

Paper: Is IP going to take over the world (of communications)?

1. Problem the paper is addressing

The paper examine closely several key assumptions about IP and packet switching in general. The examination forces us to re-think carefully the pros and cons of packet switching, its relationship with other techniques and protocols that might have been overlooked due to commonly held assumptions in the networking world.

2. Main contribution of the paper

The paper successfully debunked several common “myths” or believes around packet switching, and the IP protocol in particular. It was quantitatively shown that packet switching/IP is not necessarily more dominant, more efficient, more robust, nor simpler than its circuit switching counter-part.

3. Key ideas

All of the aforementioned folklores were carefully considered with concrete measures, instead of simple “textbook” examples and qualitative reasoning which sometimes give us a false sense of reality.

4. Critique of the main contribution

The paper deserves a rating of 3.5 (somewhere between 3 and 4). Its writing is thorough and convincing. The supported data can be checked by any reader. The idea that packet switching may not be as efficient/robust/simple as one may think is not new. See, for instance, RFC 3439. What is new is that this is coming from academic folks who supposedly are in the Internet camp instead of the telephone companies’ camp.

What the paper failed to dig deeper into is that, while IP and packet switching in general may not be as we assumed, its growth rate could in principle change the landscape completely in a few years. It is unfair to compare infrastructures of a relatively new technology like the Internet to the more than 100 year-old telephony world. The efficiency of IP vs. circuit switching needs a much more concrete study to say definitely which is more efficient. Over-provisioning makes it hard to say at this point. Last but not least, the conclusion that designing the Internet with circuit switching at the core and packet switching at the edge is pre-mature.

5. Open problems arising from the work

There are various interesting problems for further studied. I have mentioned some of them in the previous section. A very interesting problem is to study the performance of a network combined of PS and CS to see which kind of combination is the most effective under which circumstances (traffic load, technologies, application requirements, etc.)