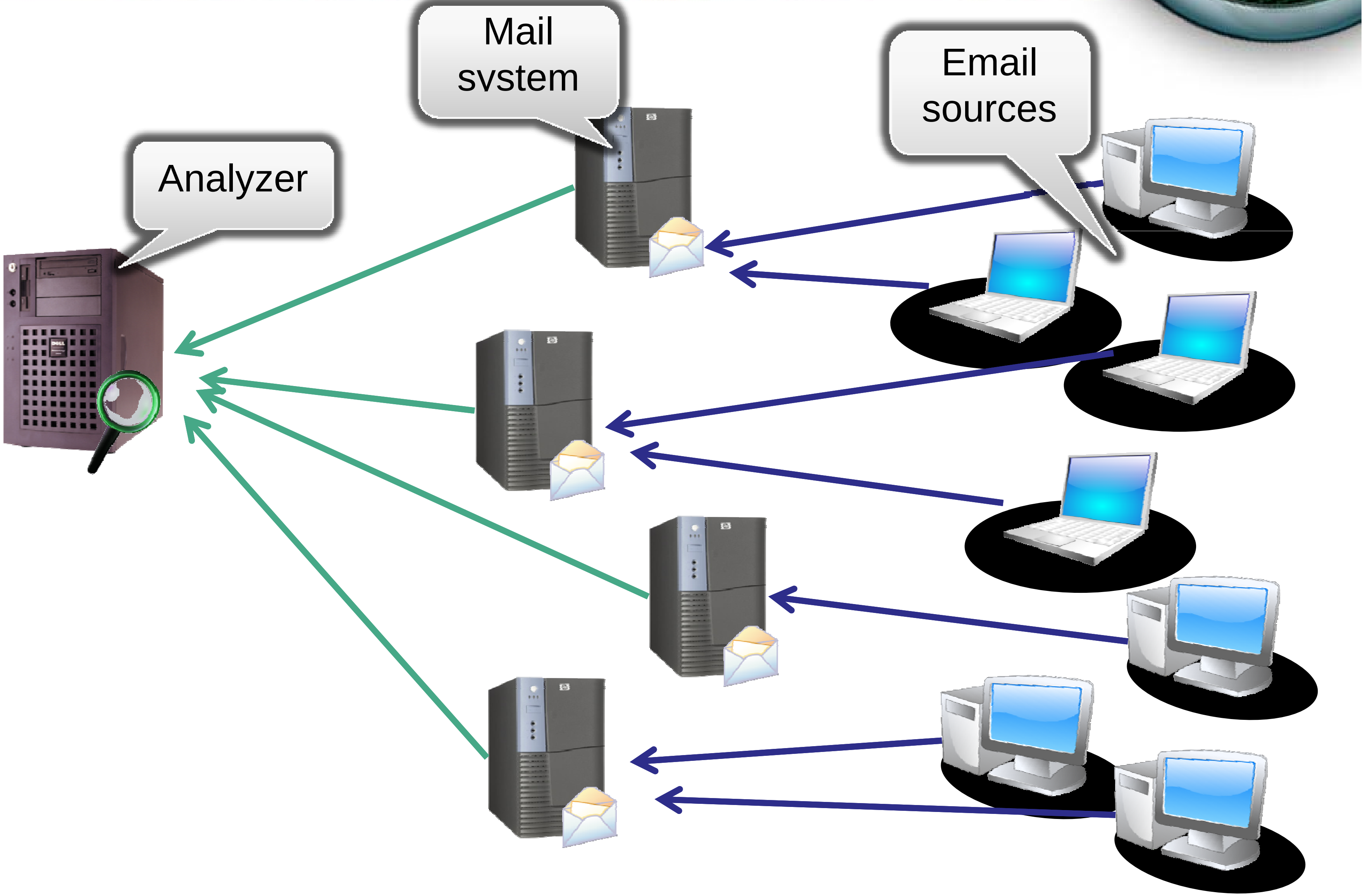
Botnets and spam distributions

Botnets and spam distributions are closely tied together and benefit from each other

- Due to their immense size, combined with dynamically changeable IP addresses, botnets are a powerful tool for spam distribution.

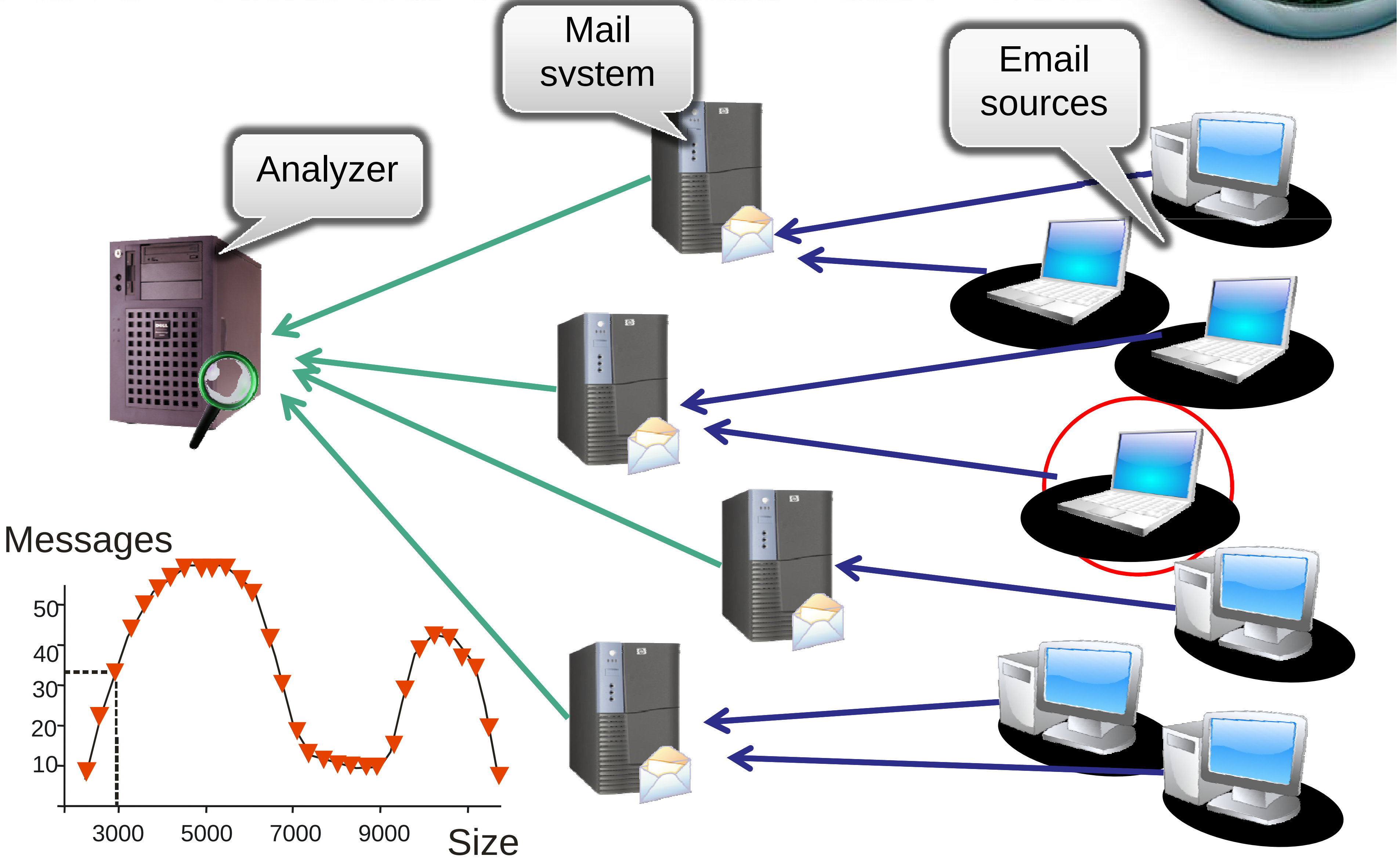
- Distributing spam messages with malicious content results in larger botnets.



Mail svstem

Email sources

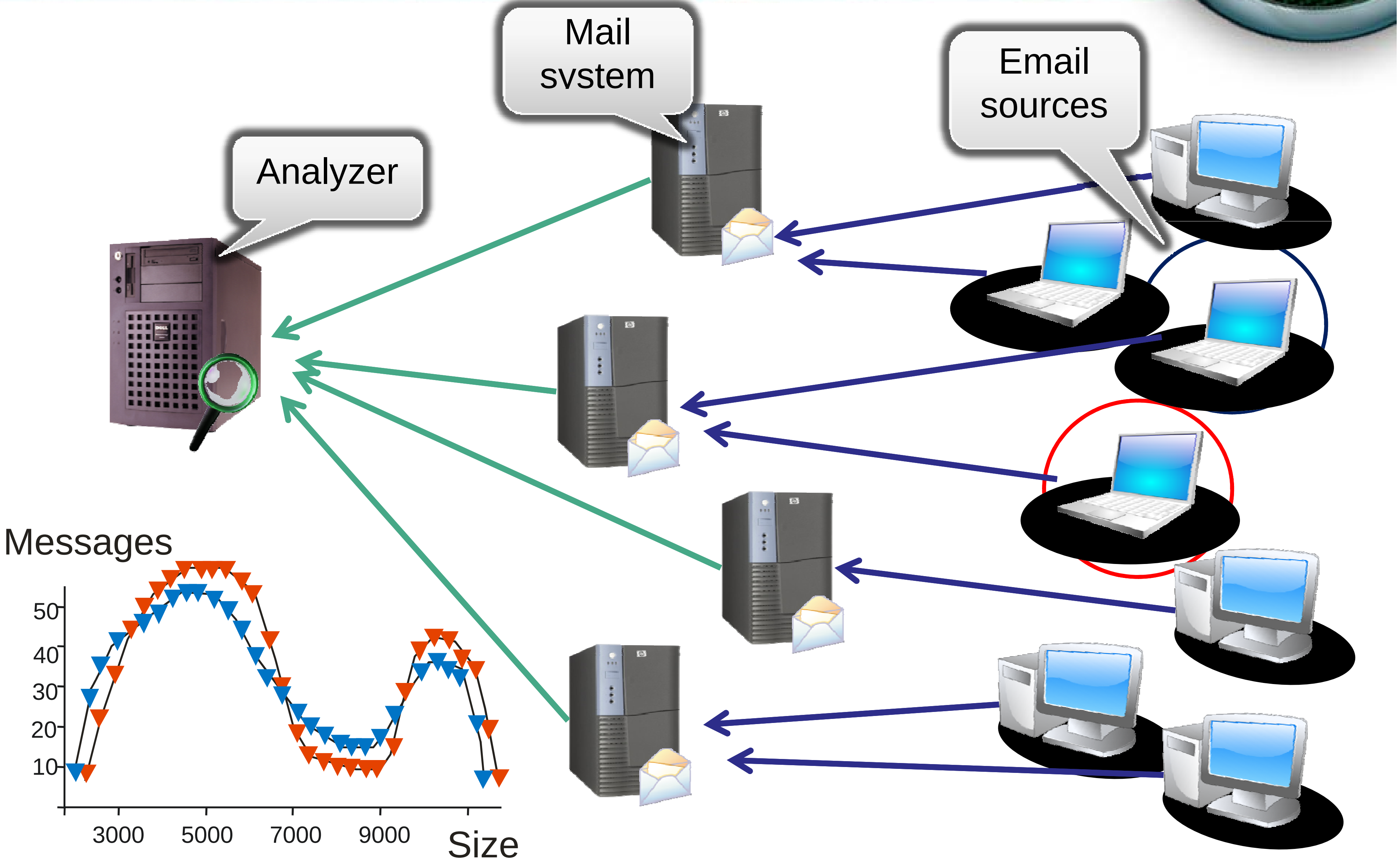
Analyzer



Mail svstem

Email sources

Analyzer



Mail svstem

Email sources

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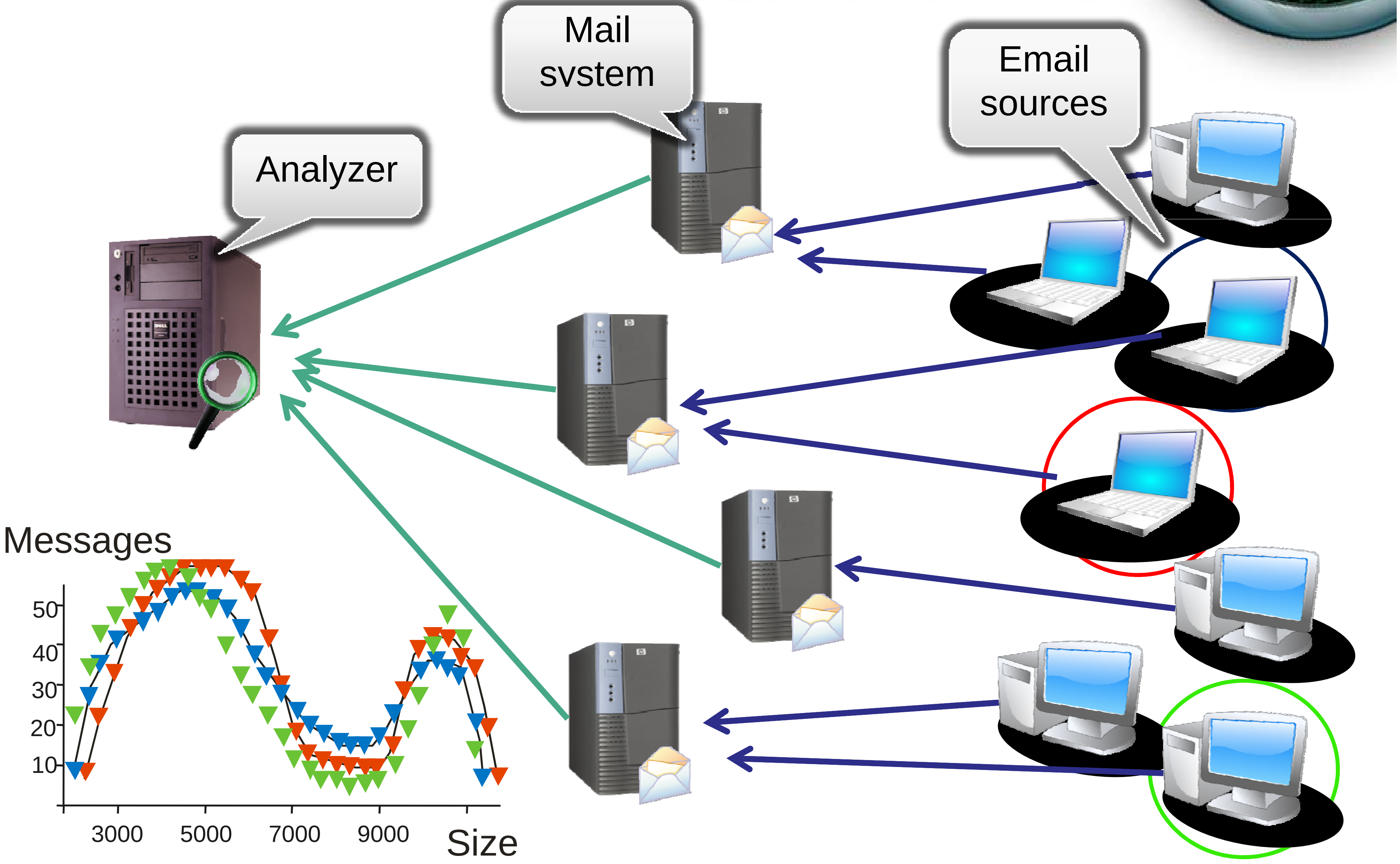
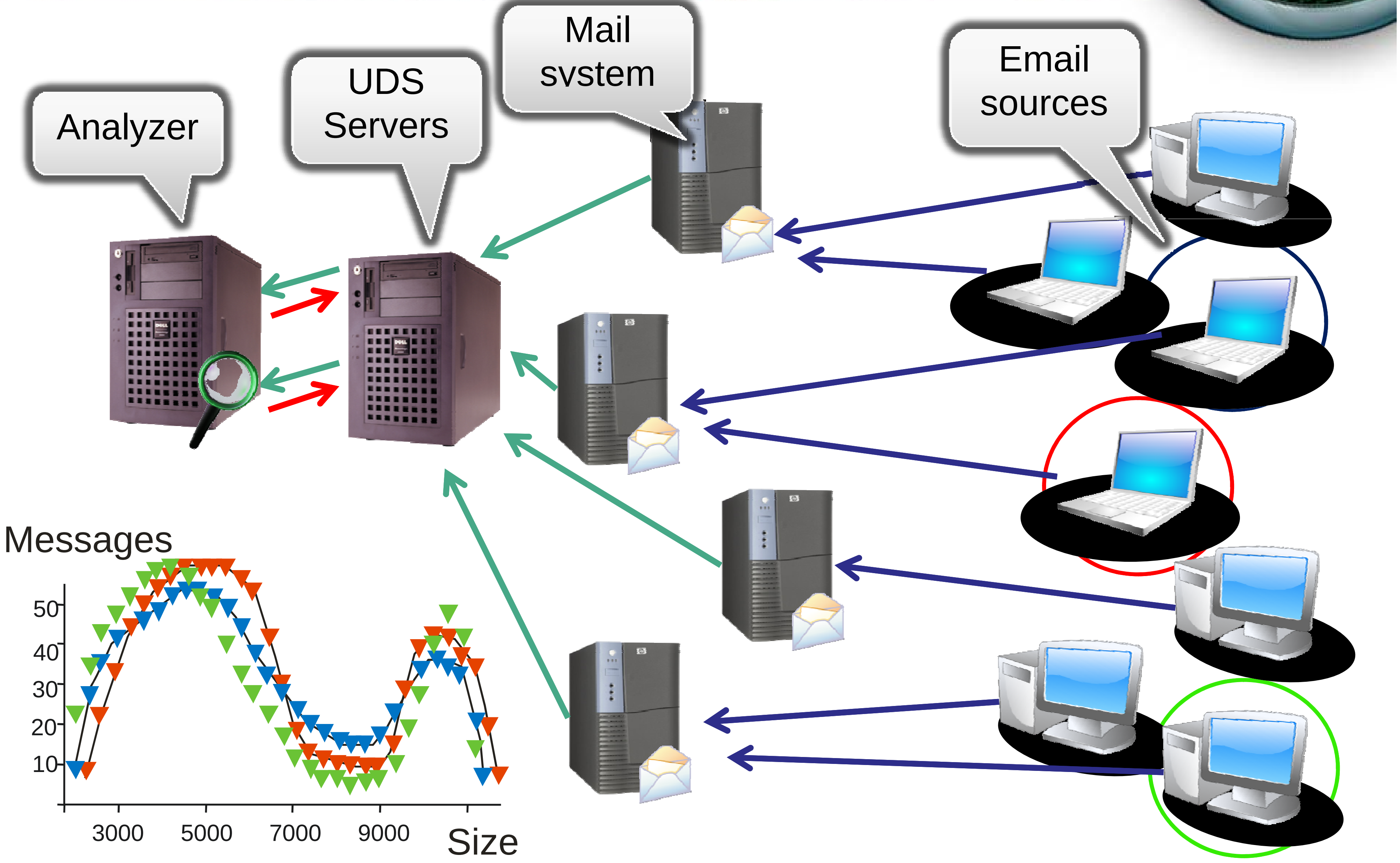

Mail
svstem
Email
sources
Analyzer
Messages
50
40
30
20
10
3000
5000
7000
9000
Size



Analyzer

UDS Servers

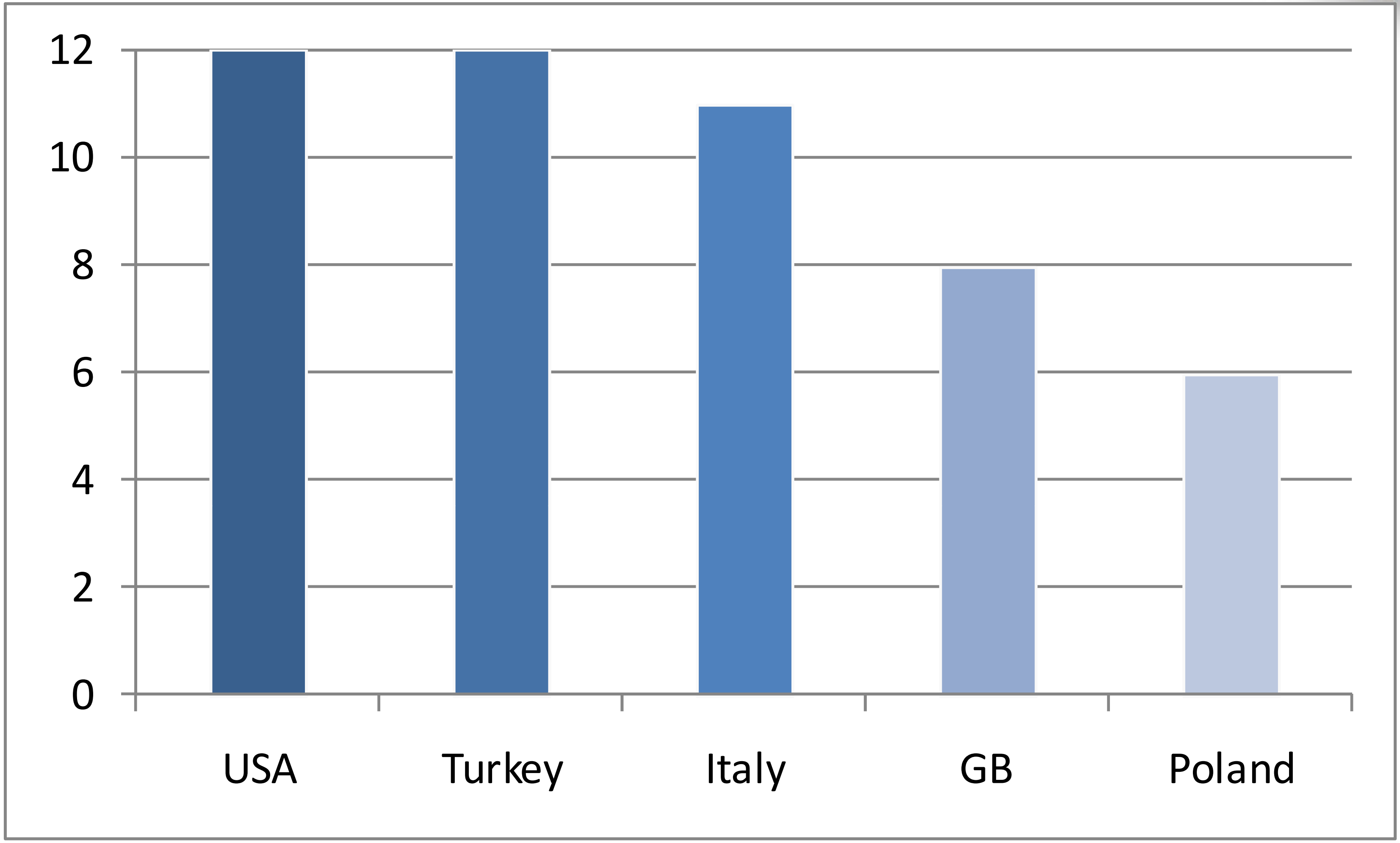
Mail svstem

Email sources

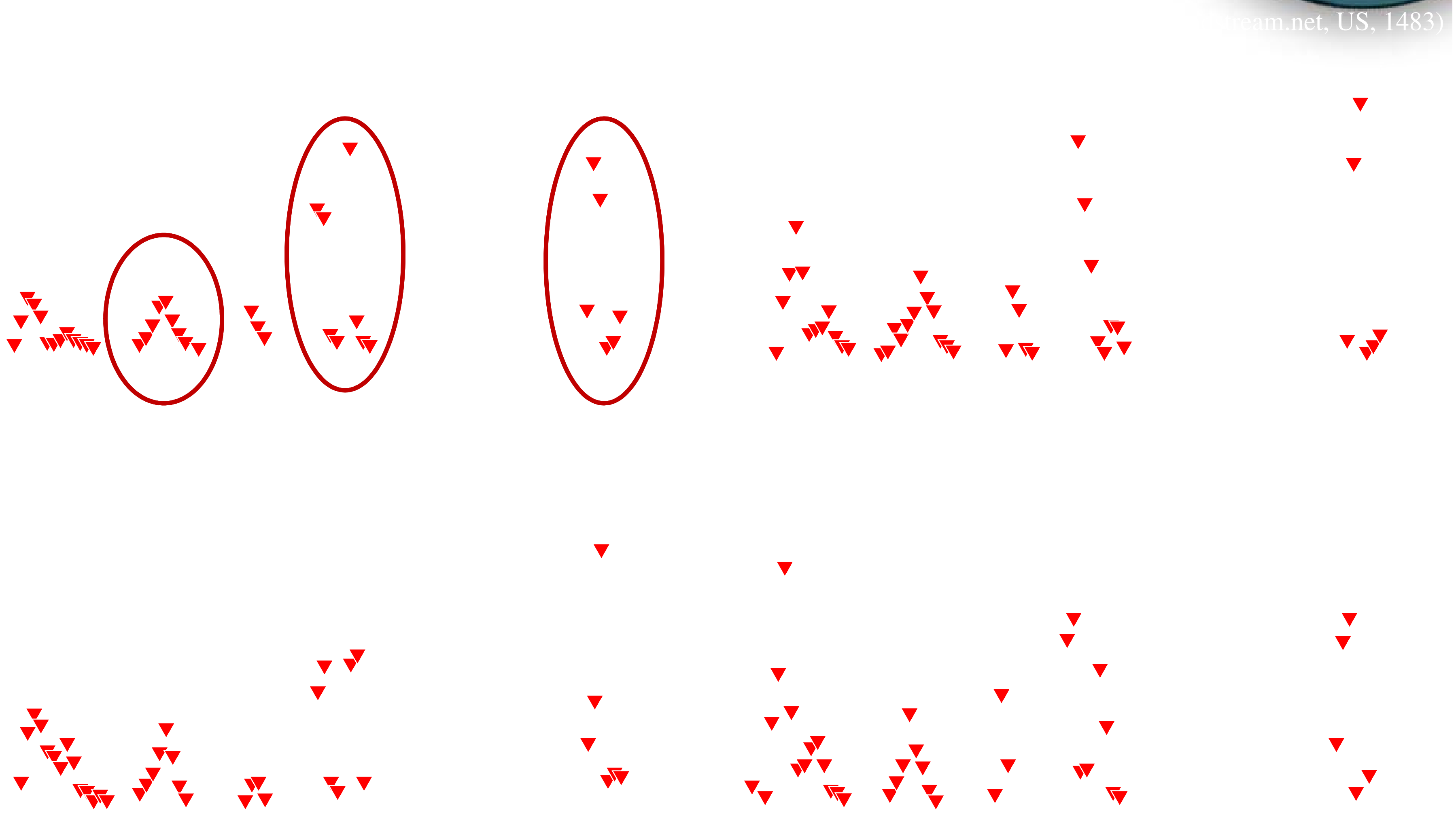
Statistical data and summary of results

- About 2000 active clients
- 1.5 million IP addresses per day
- 120,000 (8%) IP addresses suitable for analysis
- 40,000 IP addresses fall into botnet lists
- 4-5 botnets with 5,000-7,000 hosts and 10-15 botnets with fewer hosts
- Botnet regions: China, USA, Turkey, Russia

Regional distribution of the botnet

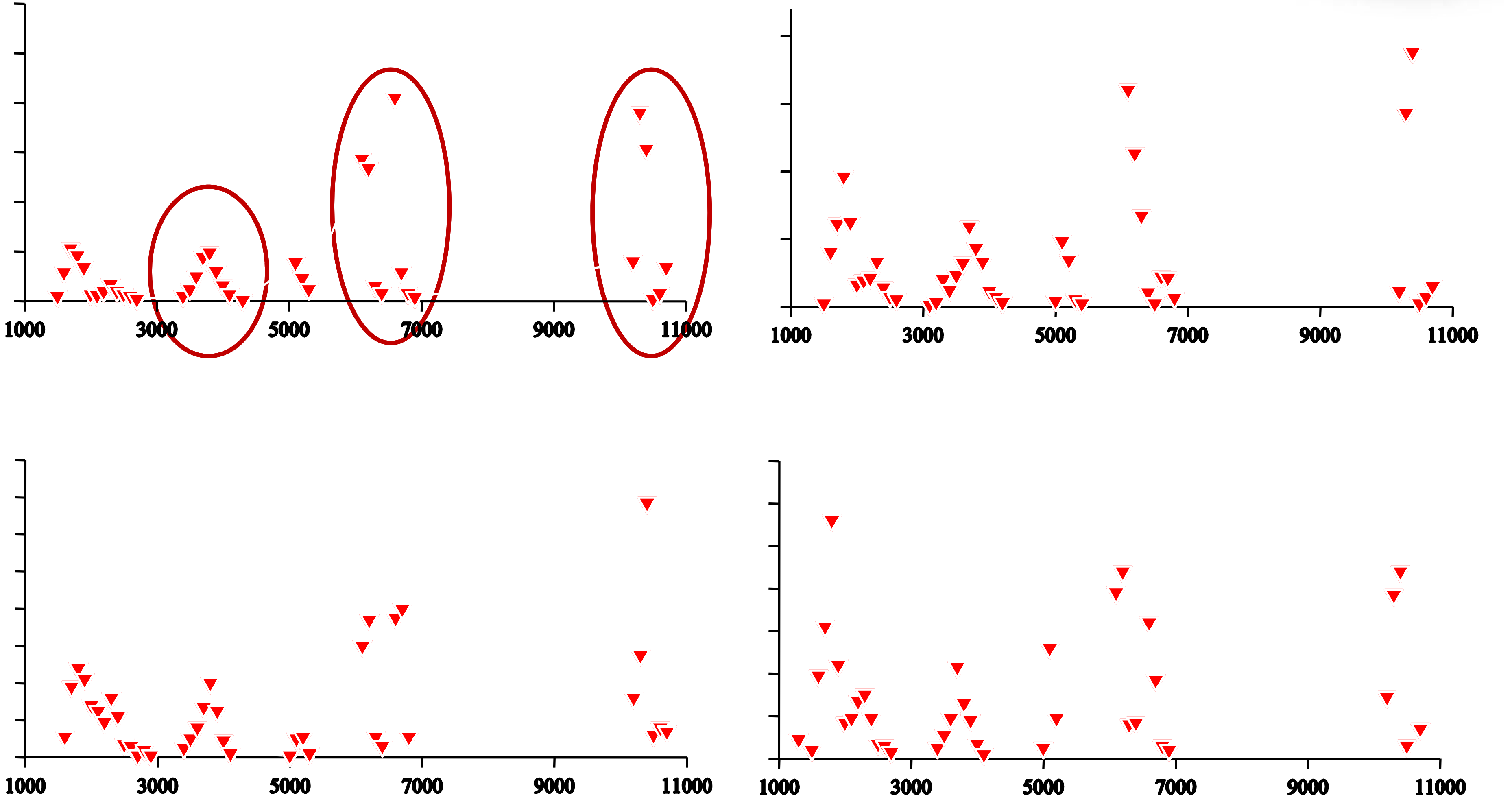


Distributions of the number of messages by size



Distributions of the number of messages by size

stream.net, US, 1483)



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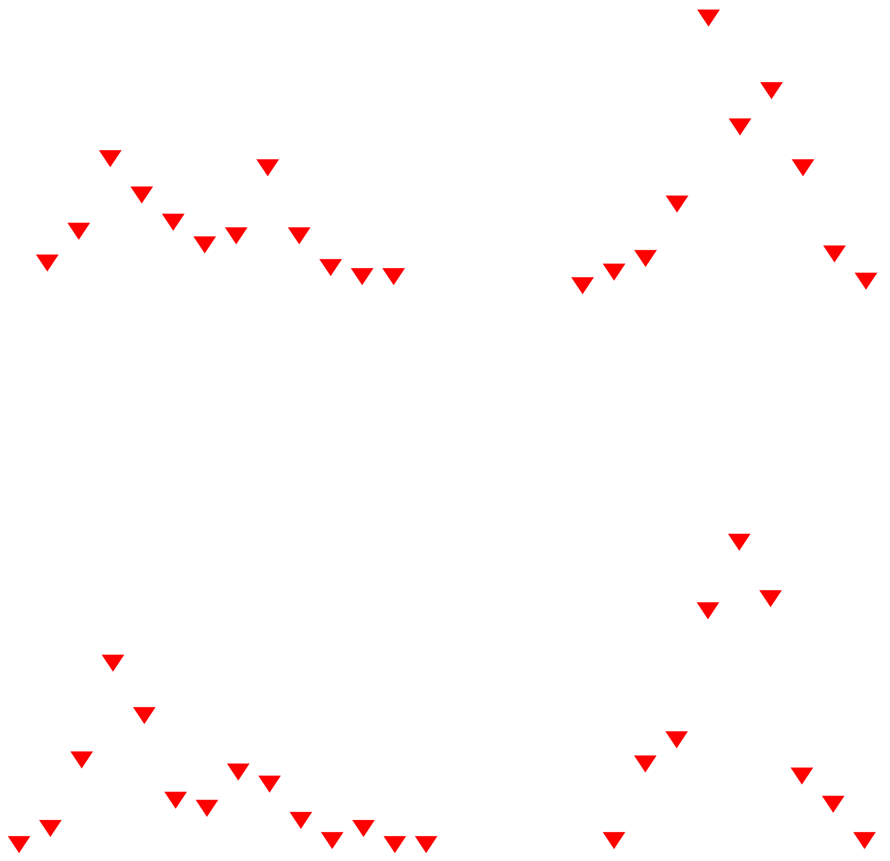
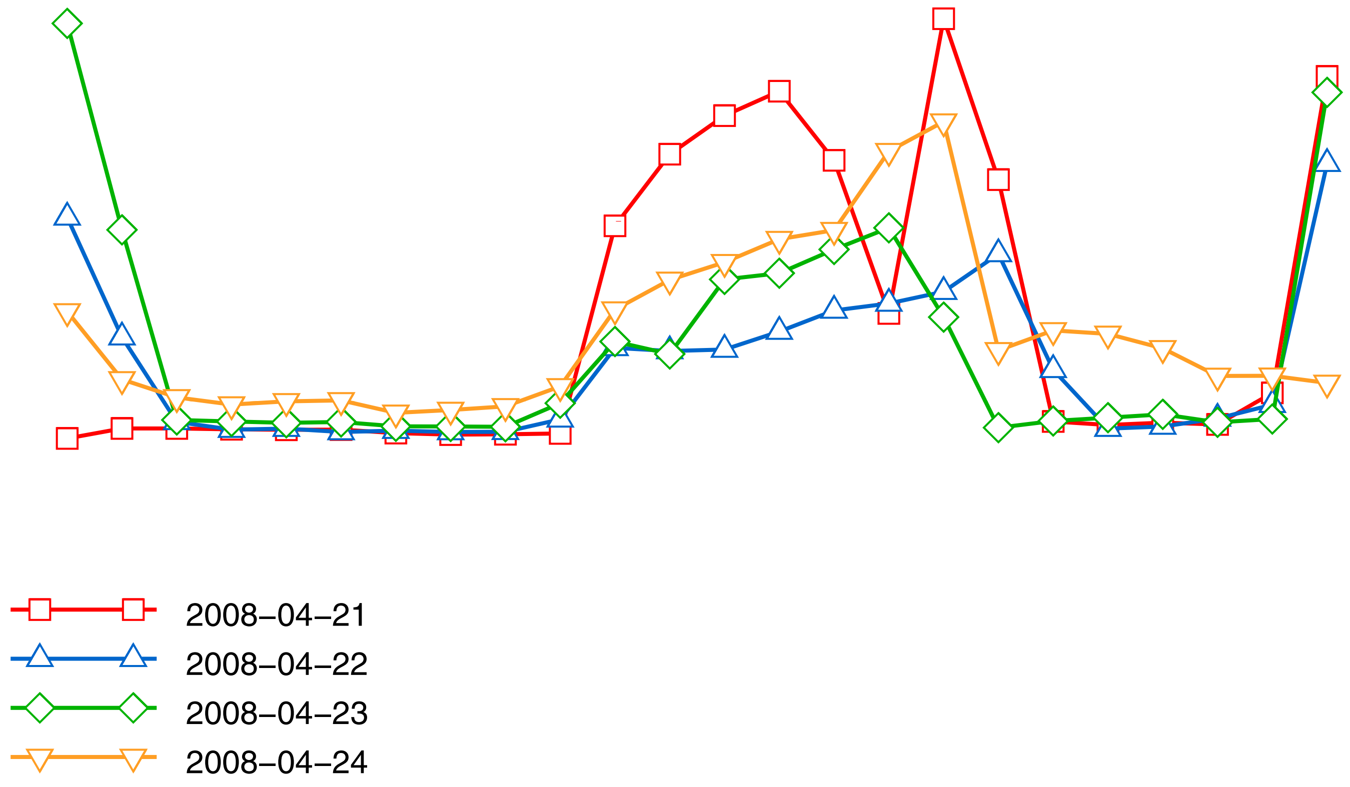


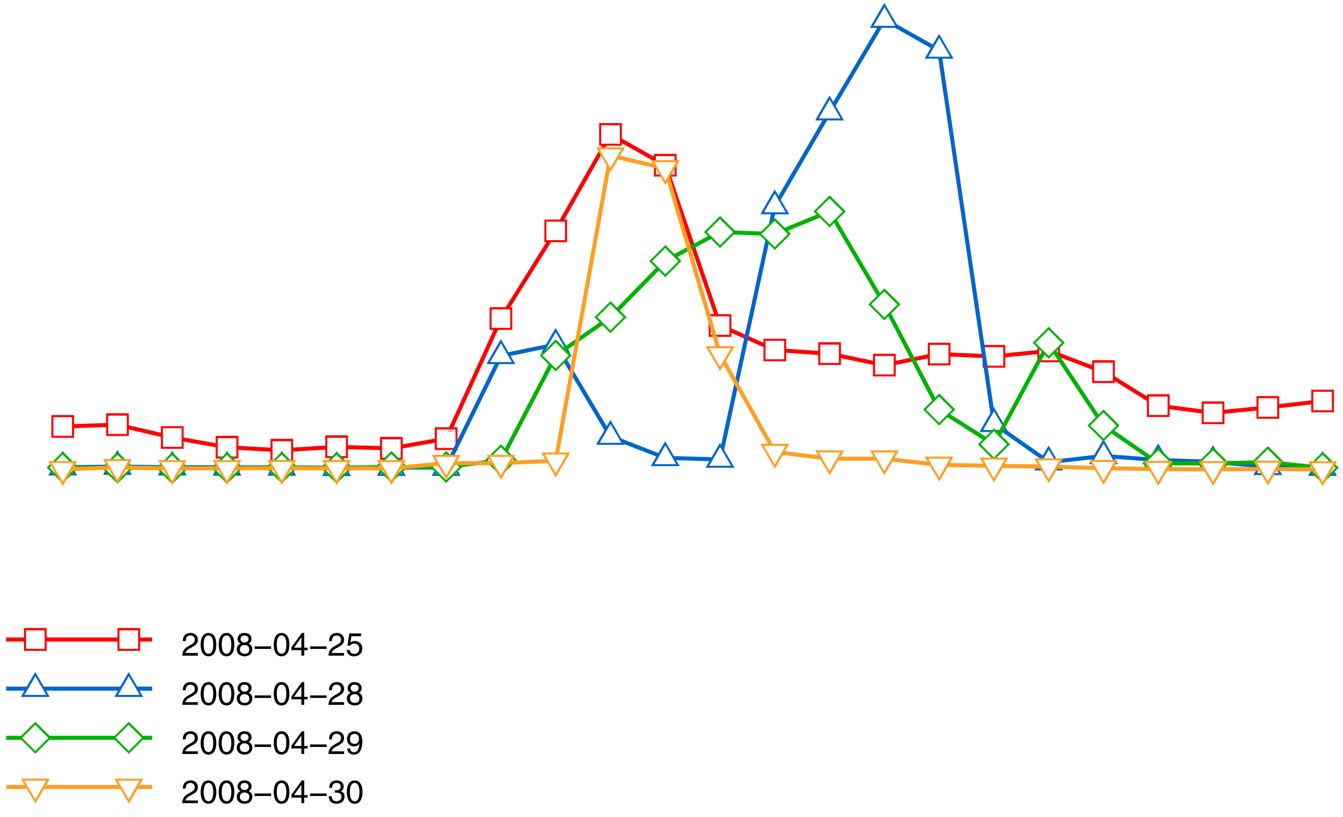
Jun 12 and Jun 15

Hourly botnet activity



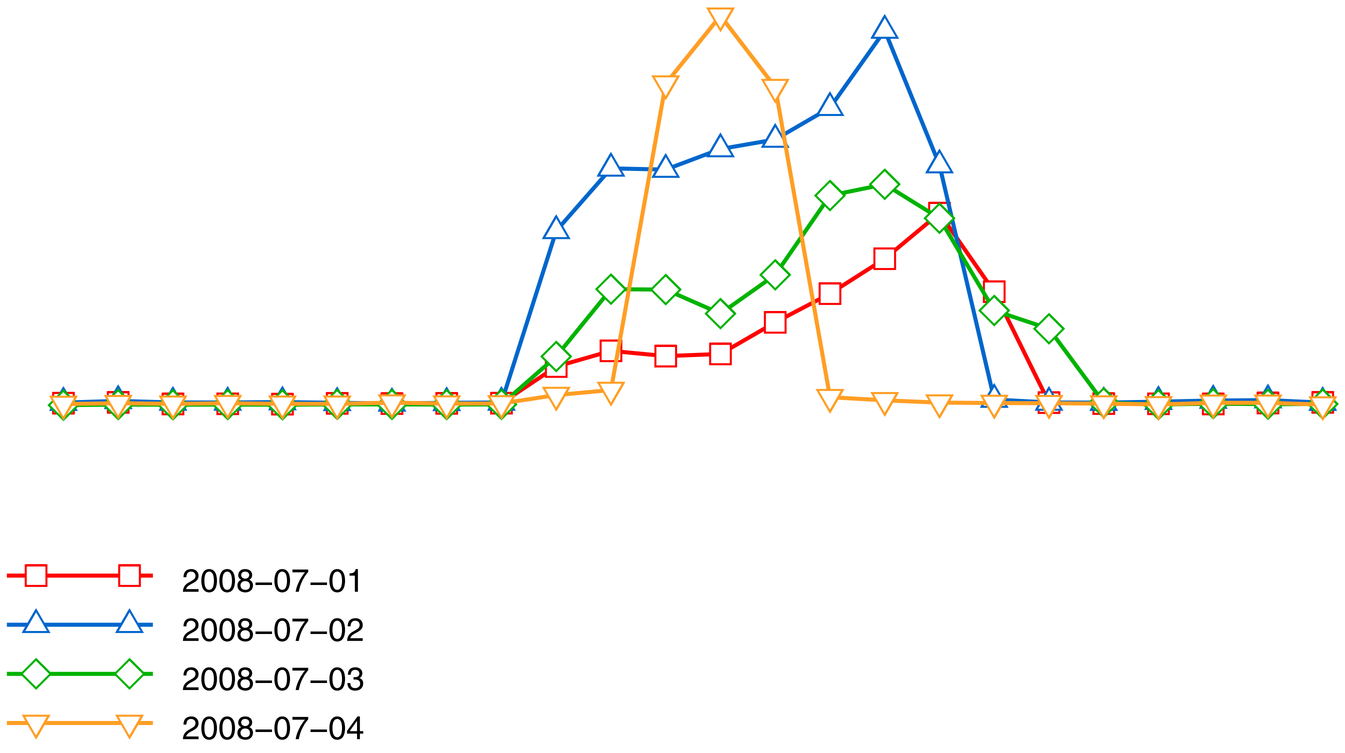
Apr 21-24

Hourly botnet activity



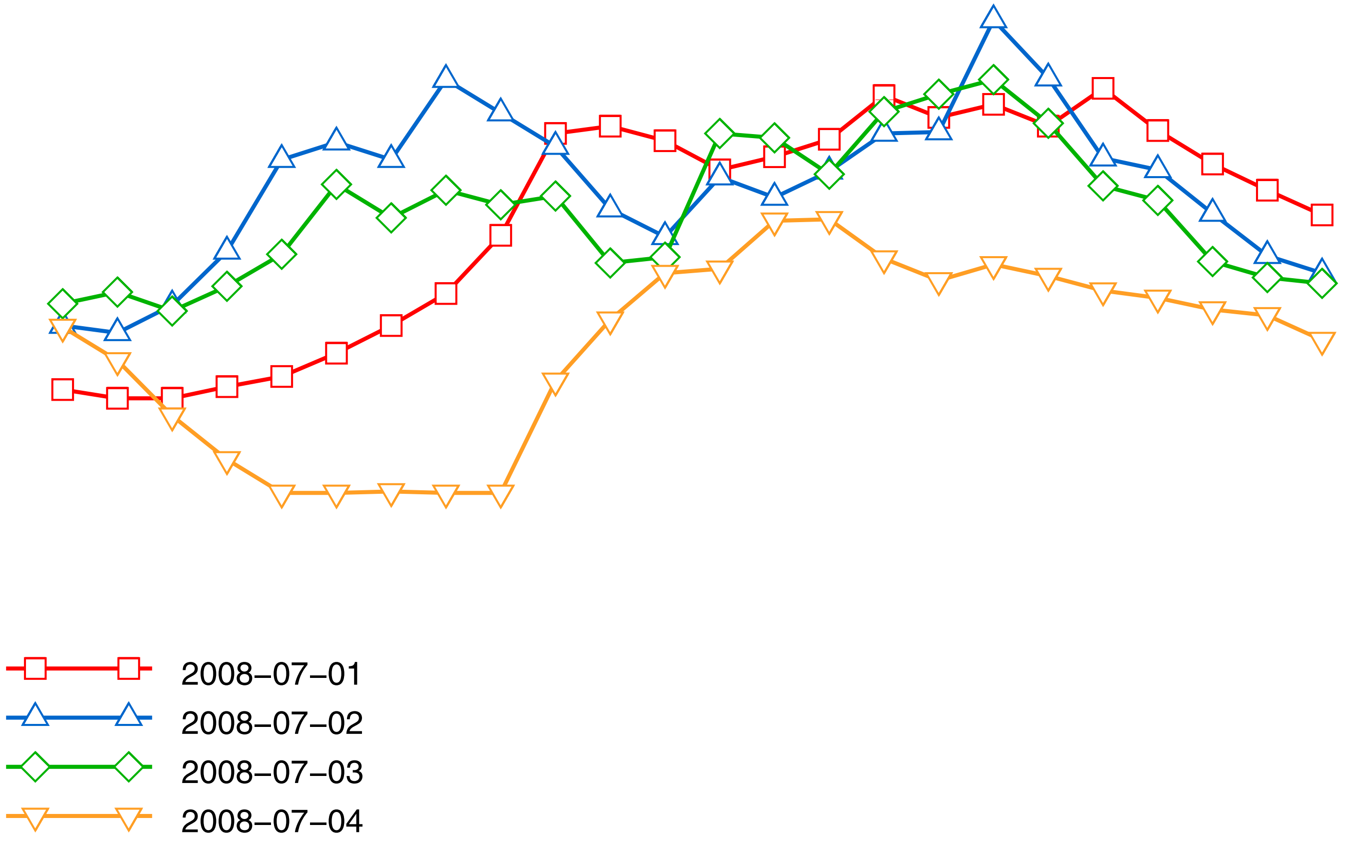
Apr 25-30

Hourly botnet activity



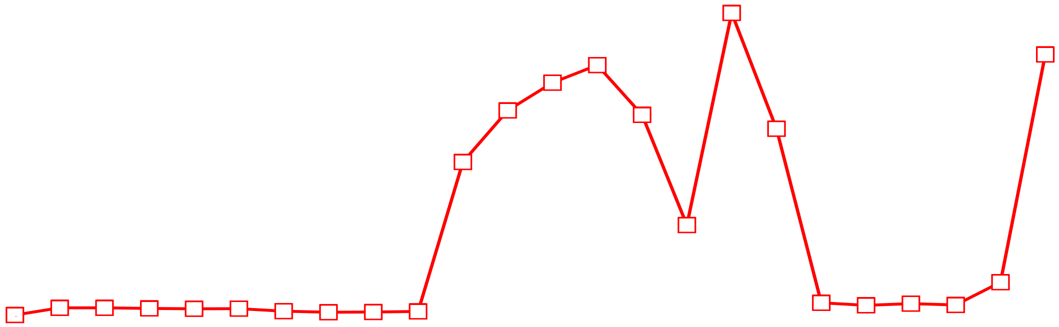
Jul 1-4

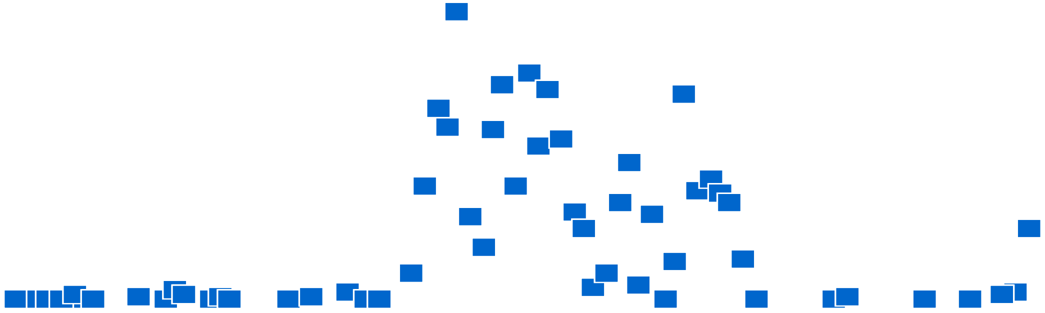
Hourly botnet activity, (another botnet)



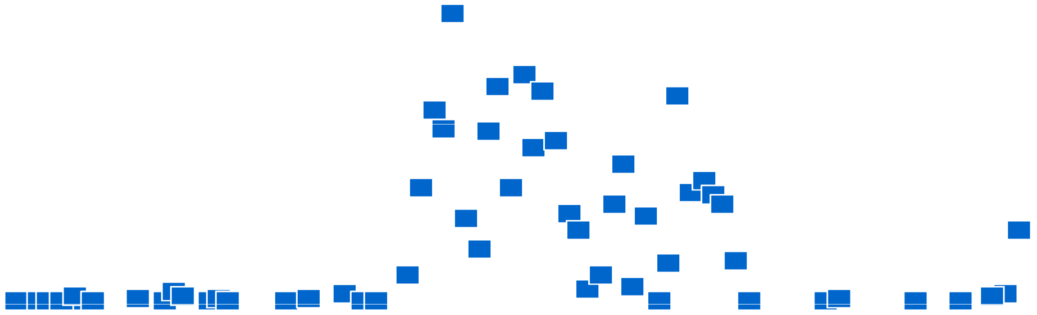
Jul 1-4

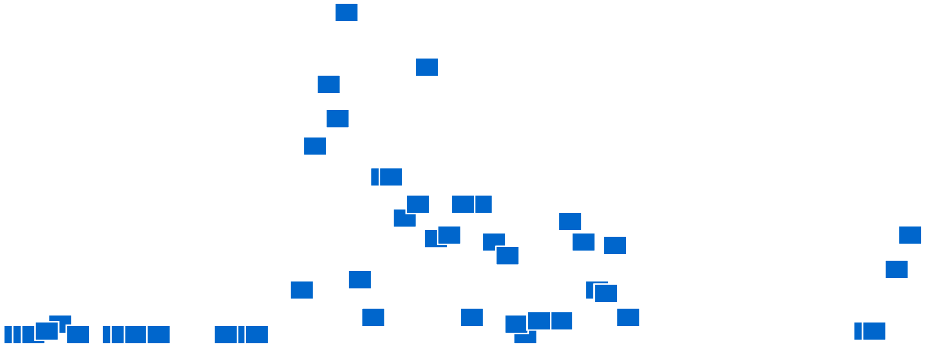
Hourly botnet activity vs. individual host activity





Distributions of the number of messages by time





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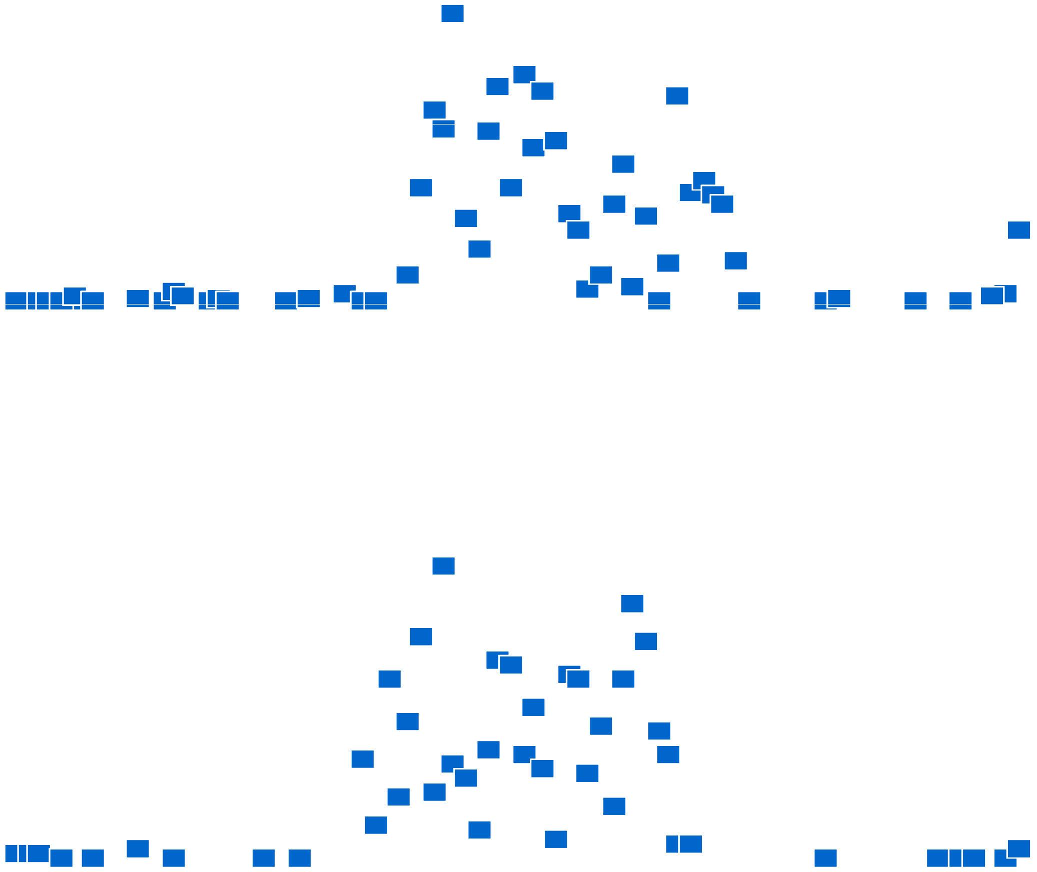

Apr 21 and Jul 2

Pros and Cons

Pros

- Independence from bot implementations and botnet control infrastructure protocols
- Simple implementation, especially on the client side
- Low maintenance cost: once implemented, the system does not require much human intervention

Cons

- The need to gather a large quantity of statistical information from many sources
- Inability to block a botnet until enough statistical information is gathered

THANK YOU

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