

How the Internet Works



We have all come to take the Internet and the World Wide Web for granted, but it is useful to cover the basics of how it works, especially when it comes to troubleshooting.

The Internet is a worldwide network of computers linked together by a variety of telecommunications technologies. For simplicity sake, we can say that all the computers on the Internet can be grouped into two categories: servers and browsers.

Servers are where most of the information on the Internet is stored and shared.

Browsers are the programs that people run on their computers to access and display the information stored on the Servers. Common browsers include Microsoft Internet Explorer, Google Chrome, Mozilla Firefox, and Apple Safari. Each browser is an independent implementation by the vendor of the protocols and standards that comprise the World Wide Web (which is why different browsers will behave differently).

You can think of your Internet Service Provider (ISP) as a special server whose job is to provide a link between your browser (and other applications on your computer) and the rest of the Internet. A single ISP server handles connections to hundreds or even thousands of individual browsers.

ISP servers receive requests from browsers to view webpages, check email, etc. Each ISP server cannot of course hold all the information from the entire Internet, so the ISP servers must connect to other Internet servers. These other servers are called Host servers.

Host servers are where websites “live”. Every website in the world is located on a host server somewhere. The host server’s job is to store information and make it available to other servers. This information is organized into pages, where each page may contain data, images, links to other pages, and programs. The format of these pages is defined by standards generically referred to as Hypertext Markup Language, or HTML.

To view a web page from your browser, the following sequence occurs:

- 1) You either type a unique address (called a Universal Resource Locator, or URL) into the address bar or click on a link (called a hyperlink) which contains a URL
- 2) Your browser sends a request to your ISP server asking for the page
- 3) Your ISP server looks in a huge database of internet addresses dynamically maintained by the internet infrastructure and finds the exact host server which houses the referenced website and sends that host server a request for the page
- 4) The host server sends the requested page to your ISP server
- 5) Your ISP sends the page to your browser; your browser interprets the information and displays it on your screen

When you realize all the steps involved and the physical distance that may have to be covered, it is truly amazing how well the Internet works. Knowing the sequence is very useful in troubleshooting browser issues. Here are some typical troubleshooting steps:

If you cannot display ANY web pages, the problem likely is with your ISP or your ISP equipment. Contact your ISP to see if there might be a disruption in your Internet service and have them guide you through diagnostic tests.

If one specific web page crashes your browser or is not displayed properly, make sure you are using the most modern version of your browser. It is also useful to try another browser to see if the same problem occurs.

If you cannot get a response from one specific website, but all the other websites are fine, the problem is likely with that specific host server. Wait a few minutes and try again.

This newsletter, as well as all past newsletters, can be found on my web site (<http://steve.gimnicher.com>).