Tribler: Internet standard for (anonymous\textsuperscript{2014}) streaming?

Elric Milon
Lead Developer
Delft University of Technology
Research goal: a new IETF Internet standard for streaming

Streaming&communication for:

- Bittorrent
- Wikipedia
- Youtube
- Skype
- Twitter
- MSN
- Facebook

And below IPv4+NAT+IPv6

Plus creative new uses
The bigger picture

Video on the internet: Why are public broadcasters experimenting with the “peer-to-peer” technology beloved of online pirates?

Mar 4th 2010 | from the print edition

LAST year Norway’s public broadcaster, NRK, filmed a stunning seven-hour train ride between Bergen and Oslo, shot entirely in high-definition video. Over one million Norwegians watched the film on television. But NRK faced a challenge in reaching a larger audience. How could it distribute the hard-drive-busting 246 gigabytes of raw footage to a global audience without bringing its servers to a grinding halt? The broadcaster made a somewhat surprising choice: it turned to BitTorrent, a peer-to-peer (P2P) internet service best known as a means of sharing pirated movies and music.

Some at NRK worried that using a system associated with piracy would generate negative publicity. But BitTorrent itself is value neutral. It is a uniquely efficient distribution method that lets broadcasters “seed” the internet with one or two copies of their massive media files. It then relies on end users (called peers) who request the file and receive different pieces of it. To assemble a
Cooperative streaming

- P2P streaming (live & on-demand)
- Every user helps
- Forward video to others
2007: TUDelft & Harvard: bandwidth-as-a-currency
A New Internet-Draft is available from the on-line Internet-Drafts directories. This draft is a work item of the Peer to Peer Streaming Protocol Working Group of the IETF.

Title: Peer-to-Peer Streaming Protocol (PPSP)
Author(s): A. Bakker
Filename: draft-ietf-ppsp-peer-protocol-00.txt
Pages: 40
Date: 2011-12-19
Libswift P2P streaming engine

- Radical redesign of P2P
- Implemented in C++
- Video-on-demand over UDP
- Upcoming IETF standard (PPSP)
- Running on:
  - iPad, Android, set-top box
  - Inside a television
  - Firefox: `<video src="swift://...`
    - 100 KB plugin, en.wikipedia.org
  - within Tribler
- Designed for P2P caching + proxies (content-centric networking)

P2P-Next project: Industry usage

Source: Arno Bakker, Delft University of Technology, IETF 81 PPSP WG 25.7.2011, Quebec City
Libswift on the wire (1)

- Peer A and B both have some chunks

- Note: low latency, data transfer already in 3rd datagram.
Libswift inside TV firmware

- Self-forming:
  - Keyword search
  - Sharing
  - Streaming
- Running code on a TV
- Samsung UE40D7000
- ARMv7 gcc-toolchain
- Thnx to SamyGO
- PPSP, LEDBAT, NAT, etc.
- Open Source
- 6 years of work, 12-18 people

Firmware: http://www.tribler.org/SwiftTV
“Tribler Mobile” app
From Android:

To Android:

No server infrastructure!

Questions

Further reading:

“Tribler search and stream”, http://sigmm.org/records/records1201/featured03.html

“Improving accuracy and coverage in an internet-deployed reputation mechanism”, (Google is your friend)

Code: Github.com/Tribler