Blocking Access to Websites

Normal operations

- We type the URL (e.g., http://thainetizen.org/) to the browser.
- So many things happen behind the scene.

How things normally work

Step 1: from names to numbers

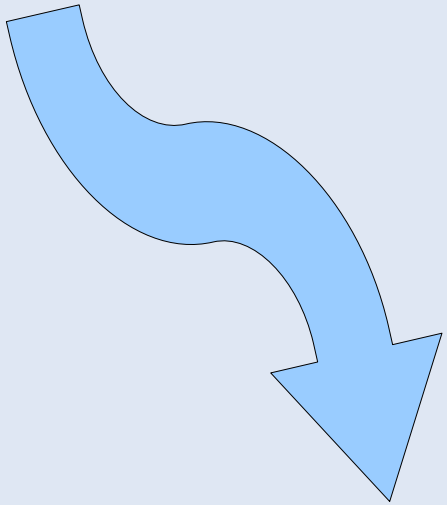
- Every ”house” in the Internet has an address.
- It looks like this:

203.150.230.164

Step 1: from names to numbers

- Your machine has to ”**resolve**” the hostname ”thainetizen.org” to this number.

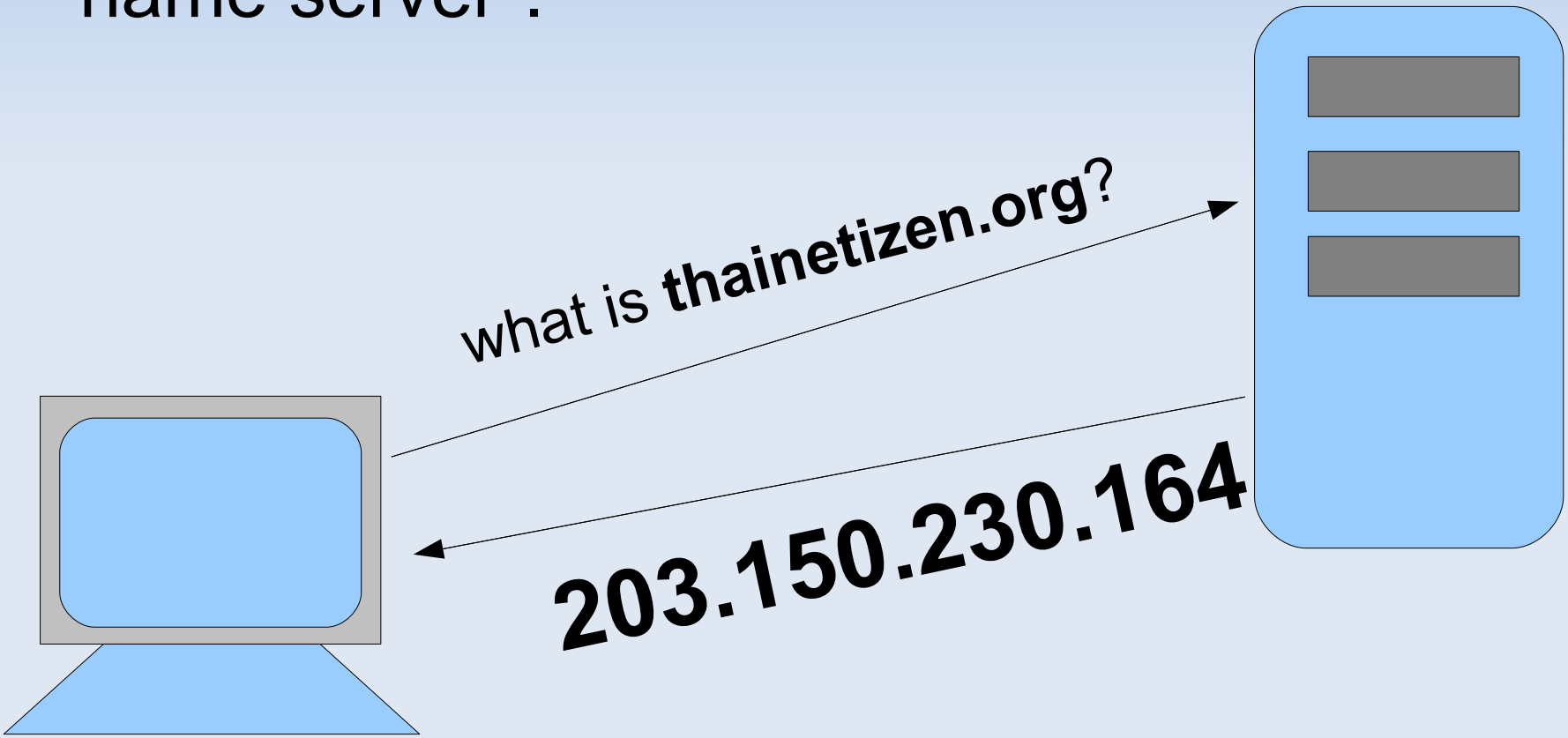
thainetizen.org



203.150.230.164

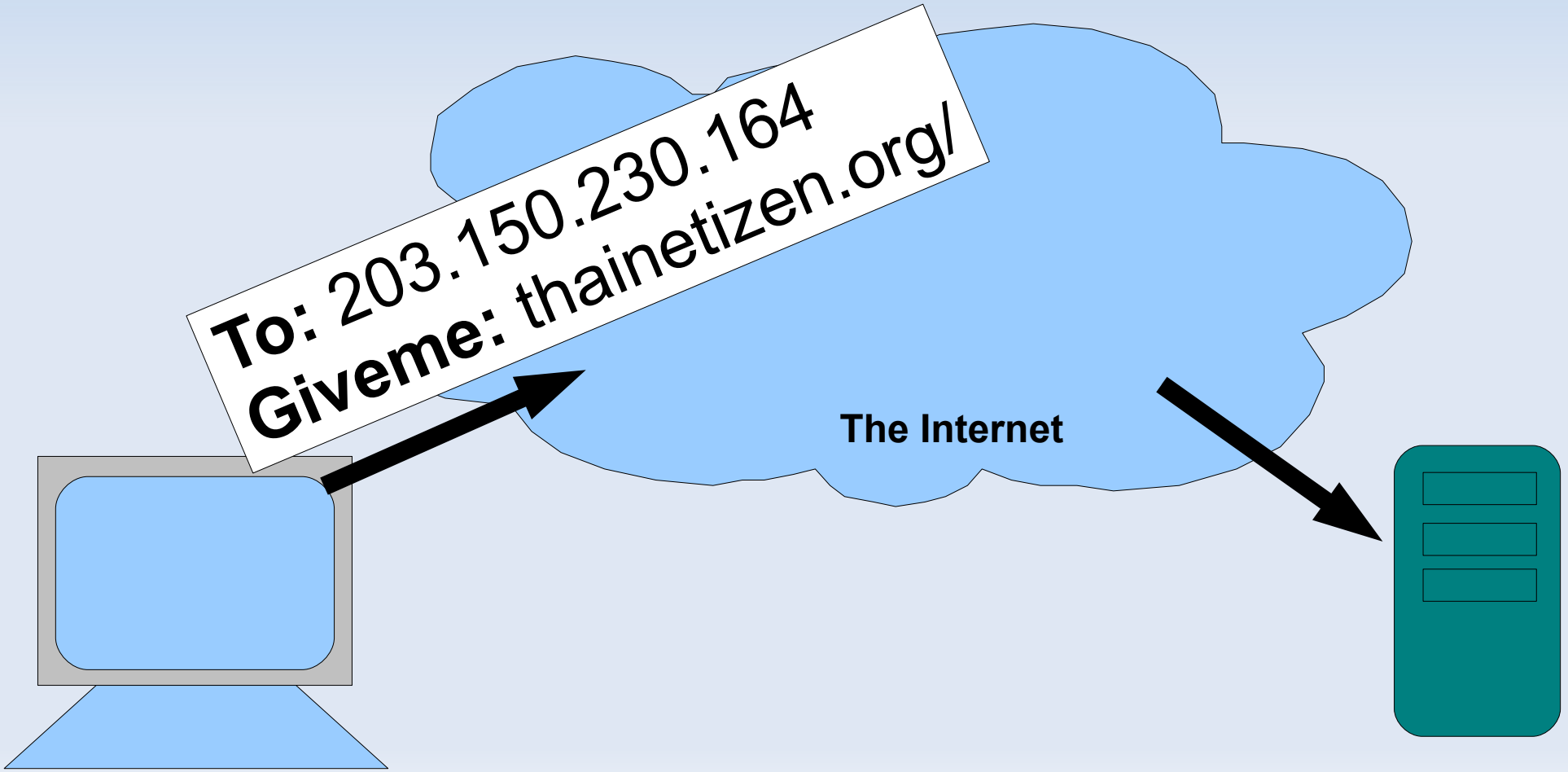
Step 1: from names to numbers

- It does so by asking another machine called ”name server”.



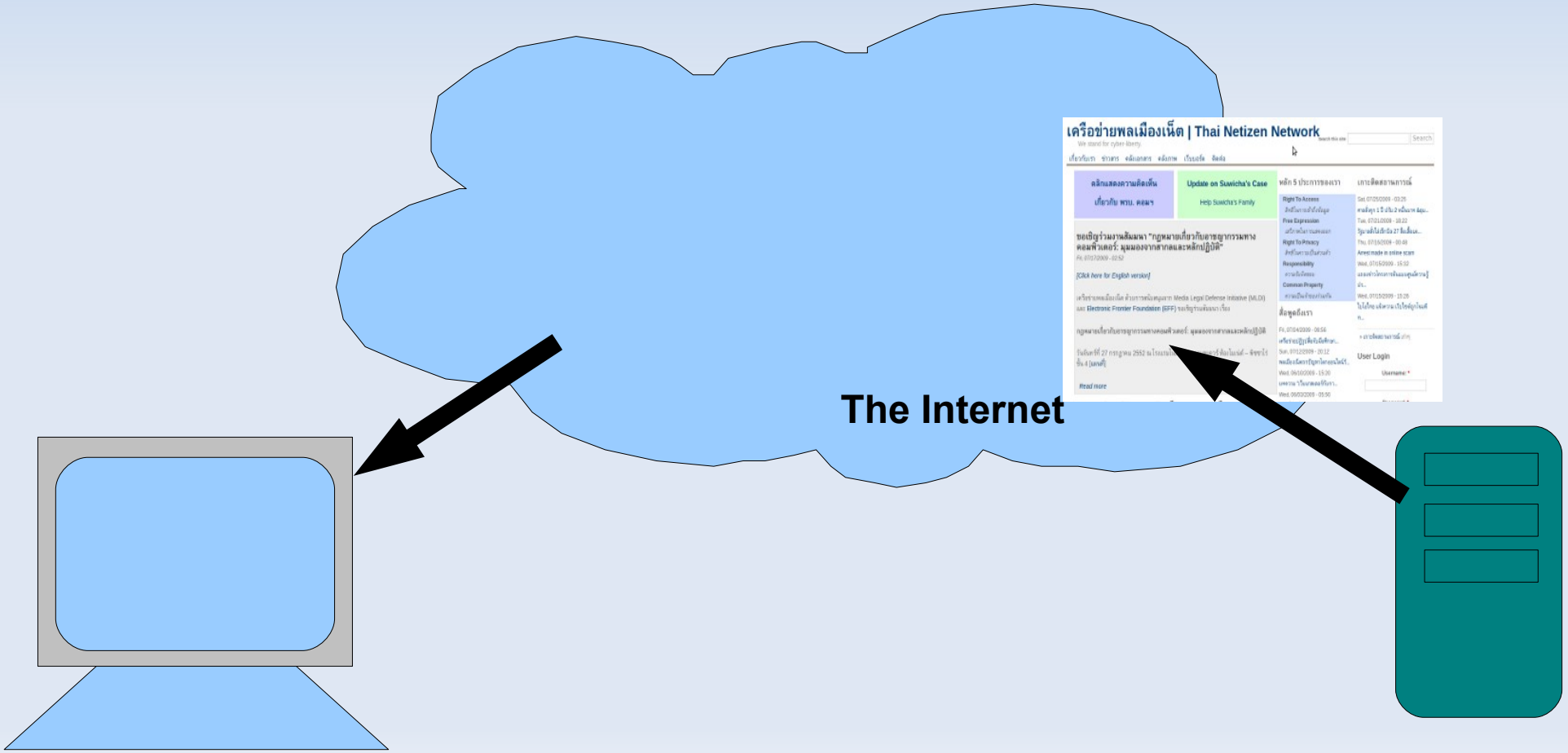
Step 2: make contact

- Then, you machine makes a contact to the web server (on the Internet) to get data.



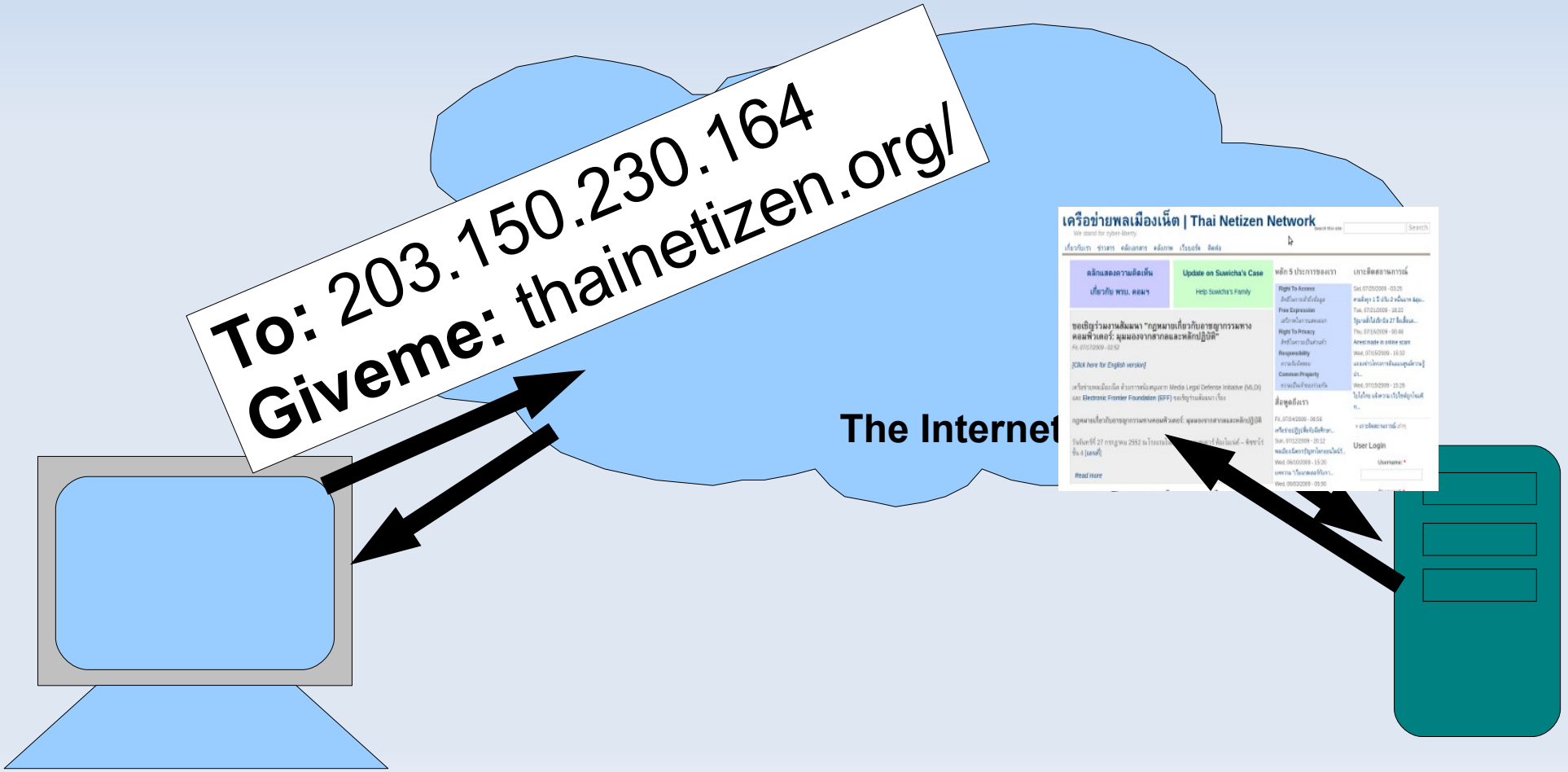
Step 2: make contact

- And you get the page

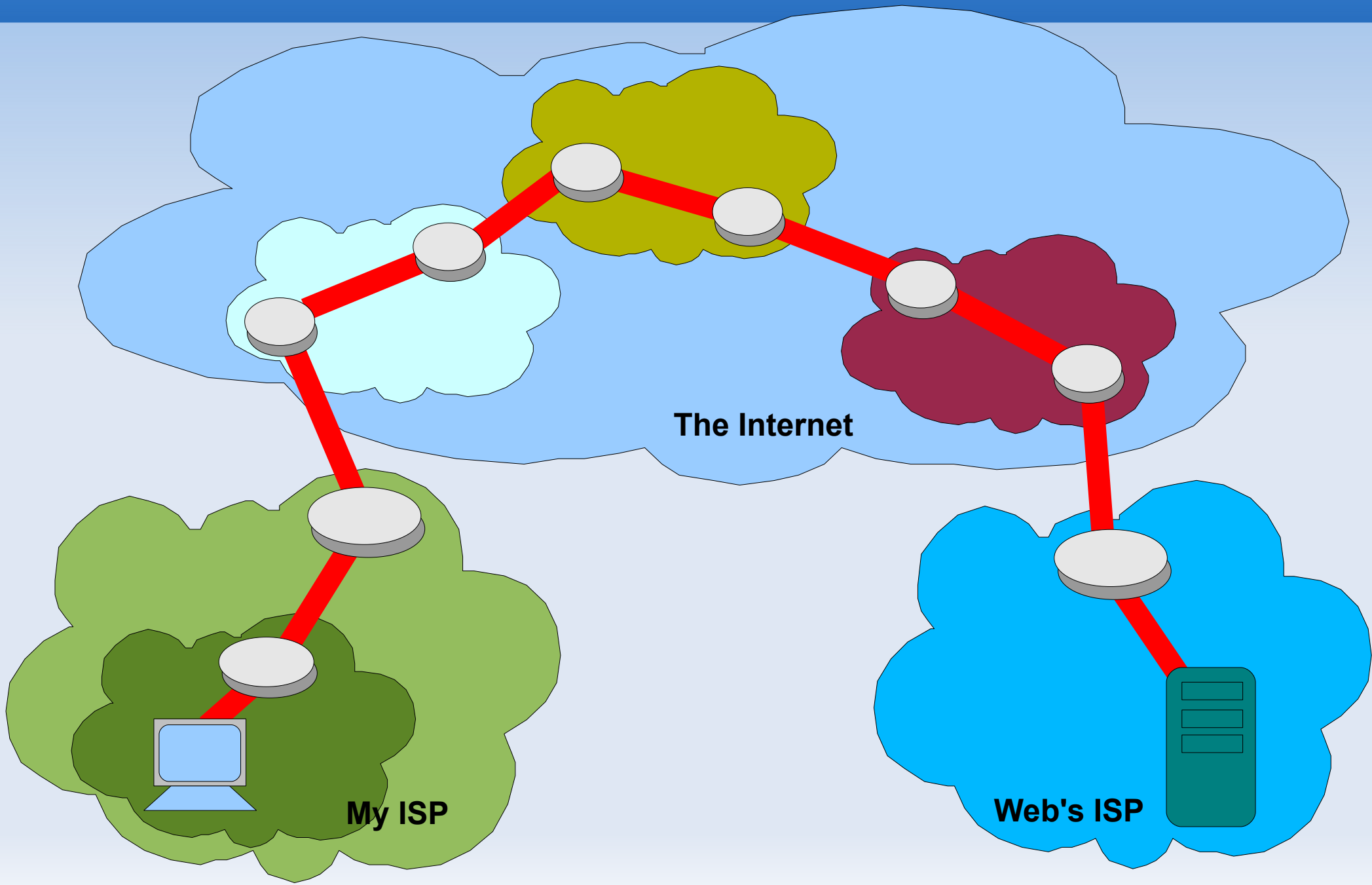


Step 2: make contact

- But on the Internet we rarely have **”direct”** contact with the web server.



Step 2: real contacts



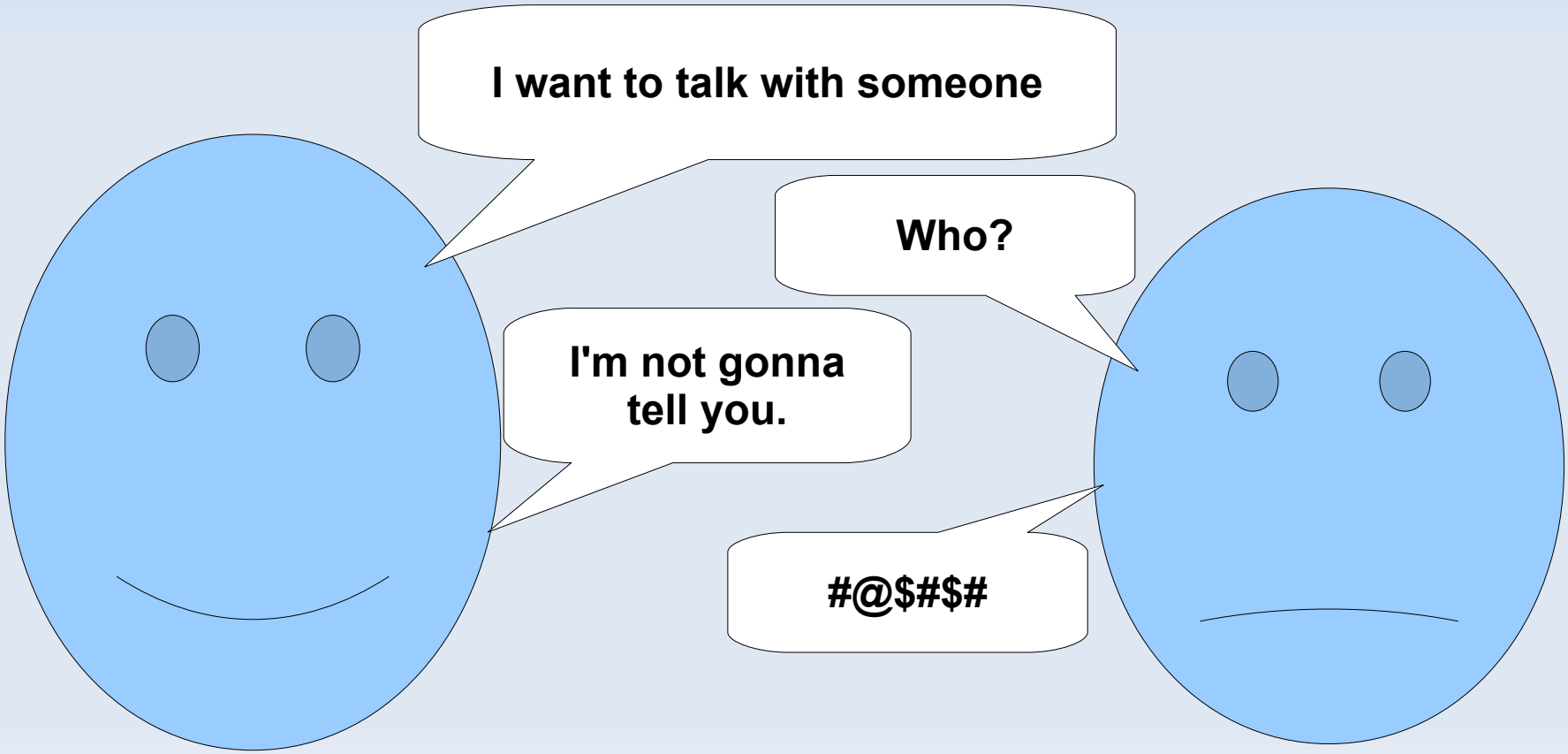
Interception

- Blocking websites is all about interception the normal operations.

Intercepting ”calls”

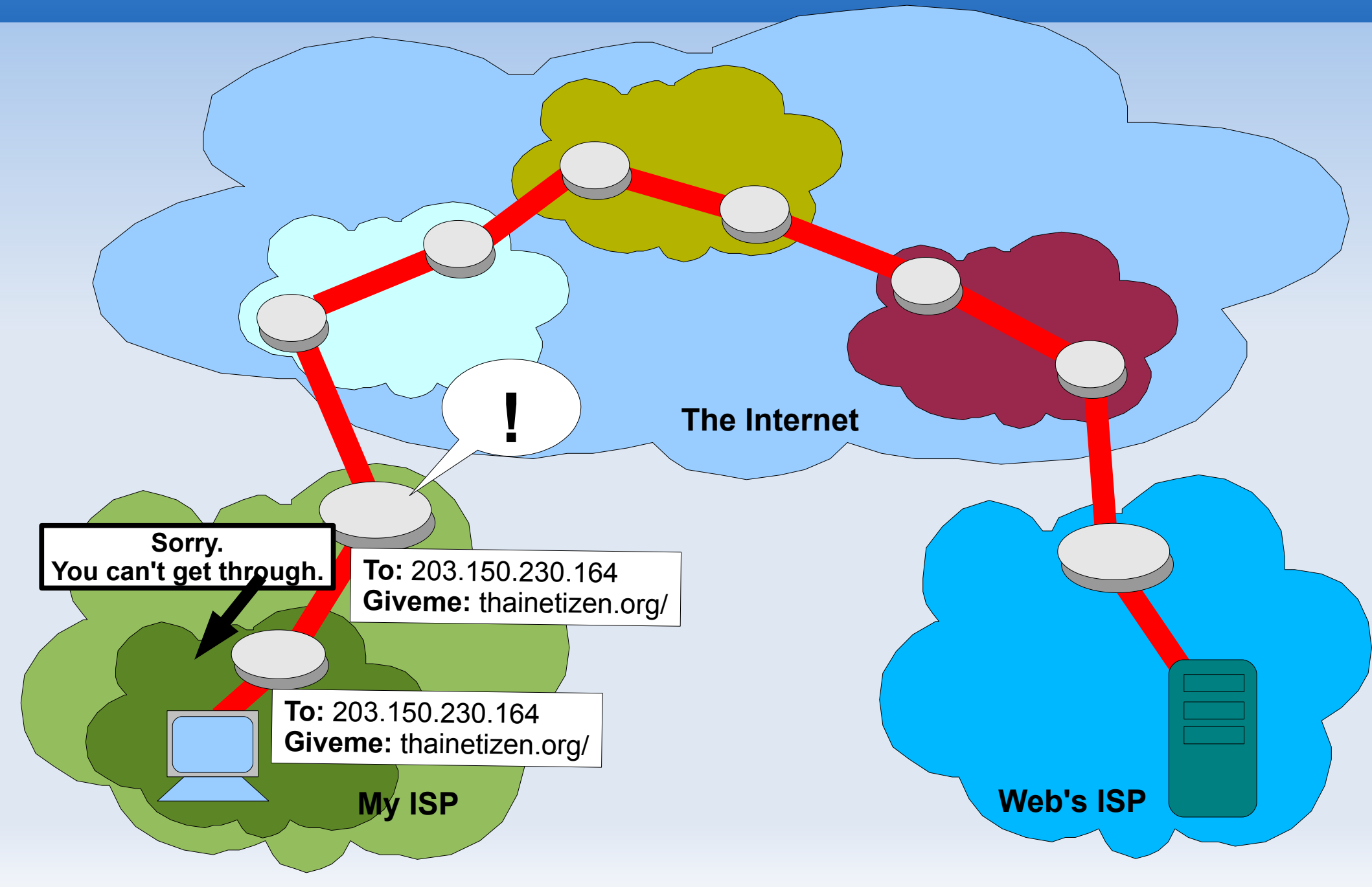
Why it is theoretically so easy to intercept ”calls”

- You need to help of many parties to communicate, so normally you can't avoid telling them who you want to call.

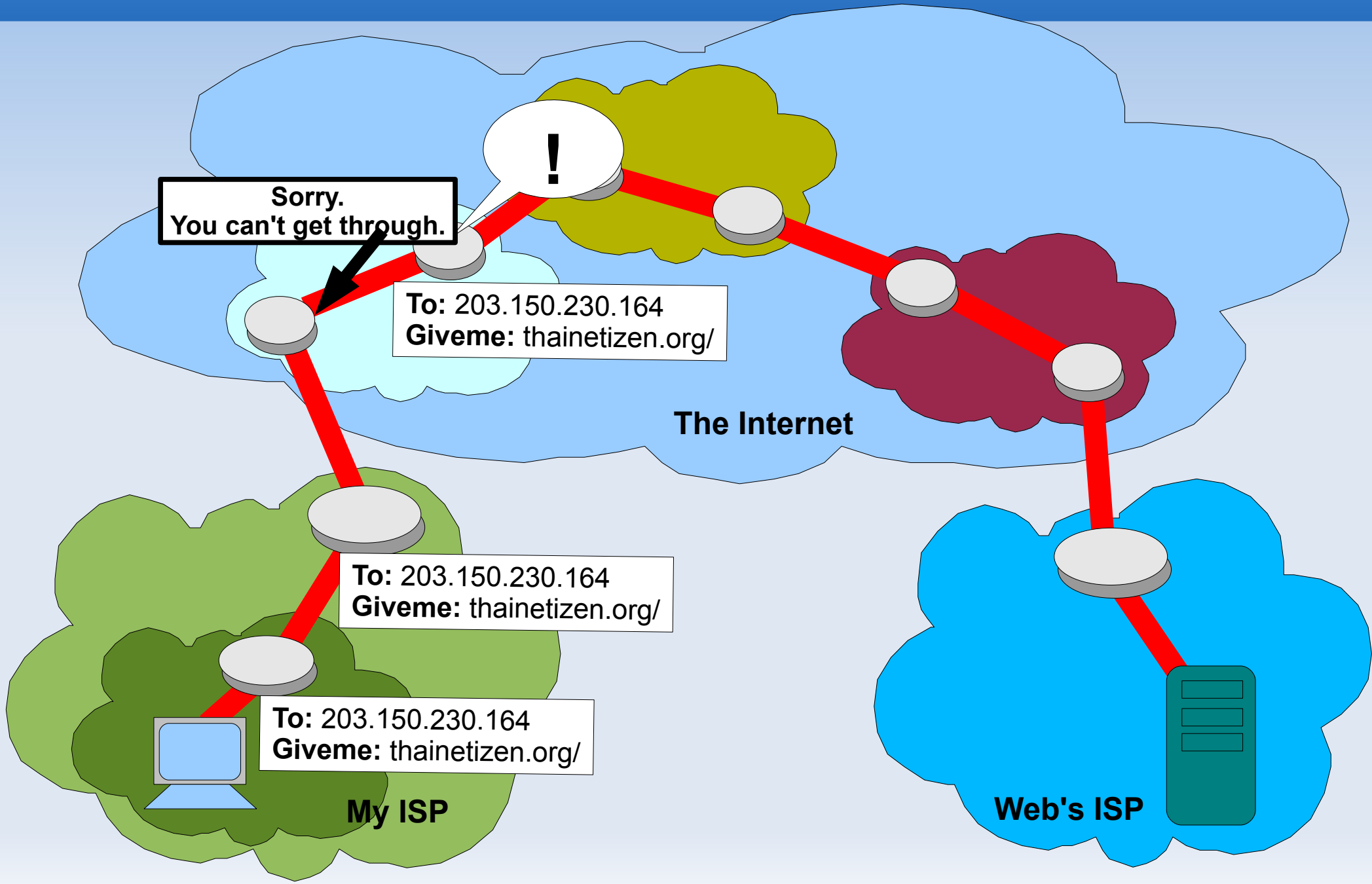


Intercepting step 1

Intercepting step 2



This can be done at many levels



Messages

- The evolution of ”you-re-blocked” messages is quite interesting.

Evolution of blocking messages

1st generation: the eye

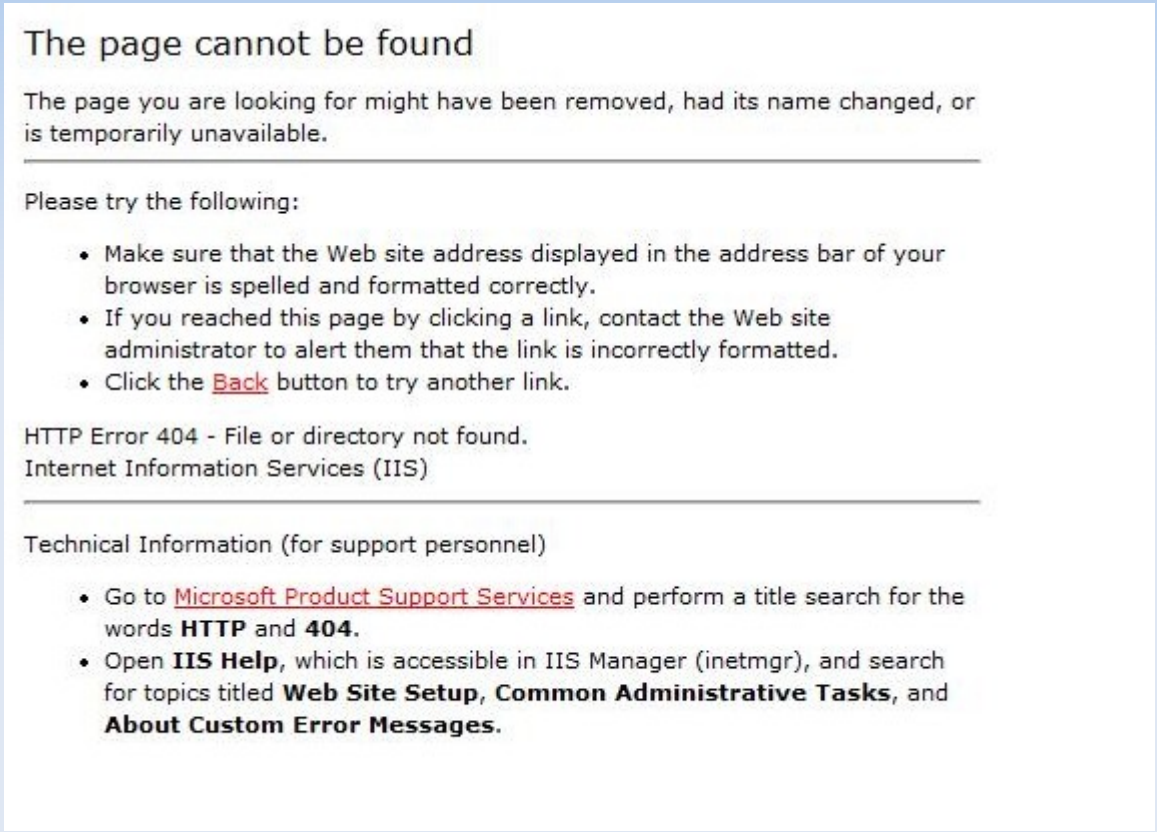
- When MICT is proud of its technology...

from: http://www.prachatai.com/journal/2007/04/12342

2nd generation: it's ISP job

- The message doesn't say the work is done by MICT. It's a problem you have with your ISP.

3rd generation: Opps... website is broken



The page cannot be found

The page you are looking for might have been removed, had its name changed, or is temporarily unavailable.

Please try the following:

- Make sure that the Web site address displayed in the address bar of your browser is spelled and formatted correctly.
- If you reached this page by clicking a link, contact the Web site administrator to alert them that the link is incorrectly formatted.
- Click the Back button to try another link.

HTTP Error 404 - File or directory not found.
Internet Information Services (IIS)

Technical Information (for support personnel)

- Go to Microsoft Product Support Services and perform a title search for the words **HTTP** and **404**.
- Open **IIS Help**, which is accessible in IIS Manager (inetmgr), and search for topics titled **Web Site Setup**, **Common Administrative Tasks**, and **About Custom Error Messages**.

From: http://www.adslthailand.com/forum/viewtopic.php?f=16&t=42802

How hard it is to block websites

Intercepting 10,000 calls

- It is easy to intercept one call.
- It becomes harder to intercept all calls, without being noticed by customers.

Selective blocking

- Also, it is easier to intercept at lower levels.
- Filter communication with IPs (numbers) or URL?

To: 203.150.230.164
Giveme: thainetizen.org/

Selective blocking: IP

- Easier but hard to customize.

To: 203.150.230.164
Giveme: thainetizen.org/

To: 203.150.230.164
Giveme: book.co.th/

To: 203.150.230.164
Giveme: book.co.th/nstk

Big machines, huge money

- To keep up with internet traffic, to screen access to websites, you need very powerful machines.

Effectiveness?

- There are many tools that let users skip these interception/filtering.
  - Tor (anonymous serfing)
  - Anonymous proxy
  - VPN