

Conclusions

SPAM

Email was the first, great application of the internet
Spam is already making email noticeably less useful
Email is based on trust - spammers abuse that trust

Spam Optimism

Email is so valuable when it functions, I'm confident that the internet community will get rid of spam...

ASRG -- working group within IETF working on multiple spam technologies...
<http://www.irtf.org/asrg/>

Filtering -- not a great solution

There are many current technologies that filter out email based on its content. These are very effective at present, but not a great solution. Spammers can craft messages that look more and more like your regular email. An email system where you get 98% of your email is much worse than a system where you get 100%.

1. Sender Auth

Minor changes in SMTP to make it harder to spoof the From: part of an email
Theme: anonymity breeds the worst behavior. Having a real identity associated with actions creates incentives for the identity to behave well.

2. Trusted Sender / Reputation Systems

Given that each email has an identified sender, easy enough to have "trust" or "rating" systems that identify senders known not to send spam. This information can be incorporated into filter systems as the users wish. More importantly, creates a structure where there are incentives for being a good email sender.

Black Hole Systems

Currently, there are many realtime black hole RBL systems
These track which IP address ranges appear to be sending out a lot of SPAM
Email recipient systems subscribe to the RBL list, and reject all incoming email from those IPs
The result is, if an ISP allows spamming., then all of the email from that ISP gets blocked, leading to complaints to the ISP
This is an attempt to put incentives on the originating ISP, which is the party that has some power to monitor and block spam.

Many people dislike the RBL systems, since they are somewhat random, and punish bystanders -- people who use an ISP that is spam tolerant.

3. Micropayments

There are many proposals along these lines.

The sender agrees to pay some small amount for every email, or only in cases where the recipient decides they should.

The email client could understand that email signed in a certain way agrees to possible payment, and so the mail could deliver it with confidence.

Privacy vs. Transparency

Privacy

Electronic technology tends to leave less privacy.

Transparency -- that the truth of what actually happened is more accessible -- tends to be increased by electronic technology.

There is a current popular perception that privacy is inherently good, however IMHO the tradeoff between privacy and transparency is complicated.

Obviously, there are times when a person wants to keep their privacy -- "Right to privacy" -- but there are other times when groups of people can better interact if they are transparent with each other.

Identity

When using a computer, it's useful to have a reliable, formal notion of "identity"

One login for... email, web sites, leland,

Trust problem for ebay: both parties would like a way to show the other that they are who they say they are

Identity Gadget

You have an account with an "identity server" (maybe run by the government, or maybe there will be many competing identity services)

No more passwords

You will carry around a card, ring, etc. with your private key in it -- you put your thumbprint on it or type in a PIN when it needs to prove your identity to some other entity

Might work wirelessly

Could double as door lock, car lock, train ticket, etc.... they just know its you

Transparent Association

There are times when two or more people would like to interact, but need to build a network of accountability/trust.

Each person reveals information about themselves, creating accountability (which leads to trust)

The right to transparent association -- a community may require a degree of transparency

Voluntary -- people can decide if they would like to join the community or not

e.g. ebay Transparent Identity

(hypothetical) Suppose ebay offers a "transparent identity" service, where they fingerprint, photograph, etc. you, and then you can list your identity as an ebay seller

A seller can decide if they want to participate -- voluntary transparent association
Buyers will prefer transparent sellers, since (transparency -> accountability) such sellers are far less likely to cheat the buyer

When someone tries to hide their identity, they are usually doing something bad to you (mugger, spammer)

Internet Lesson

What is the lesson of the history of the Internet so far?

Network Effect

Lots of value -- N^2 (N square, for N participants)

Fax machine

SMTP

VHS video format (vs. Beta) -- i.e. why, in the end, was VHS equipment more valuable than Beta equipment? -- network effect

MP3 -- lots of books, tools, players, collective expertise, MP3's made by others

The more participants = more overall value

Aka "Metcalfe's law" -- n squared effect

"the usefulness, or utility, of a network equals the square of the number of users."

Public Standard -- e.g. RFC

Standard -- e.g. RFC

Freely available, well defined standard.

Something controlled by one company, kept secret, and changed without notification does not count.

It's possible for a company owned technology to act as a standard, so long as the information is public and well-defined.

Compatible

It's about being compatible. By being compatible with the standard (which may have some costs) your system now interoperates with everyone else who has volunteered to be compatible with the standard.

Replaceable/Commodity --> Competition

If the standard is working well, then the consumer should be able to replace vendor A's solution with vendor B. This keeps the quality up and prices down. Vendors dislike this somewhat, but it makes the domain more attractive to consumers.

Car example: GM car that only takes GM gas. GM car that works with gas from any company.

n^2 Value

The standards allow separately authored components to interoperate with each other thing -- n^2 connections. We may not know the exact mechanism, but recent history shows that standards based n^2 networks create a lot of value.

Not proprietary

If anyone is free to implement the standard, no one vendor gets to monopolize the value. It's not like there's some "owner" of TCP/IP that gets all the value out of it. The TCP/IP **participants** collectively receive the value of TCP/IP.

vs. Markets

It's hard for vendors driven by market forces to make good standards (even though in reality, the vendors come out ahead once the standard exists).

The TCP/IP, HTTP, email, .. standards ... these were all produced by non-profit groups, often with government funding. I think markets are great for some things, but standards are an interesting and important area they get very wrong.

How The Internet Came About

Short history of the Internet...

N^2 Value available -- there was obviously enormous potential value in connecting all the computers.

Proprietary Failure

IBM, Microsoft, Novell -- they each came up with ways of connecting **their** computers. Trying to create a network effect that included only their brand -- trying to re-create the Win32 money-making franchise.

Attractive Standards

Homely, ordinary, publicly funded standard like TCP/IP, HTTP, HTML were defined as real standards.

As real public standards, they were attractive to **participants**.

As the number of participants grew, the network effect for TCP/IP, HTTP, etc. etc. grew at the N^2 rate -- at some point they became unstoppable.

Vendors Love/Hate Standards

Vendors: bad: you are replaceable, you only get your share of the pie, and no monopoly rents. There will be competition.

Vendors: good -- the pie will be very large, and even if you are small, you can break in since your standards-compliant technology will interoperate just as well as the big vendors.

Community Love Standards

The lesson of the internet, is that the community of participants get enormous benefits from standards.

The standards allow n^2 any-to-any effect within the community (e.g. email, the web, ...)

The standards keep the vendors producing high-value, low cost solutions, since the vendors are always subject to competition, since the standard avoids vendor lock-in.