



Unreliability as a QoE goal

Jon Crowcroft,

<http://www.cl.cam.ac.uk/~jac22>

<http://hubofallthings.com/>



Internet Classic

- Reliability a goal at every layer
 - modulo End-to-end argument
 - Integrity checks in link CRC
 - Integrity of routing & fwd
 - Ip hdr checksum
 - Reverse path check
 - Router-router (bgp) sec
 - Reliable, integrity of data, in-order delivery in TCP transport



Internet Classic Apps reliable

- Telnet, FTP, SMTP
 - Were all reliable
- SSH, HTTP-S, PGP add
 - Security/more integrity
- Distributed apps like E-Mail even
 - Had 40 days retry timers
 - from back in uucp days



Reality is less assured...

- We live in a filter bubble (pace Eli Pariser)
- What you get in
 - Search
 - Social Nets
 - Microblogs
 - And even E-Mail
- Depends
 - who you are, where you are, when you look
 - And your mileage may vary too



So all that hard work is to no avail

- Apps and proxies and middle boxes
 - Select, modify, remove etc
- So we should engineer accordingly
- Were aware of this for multimedia
 - RTP/UDP designed for loss tolerant codecs
 - Even do partial packet checksums...
 - Add symbol level net coding, etc etc
- Also for trading nets (gaming)
 - Pragmatic General Multicast



Go further: s/IP/DTN+ICN/

- users experience poor performance:
- *Because* of misplaced reliability effort
- Lets go back to drawing board
- Reliability (even integrity) is the exception, not the rule
- So, Information Centric Net (ICN)?
 - Aka Named Data Networking
 - Substitute pub/sub for IP...



Not enough just ICN...

- Need delay tolerance too...
- And delay intolerance -
 - When to discard (idea from PGM):
 - Time limited window of delivery
 - When to forget (cache eviction etc)
- Note also integrity
 - may not care which version, just any will do
 - May not care if transcoded en route



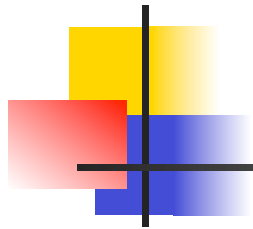
Locality of Relevance

- As with googling, facebook, twitter
- What you get depends
 - when you look,
 - Where you are
 - Who you are
- Locality is a good optimisation technique
 - But if we keep all that reliability legacy
 - We downright downrate the user experience!



In summary

- to re-assert unreliability as a feature
 - Not a bug
- Modern apps re-target e2e argument
 - In app protocol layer, not transport
- Your mileage should vary less
 - And be in kilometers, anyhow



Who Am I?

