Stopping Outgoing Spam by Examining Incoming Server Logs

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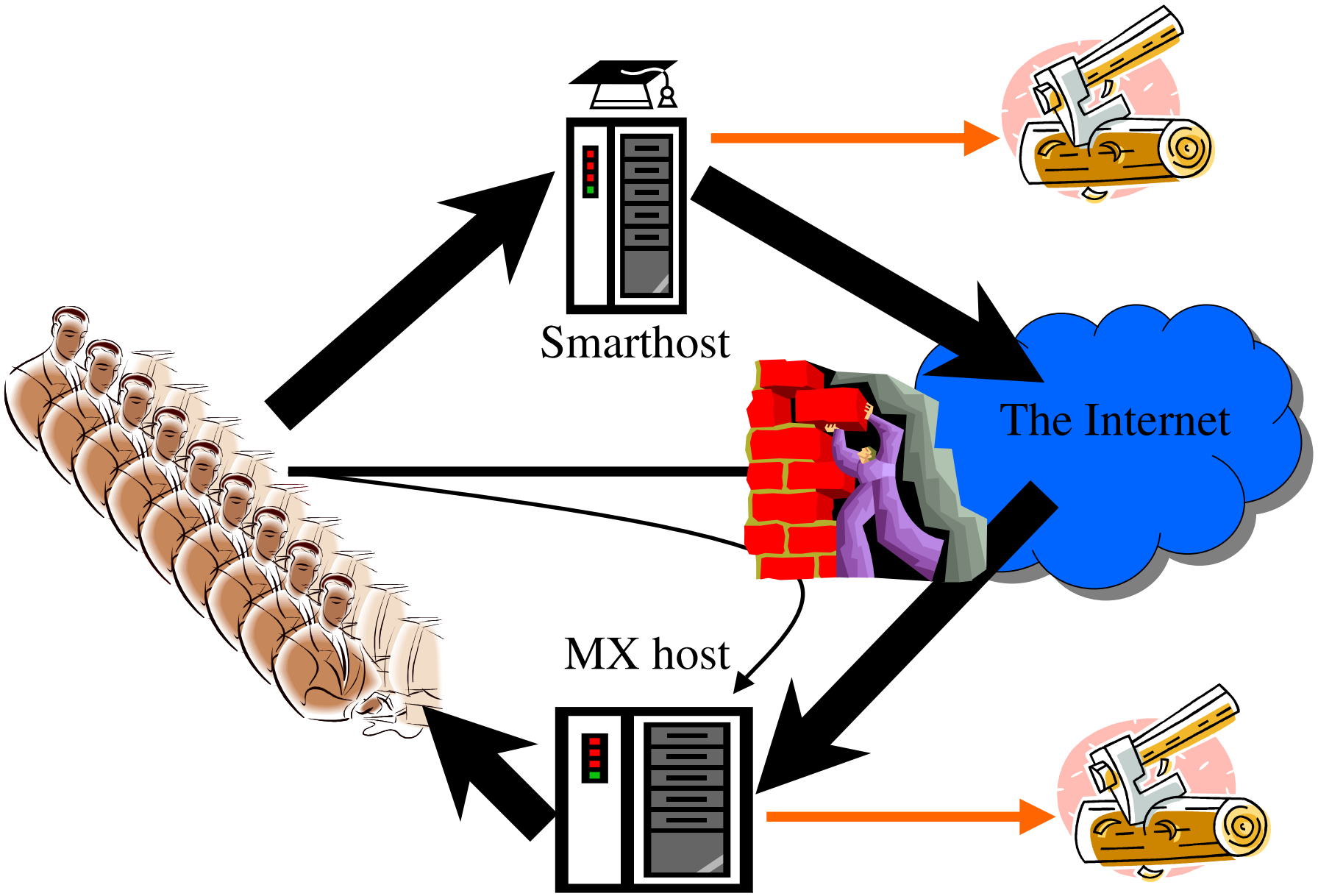
Summary

- ISP email handling
- Log processing for customers
- Log processing for non-customers
- So how effective are we being ?

ISP Email Handling



Heuristics

- Simple heuristics work really well
  - just as for smarthost
- Look for multiple HELO lines
  - often match MAIL FROM (to mislead)
  - may match RCPT TO (? authenticator ?)
- Look for outgoing email to the Internet
- ?? Look at Brightmail's opinion ??
  - but need to discount forwarding

This report relates to [192.0.2.1] = **example.demon.co.uk.**

which IP address was in use between 2005-07-20 18:35:27
and 2005-07-20 18:43:39

and from whence an overall total of 4 messages and 0 bounces were sent
these were to 4 destinations of which 0 were failures
and for which we generated 0 reports about undeliverable messages.
The total size of all these messages was 120 KB.

The HELO text is varying so much that relaying or a virus is suspected

There are 4 items in this category

HOST = , HELO = **example.demon.co.uk**

2005-07-20 18:35:27 first.last@gmx.at -> wpb@example.demon.co.uk Size=**30616**

HOST = , HELO = **other.demon.co.uk**

2005-07-20 18:37:09 sales@digitaldepot.co.uk -> clive@other.demon.co.uk Size=**30589**
2005-07-20 18:37:33 gweek.inn@tesco.net -> nne@other.demon.co.uk Size=**30385**

HOST = , HELO = **demon.net**

2005-07-20 18:43:39 sales@example.co.uk -> helpdesk@demon.net Size=**30561**

Excellent Results

- Four weeks of data from Demon Internet
- Spam source (relay, SOCKS, trojan &c)
  - 78 valid reports
  - 6 false positives, 52 examples missed
- Virus infected
  - 318 valid reports
  - 5 false positives, 88 examples missed
- Low volumes were main reason for errors

The Rest of The Internet

- Can use same heuristics to look at incoming email from the rest of the planet
- Looked at data for just a single day ☹
- 6.6 million emails from 413,728 IP addresses
- 2,527 were virus infected
- 35,615 were sources of spam
- Looked up the AS (ISP responsible)

Viruses

- Figures in the paper
  - #1 was “BTnet” (large UK ISP)
  - #2 was “CHINANET”
  - #3 was “NTL” (large UK ISP)
  - #4 was “Telewest” (large UK ISP)
  - #5 was “Telefonica” (large Spanish ISP)
- Viruses leverage address book contents…

Spam

- Figures in the paper
  - #1 was “CHINANET”
  - #2 was “Korea Telecom”
  - #3 was “China Telecom”
  - #4 was “Hanaro Telecom” (KR)
  - #5 was “AT & T”
- Spammers operate with global lists…

How Many at Demon Internet?

- Clearly number of senders vary depending on size of external network
- BUT percentage infected varies widely
- However, consider the detection method, and note that there's nothing special about Demon customers – so examine ratio of detection to those sending any email at all…

Detection Ratios

- Asian networks
  - 1 sender in 30 .. 100 detected as “bad”
- European networks
  - 1 sender in 300 detected as “bad”
- Demon Internet in Europe… so maybe we have only one bad customer in 300 as well ?

Demon Internet

- On relevant day, spotted 42 Demon customers with problems
- Hence 42 x 300 (12,000) actually have problems (?perhaps?)
- System picked up 530 over the month (including the false negatives)
- Only 8445 used the incoming servers at all!

Conclusions

- Processing incoming server logs works
- You can learn a lot about where spam comes from (and who is virus infected)
- Figures suggest that only picking up around 5% of ISP's problem – which is a start (so don't knock it), but not especially cheering
- More log processing ideas next year ☺

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`http://www.cl.cam.ac.uk/~rnc1/incoming.pdf`

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Demon