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THE EUROPEAN UNIX NETWORK

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The European UNIX† Network

by

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and

Jim McKie

ABSTRACT

The papers describes the structure of the communication network of UNIX sites and the services which are provided by the network as electronic mail and electronic news. From experience the costs for providing the service are given.

KEY WORDS & PHRASES: UNIX, global networking, electronic mail, electronic news.

†UNIX is a Trademark of Bell Laboratories.

Recent years has seen the rise in popularity of the UNIX[1] operating system in universities, private companies and research organisations. The reasons for this are many, one primary reason is the large user community and the ease of interchange of information between them. This is accomplished by an 'ad-hoc' communications network of UNIX systems mainly using dial-up lines[2] which provide *electronic mail*[3] and *network news*[4] facilities. The network is called **USENET** in North America, and **EUNET** is the European extension.

Electronic mail and news

Electronic mail is the ability to post a message to another user, possibly on another computer, in a simple manner. There are facilities for editing messages, sending 'carbon-copies' to other recipients, etc. A user is normally informed when mail has arrived for him.

Network news is a bulletin board shared among many computer systems around the United States, Canada, and now, Europe. This is useful in a number of ways. Someone wishing to announce a new program or product can reach a wide audience. A user can ask "Does anyone have an *x*?" and will usually receive several responses within a few days. Bug reports and their fixes can be made quickly available without the usual overhead of mass mailings. Programs are freely exchanged. Discussions involving many people at different locations can take place without having to get everyone together. The news network has provisions which define the spread of news, and which groups of news are subscribed to. The software has a controlling mechanism for handling the database.

The structure of the network

All things cost money, and networking is no exception. The success of the UNIX network is partly due to it being relatively cheap to join, provided high performance is not sought. Sites, and their financial commitments, can be split up into roughly three groups, *backbone sites*, *secondary feeders*, and *terminal sites*.

A backbone site is one that bends over backwards to make delivery of mail/news as reliable and fast as possible, so it can feed mail/news to smaller sites in the same general area. Backbone sites have a great responsibility and investment in keeping the network running. The hardware required includes modems, auto-diallers, possible expensive connections to other networks, and a considerable amount of machine resource, i.e. computing cycles, disk space, etc. Manpower is needed here, probably at least one person, full time. A backbone site is the channel for all long-distance communication, and the transmission of mail/news can be lengthy and expensive here.

Feeder sites are similar to backbone sites, but only have the responsibility of passing mail/news traffic on to local sites "downstream". The investment here covers hardware in order to be called by or to call other sites, and temporary storage of data which is to be forwarded. The amount of manpower should be low (one man-month per year) as most of the work is done by the backbone site.

Terminal sites involve a minimal investment of money and manpower. Such sites are at the "end of the line", and are not involved in passing traffic on. There is very little manpower investment in a terminal site connection, apart from installation and routine maintenance. The hardware cost is that of a connection for the feeder site.

The extent of the network

At present, the network spans over 1600 sites all over the world with electronic mail, and about 800 of those also participate in the network news. In North America, almost every research institute has a connection to the network. This is the largest such network in the world.

The **Mathematisch Centrum** in Amsterdam started EUNET in early 1982, and is the backbone site for Europe. It regularly calls, by means of dial-up, two sites in North America to exchange mail/news, then feeds this out to other European sites. Typically, 1M bytes per month are transferred across the Atlantic for mail/news, about one third mail and two thirds news. The amount of news forwarded to Europe is 20% of that which is available in the United States.

In early 1983, one year after its inception, EUNET encompassed around 30 sites; there are over 300 UNIX sites in Europe, so there is still plenty of room for growth.

A map of sites which are formally connected to the network news is included. The map dates from the end of 1982.

Connections to other networks

The UNIX network touches other networks at various points, ARPANET[5] and CSNET[6] in North America, SERC-Net and RCO-Net in Great Britain, and the Australian Computer Science Network[7] for example. Mail, and in some cases news, can be transferred across some of these boundaries. Since the network is a *logical* network which sits on top of physical networks, there is no need for the computer systems to be using UNIX at all, provided the physical networks allow the transfer of logical messages between networks, and each computer system understands the format of the logical messages. This is the case with ARPANET for example.

There are many physical ways in which the mail/news can be delivered, including dial-up lines, X25 networks, ARPANET, private networks, etc. The most popular is by means of dial-up lines, as this is cheap, easy to install, and requires no special hardware or communications media.

Costs

Installation of the network software, like it's running, is almost automatic, and should take one or two hours on a lightly-loaded system. Ideally a site has it's own auto-dialler (cost Hfl 2500.-) to phone other sites. In this way, the site pays automatically for their connection costs. A 300 baud modem costs approximately Hfl 1500.-, but requires the site to be polled.

The following table gives the costs incurred by the Mathematisch Centrum, a backbone site, for one year:

item	type	cost (Hfl)
communications costs	recurrent	60K
manpower	recurrent	100K
machine time	recurrent	75K
communications hardware	non-recurrent	20K
disk space	non-recurrent	20K
energy	recurrent	unknown
maintenance	recurrent	10% of total

The only part of this which is currently being passed on to the other sites is their percentage of the local and long-haul communications costs; in the future it may be unavoidable to share the other recurrent costs with all sites connected.

Facilities not provided

The layering of the network, as well as the software, does not allow remote login via a path to a certain site. Of course, local-area networks may provide this, but it is not part of the mail/news network, both facilities are merely using the same transport medium.

Short-term expectations

In it's early stages, EUNET can be expected to follow the same pattern as the North American USENET, spontaneous growth mainly using dial-up lines. However, other computer networks and transport services are now becoming available, and use of these facilities must be made if the network is to remain cost effective as the volume of data increases. This is important as there is no central organisation funding the network, the users do so directly.

At present, two thirds of the European sites are in The Netherlands, where using the public telephone system is relatively cheap. There are two sites in Great Britain which are called up from the Mathematisch Centrum, and these feed other sites by means of private networks, as the public telephone system is expensive there. The public X25 service in Great Britain is relatively cheap, and this will probably play an increasing role as a transport medium there and in the rest of Europe, especially once the international X25 networks become available (end of 1983 in The Netherlands), and the amount of data increases. Some work will need to be done interfacing EUNET sites over these networks.

Currently there is no regulation of the network news, and some feel that a loose form of control is necessary to prevent chaos. This would be difficult in North America where USENET is long established, but the opportunity exists in Europe, where there is a strong user organisation, the **European UNIX Systems User Group (EUUG)**, which binds the UNIX sites together. The Mathematisch Centrum has set up the network structure with respect to the EUUG, and this coupled effort can prevent possible chaos if unbridled growth is allowed to take place.

There is a limit to how far the Mathematisch Centrum can expand the network services it provides to The Netherlands and the rest of Europe using it's own finances.

Future developments

Standards are now available for network protocols, hardware interfaces, and even for the format of electronic mail messages. Many networks, the UNIX network is no exception, have grown up when no such standards applied. There will soon be pressure from various factions to conform.

The present network addressing scheme is a full pathname. An attractive alternative to this would be to use an addressing scheme similar to the surface post, addresses with domains. This change is already under development, and it is interesting to note that this will provide the network with a distributed nameserver, not a central one.

A consequence of the present addressing scheme when news is spread to every subscriber is much duplication of data. If data transport becomes cheaper and faster, a network-wide database may be possible and manageable.

There is investment in existing network hardware and software. Due to

- abovementioned standards
- hardware developments
- growth of local-area networks
- cheaper connection to X25 networks
- technical backup (solving hardware and software problems)
- growth of the network.

Changes will be required in the financial structure of the network. The backbone sites are most vulnerable here, as they are committed to providing a service, the cost of much of which is not passed on to the other sites.

Conclusions

The experience of the last few years with the UNIX network has shown that the national and international communications infrastructure can be considerably improved at reasonable costs. The benefits for the research community are obvious. It is expected, however, that with the growth of the user community of the network, the diversity of this community will also increase. Currently the

majority of the UNIX sites in Europe can be found in universities and research institutes, only 30% of the European sites are commercial. whereas in the United States, around 90% of UNIX sites are commercial. Of the European UNIX sites which have access to the network, only 20% are commercial, in the United States, 60% of UNIX sites with access to the network are commercial. Industry is becoming more and more interested in gaining access to the vast amount of information and expertise as embodied by the UNIX network, and the number of users from industry will rapidly increase in the years to come. In this way the UNIX network will play a major role in bridging the gap between researchers in universities and researchers in industry.

1. D. M. Ritchie and K. Thompson, "The UNIX Time-Sharing System," *Comm. Assoc. Comput. Mach.* **17**(7), pp. 365-375 (July 1974).
2. D. A. Nowitz and M. E. Lesk, "A Dial-Up Network of UNIX Systems," UNIX Programmer's Manual, Section **2**, Bell Labs, Murray Hill, New Jersey (August 1978).
3. K. Shoens, "Mail Reference Manual," UNIX Programmer's Manual, Virtual VAX-11 Version, Section **2c**, University of California, Berkeley (November 1980).
4. M. R. Horton, *How to Read the Network News.*
5. J. M. McQuillan and D. C. Walden, "The ARPA Network Design Decisions," *Computer Networks* **1**, pp. 243-289 (August 1977).
6. C. Barney, "CSNET Unites Computer Scientists," *Electronics* (October 20, 1982).
7. R. J. Kummerfeld and P. R. Lauder, "The Sydney UNIX Network," *The Australian Computer Journal* **13**(2), pp. 52-57 (May 1981).

List of European UUCP Network (EUNET) Sites
24th February, 1983

Comments: Phone numbers are in CCITT format, +country-code area-code number
Comments: Usenet and UUCP sites are collections which can differ heavily.

Name: mcvax
Organisation: Mathematical Centre
Contact: Teus Hagen
Phone: +31 20 5924127
Postal-Address: Kruislaan 413, NL-1098 SJ Amsterdam, Netherlands
Electronic-Address: mcvax!teus
Usenet: philabs diku edcaad ukc vub ztil
mcpdp45 sara70 philmds nlgvax uvapsy dutesta vu44
UUCP: decvax diku edcaad ukc vub ztil IM60 ikogsmb kunivv1 riv02 mcpdp34
mcpdp45 sara70 philmds nlgvax uvapsy dutesta vu44
Comments: mcvax is the gateway to EUNET, the European Usenet.

Name: IM60
Organisation: HIO de Maere
Contact: Theo de Ridder
Phone: +31 53 324247 x 14
Postal-Address: Postbox 1075, NL-7500 BB Enschede, Netherlands
Electronic-Address: IM60!ridder
Usenet:
UUCP: mcvax

Name: caad24
Organisation: University of Edinburgh, Computer-Aided Architectural Design
Contact: David Rosenthal
Phone: +44 31 6671011 x 4598
Postal-Address: 20 Chambers Street, Edinburgh EH1 1JZ, Scotland.
Electronic-Address: caad24!dave
Usenet:
UUCP: edcaad

Name: cern45
Organization: CERN
Contact: D. Wiegandt /DD
Phone: +41 22 834940
Postal-Address: CH-1211 Geneva 23, Switzerland
Electronic-Address: mcvax!cern45!dietrich
Usenet:
UUCP: mcvax

Name: csg
Organisation: NIKHEF-K
Contact: Marten van Gelderen
Phone: +31 20 5922030/2035
Postal-Address: Postbus 4395, NL-1009 AJ Amsterdam, Netherlands
Electronic-Address: csg!marten
Usenet:
UUCP: ikogsmb

Name: diku
Organisation: University of Copenhagen, Institute of Datology (DIKU)
Contact: Keld J. Simonsen
Phone: +45 1 836466 x 14
Postal-Address: Sigurdsgade 41, DK-2200 Copenhagen N, Denmark
Electronic-Address: diku!keld
Usenet: mcvax ibt
UUCP: mcvax ibt

Name: dutesta
Organisation: Delft University of Technology, Department of Electrical Engineering
Contact: Henk Hesselink
Phone: +31 15 783502
Postal-Address: Vakgroep Schakeltechniek, Gebouw voor Elektrotechniek, Mekelweg 4, NL-2628 CD Delft, Netherlands
Electronic-Address: dutesta!henk
Usenet: mcvax
UUCP: mcvax

Name: edai
Organisation: University of Edinburgh, Dept. of Artificial Intelligence
Contact: Irene Orr
Phone: +44 31 6671011 x 2380
Postal-Address: Forrest Hill, Edinburgh EH1 2QL, Scotland
Electronic-Address: edai!irene
Usenet:
UUCP: edee

Name: edcaad
Organisation: University of Edinburgh, Computer-Aided Architectural Design
Contact: David Rosenthal
Phone: +44 31 6671011 x 4598
Postal-Address: 20 Chambers Street, Edinburgh EH1 1JZ, Scotland.
Electronic-Address: edcaad!dave
Usenet: mcvax
UUCP: mcvax caad24 edee

Name: edee
Organisation: University of Edinburgh Dept. of Electrical Engineering
Contact: John Hannah
Phone: +44 31 6671081 x 3279
Postal-Address: Kings Buildings, Mayfield Road, Edinburgh EH9 3JL, Scotland.
Electronic-Address: edee!john
Usenet:
UUCP: edee60

Name: edee60
Organisation: University of Edinburgh Dept. of Electrical Engineering
Contact: John Hannah
Phone: +44 31 6671081 x 3279
Postal-Address: Kings Buildings, Mayfield Road, Edinburgh EH9 3JL, Scotland.
Electronic-Address: edee60!john
Usenet:
UUCP: edee

Name: edmiru
Organisation: University of Edinburgh, Machine Intelligence Research Unit
Contact: Alen Shapiro
Phone: +44 31 6671011 x 6447
Postal-Address: 2 Hope Park Sq., Edinburgh EH8 9NW, Scotland
Electronic-Address: edmiru!alen
Usenet:
UUCP: edee

Name: ibt
Organisation: University of Copenhagen, Indre By-terminal
Contact: Keld J. Simonsen
Phone: +45 1 120115
Postal-Address: Studiestraede 6 o.g., DK-1455 Copenhagen K, Denmark
Electronic-Address: ibt!keld
Usenet: diku
UUCP: diku

Name: ikogsmb
Organisation: NIKHEF-K
Contact: Wytze van de Raay
Phone: +31 20 5922030/2035
Postal-Address: Postbus 4395, NL-1009 AJ Amsterdam, Netherlands
Electronic-Address: ikogsmb!wytze
Usenet:
UUCP: mcvax

Name: kunivv1
Organisation: KU IVV Wis- en Natuurkunde fac.
Contact: Hendrik-Jan Thomassen
Phone: +31 80 558833 x 3125
Postal-Address: Toernooiveld 1, 6525 ED Nijmegen
Electronic-Address: kunivv1!hjt
Usenet:
UUCP: mcvax

Name: mcpdp34
Organisation: Mathematical Centre
Contact: Teus Hagen
Phone: +31 20 5924127
Postal-Address: Kruislaan 413, NL-1098 SJ Amsterdam, Netherlands
Electronic-Address: mcvax!teus
Usenet:
UUCP: mcvax

Name: mcpdp45
Organisation: Mathematical Centre
Contact: Teus Hagen
Phone: +31 20 5924127
Postal-Address: Kruislaan 413, NL-1098 SJ Amsterdam, Netherlands
Electronic-Address: mcvax!teus
Usenet: mcvax
UUCP: mcvax

Name: nlgvax
Organisation: Philips Natlab Geldrop
Contact: Jeroen van der Minnen
Phone: +31 40 867575
Postal-Address: Willem Alexanderlaan 7b, NL-5664 AN Geldrop, Netherlands
Electronic-Address: nlgvax!jeroen
Usenet: mcvax
UUCP: mcvax

Name: philmds
Organisation: Philips S&I/T&M/PMDS
Contact: Johan W. Stevenson
Phone: +31 40 784736
Postal-Address: Gebouw TQ V-5, Eindhoven, Netherlands
Electronic-Address: philmds!johan
Usenet: mcvax
UUCP: mcvax

Name: riv02
Organisation: Rijksinstituut voor Volksgezondheid
Contact: Paul Etty
Phone: +31 30 742963
Postal-Address: Postbus 1, NL-3720 BA Bilthoven, Netherlands
Electronic-Address: riv02!paul
Usenet:
UUCP: mcvax

Name: regi
Organisation: University of Kent Administration
Contact: Gordon Watson
Phone: +44 227 66822 ext 608
Postal-Address: The Registry, University of Kent, Canterbury CT2 7NZ, U.K.
Electronic-Address: ukc!regi:gsw
Usenet: ukc
UUCP: ukc

Name: sara70
Organisation: SARA
Contact: Joke Dorrepaal
Phone: +31 20 5923078
Postal-Address: Kruislaan 415, NL-1098 SJ Amsterdam, Netherlands
Electronic-Address: sara70!sara
Usenet: mcvax
UUCP: mcvax

Name: ukc
Organisation: University of Kent
Contact: Mike Bayliss
Phone: +44 227 66822 x 7615
Postal-Address: Computer Laboratory, Canterbury CT2 7NF, U.K.
Electronic-Address: ukc!mjb
Usenet: mcvax regi
UUCP: mcvax regi

Name: uvapsy
Organisation: Universiteit van Amsterdam, Afd. Psychologie
Contact: Anjo Anjewierden
Phone: +31 20 5253121
Postal-Address: Weesperplein 8, NL-1018 XA Amsterdam, Netherlands
Electronic-Address: uvapsy!anjo
Usenet: mcvax
UUCP: mcvax

Name: vu44
Organisation: Vrije Universiteit, Afd. Informatica
Contact: Hans van Staveren
Phone: +31 20 5484768
Postal-Address: de Boelelaan 1081, NL-1081 HV Amsterdam, Netherlands
Electronic-Address: vu44!sater
Usenet: mcvax
UUCP: vu45 vu60 mcvax

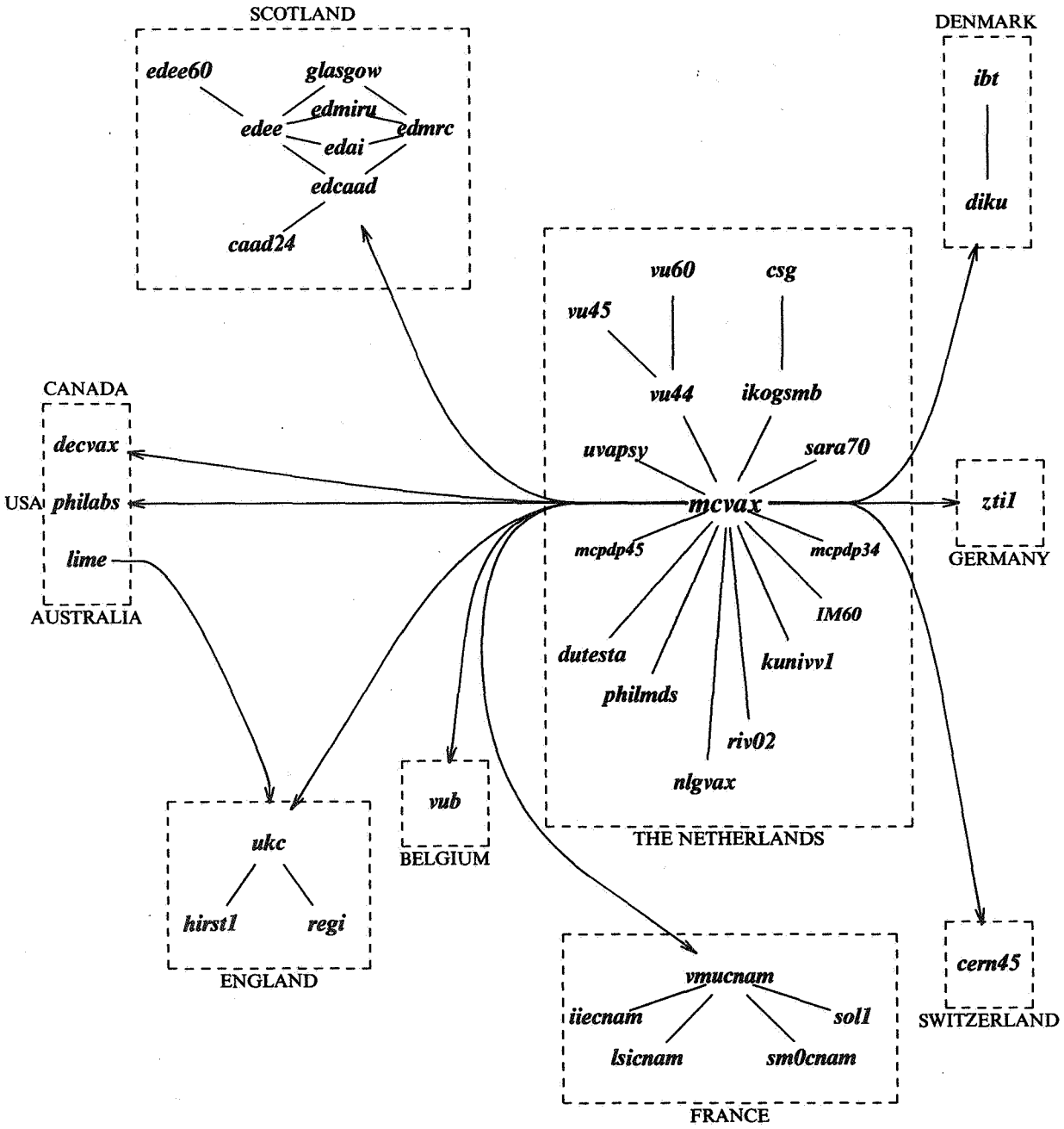
Name: vu45
Organisation: Vrije Universiteit, Afd. Informatica
Contact: Hans van Staveren
Phone: +31 20 5484768
Postal-Address: de Boelelaan 1081, NL-1081 HV Amsterdam, Netherlands
Electronic-Address: vu44!sater
Usenet:
UUCP: vu44

Name: vu60
Organisation: Vrije Universiteit, Afd. Informatica
Contact: Hans van Staveren
Phone: +31 20 5484768
Postal-Address: de Boelelaan 1081, NL-1081 HV Amsterdam, Netherlands
Electronic-Address: vu44!sater
Usenet:
UUCP: vu44

Name: vub
Organisation: Vrije Universiteit Brussel, Medische Informatica
Contact: Erik Blockeel
Phone: +32 2 4781520/1438
Postal-Address: Laarbeeklaan 103, B-1090 Brussel, Belgium
Electronic-Address: vub!erik
Usenet: mcvax
UUCP: mcvax

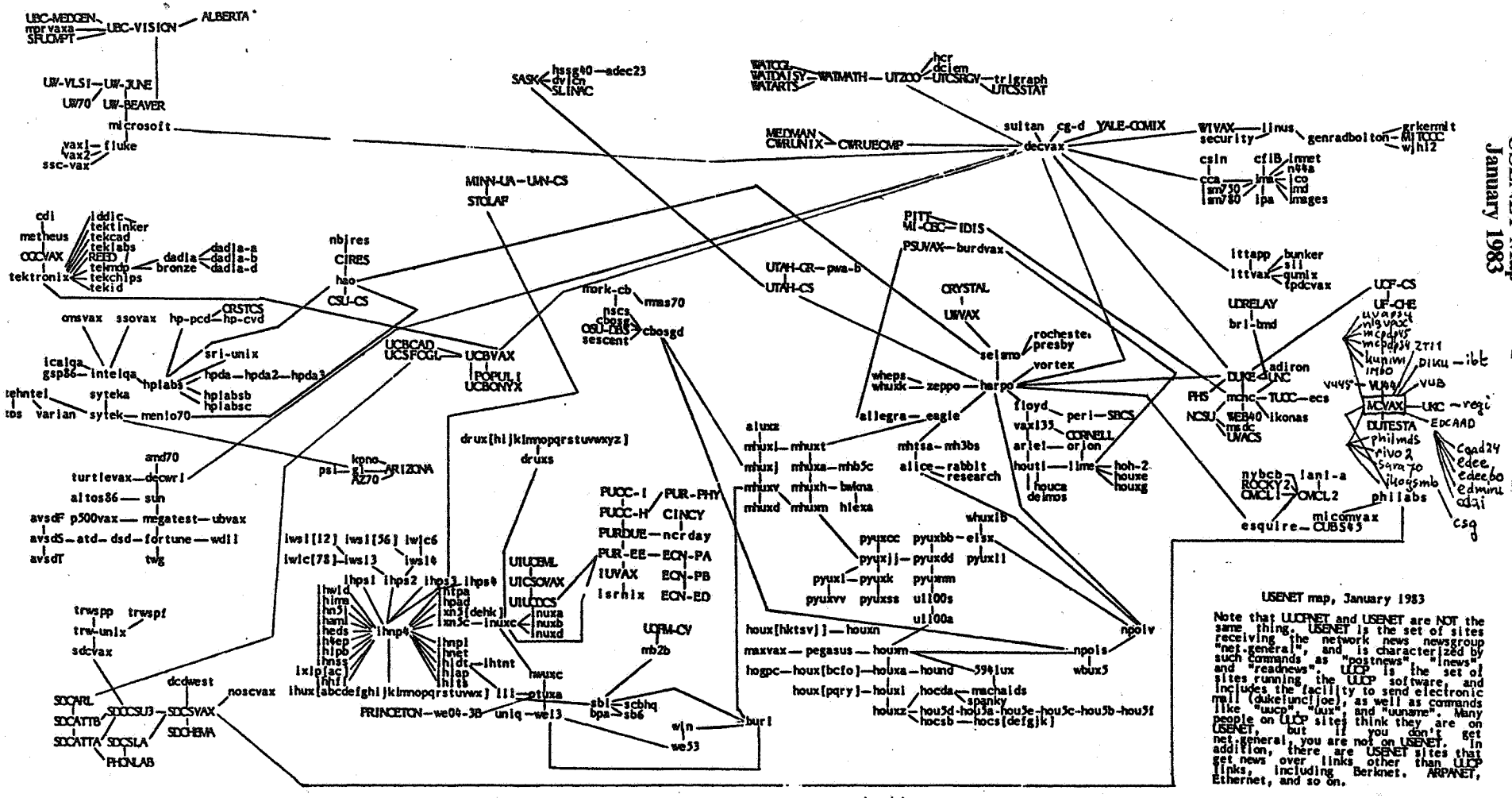
Name: zti1
Organisation: Siemens AG
Contact: Michael Uhlenberg
Phone: +49 89 63644622
Postal-Address: ZT1 INF 212, Otto Hahn Ring 6, D-8000 Muenchen 83, W. Germany
Electronic-Address: zti1!uh
Usenet: mcvax
UUCP: mcvax

European UUCP Network (EUNET) Map
8th March, 1983



THIS PICTURE WAS PICKED OUT BY PIC.

USENET Map
January 1983



USENET map, January 1983

Note that UUCPNET and USENET are NOT the same thing. USENET is the set of sites receiving the network news newsgroup "net.general", and is characterized by such commands as "postnews" "inews" and "readnews". UUCP is the set of sites running the UUCP software, and includes the facility to send electronic mail (duke!unc!joe), as well as commands like "uucp", "uux", and "uuname". Many people on UUCP sites think they are on USENET, but if you don't get net.general, you are not on USENET. In addition, there are USENET sites that get news over links other than UUCP links, including Berknet, ARPANET, Ethernet, and so on.

European backbones:

mcvax	Netherlands
ukc	England
edcaad	Scotland
diku	Denmark
zfi 1	Germany
vub	Belgium

Appendix 1 - Some Major Newsgroups

This is a list of some major USENET newsgroups as of 9th February, 1983. The full list is maintained by Adam Buchsbaum (research!alb).

Newsgroup	Description
net.ai	Artificial intelligence.
net.applic	Applicative language and related architecture.
net.arch	Computer architecture.
net.bugs	General bug reports and fixes.
net.bugs.4bsd	Subgroup for UNIX version 4BSD related bugs.
net.bugs.usg	Subgroup for USG (System III, V, etc.) bugs.
net.bugs.uucp	Subgroup for UUCP related bugs.
net.chess	Chess and computer chess.
net.dcom	Data communications hardware and software.
net.followup	Followups to articles in net.general.
net.games	Games and computer games.
net.general	General queries, requests, announcements, etc.
net.graphics	Computer graphics, art, and animation.
net.jobs	Job announcements, requests, etc.
net.jokes	Jokes and the like. May be slightly offensive.
net.lan	Local area network hardware and software.
net.lang	Different computer languages.
net.lang.ada	Subgroup for ADA.
net.lang.apl	Subgroup for APL.
net.lang.c	Subgroup for C.
net.lang.lisp	Subgroup for LISP.
net.lang.pascal	Subgroup for PASCAL.
net.lang.prolog	Subgroup for PROLOG.
net.mail	Proposed new mail/network standards.
net.math	Mathematical discussions and puzzles.
net.micro	Micro computers of all kinds.
net.misc	Miscellaneous discussions too short lived for their own groups.
net.news	Discussions of USENET itself.
net.news.confi	Subgroup for posting of computer down times and network interruptions.
net.news.group	Subgroup for discussions and lists of newsgroups.
net.news.map	Subgroup for maps.
net.news.newsite	Subgroup for new site announcements.
net.periphs	Peripheral devices.
net.rumor	For the posting of rumors.
net.sources	For the posting of software packages.
net.unix-wizards	Discussions, bug reports, and fixes on and for UNIX. Not for the weak of heart.
net.usoft	Universal software packages. net.usoft.s
net.wanted	Requests for things that are needed, e.g. device drivers, pointers to people, etc.
net.works	Assorted workstations.

Appendix 2 - Net Etiquette

This article was posted on the network on Fri Nov 19 16:14:55 1982, by Jerry Schwartz.

Emily Post for Usenet

Usenet is a large, amorphous collection of machines (hundreds) and people (thousands). Readers range from casual observers who infrequently scan one or two groups to active participants who spend a significant amount of time each day reading news. Their ages, experience and interests also vary widely. Some use the network solely for professional purposes. Others use it to carry on a variety of exchanges and interactions.

The kinds of interaction that occur in Usenet are new to almost everyone. The interactions certainly aren't face to face. On the other hand, submitting an item isn't like standing up before an audience either. Nor is it like writing an article for publication. Nor, since noone moderates submissions, is it like writing a "letter to the editor." It combines aspects of formal and informal communications in a new way.

Despite (or because of) these considerations Usenet is a powerful and pleasant tool when people submitting items follow the emerging "net etiquette." Users at new sites (those at which Usenet has been available for less than three months) should be especially cautious until they have adjusted to this new form of communication.

This document is not a readnews tutorial. In some cases I tell you to do something without saying how. Ask around or consult whatever documentation is available.

The following list of suggestions is long, but you can become a responsible member of the Usenet community by reading it. Before presenting a full discussion I will boldly state the rules:

Put all items in an appropriate group.
Reply via mail.
Exhibit care in preparing items.
Read followups.
Don't be rude or abusive.
Avoid sarcasm and facetious remarks.
Use descriptive titles.
Cite references.
Summarize the original item in followups.
In posting summaries of replies, summarize.
Be as brief as possible.
Don't submit items berating violators of these rules.
Don't make people read the same thing more than once.

A more extended discussion of these points, of some important newsgroups, and of some common questions follows.

1. Put all items in an appropriate group.

   See below for a list of some important groups. A followup to an item does not always belong in the same group as the original item. In particular, followups should never go to net.general.

   Groups exist both to accommodate different interests and to limit distribution. Many geographic areas and organizations have groups that are only distributed locally. For example, on eagle where I am composing this item there are "net" groups, "btl" groups (Bell Labs), "mh" (Murray Hill) and "nj" groups (New Jersey)"

2. Use mail instead of a followup item.

   When an item asks for specific information or requests a "vote", you should reply via mail to the originator. Remember that many people will be reading the item at more or less the same time and if they all respond via a followup item, the net becomes flooded with almost identical responses that can annoy even people who were interested in the original question.

   When submitting an item that is likely to generate responses, remind people of this point by ending with "send me mail and I'll post the results to the net." Of course, you then accept the obligation of doing so.

3. Exhibit care in preparing items.

   While Usenet interactions sometimes take on the flavor of casual conversation, you should spend the time and effort to make your item readable and pertinent. Be sure you have something new to say. In particular, be sure you have understood earlier items. If you are in doubt about an author's intent, carry on a private interaction. Frequently a discussion starts with one or two carefully prepared "position papers" and then degenerates into repetitive claims.

   While proper spelling and grammar do not necessarily improve the ideas of an item, many readers feel that their absence reflects a lack of care. And that lack of attention to English usage may reflect a similar lack of attention to the ideas.

4. Read followups before reacting.

   When you read an item, followups may have already reached your machine. Before reacting to the item (either with mail or by submitting a followup) you ought to know what others have said.

   The standard readnews interface doesn't make this easy, but it should be done. (See below.)

5. Use an editor to prepare items for submission.

   If you are using the standard version of readnews or postnews

you should set the EDITOR shell environment variable to the editor you want to use. This lets you correct spelling, grammar, etc.

6. Don't be rude or abusive.

   I regret having to say this, but I have seen too many items that start "John, you idiot, ...", or contain phrases like "People who think ... should be shot." I suspect much of this rudeness is just carelessness. Modes of speech that would be reasonable in private conversation may not be reasonable in a semi-public forum such as the net.

7. Avoid sarcasm and facetious remarks.

   Without the voice inflection and body language of personal communication these are easily misinterpreted.

8. Use descriptive titles.

   Readers should be able to decide whether to read or skip items based on their titles. For example if you are having trouble with your dishwasher you might submit an item titled "need help with G.E. dishwasher" to net.wanted. Don't submit an item titled "Need Help."

   Followups should be titled "Re:" followed by the title of the original item. This is done automatically by the "f" command in standard readnews.

9. Whenever possible, cite references.

   This is especially true in discussions when you quote "facts" that are not universally known. Many such "facts" turn out on close examination to be opinions.

10. Summarize the original item in followups.

    Remember that although you may have an item in front of you when you submit a followup, others won't. Remind the reader of the point of the original item. But don't repeat a long item. That would violate the "be brief" principle.

11. In posting summaries of replies, actually summarize.

    Sometimes people just collect the items they received. The mailed replies might just as well been submitted to the net. At the least the replies should be edited to eliminate redundancy and irrelevancy.

12. Be as brief as possible.

    Some people read news over slow (300bps) terminals, and watching a 15 line "signature" that you have seen ten times before gets boring. (I hope you don't consider this item a violation. I

have tried to keep it brief, but there is a lot to say.) Even people who read news on faster terminals don't like to wade through extraneous material to get to the heart of the matter.

13. Don't publicly berate violaters of these rules.

    They probably didn't realize the anti-social nature of their behavior. Besides, if you didn't want to see the original item nobody wants to see your complaint. These complaints fall into the category of reactions that should go directly to the originator via mail.

14. Don't make people read the same thing more than once.

    When you have something to say that is of interest to more than one group, submit it as one item to the groups with one command. If you use a separate command for each group, readers who subscribe to several of these groups will see it more than once.

    If you must retract or revise an item, use the "cancel" command.

15. Here is a list of some groups that are important to the smooth functioning of the network or are frequently used improperly:

    - net.general

      This group is only for short announcements and queries that need to be read by everyone. Followups and discussions should never go here.

    - net.followup

      This is the place for continuing discussions that have started in net.general. In the standard readnews program the "f" command applied to an item in net.general will put your submission in net.followup, but you can also submit items directly to net.followup.

    - net.misc

      This is the place to carry on frivolous discussions, arbitrary chat, and rambling discussions. New groups are frequently spawned from these discussions.

    - net.wanted

      This group exists for posting queries for help. ("I know somebody must have a program to compute ...")

    - net.jokes

      Jokes go here. Jokes that might offend any readers should be encrypted. You can learn an encryption technique by decoding some encrypted jokes.

This group is often seen by people who do not regularly use computers, and there have been several instances of problems raised by offensive jokes. There have also been several extended discussions of the relation of this issue to free speech. The conclusion of these discussions has always been that because the net exists largely at the sufferance of large institutions who foot the bills we should all be very careful about offending anyone. Almost any racial, ethnic, or sexual reference will offend somebody. The safe rule is: don't submit an unencrypted joke unless you have seen similar ones in this group already.

- net.jokes.d

Discussions about humor go here, not in net.jokes

- net.news

Discussion of all aspects of Usenet itself belong here.

- net.news.group

Creating a new group affects all the machines on Usenet. Normally the need for a new group should be demonstrated by the submission, over a period of time, of items that might properly belong in a new group. If you are new to Usenet (less than 3 months) you probably shouldn't be creating new groups.

If you want to discuss a topic and can't find anywhere else, try net.misc.

In any case before you create a new group, submit an item proposing the new group to net.news.group and to specific groups that may share interests with your proposed new group. If after a week or two, you have received support for the idea, and you haven't received any strenuous objections, go ahead and create the group. You should also create an item in the new group with a distant expiration date describing what the group is about.

- net.sources

After being announced in some appropriate place useful programs and shell scripts are put here. These should be well enough commented so that even people who miss the announcement can understand what they do.

- net.test

This exists so that Usenet administrators can test the functioning of the software. It should be used only as a last resort since items will go to all machines. In most instances there will be a more limited group in which to

put tests (e.g. "mh.test").

16. Here are some queries that seem to be submitted frequently by new users. Please don't ask them out of idle curiosity.

    - "Where does 'fubar' come from?"

      In my opinion the best answer seems to be "Fouled up beyond all recognition." There are lots of versions of this acronym, in particular "Fouled" is usually replaced by a less polite word. "foobar", "foo" and "bar" are all derived from "fubar." (See discussion of net.jokes for the reason I use the polite word.)

    - "Does anybody know my freshman roommate, John Doe, who I haven't seen in years but I think works at Bell Labs?"

      If you really want to know, try calling any Bell Labs location and asking the operator. (The Murray Hill number is 201-582-3000.) They have lists and telephone numbers of all employees. The same of course applies to DEC or UCB or wherever.

    - "I can't reply via mail to some items. What can I do?"

      There are two common causes for this. One is items from ARPANET sites. (These have "@" in their names.) There are technical, administrative and organizational problems with communication between Usenet and ARPANET. The other cause is machines that are on Usenet but won't forward mail. (This includes some ARPANET sites and some uucp-only sites.) The only (admittedly difficult) way to circumvent both problems is to construct a path that avoids the trouble machines.

    - "Is being called a 'hacker' a compliment or an insult?"

      Some people think one, some think the other. If you want to be unambiguous find another word.

    - "How do I read followups to an item before I reply?"

      This depends on how you read news. If you use the standard readnews program then the easiest way is to use the "e-" command after reading an item. This will tell readnews to forget that you have read the previous item. When you have read the followups you can "q" and start readnews again.

Phew!! Don't let this long list intimidate you. The net exists to be used. It is a powerful tool and as long as people treat it as a tool rather than a toy, it will prosper.

Jerry Schwarz
eagle!jerry

Appendix 3 - Some Articles from the Network

The following articles were chosen in order to give more information about the network itself, as well as a flavour of the type of discussions which take place. Correspondingly, some of the articles here are somewhat longer than average.

From philabs!cmcl2!floyd!harpo!decvax!cwruecmp!krm
Wed Feb 9 12:02:55 1983
Subject: looking for RSX software
Newsgroups: net.general

I am looking for software sources for RSX (like to port over to DEC pro's).
specifically I would like to know if there is an emacs, a compilable lisp,
(not Pslow-code), and games. All hints and pointers will be appreciated.
Mail me, I will summarize if interrest warrants.

Rich Magill
decvax!cwruecmp!krm

From philabs!cmcl2!floyd!harpo!decvax!decwrl!sun!megatest!dre
Sat Feb 12 19:39:18 1983
Subject: Benchmarks of machines at Unicom
Newsgroups: net.general

A benchmark comparison of all machines at Unicom except the IBM PC running
Venix (they had no C compiler) has been posted to net.micro.

Dave Emberson
Megatest Corp.
ucbvax!lbl-csam!megatest!dre

From vu44!plain Mon Feb 21 13:41:36 1983
Subject: Call for papers
Newsgroups: net.general

WORKING CONFERENCE ON PROTOTYPING

October 25-28, 1983 Brussels, Belgium

This conference will focus on the user-oriented development of information
systems. Research-oriented and technical presentations, as well as working
group discussions shall address the following main issues of the conference:
- What should be understood by the term prototyping in IS development?
- Which parts of the final system can or should be covered by prototypes?
- Which methods and tools are available for prototype construction?
- What are the new opportunities and demands on developers and users?

Deadline for position papers and summaries of full papers: April 15, 1983
Deadline for full papers: July 29, 1983
For further information contact:

Martin Kersten
Department of Mathematics and Computer Science
Vrije Universiteit
de Boelelaan 1081
1081 HV Amsterdam, The Netherlands
USENET: mcvax!vu44!mk

From philabs!cmcl2!floyd!harpo!npoiv!npois!cbosgd!mark
Sat Feb 12 21:13:06 1983
Subject: backbone sites needed
Newsgroups: net.news

The net is about to undergo some major reconfiguration, and this seems like a good time to reorganize some of the major hub sites. Specifically, harpo is about to fade into the boonies of the net, so we desperately need a Bell Labs site or two to become the primary gateways into/out of BTL to replace harpo. We also need some more organization in California (especially Los Angeles, although San Diego, Silicon Valley, and San Francisco could stand some cleaning up too) and on the ARPANET.

A backbone site is one that we bend over backwards to make delivery of news as reliable and fast as possible, so it can feed news to less main sites in the same general area. Such sites currently include decvax, harpo, ucbvax, duke, and to a lesser extent seismo, teklabs, microsoft, sdcarl, and so on.

A backbone site should be a large, robust machine, that can handle connections of at least 6-10 USENET neighbors. (It helps a lot to run Berkeley 4.1BSD and have uucp subdirectories installed.) The site should have at least one reliable 1200 baud dialer, and be willing to spend some money on long distance phone calls to send news to other backbone sites (although depending on who your neighbors are, a phone budget isn't always necessary - ucbvax and duke don't have one). Backbone sites should pass along all newsgroups to their neighbors (except for a few officially blacklisted newsgroups like net.jokes.q). They should run a recent version of news software (either A or B) and the contact person there should be someone who is active on the network and who responds quickly when they receive electronic mail. These are not all absolute requirements, but show the kind of attributes that help.

Would any interested persons/sites please drop me a line?

Mark Horton

From philmds!root Wed Dec 1 21:44:57 1982
Subject: sitedir Philips, Science & Industry
Newsgroups: net.news.newsite

Site: Philips, Science & Industry
Contact userid: johan
Contact name: Johan W. Stevenson
Address: Philips, S&I, T&M, PMDS,
Address: Gebouw TQ V-5,

Address: Eindhoven,
Address: The Netherlands.
Usenet partners: mcvax
Regular uucp: mcvax
Irregular uucp:
Voice phone: (040) 784736
Dial in: (040) 784389, 1200 baud, Sematrans 1211
Subscribes to: net.all,eunet.all,nlnet.all
Willingness: anybody may dial-in, but we cannot dial-out (yet)
Location:
Comment: 11/44, Fujitsu 160Mb, RL, DZ, DH, TS, 1.25 Mb
Comment: We use UNIX to develop the Philips Microcomputer Development
Comment: System based on UNIX, using 68000. PMDS uses
Comment: In-Circuit-Emulation techniques to debug a wide range of
Comment: microprocessors, 8 and 16 bits, of various manefacturers.

From philabs!cmcl2!floyd!vax135!ariel!hou5f!npoiv!harpo!decvax!utzoo!utcsrgv!bobr
Thu Feb 3 14:28:48 1983
Subject: Proposal for Naming Conventions of European Phone Numbers
Newsgroups: net.news.newsite

Now that European sites are joining usenet, may I suggest
a standard way of expressing their phone numbers.

I suggest

"(" <country-code> "-" <area code> ")" <local phone number>
where the default value of <country-code> is "1",
standing for North America.

Thus people on this side of the ocean would not have to
change their naming convention for phone numbers and
European phone numbers would look something like

(44-1) 123-4567 in London or
(49-30) 123 45 67in Berlin.

Christoph Bobrowski Dept. of Computer Science, Toronto
still: (416) 978-6027
soon: (49-40) 299 10 22

From philabs!sdcsvax!sdccsu3!sdcvax!trw-unix!gorlick
Sun Feb 6 11:52:43 1983
Subject: CBSIZE in 4.1bsd kernel
Newsgroups: net.unix-wizards

Has anyone running 4.1bsd ever tried to increase the size of
'CBSIZE', the number of characters in a clist block? I increased
it by 50% from 28 to 42 and got trap 8's and 9's when I rebooted
the new kernel. Any advice would be much appreciated.

-Michael Gorlick-
{decvax, ucbvax}!trw-unix!gorlick

From philabs!cmcl2!floyd!harpo!decvax!ucbvax!CAD:tektronix!tekmdp!laurir
Fri Feb 11 17:42:57 1983
Subject: using YACC to generate commercial products - AT&T speaks
Newsgroups: net.unix-wizards

Long time followers of this news group may recall that last April
I queried as to the legality of using YACC to generate a compiler
which would then be sold to customers who do not necessarily have
Unix licenses. The problem is that YACC includes a 150-line file,
/usr/lib/yaccpar, in the generated compiler, and so one might construe
the result to be "derived" from Unix in the sense of the copyright
act and/or the Unix license.

I heard today from the AT&T licensing folks, and they do in fact
consider output from YACC to be part of Unix. There is at least
one company making its money by selling such a compiler; they run
the C code from yacc through a cross compiler to get a compiler
for a machine which cannot run Unix. The implication then is that
a Unix binary license must be purchased for this non-Unix
machine before the generated compiler can be run on it.

-- Andrew Klossner (decvax!tektronix!tekmdp!laurir)

From philabs!cmcl2!floyd!harpo!decvax!ittvax!swatt (Alan S. Watt)
Wed Feb 9 22:28:08 1983
Subject: Re: CBSIZE in 4.1bsd kernel
Newsgroups: net.unix-wizards

>From trw-unix!gorlick:

> Has anyone running 4.1bsd ever tried to increase the size of
> 'CBSIZE', the number of characters in a clist block? I increased
> it by 50% from 28 to 42 and got trap 8's and 9's when I rebooted
> the new kernel. Any advice would be much appreciated.

Note that (CBSIZE + sizeof (char *)) must be a power of two, so that

CBROUND = (CBSIZE + sizeof (char *) - 1)

Greg Hidley at dcdwest has tried it with CBSIZE=60, CBROUND=0x3f.
I have just built a kernel with CBSIZE=124, CBROUND=0x7f, but
haven't tested it out yet.

- Alan S. Watt

From philabs!cmcl2!edler (Jan Edler) Thu Feb 10 19:14:03 1983
Subject: Re: CBSIZE in 4.1bsd kernel
Newsgroups: net.unix-wizards

Does anyone know how much difference this makes in performance?

Jan Edler cmcl2!edler(nyu)
edler@NYU (I think)
pyuxll!jse (abi piscataway)

From philabs!cmcl2!floyd!harpo!decvax!ucbvax!CAD:tektronix!tekmdp!dadla!dadla-b!james
Wed Feb 9 23:22:56 1983
Subject: rsx-unix gateway
Newsgroups: net.unix-wizards

Some time ago, someone expressed interest in unix to rsx communications software. Who was that person and would they please get in contact with me as I have some news for them.

Jim Binkley
tektronix!tekmdp!dadla!dadla-b!james

From philabs!cmcl2!floyd!harpo!seismo!presby!aron (Aron Shtull-Trauring)
Thu Feb 10 21:25:57 1983
Subject: summary: unix license "legal" query
Newsgroups: net.unix-wizards

I recently sent out a "legal" query about unix licenses viz. what do I need to get Berkeley, and are licenses "tied" to machine types. I got several answers, all along the same lines. The following was the most complete:

****

1. A binary license for a suitable form of Unix suffices to let your binary-license vendor sell you stuff incorporating x.yBSD code. It does not suffice to get you a Berkeley distribution, since the distributions from Berkeley include sources, some of which are derived from Bell sources. Berkeley lacks the resources and the motivation to cater to binary-only sites themselves.

2. The System III license, like all Unix licenses, specifies a particular cpu by model number and serial number. There is NO form of Unix license which gives you a blanket right to use the software on any cpu you wish; all cpus must be licensed individually. Mind you, Bell doesn't care who made the cpu or whether it corresponds to the type of cpu the distribution tape is set up for (although you may need to specify, in addition, which tape you want).

****

aron shtull-trauring
harpo!seismo!presby!aron

From philabs!cmcl2!floyd!harpo!eagle!mhuxt!mhuxa!mhuxh!mhuxm!pyuxjj!martin
(M Harriss) Mon Feb 7 10:06:21 1983
Subject: Re: Proposal for Naming Convention of European Phone Numbers
Newsgroups: net.news.group

There is an international standard for the representation of telephone numbers in foreign countries; I strongly suggest that we stick to that in favour of devising a different scheme. The standard scheme uses a "+" to represent the international access code from your particular country; this is followed by the country code and the actual number.

For example:

+44 1 246 8091	in London
+32 2 123 4567	in Brussels

etc.

In those areas in the US that can dial their own international calls, the "+" is replaced by 011.

I believe this standard is proposed/supported/endorsed or whatever by the CCITT. Let's stick to it!

Martin Harriss
pyuxjj!martin