Properties of today's and tomorrow's Internet

What do we want from our networking protocols?

BoF session, RIPE 84, Berlin
2022-05-16

Agenda

- Introduction
  - Origin an problem statement
  - ‘Properties’?
  - Suggestions for discussion
- Open discussion
- What’s next?

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- Discussions/brainstorms about new protocols and research
- Often veered into high-level discussion about “properties”
- And a nagging feeling about **negative** properties

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For example: Path tracing

- Adds transparency
- Step-up to control
- But also: Surveillance, perhaps?
- And control for whom?

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But also discussions like:

- “Why don’t you use <technology X> instead of that <expletive> new protocol?”
- “New protocol X is <expletive> because it does X!”
- New protocol X is <expletive> because it doesn’t do Y!”

All of these can very well be valid arguments, but it depends on what else they do or don’t do, and how important those features are.

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As well as:

“Let’s talk about the future”

- NDN, SCION, RINA, etc
- Quantum
- Environmental sustainability

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How do we frame such wildly different topics? And between different disciplines?

- Operators
- Governance
- Protocol developers
- Researchers
- etc

Interesting related reading

ISOC Document: “Defining the critical properties of the Internet”

https://www.internetsociety.org/wp-content/uploads/2020/09/IWN-IIAT-Defining-the-critical-properties-of-the-Internet.pdf

- Open architecture
- Decentralization
- Common global identifiers
- Technology neutral

All very high level of abstraction

Interesting related reading

O’Hara and Hall: “Four internets”

https://eprints.soton.ac.uk/427838/1/Paper_20no.206web.pdf

Defines four different views on, and requirements for, the Internet:

- Silicon Valley’s Open Internet
- Brussels’ Bourgeois Internet
- Beijing’s Authoritarian Internet
- DC’s Commercial Internet

Interesting related reading

Philip Richter: “Whither the public Internet?”

https://www.prichter.com/whither-tprc46.pdf

- Abstract architectural
- Network complementors
- Customer experience

Properties of the Internet

What about other properties?

- Networking transparency
- Environmental sustainability
- Protection against (network) abuse
- Mobility?
- Hijacks? (or perhaps: spoofing in general?)
- Anonimity?
- Accountibility?
- Responsibility?
- Discoverability? And related: Debuggability vs exposing internals to be exploited?
- Different property requirements for different layers in the stack?
- and this list could go on and on and on and on

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But what properties do **we**, as the community of operators (and developers and researchers) want?

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And, how to actually **discuss** such things?

Two approaches:

- Define the properties we want and do not want (‘top-down’)
- Discuss/compare technologies based on the properties they bring, or take away (‘bottom-up’)

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My goals:

- Have a way to discuss or frame such topics in the future
- Figure out what we (you, RIPE community) want, to focus our (and others') future research

Discussion suggestions

- Top-down: is there a ‘property’ on the internet that is missing, or one that should be removed?
  - Which (new) protocols could bring that?
- Bottom-up: Discuss a (new) protocol -or compare two- in terms of the properties they bring
  - e.g. RINA, LISP, SCION, …?

Discuss!

Please keep the throwing of chairs and other physical objects to a minimum.