

**Fair Young Sustainable Inclusive  
and Cooperative (FYSIC)  
@ Modica – Sicily**

**FREE SOFTWARE – GNU/Linux  
TOR PROJECT**

**Solira – Software Libero Ragusa**

# What is SOLIRA?



- We promote the **Free Software philosophy** on local territory
  - since 2003
  - by means of:
    - conferences/seminars
    - free courses
    - interaction with Public Administration and local subjects
- our web-site: *www.solira.org*

# OVERVIEW OF THE WORKSHOP



- Free Software
- GNU/Linux
  - break!?!
- Installation session
- TOR Project
  - a bit more technical
  - just if you are interested!

# FEW TECHNICAL CONCEPTS

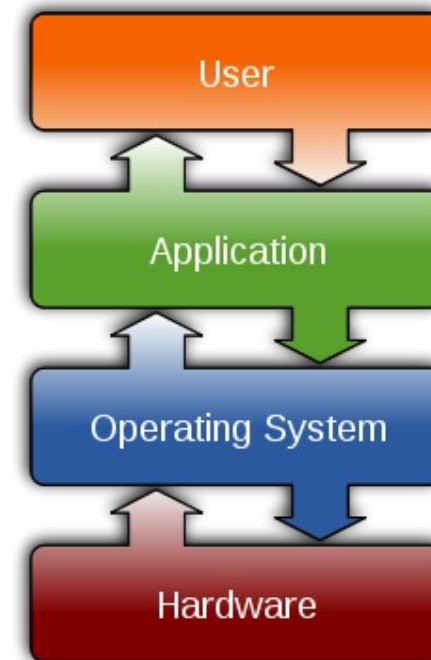
- What is a computer?

- **Hardware**
- **Software**



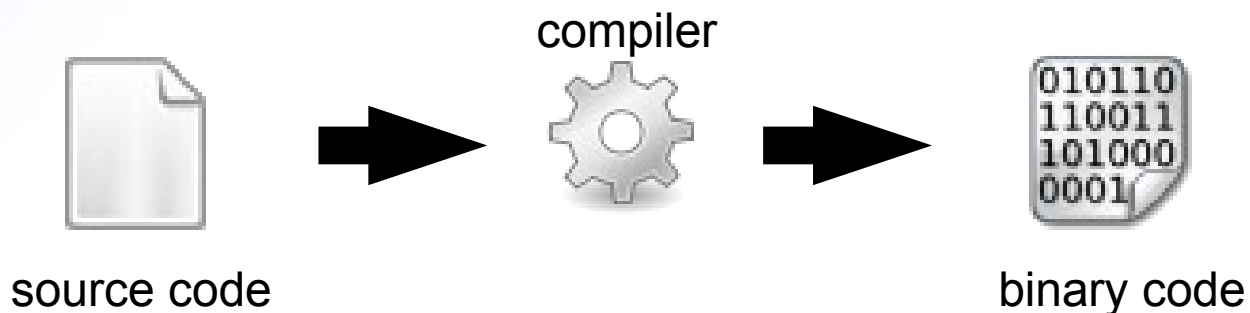
- Several types of software in a computer:

- Operating system
- System utilities
- User programs



# ANOTHER ONE: SOURCE CODE

- How programs are made?
  - practical analogy:
    - a **cooking recipe**
  - technically speaking:



- Why does it matter?
  - its knowledge allows to understand how the program works and to modify it

# A bit of history: 1960-1970



- Mini-computers: a broader diffusion
- **Internet** was born!
- **UNIX**: an operating system by Bell Laboratories



- And the **source code**?

- available to all
- researchers collaborate to improve it
- programmers were paid for their work



# A bit of history

- A reversal in the trend by companies:
  - **commercial licenses** of use
  - **closed source** code
- a small but important episode:
  - in a **MIT** laboratory decided to change the printer equipments
  - they were used to modify printer's software (drivers) to solve some tiny specific problems (jam of paper and jobs notification)
  - printer manufacturer (Xerox) denied the source code access!
    - it was WAR!!



# GNU PROJECT - FSF

- A MIT lab programmer: **Richard Stallman**
- he proposes the **GNU project**:
  - GNU = GNU is Not UNIX
- founded the **Free Software Foundation** – FSF (1980)
  - **Vision**: Dedicated to eliminating restrictions on copying, redistribution, understanding and modification of software...
  - **Goal**: develops free and compatible replacements for propriety software
- An important remark: “free software” is a matter of liberty, not price. Think of “free” as in “**free speech**,” not as in “**free beer**”.





# Why SOFTWARE FREEDOM?

- because **knowledge** should always be shared and be kept free



- because we have somethings more important to do than **reinvent the wheel**
- to keep software as **a science**, not alchemy or witchcraft
- to fight **monopolies**



# GENERAL PUBLIC LICENSE - GPL



- Four fundamental guaranteed freedoms:
  - freedom 0: to **run** the program for any purpose
  - freedom 1: to **study** how the program works, and adopt it to your needs
  - freedom 2: to **redistribute** copies so you can help your neighbor
  - freedom 3: to **improve** the program, and **release** your improvements to the public, so that the whole community benefits



**BUT... what's**

**"OPEN SOURCE SOFTWARE"?**

- The Open Source Initiative defined "**Open Source**" by means of 10 practical points
  - less confusing
  - based on the way is designed and developed
- Free software movement focuses on the philosophical freedom it gives users
- A schism?! NO!

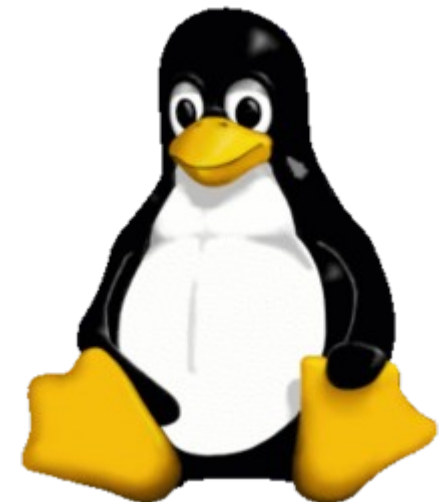
**Free Software  $\approx$  Open Source Software**

- **Free and Open Source Software** (FOSS) movement
  - encompasses the two movements



# The STORY CONTINUES... Linux

- A missing important piece in the GNU project:
  - a working **kernel** (the hearth of the OS)
- In 1991 **Linus Torvalds** (a Finnish university student) shared with the community a personal project:
  - the **Linux** kernel!
  - a free rewrite of UNIX kernel
- personal project → **community project**
- hundred of collaborators and many companies
- GPL license



- The puzzle is complete now:
  - the **GNU/Linux** Operating system
  - also know as just “Linux”
    - don't name it like this in front of Stallman!!!
- main features:
  - Reliability
  - Scalability
  - Flexibility
  - Security
  - Price



# GNU/Linux



- Who does use it?!



Google



IBM



- Where is it adopted?



# How does it LOOK on a DESKTOP?!



*"One soul, many bodies"*



- If GNU/Linux is the **engine** of our car... we can choose its **bodywork** and accessories!



– **Desktop Environment**

– which one? a matter of tastes and weight!



KDE



GNOME™




LXDE

...



Windows Applications

Type to search... 



Home

File Edit View Go Bookmarks Help

Devices

- 54 GB Filesy...
- Entertainm...
- 105 GB Files...
- ArchHome
- Portfolio

Computer

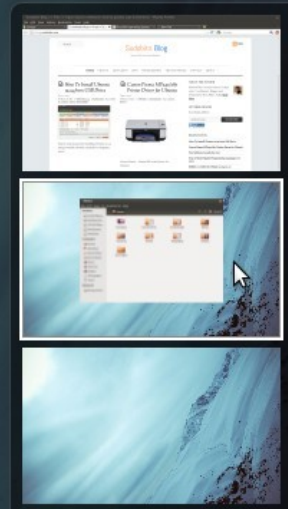
- Home
- Desktop
- Documents
- Downloads
- Music
- Pictures
- Videos
- File System
- Trash

Network

- Browse Net...

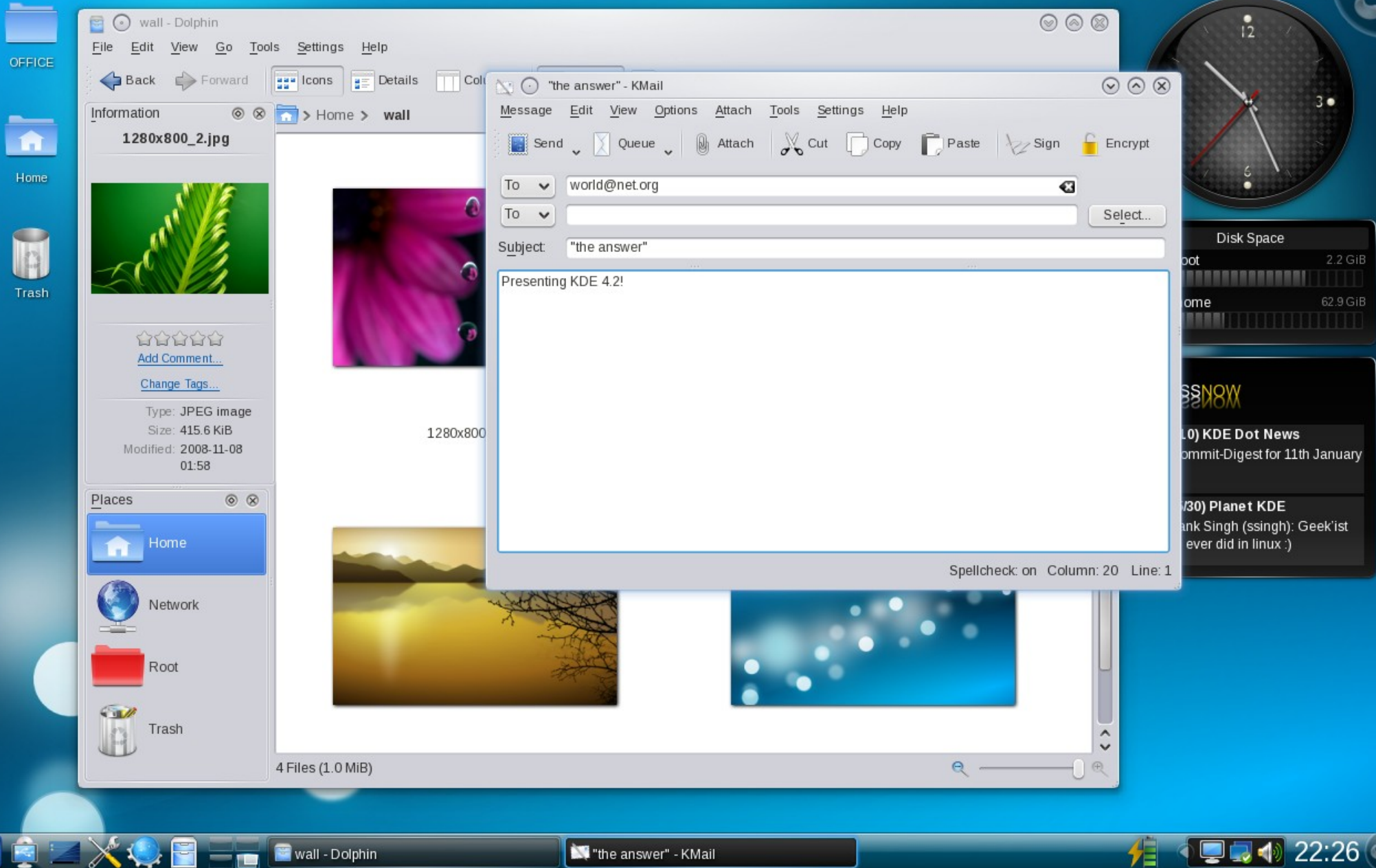
Home

- Desktop
- Documents
- Downloads
- Music
- Pictures
- Public
- Templates
- Videos
- Examples



Home





The screenshot displays the KDE 4.2 desktop environment. On the left, a vertical sidebar contains icons for OFFICE, Home, and Trash. The main desktop area features a Dolphin file manager window titled "wall - Dolphin" showing a directory named "wall" with four image files. A KMail window titled "'the answer' - KMail" is open in the foreground, displaying an email with the subject "the answer" and the body text "Presenting KDE 4.2!". The email is addressed to "world@net.org". On the right side of the desktop, there are several system monitors: a large analog clock, a "Disk Space" monitor showing 2.2 GIB for root and 62.9 GIB for home, and a "NEWS" monitor with links to "KDE Dot News" and "Planet KDE". The bottom of the screen shows a taskbar with icons for the KDE logo, Dolphin, KMail, and system status, along with the time "22:26".

# LXDE

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The desktop environment features a blue wavy background. On the left side, there is a vertical column of icons: a home icon labeled 'My Documents', a globe icon labeled 'Answer.aspx.html', a box icon labeled '46860-vista\_glow...', the Internet Explorer 6.0 icon, a folder icon labeled '65146-Metacity-Z...', another folder icon labeled '41090-LiNsta-Pack...', and a folder icon labeled 'LiNsta-Pack'. To the right of this column are several document and application icons: a document icon 'sayya\_mysql', a PDF icon 'Clopidogrel Is Safe Early ...', a document icon 'NARCOTIC ANALGESIC...', a PDF icon 'Surgery for Cardiac Val...', a document icon 'CPR on 11-05', a PNG image icon 'gutsy-20071 025-1.png', a music icon '18 Brazil (Around th...', a JPEG image icon 'DSCN0713.JPG', the Adobe Reader 8 icon, a file icon 'bookmarks.sh', a document icon 'cai\_hong.gp3', a music icon 'tuning.mid', a folder icon 'lxde\_screenshots', and a folder icon 'Temp'. On the right side of the desktop, there is a large 'LXDE' logo with a stylized bird-like graphic, and below it, the text 'LIGHTWEIGHT X11 DESKTOP ENVIRONMENT'. At the bottom of the screen, there is a taskbar with several application icons and a system tray on the right showing the time '05:33' and various system icons.

# LXDE

LIGHTWEIGHT X11 DESKTOP ENVIRONMENT

# OK, WHERE CAN I GET ONE?

- You have to choose your **distribution**?
  - a ready to use bundle with specificities
- How many? Hundreds!!! :)
  - take a look to **DistroWatch.com** website
- Do no worry about...
  - few **major distributions**
  - **free download**
  - ...but it is **fun** to try different stuff
  - ...and useful with **VERY OLD hardware!**



...

# FEW highLIGHTS

- Is it easy to **install**?
  - often it is even easier than other OSes
- It is a good neighbor
  - **multi-boot** installation
- *“first try... get it only if you like!”*
  - **live mode**
- we invented the App Store, not Apple!
  - **on-line repository**: thousands of ready-to-click installable software
  - **on-line updates**



# NOT JUST GNU/Linux...



- Open source projects in **every field!**
  - community + some farsighted companies
  - many excellences (not just an alternative)
    - how is it possible?!
- Is it possible to use open source software without using GNU/Linux?!
  - yes, that's no blasphemy!
  - many OS projects are multi-platform
    - also on Microsoft Windows and Apple Mac OS



# SOME EXAMPLES

- Web services:
  - Apache web-server
- Office Automation:
  - LibreOffice
- Internet clients:
  - Firefox browser
  - Thunderbird mail client
- Graphics:
  - the GIMP
  - Inkscape



APACHE  
HTTP SERVER



**LibreOffice**  
The Document Foundation

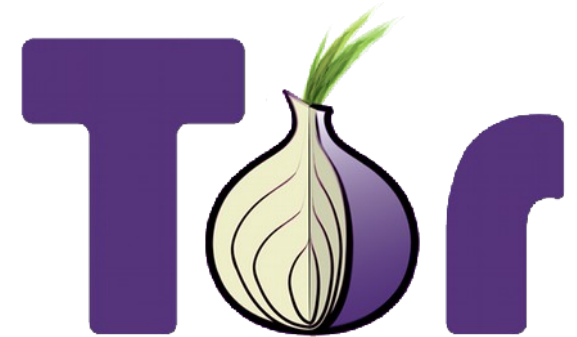


**QUESTIONS?!**



# The "TOR PROJECT"

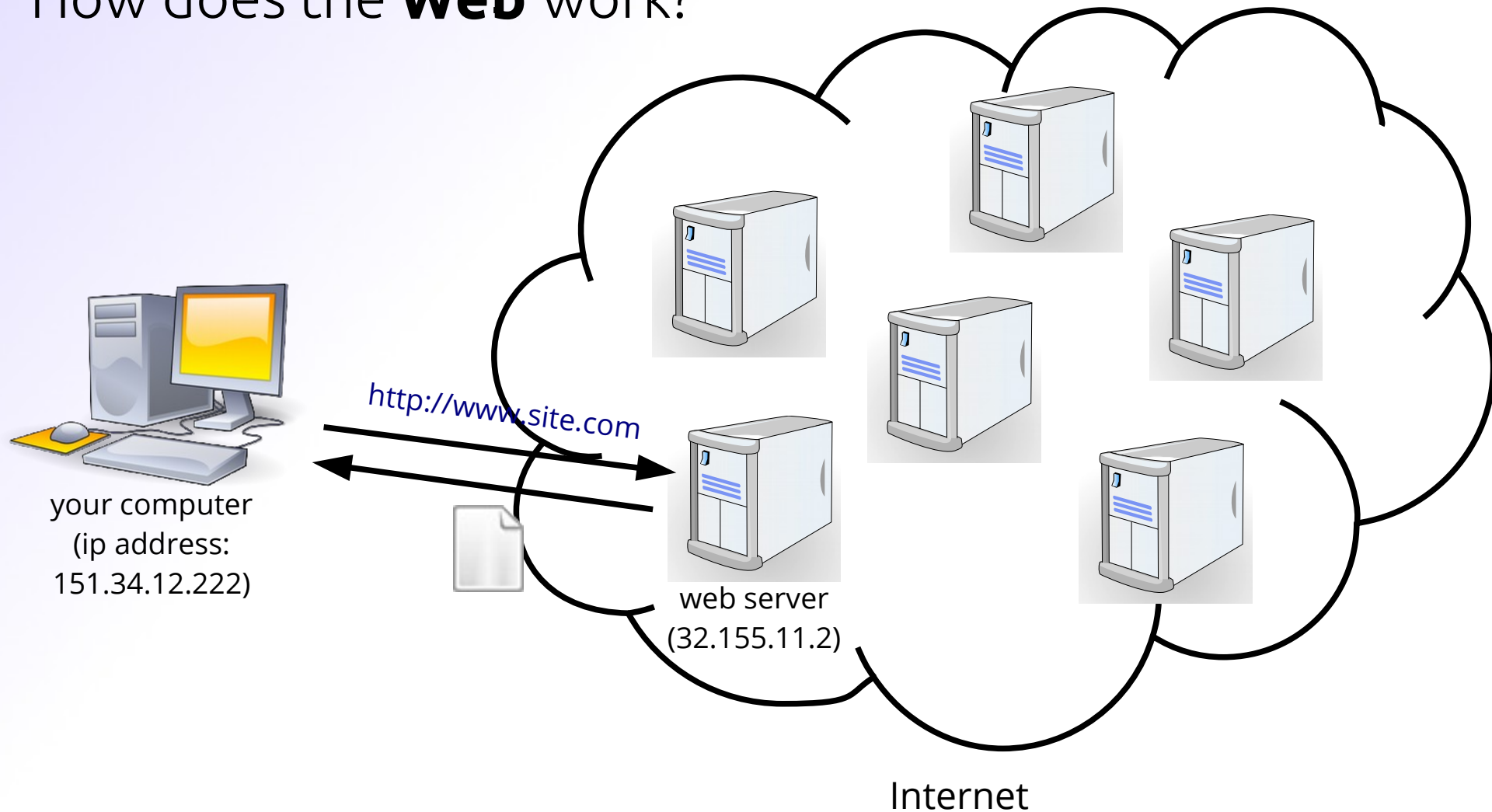
- What about?
  - on **privacy** and **anonymity**
  - on **anti-censorship** methodologies
    - a side effect!
    - institutional censorship:
      - China, Syria, Ethiopia, ...but also UK, Italy,...
- A research **project**
  - a community of activists
  - an Open Source project!!
  - multi-platform
  - main web-site: *www.torproject.org*





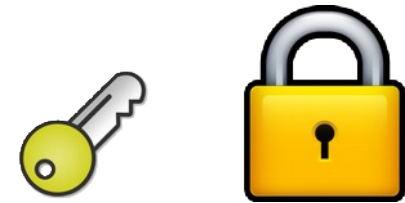
# Again FEW TECHNICALITIES

- How does the **Web** work?



# Again FEW TECHNICALITIES

- Do you know what is **Cryptography**?



- **SSL protocol** on Internet



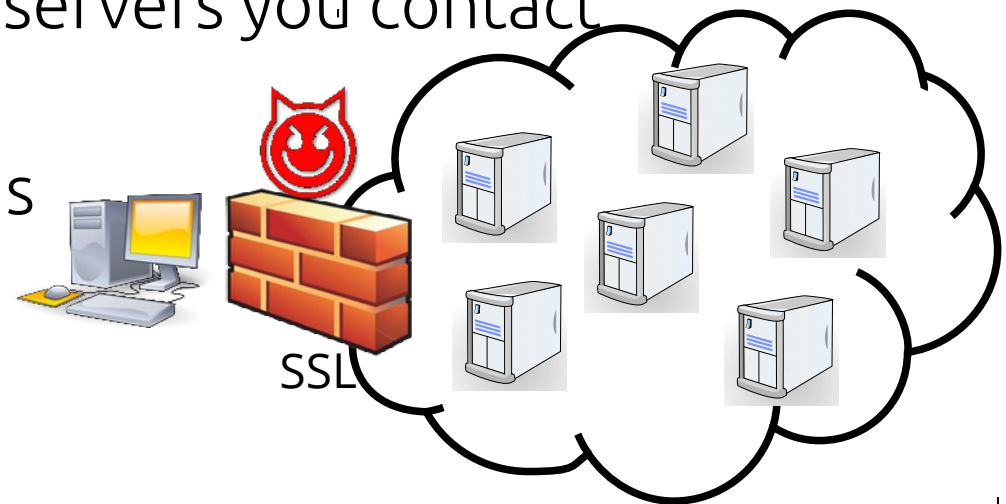
# SSL: is it enough?

- Not useful to guarantee **anonymity**



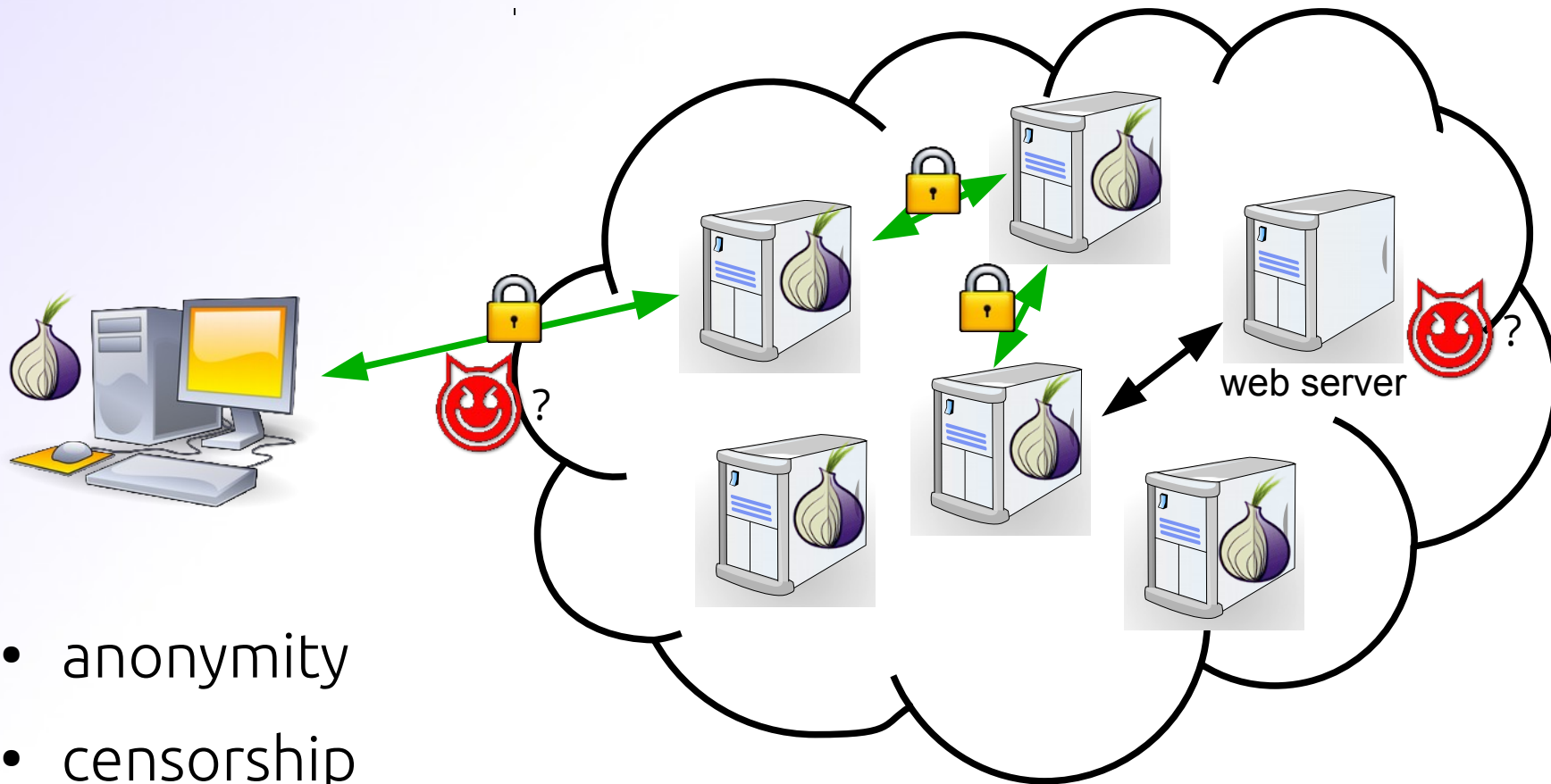
- what about  **censorship**?

- they can see which servers you contact
- easy to block:  
deny all connections  
or just SSL



# HOW DOES TOR WORK?

- **Onion routing**
  - a set of **onion servers**



- anonymity
- censorship

# is it difficult TO USE?!

- it is easier than you can think!
  - 1) go on [www.torproject.org](http://www.torproject.org)
  - 2) download the ready to use **TOR Browser bundle**
  - 3) extract and launch it
- multi-platform
  - GNU/Linux, Windows, Mac OS, smart-phone, ...
- everyone can help!
  - **join the network**
  - become a relay node
- some dislike TOR... why?!
- let's try it!



# SOMETIMES IT IS NOT SO EASY

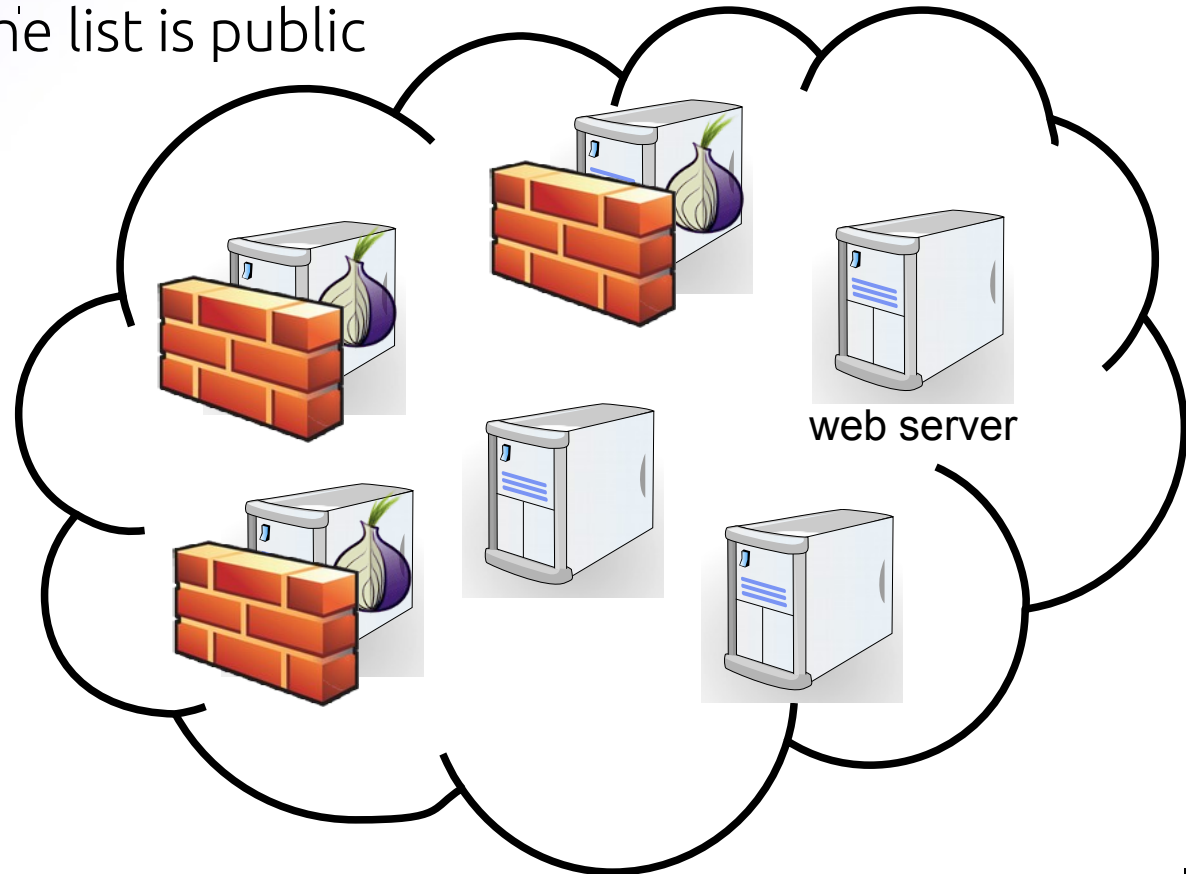
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- A continuous **hunt**

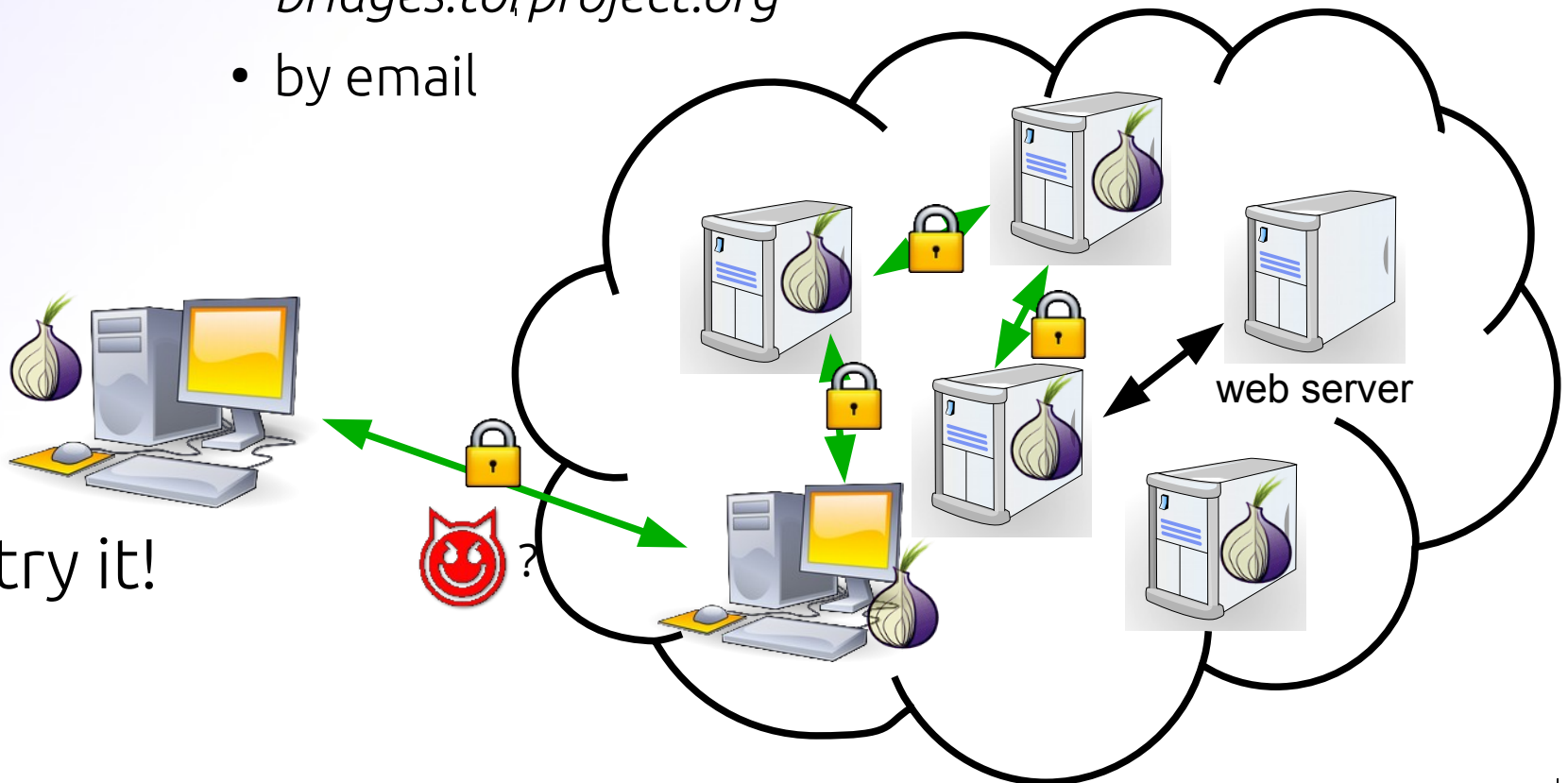
– **countermeasures** by censors:

- **block** the access to all the TOR servers
- the list is public



# A SOLUTION: THE BRIDGES

- you can help becoming a special relay node:
  - become a bridge for others!
  - the list of bridges is dynamic and not public
    - *bridges.torproject.org*
    - by email

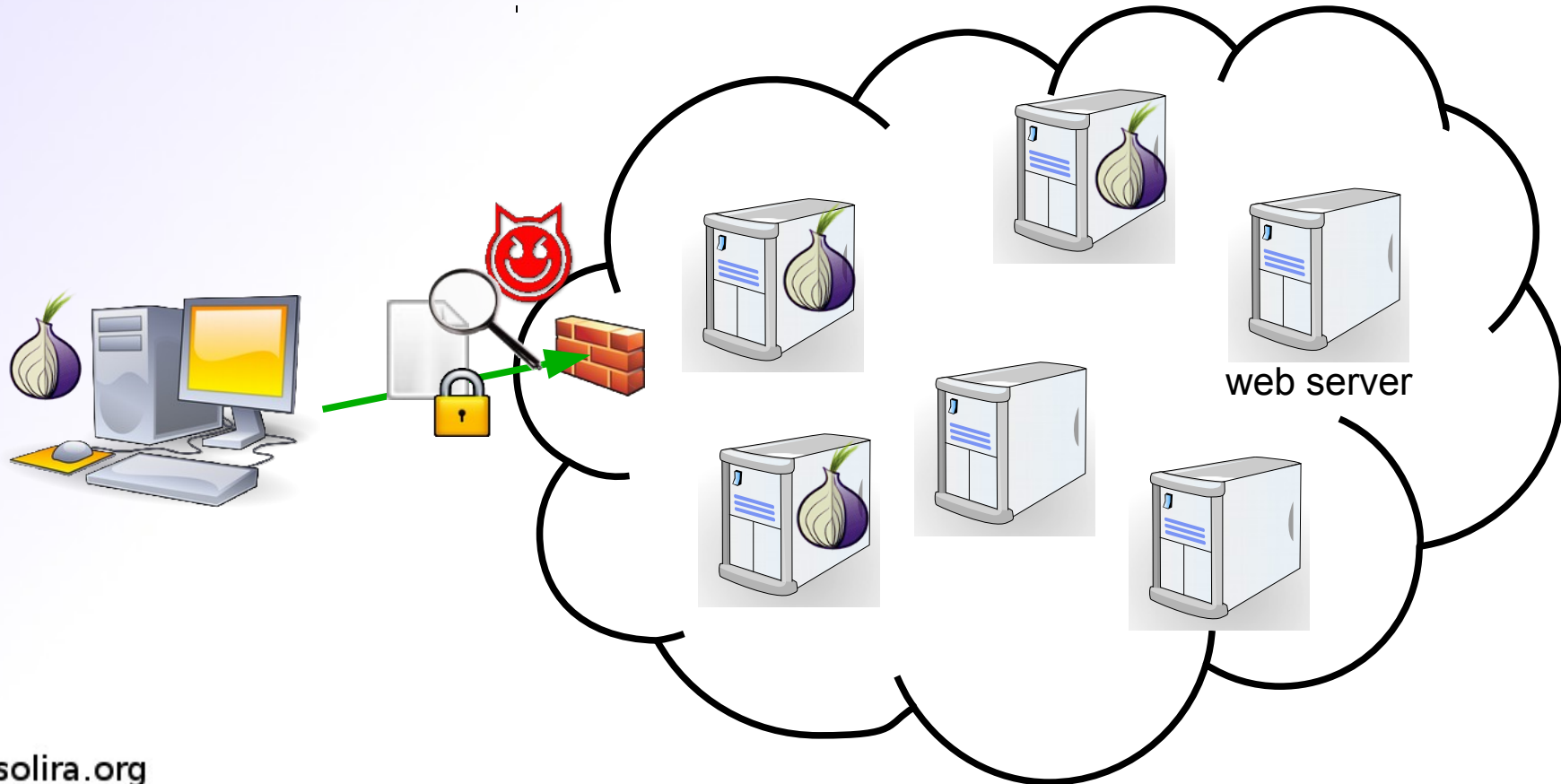


- let's try it!

# SOMETIMES IT IS NOT SO EASY



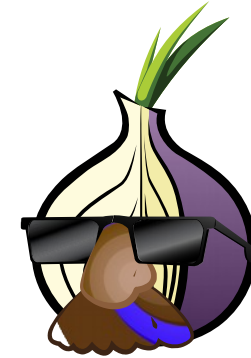
- other countermeasures:
  - **Deep Packet Inspection (DPI)**
  - they try to **recognize** and **block** all TOR messages





# A SOLUTION: obfuscation

- TOR can try to **hide** its messages in order to fight DPI recognition
- you need a special **Obfsproxy Tor Browser Bundle**
  - [www.torproject.org/projects/obfsproxy.html](http://www.torproject.org/projects/obfsproxy.html)
- with special kind of bridges
  - **obfsproxy bridges**
    - already included in the bundle
  - as before:
    - [bridges.torproject.org](http://bridges.torproject.org)
    - by email
- let's try it (last time!)



# PLAN OF DEFENCE

- 1st attempt:
  - download the **TOR Browser Bundle** for your system
  - test it
- 2nd attempt: use an ordinary **bridge**
- 3rd attempt:
  - download the **Obfsproxy TOR Browser Bundle**
  - use an **obfsproxy bridge**
  - test it
- ... is it still not working?
  - the hunt continues...



QUESTIONS?!



... the END! :)