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Toward a user centric internet

Abstract

Multiple communication architectures have emerged in the recent past, while the core of the internet remains quite untouched from its original design. Such architectures could impact drastically the internet performance as it will basically allow for multiple communication paradigms to co-exist (at least at the control level). These new communication paradigms are supposed to address the evolutions on usage and information/content. Indeed, information diversity has increased and it is not only generated by a small percentage of its tech-savvy users but by the majority of them. Most internet users are almost always connected (mobile and wired) and produce a lot of information through various sensors and applications. The cloud has emerged as an unavoidable infrastructure component; however, it is posing a number of problems including availability, privacy, security, information segmentation.

But the most worrying aspect of this evolution is the increasing complexity of the internet infrastructure and the consequent impact on vulnerability and usability. Almost everyone is -or will soon be- confronted to troubleshooting an internet application or service. It was already a challenge when the internet was a single waist distributed system with a few applications. It is a nightmare today with billions non technology aware users generating MegaBytes of information daily and relying on this information for e.g. health control, driving, home security. We claim that the Internet design should be User Centric and that all new mechanisms involved in any part of the communication architecture should deal first with manageability, privacy and usability concerns. We advocate for information (including media streams) to be stored/cached at the edge and for any type of middle box to disappear from the Internet. We illustrate the proposed approach with some user level experiments.

Biographical Sketch

Christophe Diot received a Ph.D. degree in Computer Science from INP Grenoble in 1991. With INRIA Sophia-Antipolis (Oct 93-Sept 98), Diot pioneered diffserv, single source multicast, and peer-to-peer online games. At Sprint (Oct 98-Apr 03), he pioneered Internet measurements. Diot was with Intel Research from May 03 to Sept 05, and then joined Thomson where he started two research labs: Paris in 2006 and Palo Alto in 2011. Diot's research activities now focus on content delivery architectures and personalization. Diot has around 30 patents and more than 300 publications in major conferences and journals. Thomson became Technicolor in Jan 10. Diot is currently Chief Scientist at Technicolor. He is an ACM fellow.