JAP – Web-Mixes

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- Overview
- Statistics
- Mix Development and Deployment
- How to attract Developers?
- Attracting Users
- Abuse
- Results of a users’ Survey
Statistics

- open for public use since autumn 2000
- 1,3 Mio visits of our Web-Page [http://anon.inf.tu-dresden.de](http://anon.inf.tu-dresden.de)
- > 200,000 downloads of JAP:
  - Windows : ca. 75 %
  - MacOS   : ca.   3 %
  - Other    : ca. 22 % [Linux, OS/2, Irix, Solaris etc.]
- 1,500–2,000 users concurrently online, maybe >30,000 in total
- 100 GByte traffic per day / 3 TByte traffic per month
- 10 Mio. URLs processed per day:
  - HTTP: >99,9% of requests >90% of traffic
  - FTP  : < 0,1% of requests 5-10% of traffic
  - Targets: ca. 50% “.com” ca. 25% “.de” ca. 10% “.net” ca. 2% “.org”

Compared to other anonymous communication systems:

**Is this little or much ???**
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Average usage

• Users and mixed packets over the day
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Mix Deployment

1. Approach
   - Assumption:
     - Mix operators are experienced system (unix) administrators
   - Conclusion:
     - Mix software installation and configuration need not to be easy
   - Results:
     - 1. Mix software is a command line program with many options
     - 2. Mix software comes as source code
     - The people who were willing to operate a mix failed.

2. Approach
   - Assumption:
     - NOT all Mix operators are experienced system administrators
   - Conclusion
     - Mix installation and configuration hast to be as easy as possible
Mix Deployment

Results:

- Graphical user interface for Mix configuration written in Java (executable either as application or applet within your favourite browser)
- Mix software is still a command line tool, but has only one option: the configuration file
- Mix software runs on many platforms, so the operator can choose her or his favourite one
- Try to use only components, which are included in the default installation of that operating system

A new problem:

- Configuration file is XML ⇒ we use Apaches Xerces-C++ XML-Library
- Problems:
  - C++ ABI changed with every Version of GNU GCC, so precompiled versions of Xerces-C++ are often not usable
  - Changes in the Xerces-API (including namespace etc.) make it difficult to hold the Mix software compatible with all versions of Xerces
  ⇒ If people fail to compile the Mix the reason is Xerces!
  ⇒ Potential solution: Use other XML-Library like libxml, which is written in C
  ... but this makes development more difficult

Easy development ⇌ Easy deployment ??
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Mix-Configuration Tool

![Image of Mix Configuration Tool interface]

- **Own Mix Certificate**
  - Name: CN=<Mix id='141.76.1.120:3746544'>
  - Valid From: Thu Oct 17 10:05:15 CEST 2002
  - Valid To: Sun Nov 03 03:45:44 CET 2002

- **Previous Mix Certificate**
  - Name: Import...
  - Valid From:
  - Valid To:

- **Next Mix Certificate**
  - Name: CN=<Mix id='182.160.63:3746544'>
  - Valid From: Tue Aug 26 17:07:22 CEST 2002
  - Valid To: Fri Aug 23 17:47:51 CEST 2002
Mix Deployment

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How to Attract Developers?

- Coding the whole system (Mixes, JAP, InfoService etc.) needs really much resources (manpower)
- Idea: Using the power of the open source community to help
  - Whole project is open source (BSD style licence) and available at sourceforge.net
  - But: Attracting developers is not that easy (maybe because of the special research character of the project?)
  - **How to attract developers??**
  - **How is the development of other anon systems organized??**
Attracting Users

- Support as many platforms as possible:
  - JAP is written in Java 1.1 and available for nearly every platform
  - Problems:
    - Java grants no access to system specific functions and configuration, e.g. changing the browser settings to use JAP as proxy is not possible
    - Real integration in the look and feel of a system is not possible
    - “write once, run anywhere” does not really work
    - Solutions ??

- Installation and configuration have to be easy:
  - If the user is not able to get it run within 10 minutes he will not use it at all
  - Most users like a graphical interface not a command line tool

- Give them support:
  - We have answered more than 5000 e-mails from users
  - Has anyone experiences with tools supporting this ??
  - Users are not willing to read anything like documentation, FAQs etc.
  - How to force them reading before asking ??
Firewalls are always a problem:
- in companies “normal” users have no influence on the firewall configuration
- Home users have many different kinds of personal firewalls and often do not know how to change their configuration

Our solution:
- use only few connections to the outside world
- design them in a way, that they could be tunnelled via common proxy protocols like HTTP, SOCKS etc.
- let servers listen on usually “accessible” ports (80, 443 etc.)

Other solutions ??

We have made no “active” advertisement, but others report about the project on different media:
- Newspapers, radio, TV, Internet etc.
- Especially we get a push after each message on the German internet news board called “Heise News Ticker”
- But: We believe, that at the moment most of our users are Germans, so What are the relevant media (especially internet based) for other countries ?

We have exhibited on fairs like CeBIT
- Although this also attracts users, using internet based media is much cheaper and results in more attention
Attracting Users

“Hidden” functionality
- People in countries with restrictive Internet access use the system just to freely browse the whole Web
- Some countries have blocked our anon service
- Big challenge:

How to make blocking as difficult as possible?

Keeping the system “alive”
- Development and operating of the system cause great running costs
- At the moment covered by the research project
- But: How to recoup the costs afterwards?
- Are the users willing to pay, how much?

Which experiences did commercial systems make?
Misuse of our anon service:
- credit card fraud
- blaming of people in postings to Newsgroups or Internet forums
- identity theft
- hacking of servers which run unpatched Microsoft IIS
- 2-3 request per month from the police or public prosecutors
- on request of site operators, we block them
- Which experience did other anon systems make?
- Should there be the possibility to reveal identities in certain situations (maybe according to the fairness assumptions of digital cash (e-coins))?
- How to achieve this without monitoring all users?
- In the sense of fairness, should the requested server be informed, that a certain request is anonymized (maybe by including a X-Anonymized header line)?
- Could this solve some abuse problems?

Abuse in Peer-To-Peer based systems:
- in our system, only we get into contact with the police, but NOT our users (because the IP of the last node belongs to us)
- this is different in Peer-To-Peer based systems like Crowds or Tarzan, because every participating user may be a “last node”
- Is this a big problem for the acceptance of Peer-To-Peer based systems?
- Perhaps users would not risk to be contacted by the police?
Results of a users’ Survey

- Web based users’ survey
- 4190 Entries from 07/04/2001 – 03/22/2003
- Results: (multiple choices are possible)
  - Reasons for using JAP:
    - 64% protection against the ISP
    - 51% protection against the police, secret service etc.
    - 47% protection against the operators of the Anon-Service
    - 34% free speech
    - 44% easy to use
    - 12% bypass censorship
  - 55% of the Users are willing to pay for JAP
  - 7% of the Users use JAP relating to business

Has anyone else made a survey relating to anonymous communication systems – and what are the results ??