

# **The Experimental Literature of The Internet: An Annotated Bibliography**

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## **Abstract**

**The DARPA Internet is the most successful experiment in heterogeneous internetworking. It connects computer systems from almost every major vendor, using a wide variety of wide-area and local-area network technology, and is in continual use by thousands of people. This annotated bibliography covers the literature of the Internet as an experiment: publications which convey the experience acquired by the experimenters.**

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## **1. Introduction**

The DARPA Internet is the most successful experiment in heterogeneous internetworking. It connects computer systems from almost every major vendor, using a large variety of wide-area and local-area network technology. The Internet has continually evolved over more than a decade, and is in continual use by thousands of people, most of whom view it as a resource rather than an experiment. For these reasons, it has produced a lot of hard-won experience on how to construct, and on how not to construct, a large heterogeneous internet.

The experience gained from the Internet is its most important experimental result. It has proven hard to transfer this experience to other researchers and practitioners, with the result that many of them must learn the same lessons, often in contexts (such as commercial installations or international standards) where it is much more difficult to change course. Many people have learned the lessons of the Internet by being involved in its operation, but many more people can only learn these lessons by reading about them.

It is far harder to convey experience in written form than it is to convey, say, analytical studies of access methods or proposals for protocols. Perhaps this is because it takes much longer to conduct an experiment, especially one as large as the Internet. It is harder come to a simple conclusion, if only because simple conclusions often melt when faced with real experience. Finally, experience (especially when not quantitative) seems less “scientific” than more formal publications.

But computer science is an experimental science, and there is a wealth of experimental literature on the Internet. Some of this covers the design and use of the Internet Protocol (IP) family; some covers the implementation and performance of the IP protocols; some covers the problems involved in constructing a large heterogeneous internet. This literature is often buried in the larger flood of publications concerning computer communication, so it is not easily available to someone unfamiliar with the field.

## **2. Selection Criteria and Annotations**

This annotated bibliography is an attempt to sift out the literature of the Internet as an experiment: those publications which convey the experience acquired by the experimenters. There have been other bibliographies covering computer networking (for example, Shoch [6], Ananda and Srinivasan [1]), and there are some that cover mostly informally published documents [3, 5]. This is the first bibliography to concentrate on the experimental results of the Internet.

I have tried to include mostly formally published works. The primary documentation for the IP protocols and the Internet, of course, are the “Request For Comments” (RFC) documents available as technical reports from the Network Information Center at SRI International. Very few of these, however, convey experimental results; most propose or elucidate standards. I have included a few RFCs that do present interesting results.

The bulk of the publications included are those from the more formal literature, ranging from refereed journals and conference proceedings to the unrefereed publications of scientific societies. For the most part, I have avoided the trade press.

I cannot claim to have discovered all of the relevant literature. I started with what I was already familiar with, scanned tables of contents and other bibliographies, and solicited suggestions from the Internet community. Undoubtedly I have ignored certain publications that either were not available to me, or whose titles did not entice me to read further. I have also been somewhat arbitrary in choosing to include or exclude literature that fell on the borderline.

Most of the entries are accompanied by brief annotations on their content. When possible, these are my own comments, and I take full responsibility for oversimplifying or distorting the results of the publication.

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