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## SOURCES

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### How and Where to Obtain Useful Information

No book, no matter how large, could possibly contain all the information that is available about open systems networking; even a casual interest in the subject will sooner or later give rise to questions that either are not answered in this book or are answered without the additional detail or context that the reader's interest requires. Fortunately, the world of open systems networking is, for the most part, genuinely "open" with respect to access to documentation; with few exceptions, any information about TCP/IP or OSI that is not found in this book can be obtained with little difficulty from one of the sources listed in this appendix.

At the time this is being written, it is still the case that the primary sources of information about the TCP/IP architecture and protocol suite are available at essentially no cost<sup>1</sup> to anyone with any kind of access to the Internet (including, for example, anyone with a commercial electronic mail account with MCI or CompuServe,<sup>2</sup> in addition to those who are fortunate enough to have a direct connection to the Internet), but the primary OSI sources—the ISO/IEC and CCITT standards—are not. The standards-development activities of the Internet are almost entirely subsidized by the United States government and (very recently) by the Internet Society; the standards-development activities of ISO/IEC and

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1. "Essentially" because even though there is no explicit charge for retrieving documents by file transfer or electronic mail over the Internet, someone, somewhere is paying for the network access that makes it possible.

2. See the discussion of mail gateways later in this appendix for a list of some of the ways in which electronic-mail access to Internet information can be obtained when no direct Internet connection is available.

CCITT (and their associated national standards bodies in individual member countries), on the other hand, are funded in large part by the sale of (printed) standards. This situation is likely to change soon, so readers are advised to ask about alternative sources (particularly on-line archives) for OSI standards before buying them.



*Many people in the Internet community use the fact that Internet documents are “free” and OSI documents are not as a prime example of the superiority of the Internet way of doing things, notwithstanding the behind-the-scenes government largess that makes it possible. However, this is more than just a matter of smug satisfaction for members of one group at the other’s expense; the difficulty and expense of obtaining the OSI standards and related documentation, particularly in light of the apparent ease and freedom with which similar documentation for the Internet standards can be obtained, has effectively blocked the widespread acceptance of OSI as the basis for open systems networking. From a marketing perspective, the way in which the OSI standards community has packaged and promoted its products could not have been better designed to ensure the success of the alternative (TCP/IP). TCP/IP information is free and is available (in electronic form, instantly, “over the net”) everywhere; OSI information is absurdly expensive and can be obtained (by postal mail, on paper) only from a very small number of authorized sources. If the success of a standards-development activity is the extent to which its results (standards) are actually used, then it is not hard to conclude that in the case of OSI, the ISO/IEC and CCITT standards bodies have actively—and it appears, successfully—labored mightily to ensure their own failure.*

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## Information about TCP/IP and the Internet

In order to tap into the vast reservoir of information about the Internet and its technology<sup>3</sup> that is available “on-line,” one must first figure out a way to be “on-line” oneself. This can be accomplished in one of two ways: by connecting to the Internet directly or by connecting indirectly through an electronic-mail gateway.<sup>4</sup>

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3. There is also, of course, a wealth of information available through the Internet about things other than the Internet itself; except for those people for whom the Internet itself is the primary subject of interest, these other information resources are naturally much more important and are ultimately the reason for having an Internet in the first place. They are not, however, the point of this appendix.

4. A wealth of additional information about the way in which networks around the world are interconnected, and how to navigate the maze of different address formats and

*Direct connection* simply means that one's computer system—personal computer, workstation, time-sharing computer, etc.—is equipped with the protocols (usually, TCP/IP) necessary to exchange information directly with similarly equipped systems and that the local network to which one's system is attached (local area network, dial-up access network, etc.) is itself attached by communication links to other networks as part of the worldwide Internet “network of networks.” If this is the case, and local policy constraints do not prohibit doing so,<sup>5</sup> one can use the TCP/IP file-transfer protocol (FTP) to obtain files directly from sites that maintain “anonymous FTP” archives—“anonymous” because they allow anyone to log in to the site with the user name “anonymous” and any password.<sup>6</sup> The way in which one uses FTP to do this varies from one system and software package to another; one must check with the local system or network administrator.

The information contained in many (but not all) Internet archives can also be obtained by users who do not have a direct connection to the Internet but do have some sort of electronic-mail capability (such as MCI-mail, CompuServe, or BITNET). *Mail gateways* between the Internet and many electronic-mail systems (including virtually every commercial mail system) allow messages to be sent from a system that is not directly connected to the Internet to an Internet archive and for that archive (if it is equipped to do so, as many are) to send back, in reply, one or more files that were named in the message. The two main drawbacks are that (1) one must know precisely which file or files one wants (so as to be able to give the precise file name in the request message), and (2) many mail gateways impose a limit on the size of mail messages that may pass through them, which effectively denies access to files above a certain size. Commonly used mail gateways include the BITNET/Internet gateway at `cunyvm.cuny.edu`, the UUCP/Internet gateway at `uunet.uu.net`, and the MCI mail gateway at `mcimail.com`.

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## RFCs and Internet Drafts

Internet requests for comments (RFCs) and the working documents of Internet Engineering Task Force (IETF) working groups (Internet drafts) are available from four primary (and many secondary) archives distrib-

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usage conventions, may be found in three excellent reference books: *The Matrix: Computer Networks and Conferencing Systems Worldwide*, by John S. Quarterman (1990); *Users' Directory of Computer Networks*, edited by Tracy L. LaQuey (1990); and *!%@: A Directory of Electronic Mail Addressing and Networks*, by Donalynn Frey and Rick Adams (1989).

5. Some sites, concerned about the security of their local networks, do not allow direct access to the Internet, even though they are capable of providing it.

6. In practice, many sites will ask that an anonymous user provide his or her electronic-mail name (e.g., “lyman@bbn.com”) as the password; other sites will accept any password.

uted around the world:

1. `nic.ddn.mil` (192.112.36.5), maintained by the Internet Network Information Center, on the East Coast of the United States
2. `ftp.nisc.sri.com` (192.33.33.22), maintained by the Network Information Services Center at SRI International, on the West Coast of the United States
3. `munari.oz.au` (128.250.1.21), maintained by the Australian Academic and Research Network (AARNet), in Australia
4. `nic.nordu.net` (192.36.148.17), maintained by the Network Information Center of the Nordic Universities Network (NORDUnet), in Europe

RFCs and Internet drafts are also available by electronic mail. They can be obtained by sending a message to `mail-server@nisc.sri.com` and typing, in the body of the message

SEND <name of RFC or Internet draft>

For example, a copy of the Internet draft entitled “draft-iesg-roadplan-01.txt” can be obtained by sending a mail message containing the following line:

SEND draft-iesg-roadplan-01.txt

Additional information about even more ways to obtain RFCs and Internet drafts may be obtained by sending an electronic-mail message to `rfc-info@isi.edu` containing, in the message body, the line “help: ways\_to\_get\_rfc.” To receive announcements of the posting of new RFCs, a mail message can be sent to `rfc-request@nic.ddn.mil`.

Anyone may submit a document to the RFC editor and request that it be published as an informational RFC. Prospective RFC authors should read RFC 1111, “Instructions to RFC Authors.” Submissions should be sent to `rfc-editor@isi.edu`.

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## Internet Mailing Lists

Whereas participation in the OSI standards-development community generally requires that one attend meetings and collect reams of paper, participation in the Internet community is mediated largely by the exchange of electronic mail. One of the first things that happens when a new Internet-based activity (including all standards-making activities) is begun is the establishment of an electronic-mail distribution list to which anyone who is interested in the topic may subscribe; mail messages sent to the distribution list are then copied to each of the subscribers automatically, creating a highly dynamic “community of interest.”

Some of the most important mailing lists are those that support the activities of the IETF and its working groups. The most basic of these is the *ietf-announce* list, to which the IETF Secretariat posts announcements of IETF meetings and other activities, reports of administrative actions, and other messages of general interest. Interested parties can join the list by sending a mail message to `ietf-announce-request@nri.reston.va.us`.<sup>7</sup>

SRI International publishes two useful guides for Internet users: *Internet: Getting Started*, edited by April Marine (1992), is (as its title suggests) a primer for beginners (and a handy reference for more experienced Internet users); and *Internet: Mailing Lists*, edited by Edward Hardie and Vivian Neou (1993), contains an extensive list of Internet mailing lists and bulletin boards (including a brief description of the purpose of each).

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## IP Network- Number and Domain Name Registration

The assignment of IP network numbers and the registration of Internet domain names is the formal responsibility of the Internet Assigned Numbers Authority, but the actual operations of assignment and registration are carried out by the Internet Network Information Center, which is managed by Government Systems, Inc.:

Internet Network Information Center  
Government Systems, Inc.  
14200 Park Meadow Drive  
Suite 200  
Chantilly, Va. 22021  
U.S.A.

+1 703 802 4535 (or 800 365 3642 within North America)  
+1 703 802 8376 (fax)  
electronic mail: `hostmaster@nic.ddn.mil`

In 1992, the Network Information Center began to distribute the job of assigning and registering network numbers and domain names to organizations outside of North America. The Network Coordination Center of the Réseaux IP Européens (RIPE) is responsible for those parts of the Internet that are located within Europe:

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7. By the time this book is published, the mail address for the *ietf-announce* list may have been changed; if a message to the address given in the text is rejected, try `ietf-announce-request@isoc.org` instead.

RIPE Network Coordination Center  
NIKHEF (Nationaal Instituut voor Kernfysica en Hoge-Energiefysica)  
Kruislaan 409  
NL-1098 SJ Amsterdam  
Netherlands

electronic mail: `ncc@ripe.net`

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## Information about OSI

From modest (but never humble!) beginnings, the world of OSI standards has grown to truly daunting proportions; very few corners of the information technology field have escaped the broad reach of OSI standardization efforts. A comprehensive list of the current OSI standards published (or under development) by ISO/IEC and CCITT is published semiannually by the Association for Computing Machinery's Special Interest Group on Data Communication (ACM SIGCOMM) in its technical journal *Computer Communication Review*. To find out how to join SIGCOMM<sup>8</sup> or obtain a specific issue of *Computer Communication Review*, readers can send an electronic-mail message to `sig-services@acmvm.bitnet` (from the Internet, or another mail network that is not part of BITNET, messages can be addressed to `sig-services%acmvm@cunyvm.cuny.edu`) or contact the SIG Services department of ACM by mail, phone, or fax:

Association for Computing Machinery  
Office of SIG Services  
1515 Broadway  
New York, NY 10036-9998

212 626 0500  
212 302 5826 (fax)

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### Obtaining OSI Standards

The ISO/IEC standards for OSI are most readily obtained from the national standards bodies of the countries that participate in the information technology standardization activities of ISO/IEC Joint Technical Committee 1 (JTC1). In the United States, for example, requests for OSI

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8. Membership in SIGCOMM, which includes a subscription to the quarterly *Computer Communication Review*, is by far the least expensive way to keep track of the status of OSI standards!

standards documents (which are available either as printed documents or in page-image format on CD-ROM) should be addressed to the American National Standards Institute (ANSI):

American National Standards Institute  
Document Sales Department  
11 W. 42d St.  
New York, N.Y. 10036

212-642-4918  
212-302-1286 (fax)

ANSI, unfortunately, has no electronic-mail address to which requests for documents could be sent, nor does it have any automated (electronic) means of distributing them. This situation—which, as the authors have noted before, has done little to encourage the adoption of OSI standards by potential users—may have changed (for the better!) by the time this book is published.

CCITT recommendations can be ordered from the International Telecommunications Union Secretariat in Geneva:

ITU Secretariat  
Place des Nations  
1211 Geneva  
Switzerland

+41 22 730 5338  
+41 22 730 5337 (fax)

In the United States, they can also be ordered from:

National Technical Information Service  
5285 Port Royal Rd.  
Springfield, Va. 22161

703-487-4600

and from:

United Nations Bookstore  
Room GA 32B  
United Nations Plaza  
New York, N.Y. 10017

The ITU has recently begun to make some of its documentation available on-line through the Teledoc document-distribution service. The

first available interface is the Teledoc Auto-answering Mailbox (TAM), an X.400-based document server. Electronic-mail messages can be sent to the TAM at either the X.400 address `S=teledoc;P=itu;A=arcom;C=ch` or the Internet address `teledoc@itu.arcom.ch`. Commands to the TAM must be placed in the body of the mail message (not in the subject field). The commands are simple; for example:

```
HELP
LIST CCITT
LIST CCITT/REC
```

will send the TAM HELP file and a list of the contents of the CCITT and CCITT Recommendations sections of the ITU database. The HELP file describes how to retrieve individual documents. A welcome feature of TAM is its recognition that it is a robot and may not understand what a human user is trying to say to it. The command HUMAN, followed by any message, will cause TAM to stop processing commands and automatically forward the message to a human operator at the ITU. For example:

```
HUMAN
I am having trouble locating a document concerning standards for
the aromatic properties of madeleines. Could you please tell me
where it is available?
Thank you,
Marcel
```

Additional information about Teledoc may be obtained from the Teledoc project coordinator, Robert Shaw, at the address and phone number listed earlier for the ITU Secretariat, or at the electronic-mail address `shaw@itu.arcom.ch` (Internet) or `G=robert;S=shaw;P=itu;A=arcom;C=ch` (X.400).

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## Authors' Electronic Mail Addresses

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