Forban
a simple link-local opportunistic p2p free software

or
sharing your bookshelf everywhere
and even at the Breizh Entropy Congress

Alexandre Dulaunoy

a@foo.be

April 14, 2010

Introduction

- ▶ The legal framework is hindering you to share with your neighbors or friends.
- ▶ The editors are trying to kill the conviviality of our societies
- ▶ and (worst) the Internet is starting to be controlled.

Books In Our Societies

- ▶ Books are part of any free society.
- ▶ Books spread ideas and concepts.
- ▶ Books are part of any critical process that could improve our societies.
- ▶ Books that you cannot share are useless (e.g. DRM).
- ▶ Is the role of the librarian shifting to the reader with the introduction of digital books?
- ▶ Can everyone transport a library and play the role of the librarian?

The universe (which others call the Library)....
Jorge Luis Borges, La biblioteca de Babel

Everything Started With a Discussion (November 2009)

- ▶ Can we do file sharing without the Internet?
- ▶ Why is more easy to share with strangers than with your friends?
- ▶ Time of acceptance and protocol complexity?
- ▶ Security?
- ▶ Proximity and sharing? how to make it simple?

How is Forban different from centralized p2p or distributed hash table (DHT)?

Basic Objectives

- ▶ The protocol must be able to use HTTP and keep Web browser happy.
- ▶ We don't care too much about bandwidth use or optimization.
- ▶ People must be free of the files, formats or file structure to share.
- ▶ Wireless, ad hoc or personal network are unstable by nature.
- ▶ Any programmer could reimplement or remix the protocol.

We discarded in the objectives, a too much academic approach to the problem. We are implementing, testing, discarding, reimplementing, testing... trial and error in other words.
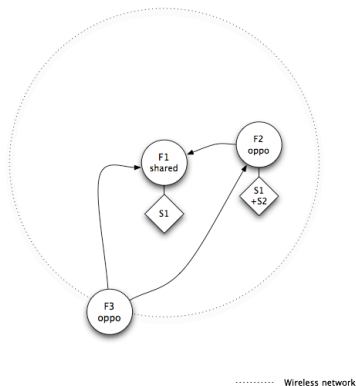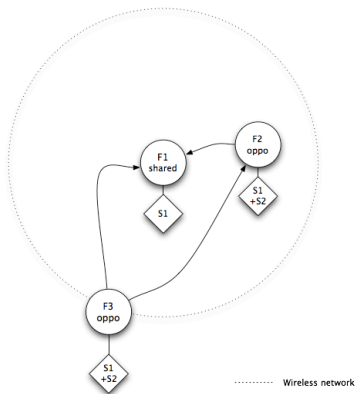
Modus Operandi 1/3
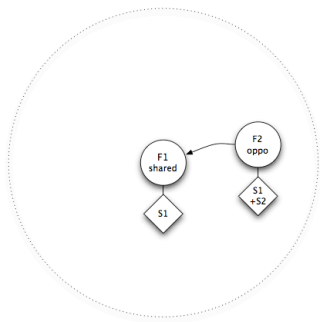
Wireless network

- ▶ 2 Forban are in the same wireless network
- ▶ F1 is only sharing
- ▶ F2 is an opportunist (sharing and also copying)
- ▶ F2 got all the available files

Alexandre Dulaunoy
a@foo.be
Forban a simple link-local opportunistic p2p free software

Modus Operandi 2/3

.... Wireless network

- ▶ 3 Forban are in the same wireless network
- ▶ F1 is only sharing
- ▶ F2 is an opportunist (sharing and also copying)
- ▶ F3 is also opportunist (sharing and also copying)
- ▶ F3 come with no files to share
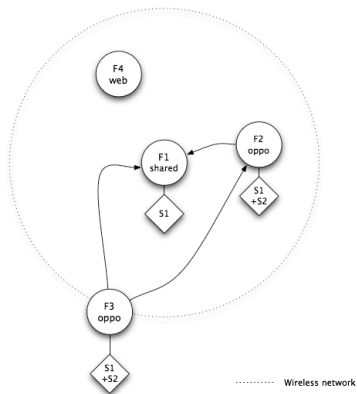- ▶ F3 discovers F1 and F2 and is fetching the indexes

Modus Operandi 3/3

- ▶ 3 Forban are in the same wireless network
- ▶ F1 is only sharing
- ▶ F2 is an opportunist (sharing and also copying)
- ▶ F3 is also opportunist (sharing and also copying)
- ▶ F3 got all files from F1 and F2

Alexandre Dulaunoy
a@foo.be
Forban a simple link-local opportunistic p2p free software

Modus Operandi

- ▶ 3 Forban are in the same wireless network
- ▶ 1 passive web client
- ▶ F4 can use his web browser to get F1,F2 or F3 files

The Forban Protocol (version 1.0-pre)

The Forban protocol in 5 lines

- ▶ Each Forban has an UUID (RFC 4122)
- ▶ Each Forban is flooding the network with an announce (UDP announce)
- ▶ Each Forban maintains a list on how to access the other Forban
- ▶ Each Forban is providing an index of the files available (HTTP)
- ▶ Each Forban has an interface to get a file from his index (HTTP)

The Forban Protocol (version 1.0-pre)

The announce message

```
<sourceinterface_v4> −> 255.255.255.255:12555
<sourceinterface_v6> −> ff02::1.12555

forban;name;adulau shared forban;
uuid;cb001bf2−1497−443c−9675−74de7027ecf9
```

tcpdump -iany -t -p -n -l -A -s0 "udp and port 12555 and udp[8:2]==0x666f"

The Forban Protocol (version 1.0-pre)

Getting the index

```
GET http://<sourceinterface_v4>:12555/s/?g=forban/index
...
InfoVis/AppliedSecurityVisualization.pdf,22121928
InfoVis/OReilly Slideology.pdf,9252536
Fiction/SciFi/4931-hackers_heroes_of_the.pdf,2761072
```

- ▶ The index includes recursively all the files available in the shared directory.
- ▶ The index is composed of the filename including a path along with the total size of each file.
- ▶ Everything available in the index can be fetched.
- ▶ The index is a text file without limitation.

The Forban Protocol (version 1.0-pre)

Getting a file

```
GET http://<sourceinterface_v4>:12555/
  /s/?g=base64_urlsafe(<filenamefromindex>)&f=b64e
```

▶ This is a traditional HTTP download with 'Content-Disposition' header.

The Forban Protocol (version 1.0-pre)

The opportunistic mode

```
foreach index in forban.discovered:
    compare the index with remote index:
        fetch missing files
```

▶ The opportunistic algorithm is quite simple and somehow follows a brute-force approach.

▶ Filters on a name can be used to limit the kind of copied files.

What's next?

- Limiting replication of duplicate files
- Improve caching of indexes using the announces
- Fixing Forban protocol as version 1.0
- Create easy to install binaries of Forban for various platforms
- Help others to remix, reuse or abuse Forban
- Forban in a device, in a tshirt, ... to ease local sharing

Defense of conviviality is possible only if undertaken by the people with tools they control. Ivan Illich (1973).

Q and A

- Thank you.
- a@foo.be
- http://www.foo.be/forban/
- http://www.gitorious.org/forban/
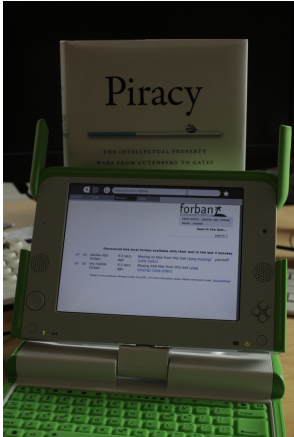
Quick Install

- git clone git://gitorious.org/forban/forban.git
- cd forban
- cp ./cfg/forban.cfg-sample ./cfg/forban.cfg
- edit ./cfg/forban.cfg and set global path and forban share path
- cd bin
- ./forbanctl start