

psiphon

the Citizen Lab
University of Toronto
Munk Centre for International Studies

user guide

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Things you should know

What is a psiphonode (pN) ?

A psiphonode is a proxy server and censorship circumvention **provider** that is located in an **uncensored** country.

What is a psiphonite (pl) ?

A psiphonite is a psiphon **user** living in a **censored** country. The psiphonite connects to a psiphonode (set up by someone they know and trust), to access information freely.

What is an IP address?

An IP identifies a specific computer or other network device on a network. It is analogous to a street address or a phone number.

What is an Internal IP?

An Internal IP is assigned to your computer if it is running from within a Local Area Network (LAN). This IP is not directly accessible from the Internet.

What is an External IP?

An external IP address is the unique identifier assigned to you by your Internet Service Provider (ISP). There are two types of external IP address, static and dynamic. Static is fixed and therefore never changes. Dynamic changes every time you connect to the Internet.

What is a Port?

A port is a special number present in the header of a data packet used to map data to a particular process running on a computer. Different processes run on different standard ports assigned by the Internet Assigned Numbers Authority (IANA). The default port for psiphon is 443, because of the "https" protocol. However, this can be customized.

What is a Router?

A router acts as a junction between two or more networks to transfer data packets.

What is a Firewall?

A firewall blocks packets or ports based on rules determined by the computer user. These rules can range from very general to very specific.

What is a Server?

A server is a host computer on a network that handles requests for data, email, file transfers, and other network services from other computers (ie, clients). In the context of psiphon, the psiphonode is the server.

What is a Proxy Server?

A proxy server acts as an intermediary between a user and the Internet. It can be used to ensure security, administrative control, and censorship circumvention (among other things). A psiphonode is, therefore, a proxy server.

What is an SSL certificate

An SSL certificate is exchanged between a client and a server to authenticate an encrypted communication channel.



I want to give access to blocked web content to my friends

psiphon is for you, please proceed

I want to access blocked web content



You do not need to install psiphon.

You need to find someone who is in an uncensored country and ask them to install psiphon and give access to it.

Think of whom you might know and trust in an uncensored country who would be able to help you.

I'm on windows

psiphon is for you, please proceed

I'm on linux

psiphon is for you, please proceed

I'm on mac

mac version is not yet available - please check back periodically to our website <http://psiphon.civisec.org> for updates.

I'm on a LAN

psiphon may not be accessible to people outside of your network depending on its configuration. Check with your network administrator.

I'm using a router

Configuration of your router is required. Please refer to Appendix A (pp 8-9) for router configuration instructions.

I have a firewall

Configuration of your router may be required. Please refer to Appendix A (pp. 8-9).

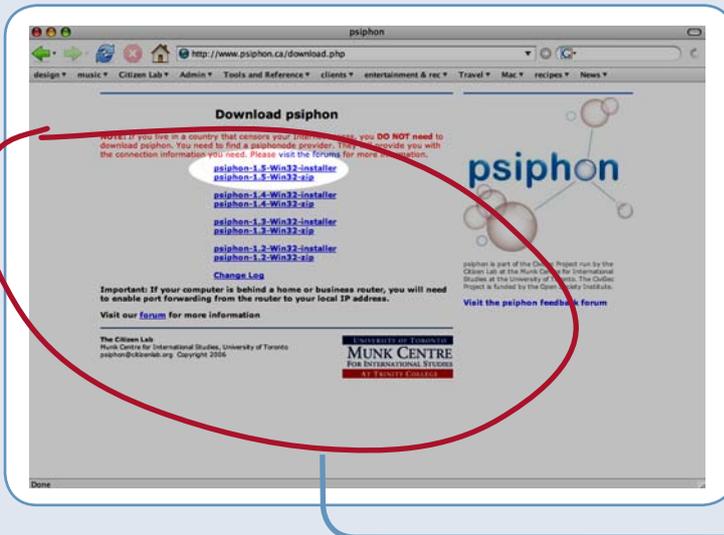


You're ready to start!

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Get psiphon

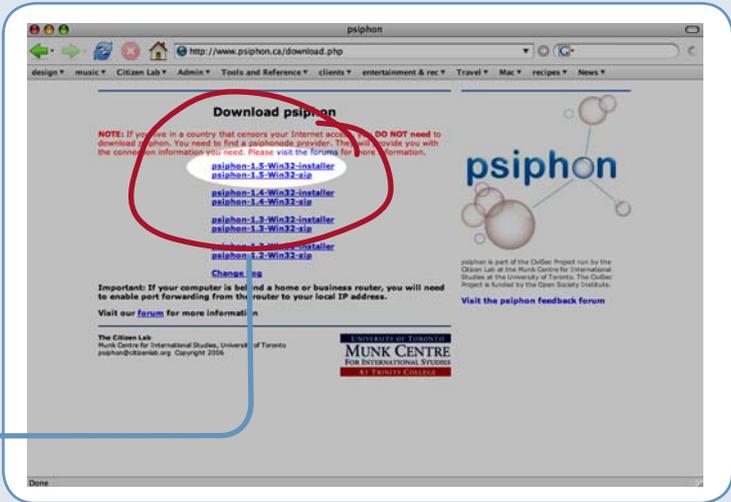
go here: <http://psiphon.ca/download.php>



Read and accept licence agreement in order to proceed.

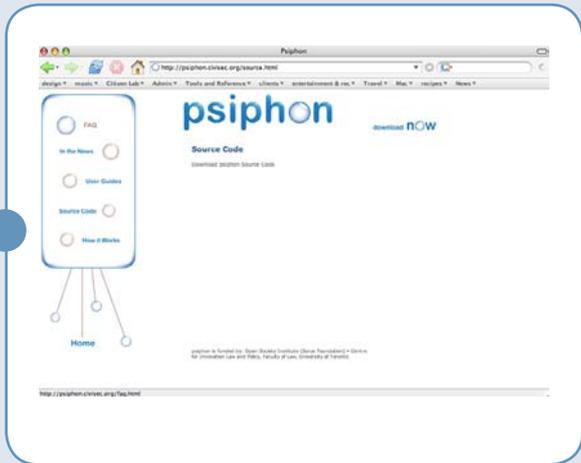
If you are on windows:

click on **psiphon-1.5-Win32-installer** and download psiphon installation file on your desktop



If you are on Linux:

you will need to download source here: <http://psiphon.civisec.org/source.html> and build psiphon yourself using the provided instructions

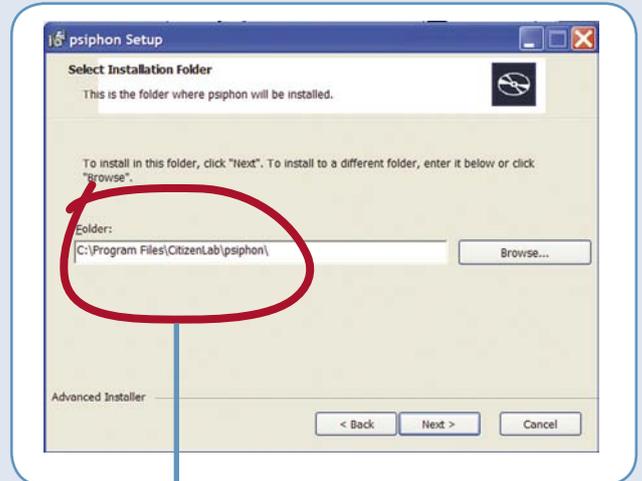


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Install psiphon

This and further instructions are for WINDOWS ONLY

Find psiphon installation file on your desktop and run the installation.



The installer will save psiphon in a default location or the location of your choice.

You are ready to run psiphon



Before proceeding, understand the security environment in which your psiphonite lives.

See Appendix B (High Risk Users) on p. 10 for details

Please proceed

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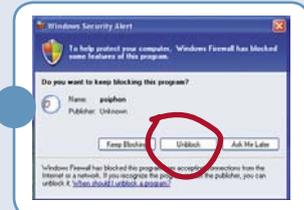
Start psiphon

Find the psiphon icon on your desktop and double click on it.



At this point, you may encounter a firewall pop-up window.

Choose 'unlock' if you wish to proceed.



Now, psiphon will help you configure your server.

Give your server a name.

This name is a part of the URL identifier that your psiphonites will use to connect to your machine, so give psiphon a name that your psiphonites will recognize as unique to you.

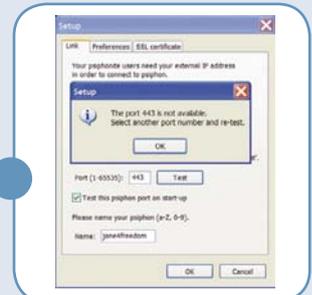


Then, psiphon will attempt to determine your external IP address.

This is the final piece of the URL identifier that is needed in order for your private psiphonites to find your psiphon server.

Next, psiphon will check if port 443 is available.

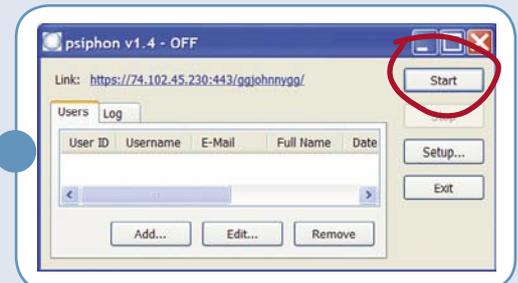
If psiphon cannot access the default port 443, a new port will be automatically assigned. You can also manually set psiphon to use a port number of your choice. Click on the 'Test' button to verify that psiphon can use the port that you have selected.



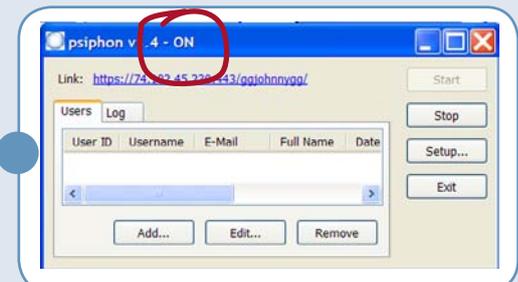
Now you can start psiphon.

Click on the "start" button.

psiphon will attempt start up the server, running through all of the tests that are required in order for your server to function.



If all tests are passed, the server will start, and the top window will display as ON.



Once your server is ON then you can **test** that your psiphon server can be seen by outside users by clicking on the blue test link at the top of the psiphon control panel.

Please proceed

The URL (what appears when you click on the blue test link) is made up of the following components:

<https://84.202.55.330:443/jane4freedom>

<https://84.202.55.330:443/jane4freedom>

<https://84.202.55.330:443/jane4freedom>

<https://84.202.55.330:443/jane4freedom>

https://

This indicates that a secure and encrypted (SSL) connection will be used between the psiphonite and your psiphonode.

74.102.45.230

This is the external IP address that your psiphonites will need in order to connect to you.

:443

This is the port that your psiphonode is listening to in order to accept connections to your IP address.

:jane4freedom

This is the name of your psiphonode.

Note that this is just a sample name. We recommend that you determine your own unique name that your psiphonites will understand.

If your psiphon server is running correctly, the psiphon certificate page will display in your browser.

Accept the psiphon certificate.

If your server is configured correctly, you will see the certificate warning, which means that your psiphonode is accepting connections to your machine.

For more information on the psiphon certificate warning, see the Appendix B (p. 11)



Login to psiphon.

Click on the blue link to get to the login page.



Unable to access login page?

If you cannot get to the login page by clicking on the blue link, that means that your psiphonode is NOT available to anyone, including yourself. Please refer to Appendix A (pp 8 - 9) to get more information on how to get your psiphonode up and running.



If login is successful please proceed

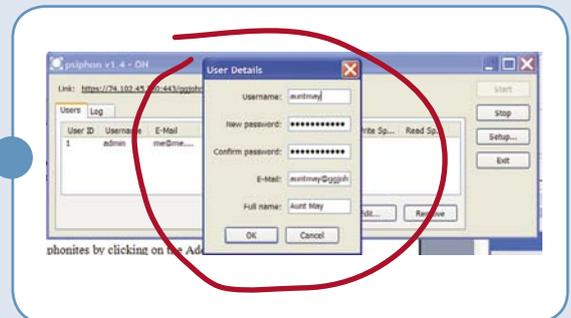
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Add psiphonites

Create user accounts for your psiphonites.

Click on the 'add' button on the psiphon control panel

Fill in the user details for your psiphonite. After doing this they will be able to access your psiphonode.

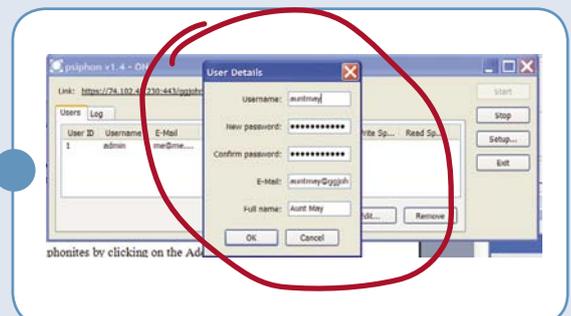


By any secure means, send your psiphonite the following connection information:

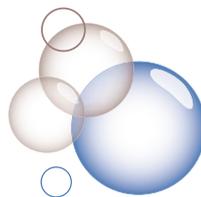
Connection information:

1. psiphonode url
2. Username and Password

<https://84.202.55.330:443/jane4freedom>



That's it!



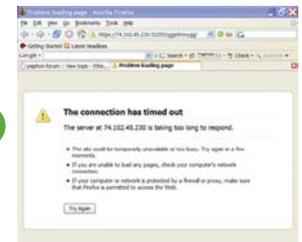
Add more psiphonite users to your psiphonode so that you can help your friends and family members that live in censored countries.

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Appendix A: login page errors

If you experience a “server timeout” error message when clicking on the blue test link, the following information will help you get your psiphonode up and running.

The server timeout looks like this



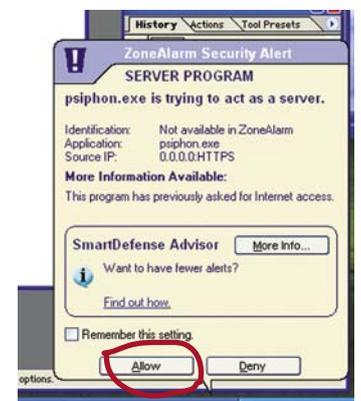
The error may be occurring for a number of reasons. Following are the 2 main reasons, and the steps to rectifying the error.

1. Your server is behind a firewall

There are 2 types of firewalls:

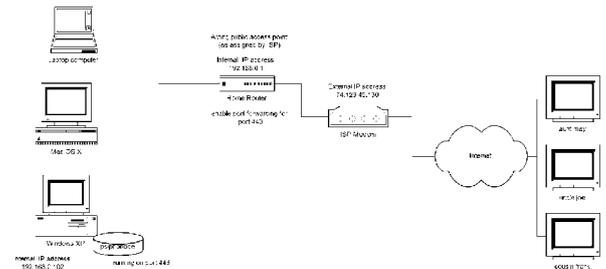
- software** - blocks incoming connections to your computer. The user decides which to allow.
- hardware** - A device in between your computer and the internet (not common in home computers).

You will need to enable the port that the firewall is blocking.



2. You need to configure your router for port forwarding.

psiphon is designed to run from your home computer. Often home computers run on a sub network, or LAN, that runs behind a router administered by someone in the home. In these cases, the psiphon server must be connected to the Internet via the home router, which in turn must be configured to open a port and route all psiphonite requests to the machine that is actually running psiphon.



<http://www.dlink.com/products/?pid=6>



There are hundreds of home routers manufactured by many companies, and each router has a unique configuration screen.

There is a thorough resource outlining the configuration requirements for all known routers at the following link: <http://psiphon.civisec.org/router-config>

This guide will walk you through the configuration of a **D-Link DI-624 router** as an example.

Please proceed

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Appendix A (cont'd): login page errors

Configuring a D-Link DI-624 wireless router to run with psiphon

The psiphonode is running on a sub net defined by the LAN IP mask. (In this example it is 192.168.0.*). This subnet accesses the Internet through the external IP internet address of your home router (In this example, identified as 172.102.45.230). When psiphon starts up, it detects the psiphonode external IP address that is running, and is the location of the psiphonode as seen by psiphonite users.

The psiphon server is running on a machine with an Internal IP address of 192.168.0.102, and psiphon is running on port 443.

All home routers, whether wireless or cable, have a configuration and administration control panel. The router is at 192.168.0.1 and it requires a username and password to login. If you do not know the username and password for the router, you will not be able to enable port forwarding on the router.

Login



Find your router virtual Server tab -

The location will vary depending on the brand of router, but in this example it can be found in the "advanced" tab.

Name this port forward connection-

This is a name of your choice.

Identify the Private IP- This is the IP address of the machine that is running from within the home LAN

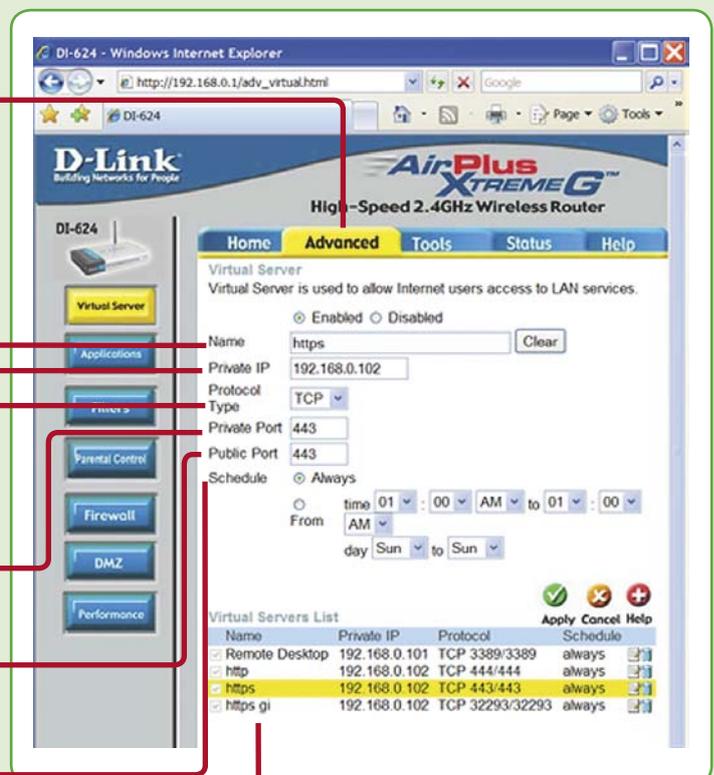
Protocol Type - Set this to TCP

Private Port - psiphon listens on this port.

Public Port - psiphonites connect to this port.

Schedule - Set this to "always", or select a duration that the port will be opened.

Below is a list of all Virtual Servers running on your router.



Your router will now forward all outside psiphonite requests to your psiphonode!

General Disclaimer:

Although we have tried to make psiphon as secure as possible, there are steps you can take to increase your security. For those high-risk users (i.e. dissidents, writers at risk, etc.) make sure you consult the resource section of this guide, and follow these recommendations:

BOTH psiphonode (pN) and psiphonite (pI):**1. Ensure secure communications**

- use a secure channel of communication (eg. encrypted email) when sending connection information.

2. Ensure SSL security

- identify and verify your psiphon certificate. (see appendix C (p. 12) for instructions)

psiphonode (pN):**1. Ensure node stability**

- make sure your computer is virus/spyware free and your OS security patches are up to date.

2. Disguise your psiphonode

- If your organization is well-known for politically contested beliefs and actions, do not host your psiphonode on the same IP as your web site domain. Adversaries may infer an association between the two.

3. Verify software validity

- make sure that you download psiphon only from <http://psiphon.ca/download.php/>

psiphonite (pI):**1. Use psiphon strategically**

- Do not use psiphon as your regular internet browser for an extended period of time.
- Limit your use of psiphon to circumventing filtered sites.

2. Eliminate usage identification

- Thoroughly erase your cache and browser history after ending your psiphon session using a known file destruction software, such as **ccleaner** (<http://www.ccleaner.com>).

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Appendix C: psiphon certificate

The psiphon certificate warning

As a matter of standard practice, high risk users should make sure to verify the SSL certificate fingerprint being exchanged is authentic. The following section provides instructions for a Firefox browser. Other browsers have slightly different fingerprint authentication methods, but follow the same general principles.

For pN

Step 1

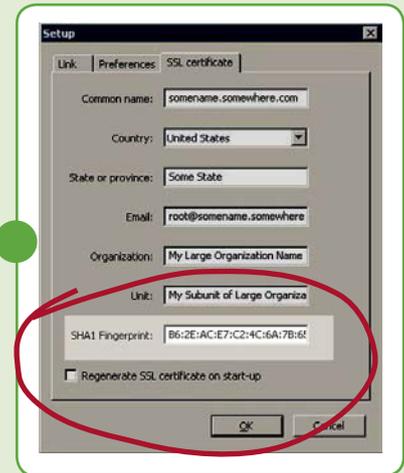
Locate your SSL certificate fingerprint by clicking on the certificate tab.

Step 2

Copy and Paste the fingerprint from the field marked "Sha1 Fingerprint".

Step 3

Send the fingerprint by any secure means (e.g., encrypted email) to your pl.



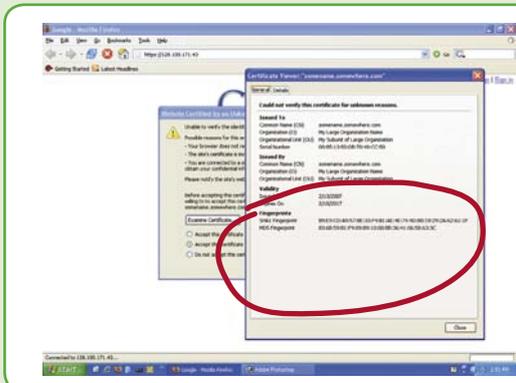
For pl (if using a Firefox Browser)

1. Click "examine certificate"

Choose "accept this certificate temporarily for this session".

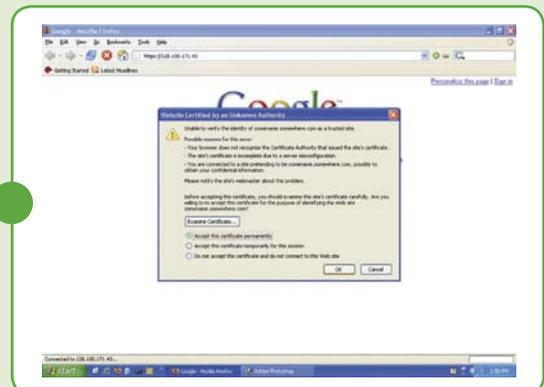
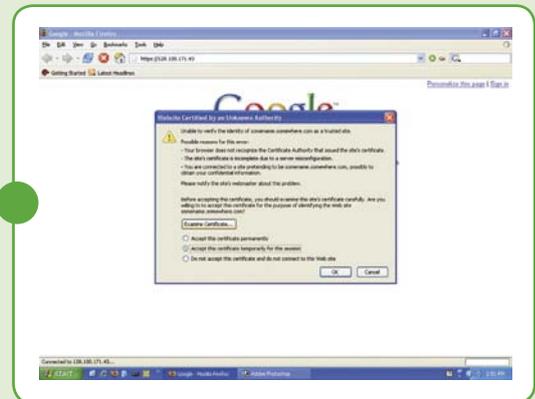
2. Examine the fingerprint

Note: in other browsers the fingerprint may be referred to as a "fingerprint".



3. Accept or decline the certificate

If the footprint matches that sent to you by your pN, accept it. If not, click "do not access..."



Note: Those interested in exploring the topics raised in this guide further may want to consult at their own discretion some of the following resources.

PSIPHON FORUM:

We encourage you to visit and register on the psiphon forum, as many questions are answered at this user-supported resource.

<http://psiphon.civisec.org/forum/index.php>

OTHER RESOURCES:

An article describing psiphon installation and configuration.

<http://nubility.net/2007/psiphon-part-ii-setting-up-psiphon/>

A video tutorial that describes psiphon and its installation process.

<http://www.youtube.com/watch?v=sSIHPxTU2UE>

Hacktivism - An international group of hackers, human rights workers, lawyers and artists that evolved out of **The Cult of the Dead Cow** (cDc).

<http://www.hacktivism.com>

Tactical Technology Collective - A non-profit foundation promoting the use of free and open source software for non-governmental organizations, and producers of the *Security NGO-in-A-Box*.

<http://security.ngoinabox.org/>

<http://www.tacticaltech.org/>

Reporters Without Borders, *Handbook for Cyber-Dissidents and Bloggers*

http://www.rsf.org/rubrique.php3?id_rubrique=542

Digital Security and Privacy for Human Rights Defenders by Dmitri Vitaliev

Published by **Front Line - The International Foundation for the Protection of Human Rights Defenders**

<http://www.frontlinedefenders.org>

<http://www.frontlinedefenders.org/manuals/en/eseaman.html>

Tor - An anonymous internet communication system.

<http://tor.eff.org>

Torpark - A secure browser built on Firefox Deer Park, using the Tor network.

<http://www.torrify.com>

Scatterchat - A secure instant messaging client.

<http://www.scatterchat.com>

PGP/GPG - Encryption software.

<http://www.pgpi.org>

<http://www.gnupg.org>

Thunderbird+GPP - An email client with built-in GPG encryption.

<http://www.portableapps.com>

Ultrasurf - Secure Internet surfing.

<http://www.ultrareach.com>

Freegate - Encrypted Internet access.

<http://www.download.com/3000-20-10415391.html>

Peacefire - A censorship circumvention tool.

<http://www.peacefire.org/>