The Matrix

Computer Networks
and Conferencing Systems
Worldwide

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A good example of a **NETSERV** is **KERMSRV** on *CUVMB.BITNET*. This is the primary distribution server for **Kermit** software and documentation. It replies to hundreds of requests a day, originating from all over the world. It is sufficiently sophisticated to be able to return a response in the format of a request—e.g., as an NJE interactive message, as electronic mail, or as a virtual card deck [da Cruz 1988].

Access
See the previous information about **NETSERV** and the sections on the constituent parts of the network later in this book: *BITNET* in the United States, *Net-North* in Canada, *EARN* in Europe, *ILAN* in Israel, and *GulfNet* in the Persian Gulf states.

10.2.2   USENET

USENET began in 1979 and is thus one of the oldest cooperative networks [Daniel et al. 1980; Emerson 1983; Tokuda et al. 1986]. It is also one of the largest networks by almost any measure, having about 265,000 users and 9,700 hosts on five continents, as shown in Figure 10.1, and ranging from individuals to people at the largest corporations and universities. In fact, one of its key distinguishing features is that essentially anyone and any organization can join. Its name is usually taken to mean "User's Network." This network is unusual in a number of ways, most remarkably because it supports only one basic service, *news*, a distributed conferencing service, and does not support electronic mail (the closely associated network *UUCP* supports mail but not news).

Administration

USENET is one of the most decentralized networks: all a new machine needs to join in most regions is another machine to communicate with [Todino and O'Reilly 1988a]. Although registration in the general maps is advisable, there is no central authority that determines access. There is also no central funding source or mechanism: each host pays for its own transmission costs and generally passes through traffic originating at other hosts. This has led to a general consensus that commercial use of the network is frowned upon. Product announcements are usually permitted, but advertisements are not. There is no way to enforce such policies directly. Instead it is done by public opinion and direct complaints: anyone posting an advertisement will get direct mail complaining about it and will see postings on the network showing that many people think the original posting was a bad idea. Since people and companies don't generally like bad publicity and castigation by their colleagues and customers, this usually works. In extreme cases, people have proposed putting pressure on the
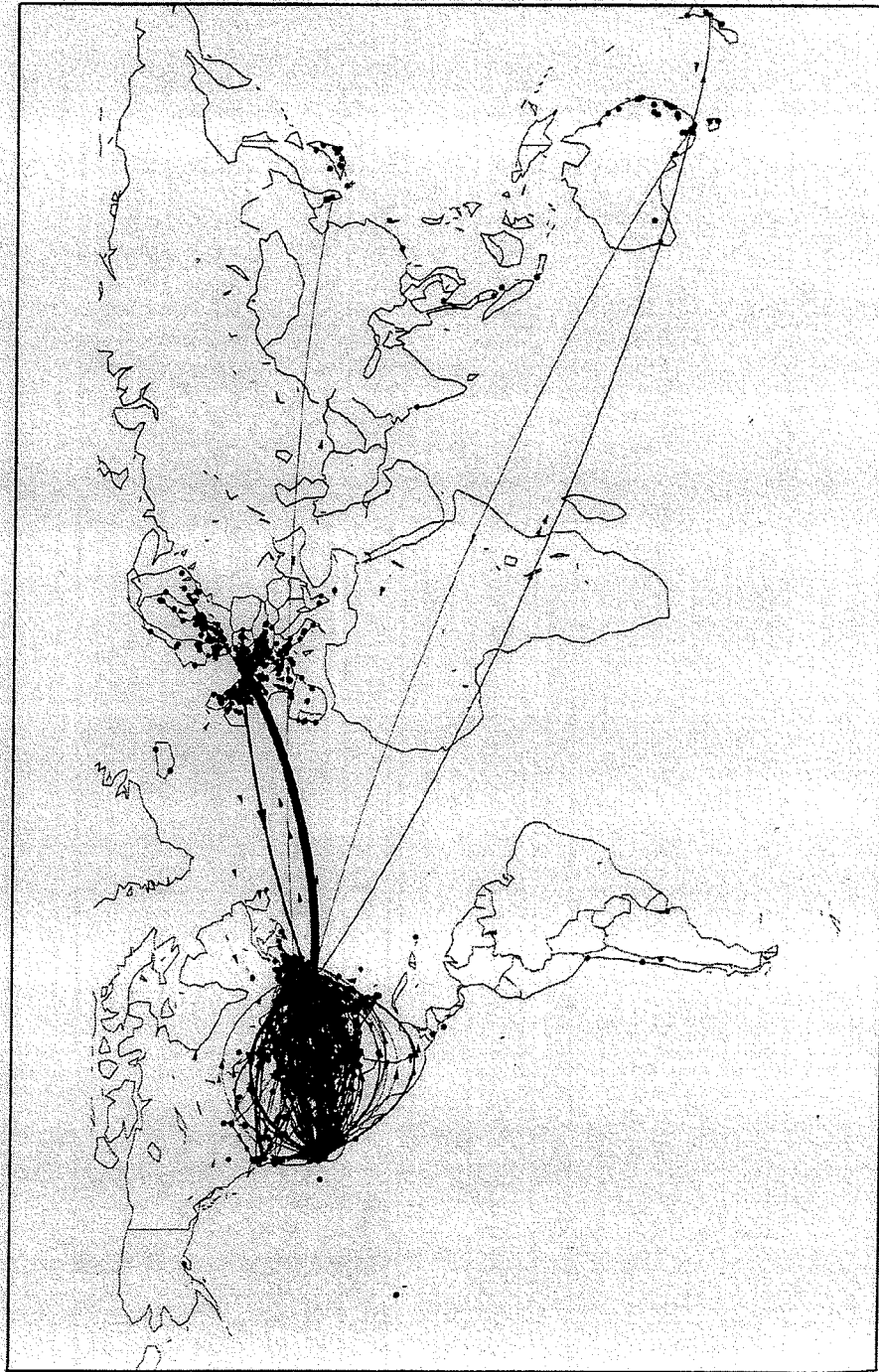
Figure 10.1. USENET *worldwide map* (*June 1989*) [*Reid 1989a*]

administrators of machines neighboring the machine from which the offending message was posted in an attempt to remove the posting machine from the network. Apparently this has never actually been done.

The greatest degree of organization in the network is found in the *backbone*, shown in Figure 10.2 and Figure 10.3. This consists of the machines with the greatest amount of traffic and thus the highest costs. (The European backbone is shown in the *EUnet* section in Chapter 13.) Since these hosts bear much of the burden of the network, their administrators tend to take a strong interest in the state of the network. The exact influence of the backbone is unclear, but it is involved in the organization of both the distribution and the content of news. There is a backbone on each continent, with trees radiating from its nodes. There may be redundant links among the nodes of those trees as well.

Speed

Most backbone (and many other) links currently run at about 11000bps. The average speed of slower links is probably close to 2400bps. More than 90 percent of all messages reach 90 percent of all hosts for which they are intended within one day.

Articles and Newsgroups

The element of information is called an *article*. Its format, as given in RFC1036 [Horton and Adams 1987] is modeled after that of *ARPANET* mail, as given in RFC822 [Crocker 1982]. That is, articles are lines of 7 bit ASCII text with a header prepended. The *From:*, *Date:*, and *Subject:* header lines are used in common with RFC822, although RFC1036 makes more requirements on *From:* and *Date:* than does RFC822. There are additional header lines peculiar to news articles, some of which are mentioned later in this section.

Articles are grouped according to topics in *newsgroups*, of which there are about 350. Newsgroup names are intended to reflect the topics to be discussed in them.

news.announce.important	Used for important announcements that are intended for everyone on the network
news.announce.newusers	Used for new users of the network

These are both *moderated* newsgroups: that is, when a user posts an article, the news software arranges to mail it over a mail network (usually *UUCP*) to a *moderator*, who decides whether or not to post it on the basis of considerations such as relevance, interest, clarity, and nonredundancy.

Some other newsgroups play roles in the administration of the network.

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