Encrypted IM with Pidgin and OTR

Tom Ryder

tom@sanctum.geek.nz
https://sanctum.geek.nz/

IM is insecure

- Chat protocols do often support SSL connections
- But they're third party, and involve trusting the person running the server
  - Google talk
  - Facebook chat
  - Skype chat
  - IRC networks
- Your chat content can still be read by attackers

Authentication

- Much like PGP email, it's not just about keeping the information secure
- We have to be sure who we're talking to, and IM and email accounts can get stolen
- We want a way not just to **encrypt**, but to **authenticate** a person, and make sure nobody else could be listening to the conversation (**man-in-the-middle**)
- As with email, this is best solved with the use of **public key cryptography**

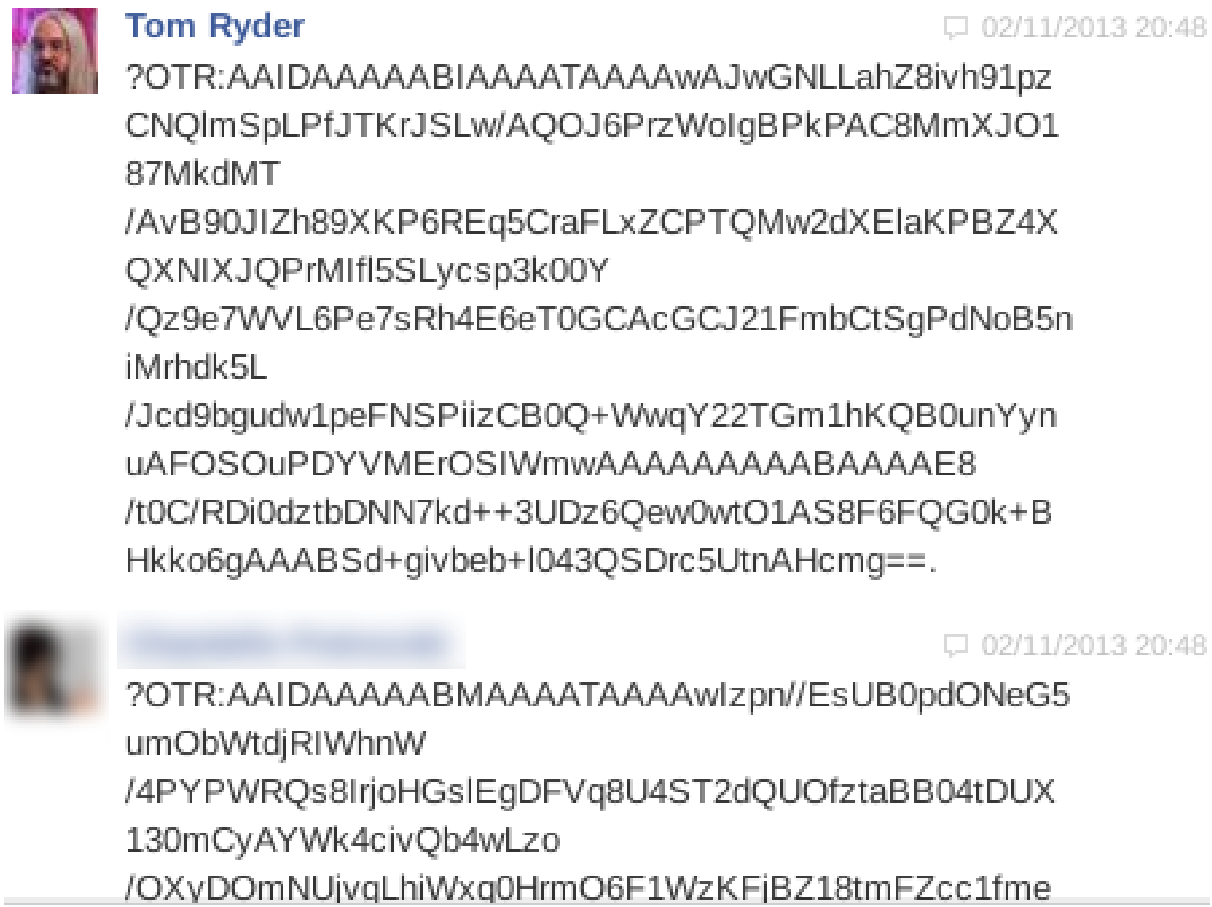
What are the options?

- If we want to keep our data completely secure and under control, we have to run our own IM servers:
  - Jabber + SSL
  - IRC + SSL
- The software is free and open source ...
- … but it's a pain to set up and manage, requires more effort from both parties, and doesn't necessarily have **perfect forward secrecy**
- If your keys are compromised, someone could read your past messages

Off-The-Record chat

- Works over **third-party systems**; the messages appear garbled to other readers
- **Authenticates** the parties in a conversation, and allows detecting man-in-the-middle attacks
- **Encrypts** the content so it can't be read by the network provider
- Has **perfect forward secrecy**; if any of the keys are stolen, they still can't be used to decrypt past messages (PGP mail does *not* do this)
- Is **deniable**; there's no way to prove you composed any given encrypted message; your keys don't contain identifying information

How it looks to third parties



Tom Ryder

02/11/2013 20:48

?OTR:AAIDAAAAABIAAAATAAAAwAJwGNLLahZ8ivh91pz
CNQlmSpLPfJTKrJSLw/AQOJ6PrzWoIgBPkPAC8MmXJO1
87MkdMT
/AvB90JIZh89XKP6REq5CraFLxZCPTQMw2dXElaKPBZ4X
QXNlXJQPrMIfl5SLycsp3k00Y
/Qz9e7WVL6Pe7sRh4E6eT0GCAcGCJ21FmbCtSgPdNoB5n
iMrhdk5L
/Jcd9bgudw1peFNSPiizCB0Q+WwqY22TGm1hKQB0unYyn
uAFOSOuPDYVMErOSIWmwAAAAAAAAABAAAAE8
/t0C/RDi0dztbDNN7kd++3UDz6Qew0wtO1AS8F6FQG0k+B
Hkko6gAAABSd+givbeb+l043QSDrc5UtnAHcmg==.

[redacted]

02/11/2013 20:48

?OTR:AAIDAAAAABMAAAATAAAAwIzpn//EsUB0pdONeG5
umObWtdjRIWhnW
/4PYPWRQs8IrjoHGslEgDFVq8U4ST2dQUOfztaBB04tDUX
130mCyAYWk4civQb4wLzo
/OXyDOmNUjvqLhiWxq0HrmO6F1WzKFjBZ18tmFZcc1fme

What supports it?

Many open source instant messaging clients:

- **Pidgin –** Windows, GNU/Linux, BSD
- Adium – Mac OS X
- Bitlbee (IM to IRC) – GNU/Linux, BSD
- Gibberbot – Android

It won't work in any web interface or proprietary client; you need to install the software on your machine.

Pidgin

- Multi-IM client: you can chat on many networks:
  - Google Talk
  - Windows Live Messenger/Skype
  - Facebook
  - Jabber
  - Steam
  - IRC
- OTR should work on all of them
- Free software
- Separate, portable library for chat programs: libpurple

Installation

- Debian, Ubuntu, Mint:

```
# apt-get install pidgin pidgin-otr
```

- Fedora, Red Hat, SUSE:

```
# yum install pidgin pidgin-otr
```

- Can be built from source if necessary

Demonstration

- Pidgin on Debian XFCE on my laptop
- Talking to my machine at home, running irssi/bitlbee over SSH
- Activating the OTR plugin
- Starting a private conversation with someone else using OTR
- Authentication via some secure channel (e.g. PGP mail)
- Checking fingerprints
- Demonstration of how messages appear to attackers
- Enjoy chatting far more securely!

How to authenticate?

- You decide what method is good enough for your purposes
  - Meet in person and exchange fingerprints (safest)
  - Sign the fingerprints and send them via PGP mail with a trusted public key
  - Pose them a question only they could answer
  - Phone call
  - Text message the fingerprint to a known trusted number (least secure; don't use this for very sensitive contacts)

Questions?

- https://otr.cypherpunks.ca/
- https://en.wikipedia.org/wiki/Off-the-Record_Messaging
- https://www.riseup.net/en/otr