

November 1998

## Nouvelle Cuisine - Understanding IP Addresses

Alis Whitt

College of Charleston, [whitta@cofc.edu](mailto:whitta@cofc.edu)

Follow this and additional works at: <https://docs.lib.purdue.edu/atg>

---

### Recommended Citation

Whitt, Alis (1998) "Nouvelle Cuisine - Understanding IP Addresses," *Against the Grain*: Vol. 10: Iss. 5, Article 40.

DOI: <https://doi.org/10.7771/2380-176X.3019>

This document has been made available through Purdue e-Pubs, a service of the Purdue University Libraries. Please contact [epubs@purdue.edu](mailto:epubs@purdue.edu) for additional information.

# Nouvelle Cuisine — Understanding IP Addresses

by **Alis Whitt** (College of Charleston, ph.: (843) 953-7998)  
<whitta@cofc.edu>



**L**ike everything else related to the Internet, IP addresses are more confounding to the normal person because of acronyms and abbreviations. In plain English, IP, or Internet protocol, is the agreed upon addressing scheme which allows computers across the Internet to send data back and forth to each other. In the same way that your car has a unique license plate which is valid all over the continental United States, your Internet-connected computer also has a unique address which identifies it no matter where you send email or what system you access on the Net.

Each Internet protocol address is different from every other IP address, although they may have common elements. A numeric IP address is literally the unique address for a specific computer. Many computers on the Net have an alphabetic "alias" which is easier to remember than the numeric IP number. Examples of such an alias are "microsoft.com" and "apple.com." If I have two Internet-connected PCs (or Macs, or a combination thereof) on the same desk, each will have a unique IP address. I dwell on the cumbersome phrase "Internet-connected" because you may use the Internet from a device that does not have an IP number. For example, a dumb terminal used to search a library online catalog does not have an IP address. A computer that connects to the Internet via a telephone line and a modem also does not have a permanent IP address. In the case of a dem-connected computer, service provider (America Online & CompuServe are examples of Internet service providers, or ISPs) provides the user with a temporary IP number which is assigned "dynamically" (i.e., as if by magic) and unassigned when you disconnect from the ISP.

So if the Internet really functions on IP numbers and not cutesy names like ginko.cofc.edu, then how does the computer get a numeric equivalent from my alphabetic "microsoft.com"? This process is

handled by the **Domain Name Server (DNS)** whose address is entered in the preferences file of your browser. A Domain Name Server is a computer running an enormous yellow pages for Internet-connected computers. It takes the alphabetic address you enter and negotiates a numeric equivalent based on its latest information. You may even have a backup DNS located on another system. DNS computers are like telephone operators in that traffic can get so high that you get a busy signal instead of an answer (in this case an answer is a connection to another computer). If you do have a secondary DNS, your system tries the backup DNS in the event of a busy signal. Otherwise, you'll get an error message like "domain name lookup failed." You should interpret messages like that as "try again, you got a busy signal."

Whether it is a permanent address or a dynamically assigned temporary address, the IP address is read from left to right and becomes more specific as it proceeds from left to right. IP addresses are four sets of numbers, separated by a period, each less than 256. At the College of Charleston, IP addresses begin with "153.9." My computer's IP address is 153.9.11.13 — the "11.13" is specific to my department and the .13 is specific to my machine. Another machine in my office is 153.9.11.85 — again, the only distinction is the quadrant, ".85" designates a particular machine at the College of Charleston.

Most people don't need to understand IP addressing in greater detail. What should be of interest to librarians and publishers is that IP addressing is increasingly used to mediate access to remote Web-based databases. When a library purchases a site license of a Web database, access to that database will be handled in a number of different ways. One technique is to provide a single password for a single user license. This technique will work fine as long as the database isn't used very often or by

very many people. A database with any usefulness will eventually require some variety of multi-user license. Ideally, an institution will purchase a site license which allows anyone from the institution to access the database. This is handled through IP "authentication"—a process which allows *Britannica*, for example, to verify that I am trying to access their online resource through a College of Charleston computer.

IP authentication is a step above individual passwords for individual users, but it still has many problems. Not all universities are able to offer direct connections to all their students and faculty. If a college or university has to refer legitimate users to an external Internet service provider, then that user's temporary IP number is provided by the Internet service provider. A remote database such as *Britannica* or *JSTOR* will not allow that user to access their data because the user has an unrecognized IP number.

Solutions to these problems are possible from many areas. Ideally, all colleges and universities will function as Internet service providers and offer full connectivity to the campus community regardless of their physical location on or off campus. It is unlikely that this will evolve, however. Campuses are strapped for resources and large-scale investment in which mim- private sector is

likely for financial reasons. The more reasonable scenario is that authentication will become more sophisticated, allowing "off-campus" users to access remote databases through a login to a campus server. Like all aspects of technology, the authentication process has become increasingly more sophisticated and promises to offer increased flexibility in the near future. 