Why the Internet only just works

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What's the problem

"There is a vicious circle—application developers will not use a new protocol (even if it is technically superior) if it will not work end-to-end; OS vendors will not implement a new protocol if application developers do not express a need for it; NAT and firewall vendors will not add support if the protocol is not in common operating systems; the new protocol will not work end-to-end because of lack of support in NAT's and firewalls."

When do changes occur?

"technologies get deployed in the core of the Internet when they solve an immediate problem ~~or when money can be made~~."

"Solutions that have actually been deployed in the Internet core seem to have been developed just in time, perhaps because only then is the incentive strong enough."

Short term problems

- Spam

- Security

- Denial-of-service attacks

- Application deployment

Medium term problems

- Congestion control

- Inter-domain routing

- Mobility

- Multi-homing

- Architectural ossification

Longer-term problems

- Address space depletion

- Inter-domain routing

- Mobility

- Multi-homing

- Architectural ossification

Conclusion

"To conclude, in many ways the Internet only just works. The number of ways in which it only just works seems to be increasing with time, as non-critical problems build. The main question is whether it will take failures to cause these problems to be addressed, or whether they can start to be addressed before they need to be fixed in an ill co-ordinated last-minute rush."